WEB-BASED GIS AND PUBLIC PARTICIPATION:

AN AID TO WIDENING FEMALE PARTICIPATION

IN REVITALIZING OUTDOOR RECREATIONAL FACILITIES

IN SAUDI ARABIA

A CASE STUDY IN JEDDAH, SAUDI ARABIA

A Dissertation

by

FAROUK DAGHISTANI

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2007

Major Subject: Urban and Regional Sciences

WEB-BASED GIS AND PUBLIC PARTICIPATION:

AN AID TO WIDENING FEMALE PARTICIPATION

IN REVITALIZING OUTDOOR RECREATIONAL FACILITIES

IN SAUDI ARABIA

A CASE STUDY IN JEDDAH, SAUDI ARABIA

A Dissertation

by

FAROUK DAGHISTANI

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Approved by:

Co-Chairs of Committee,	Christopher D. Ellis
	Douglas F. Wunneburger
Committee Members,	Robert E. Johnson
	Byoung-Suk Kweon
Head of Department,	Forster Ndubisi

December 2007

Major Subject: Urban and Regional Sciences

ABSTRACT

Web-Based GIS and Public Participation: An Aid to Widening Female Participation in

Revitalizing Outdoor Recreational Facilities in Saudi Arabia - A Case Study in Jeddah,

Saudi Arabia. (December 2007)

Farouk Daghistani,

B.S., King Abdul-aziz University; M.L.A., University of Colorado at Denver

Co-Chairs of Advisory Committee: Dr. Christopher D. Ellis
                                     Dr. Douglas F. Wunneburger

During the last decade, the Internet and Geographic Information System (GIS) have made changes in the relationship between governments and citizens in many developed countries. Citizens, in such countries, have been given more chances to participate in the decision making process of the spatial issues relevant to them. Such participation has helping to make urban planning more democratic and to make planners *plan with the public* rather than *plan for the public*. In Saudi Arabia (a developing country), participation of citizens in spatial decision making is very limited. Such limitation is more severe when considering women due to the circumstance of gender segregation in the Saudi society. While males may somehow muddle through ways to express their views about spatial issues to the planning authority, females have no ways unless they behave against the local norms. There is a persistent need for implementing distance participation for women in Saudi Arabia. This research examines whether developing and employing an Internet / GIS participatory approach can facilitate

(without conflicting with the local conservative cultural norms) women's participation in the municipal decision making process of the neighborhood's outdoor recreational facilities. The goal was primarily to adapt the technology to serve the society instead of necessitating the society to change its inherited norms to be able to advance. The research involved an exploratory ethnographic case study carried out in a selected residential community in the city of Jeddah, Saudi Arabia.

The research was carried out in two phases where the current status of public participation in the Saudi community planning was investigated first, and then a prototype for an Internet/GIS system for female public participation was developed and evaluated. The research found that there is a legitimate enthusiasm amongst the public and officials of the research sample for adopting e-public participation. Such enthusiasm is supported by a number of political, economical, technological and religious reasons. However, the findings showed that adopting e-public participation is more promising in the near future than currently due to different reasons including the current relatively small number of Internet users in Saudi Arabia. Since such research is the first of its type to be conducted in the Saudi context, the findings can serve as a road map indicating that adopting e-public participation in Saudi Arabia is promising and worth researching.

DEDICATION

With love and gratitude, this dissertation is dedicated to my wonderful parents and beloved wife who supported me from the beginning of this study to the last two years I spent away from campus due to my denied visa.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES

FIGURE   Page

FIGURE   Page

FIGURE   Page

LIST OF TABLES

1. INTRODUCTION

Community participation can be generally defined as 'where people living in an area are able to articulate their desire for change by being involved in the planning and enactment of that change and maintaining and building on that change in the future' (Rowe & Wales, 1999). A variety of terms are used to describe community participation. Creighton (1981, p. vii) discussed such variety as follows:

> *During the 1960s and 1970s there was an explosion of programs under the names of 'citizen participation', 'public involvement', 'community involvement', 'citizen involvement' and so forth. Although some people have argued that the variation in these terms represent distinctions about the degree to which the public is an integral part of decision making, I think these distinctions are semantic quibbling. What we are talking about is including (involving, consulting, inviting the participation of) the public in the important decisions of government or corporate entities.*

Community participation is important morally as well as professionally. On one hand, it is important morally because it basically stems from recognizing that those affected by a decision should have input to that decision (Moote, McClaran & Chickerin, 1997; Smith, 1982). On the other hand, it is important professionally because it helps "Reflecting the movement from 'planning *for* the public' to 'planning *with* the public'." (Klosterman, 1998, p. 394); it helps enlightening the professionals with *public knowledge* and enlightening the public with *professional knowledge*; and it helps make the plans more likely to appropriately address issues that are important to the community

_____

This dissertation follows the style of *Computers, Environment and Urban Systems.*

(Craig, 1998, p. 394). Enabling community participation creates a partnership connection between the governed and those who govern. Such partnership enables a better understanding of the community problems, and allows the two parties to work together towards possible acceptable solutions.

The degree of interactivity between the communities and the governments has been practiced in ways that range from entirely passive mode to full interactivity and empowerment. Weidmann and Femers (1993) provided a structured overview of different forms of community participation that may be seen as a ladder (Figure 1). On the lowest rung of the ladder, participation exists in an entirely passive mode as "Public right to know". At this stage, public are sometimes provided with the information they request. At the top rung of the ladder, full interactivity is present as "Public participation in final decision". At this stage, the public has a full voice in the final decision, usually through a community organization (Craig et al., 2002).

Leiner, McMaster, Elwood, McMaster, and Sheppard (2002) identified six models of delivering public participation Geographic Information System (GIS) for communities and grassroots organizations. Such models are: community-based (in-house) GIS, university-community partnerships, GIS facilities in universities and public libraries, map rooms, neighborhood GIS center and Internet Map Server. However, implementation of such models may succeed in some contexts while in some other contexts may not work. Renn, Webler, and Wiedemann (1995) found that different cultural and political contexts influence what works and what doesn't work in adopting a participatory approach to a decision making process (explained further in the literature

review section). Therefore, to enhance the opportunity of success for implementing a particular participatory model in a particular context, such a model has to be thoroughly studied and tested while taking into consideration the circumstances of such a context.

Public Participation in Final Decision
Public Participation in Assessing Risk and Recommending Solutions
Public Participation in Defining Interests. Actors, and Determining Agenda
Public Right to Object
Informing the Public
Public Right to Know

Fig. 1. The Citizen Participation Ladder (Adapted from Weidmann and Femers, 1993).

In the Saudi Arabian context (the focus in this research), applications and research about implementing technological participatory models for community participation in the planning and decision making process relevant to the community's built-environment are rare. Learning from other's studies about the implementation of community participation techniques and to what extent they were appropriate to the public people who tried it is good, but can't guarantee that what has worked in the US, for example, can work in Saudi Arabia. Every culture has its own uniqueness. The Saudi

culture is very unique at its cultural value of restricting the mix between the genders. The segregation of the genders (not permitting women to mix with unrelated men) deeply influences many aspects of social life in the country. Some of the perceived wisdom underlying such institutional mechanism is to protect women's chastity and to prevent other men from encroaching on the male honor of the family (Al-Munajjed, 1997). Implementing community participation models in Saudi Arabia has to consider such a cultural value of gender segregation in order to avoid gender inequality.

Unfortunately, in the time being, community participation in the municipal planning and decision making process is almost absent despite the efforts spent in such regard (explained in the section of the literature review). As a result of gender segregation, public women in particular are the most unfortunate community members in participating with their opinions. On one hand, it is very difficult or almost impossible for the public women to have their voices reach the municipal officials. On the other hand, the municipal officials have almost no locally acceptable means to consult the public women. Therefore, a problem that appears as a large communication gap between the two sides can be obviously noted here. Bridging such a communication gap was the challenge of this research.

The researcher, who comes from Saudi Arabia, hypothesizes that there is a great potential in using the Internet and the GIS to support the female community participation in Saudi Arabia without conflicting with the local traditions and norms. Accordingly, the general question of this research was stated as: Can Internet/GIS technologies bridge the communication gap for female community participation in Saudi Arabia? To focus the

research, a second question was determined as: Can Internet/GIS technologies facilitate the communication needs for the development and re-development of the community's outdoor recreational facilities in Saudi Arabia?

This research was moved by the researcher's belief that the technology can serve all of the world's cultures without the need for changing those cultures. Therefore, the attitude of this research was to adapt the technology to serve the existing local cultural value of gender segregation in Saudi Arabia rather than to suggest changing such a value. Based on such an attitude, and because using Internet/GIS technology for supporting public participation is new to Saudi Arabia, and to thoroughly understand such a cultural value of gender segregation, the research methodology was ethnographic and exploratory in nature. The researcher has traveled to Saudi Arabia and was a long-term resident (insider) in the study area and that has improved his access to the necessary social infrastructure.

New types of relationships can be formed between the Saudi professionals and the Saudi public as a result of facilitating an *appropriate* community participation model to the *whole* community members. This research is the very first in Saudi Arabia to study a technological participatory model for female community participation in the planning and decision making process relevant to the community's built-environment. The research represents a step in a journey of a thousand miles towards a legitimate community participatory system in Saudi Arabia.

2. LITERATURE REVIEW

Having introduced the research subject in the previous section, this section reviews literature relevant to the research context. The reviewed literatures cover the benefits of public participation and the potential of the Internet and GIS at public participation. The review also shed some light on the case of public participation in Saudi Arabia and the status of women at such participation. Literatures about the technological advances in Saudi Arabia with special focus on the Information and Communication Technology (ICT) are also reviewed. Also, literatures about the rapid urban development that Saudi Arabia underwent and how recently the government started to tackle the urban problems resulted from that rapid development are reviewed. Lastly, the summary connects together all of the reviewed literatures and shows a gap in knowledge.

2.1 Public Participation, Internet and GIS

In many places in the world, community members get together and form organizations to negotiate with their local governments. The size of such public participation organizations ranges from small ones focusing on neighborhood problems to large ones engaged in solving sophisticated regional problems. Forming such organizations has several benefits. Craig, Harris and Weiner (2002) mentioned a number of them:

Participants in such organizations see opportunities to achieve individual goals through collective action (Olson 1965). Politicians are responsive to community organizations when they represent sufficient numbers of committed voters (Grant 3 and Omdahl, 1993). Planners, in particular, pay attention to public participation and community organizations (Jones, 1990) because community input is critical for defining local issues. Planners accept that community-developed solutions are feasible because they tend to be reasonable, realistic, and sustainable. (p. 5)

Technology has a great potential to acquire the local knowledge of the community members (i.e. the indigenous knowledge). Alkodmany (2001) stated that "In an environment in which computer and Internet technology are becoming mainstream, it is important that planners develop ways to harness these technologies to work effectively with the public." Batty (1998) mentioned that computer visualization and Web-surveys offer a new way to support and facilitate democratic decision-making. "GIS and the Web are ever-evolving technologies and hold great potential for public use, allowing wider involvement in environmental decision making." (Kingston, Carver, Evans and Turton, 2000, p. 110). Graham (1996, p. 2) said that the Web will "generate a new public sphere supporting interaction, debate, new forms of democracy and 'cyber cultures' which feed back to support a renaissance in the social and cultural life of cities".

Internet and GIS hold many advantages at public participation. Howard (1999) has mentioned a number of the Internet advantages: the participation meetings are not constrained by a place or time, but available 24 hours a day on the seven days of the week. Such availability enable participation at any time as long as the Internet is accessible and so opens up opportunities for more people to participate in public consultations. Using the Internet at public participation also enable to express their views

in a relatively anonymous and non-confrontational manner compared with the traditional method of making a point verbally and face to face with the people attending participation meetings. Confrontation could discourage less vocal individuals to express their opinions at public meetings while encourage vocal individuals to probably dominate such meetings and express their opinions which could be opposite to those of the formers. On the other hand, GIS can enable data sharing across organizations (Campbell & Masser 1991) and so it can stimulate forming interorganizational relationships (Kumar & Van Dissel, 1996; Roche & Humeau, 1999; Dedekorkut, 2002).

Interorganizational relationships "are the enduring transactions, flows, and linkages that occur among or between an organization and one or more organizations in its environment" (Oliver, 1990, p. 241). Kumar and Van Dissel (1996) have found that the structure of an interorganizational relationship is established by specifying information flows, procedures, roles, obligations, rights, data, analysis, locations and computational methods used in the relationship.

As briefly mentioned earlier, Leiner et. a. (2002) identified six models of delivering public participation GIS for communities and grassroots organizations: community-based (in-house) GIS, university-community partnerships, GIS facilities in universities and public libraries, map rooms, neighborhood GIS center and Internet Map Server. The last mentioned model is of a special interest to this research. Such a model is for making maps available to community organizations over the Internet. It requires that some individuals or institutions establish a web site that provides spatial data and maps. In the time being, most sites display maps, but some heavy ones allow users to query or

analyze spatial data. Carver and Peckham (1999) have mentioned that, during the last few years, GIS have begun to appear on the Internet ranging from simple demonstrations and references to GIS use, to more complex online GIS and spatial decision support systems.

It is important to mention that adopting a participatory model would not be equally successful everywhere (i.e. in different contexts). As briefly mentioned earlier, different cultural and political contexts influence what among the participatory models can work and what can't work in those contexts. For example, in a study done by Renn et. al. (1995), a single model of public participation in environmental decision-making called the "analytic-deliberative process." was applied in Germany, Switzerland, and the United States. The study has found that while participants in Germany and Switzerland were grateful for the invitation to participate, U.S. participants were suspicious of prefabricated participation models and suspected hidden agendas with such an approach. Renn concluded that the success of public participation in the U.S. would depend on getting approval of the process by the affected communities before that process is implemented.

Integrating Internet and GIS into public participation process can be very effective at reducing the gap between the knowledge of public officials and the public people. Such integration can help feeding the public officials with the local community's indigenous knowledge. It can also aid in feeding the public people with the local government's professional knowledge. The result is better understanding between the two sides for the community well-being.

2.2 Saudi Arabia

2.2.1 Background

Saudi Arabia, a monarchy in southwestern Asia, occupies an area of 868,730 mi^2 with a population of 22.7 million in 2004 (Central Department of Statistics, 2004). Islam is the religion of all Saudi population (Ministry of Foreign Affairs, 2004) and it is the official religion. It is mentioned in the Saudi constitution that some of the duties of the state are to protect human rights, be justice, consultative and provide public security for all citizens according to the Islamic law (Ministry of Foreign Affairs, 2004).

During the last few years, the Saudi government began to give more attention to consulting public in managing some of the local affairs. For example, in October 2003, the government decided to activate the municipal councils with half of their members be elected directly by the citizens (Ministry of Foreign Affairs, 2003). For another example, a number of municipality branches in Saudi Arabia started to consult residents through the 'Councils of Cooperative Citizen' (Jeddah's Main Municipality, 2004). However, so far both of these councils (i.e. the municipal council and the Council of the Cooperative Citizens) are dedicated for male citizens only. Such dedication for males or, in other words, such exclusion of females put question marks on the status of women in Saudi Arabia (in specific) and in Islam as the country's religion (in general). Both are reviewed below.

2.2.2 Status of Women in Islam

The issue of the status of women in Islam (in general) and in Saudi Arabia (in specific) is complex and is frequently misunderstood in many of its aspects. It is a matter of fact that the Muslim culture differently views the role of women than the Western culture. Women in the Muslim culture are generally expected to give a full commitment to making a family home within which she enjoys a pre-eminent role. The stereotypes of women in Islam as uneducated, oppressed, have no rights and opportunities are simply unjust judgments. This can be seen clearly when looking into the two primary sources of the Islamic rules (i.e. the *Quran* and *Sunnah*). Muslims believe that the *Quran* is composed of God's words and it is the final revelation which was sent to the last Prophet Muhammad (peace be upon him). *Sunnah* stands for what is transmitted by a chain of well-known narrators as Prophet Muhammad's words, deeds, or approvals. Following both *Quran* and *Sunnah* is a basic requirement for every Muslim. The next three paragraphs, give some glimpses about the status of women in Islam from the social, economical and political perspectives, according to *Quran* and *Sunnah*.

From the social perspective, according to *Quran* and *Sunnah* the female as a daughter, as a wife or as a mother is fully respected. For example, about the female as a daughter, Prophet Muhammad (pbuh) said, "Whoever had a female who was not buried nor insulted by him, and had not preferred his male children to her, Allah admits him into Paradise." (Abu Dawud, 5/5146). Also, about the female as a wife, the *Quran* clearly indicates that marriage is sharing and that its objectives, besides perpetuating human life, are emotional well-being and spiritual harmony. Among the verses of the

Quran about marriage is "And among His signs is this that He created mates for you from yourselves that you may find rest, peace of mind in them, and He ordained between you love and mercy. Lo, herein indeed are signs for' people who reflect." (*Quran*, 30:21). About the female as a mother, Prophet Muhammad (pbuh) said to a man about his mother "Do not leave her because Paradise is under her feet." (Al-Nisaai, 6/11). A general saying for Prophet Muhammad (pbuh) is "…act kindly towards women." (Sahih Muslim, 8/3468).

Economically, woman's right to her money, real estate, or other properties is fully acknowledged according to the Islamic law. Woman, in Islam, retains her full rights to buy, sell, mortgage or lease any or all her properties. It is worth mentioning that such right applies to her properties before as well as after marriage. She has no obligation to spend a penny on her family out of her properties or out of her income because, according to the Islamic law, the man is fully responsible for the maintenance of his wife and children.

From the political perspective, "Any fair investigation of the teachings of Islam or into the history of the Islamic civilization will surely find a clear evidence of woman's equality with man in what we call today "political rights". " (Badawi, 2002). This includes the right of women to elect and to be elected. It also includes her right to participate in public affairs. In *Quran* and in the Islamic history we find examples of women who participated in serious public discussions related to pubic affairs and argued even with Prophet Muhammad (pbuh) himself. For example, in the *Quran*, God said to Prophet Muhammad, "Indeed Allah has heard the statement of her that disputes with you

concerning her husband, and complains to Allâh. And Allâh hears the argument between you both. Verily, Allâh is All-Hearer, All-Seer." (*Quran* 58:1). For another example, in the Islamic history, during the time when Omar Ibn al-Khattab was the ruler of the Muslim state, a woman argued publicly with him in the mosque, proved her point, and caused him to declare publicly that "A woman (laywoman) is right and Omar (the ruler) is wrong."

In Islam, women and men are enjoined to behave conservatively and modestly with each others. One aspect of this is "sex segregation" or mixing of unrelated men and women. Al-Qaradawi (2002) has mentioned that the encounter of men and women is not prohibited in itself in Islam as long as it happens under the right conditions and for legitimate causes. That's to point out to that not every kind of socialization between the two genders is prohibited in Islam and, in the same time, not all forms of mixing are acceptable. He says:

> *During the Age of the Prophet (blessings and peace he upon him), the Age of the Companions which succeeded it, and the age of their followers, Muslim men and women met at different gatherings, religious or otherwise, and this was not forbidden at all. Under the right circumstances and for good reasons, it was legitimate and natural for them to meet. Nor was it called "mixing" then. (p. 29)*

He also says:

> *In summation, the encounter of men and women is not prohibited in itself. Quite the contrary, it is allowable or even required if done in pursuit of a noble cause like gaining knowledge or performing good acts in which the joint efforts of both men and women are necessary. (p. 39)*

2.2.3 Status of Women in Saudi Arabia

In Saudi Arabia, the status of women has been controversial for a long time. In the literature, there are mainly two positions; one sees the country as almost a state of oppression in regarding to women's rights (Mtango, 2004; Coleman, 2004,; Sowayan, 2007) and one sees that women as they are enjoying most of their rights in the country (SAMEX, n.d.). Few authors took an in-between position. Fatany (2004) said, "… we Saudis admit that the status of women in our country has not been what we would have desired…" However she says that "…we cannot agree with the idea that Saudi women are underprivileged and oppressed." That's not to say there are no instances of abused women in Saudi Arabia; indeed, there are abuses just as there are all over the world.

Part of the controversy about the status of women in Saudi Arabia can be referred to the conflicting references for such evaluation. That's to say, in most of the international literature, most of the authors evaluate the status of women in Saudi Arabia according to the international human right standards. However, the Saudi government claims to evaluate it according to the Islamic standards. In his book, *International Human Rights and Islamic Law*, Baderin (2003) critiques international human rights law, arguing that it is excessively "Western" and offensive to Muslims' beliefs in several areas. However, he sees that it is possible to bring the two laws nearer to each others through the adoption of the 'margin of appreciation' doctrine by international human rights treaty bodies and the utilization of the Islamic law doctrines of *'maqasid al-shari'ah'* (the overall objective of the Islamic law) and *'maslahah'* (welfare) by Muslim countries in their interpretation and application of Islamic law. Accordingly, Baderin

asserts that the Islamic law can help in enforcing the international human rights law in the Muslim world.

As to the segregation of genders, it is an important aspect that profoundly influences every aspect of public and social lives in Saudi Arabia. Gender segregation is a general rule that applies in different areas such as in education, banking, and access to public transportation and job opportunities. It also applies to some hospitals, libraries, and shopping centers. The practice of segregation and confining women to their own company is an institutional mechanism designed to protect women's chastity and to prevent other men from encroaching on the male honor of the family (Al-Munajjed, 1997). However, the application mechanism of such segregation by the Saudi government is criticized in many published literature (Erturk, 1991; Mtango, 2004; Vidyasagar & Rea, 2004). Having said that, it is important to admit that Saudi Arabia is not the Islam and the Islam is not Saudi Arabia. Mtango (2004) and others has mentioned that the laws in Saudi Arabia are not an accurate representation of the Islamic law. For example, the Saudi government claims evaluating women rights according to the Islamic standards (as mentioned above), but indeed the sources of the Islamic law do not necessarily support the exact understanding of the law that Saudi government applies.

Generally, as it is the case in all Muslim cultures, in Saudi Arabia wives are expected to give full commitments to making family homes while husbands to give full commitment to providing for their families. However, the role of women in the Saudi society is not confined to home-making. Indeed, the development of Saudi Arabia has

brought with it increasing opportunities for women in both education and employment (SAMEX, n.d.). For example, in 1960 the government undertook the introduction of a national education program for girls. By the mid-1970s, about half of all Saudi girls were attending school. Five years later, education was available to all Saudi girls (ibid). In terms of employment, Saudi woman today plays an active role in teaching, medicine, social work and broadcasting (Ministry of education, 2005). Moreover, Saudi women recently were given opportunities to be active in several civil institutions such as the National Human Rights Association that promotes women's rights and contributes to social justice. Members of the committee say that the association will be permitted to seek explanations on decisions related to women's legal rights (Fatany, 2004). Another important development is the participation of women in the National Dialogues that were encouraged by the government in order to foster the idea of dialogue that has been missing from the Saudi society. The expansion of the woman's participation in expressing her opinion and in participating in the public matters based on the Islamic regulations was among the recommendations made by the 2nd National Dialogue Forum held in 2003 (King Abdulaziz Center for National Dialogue, 2003) . The 3rd National Dialogue Forum held in 2004 gathered 70 male/female thinkers and researchers to discuss women's rights and duties. The meeting lifted a virtual ban or taboo that has existed for years about discussing women's issues. It conveyed a message that both men and women are partners in reform (King Abdulaziz Center for National Dialogue, 2004).

Despite the efforts spent by the Saudi government on improving the status of woman, women participation in the public domain is still very limited when compared to

men participation. The Islamic law (on which the Saudi law is based) gives women the right to participate in the domain of public affairs (Badawi, 2002), but women in Saudi Arabia are not given the participation chances they deserve (Erturk, 1991; Vidyasagar & Rea, 2004). For example, women were excluded completely from the very first municipal elections carried out in 2005. Al-Habib (2005) has mentioned that such exclusion was due to procedural/technical reasons and wasn't due to governmental regulations. He mentioned some of those procedural and technical reasons such as the need for training women to operate the female side of the election as well as the need for preparing about 600 locations for them while the time was short for such preparations. Al-Ahmed (2005) argues that in Afghanistan - a poor nation – 40% of the voters were women. So it cannot be claimed that Saudi Arabia is being less technically proficient than Afghanistan!

Women in Saudi Arabia are also excluded from the councils of the cooperative citizens that some of the municipality branches organize. Such councils are formed to seek citizens' help in overcoming the municipal service shortcomings (Jeddah's Main Municipality, 2004). As a result of excluding women from such councils, women can not have their voices been effectively heard by the local municipalities. What makes the case worse is that there are no other efficient means or channels appropriate for women participation in the local affairs of their communities. Indeed, the absence of an appropriate channel of communication between the female community residents and the male municipality officials is a distinguished problem at the Saudi residential community level. This will be further explained later.

Women exclusion from participating in many life domains in Saudi Arabia was referred to the local traditions and norms by Abu-khalid (2004). Based on a survey carried out in a study by Abu-khalid, 86% of the female participants and 68% of the male participants believe that the local traditions and norms are the reason that disrupts women participation in pubic life.

In an interviews held by Al-Ramlawi and Al-Miflih (2004), a number of Saudi working women (from various professions) mentioned several public domains where they like to participate at. The mentioned public domains were the community's recreational facilities, community's female commercial facilities (e.g. tailoring and hair styling shops), community beautification, cleaning, security, and health.

2.2.4 Technological Advances

Using computer/Internet in Saudi Arabia is becoming a mainstream at both individuals and organizational levels. A governmental research named 'The National Comprehensive Plan for Sciences & Technology in Saudi Arabia: Vision 2020' (King Abdulaziz City of Science and Technology, 1999) shows that 20% of the families in the city of Riyadh (the capital city) own at least one computer machine. According to the study, such a percentage is very high among the developing countries. Al-Gahtani (2003) has mentioned that "Observers are expecting some tremendous growth in the Saudi IT market in the next few years to come." The sale of PCs has experienced an average growth of about 15% in units in Saudi Arabia during the last two years (Teriaky, 2002). The demand for PCs is expected to reach 300,000 units per annum by 2005 (ibid).

On the other side, since 1999 when the Internet service started in SA, the number of Internet users was rapidly increasing (Internet Service Unit, 2004). The number of Internet users in Saudi Arabia has reached 1.6 million, and is expected to jump to 4.48 million by the end of 2005 (Madar Research Group, 2002).

Recently, the Saudi government attached high importance to applying the e-government concept. King Abdullah approved the allocation of $800 million in the first phase of the implementation of the national e-government program '*Yesser*', commencing at the fiscal year 2006 and spanning the coming five years (Ministry of Communication and Information Technology, 2006). The government has a target to put 150 government services electronically, comprising more than a 1000 sub – services provided by 40 government agencies by 2010 (ibid).

Saudi Arabia is transforming towards the Information Society. This can be seen clearly in a report prepared by the Ministry of Communications and Information Technology in Saudi Arabia (2003) and submitted to the World Summit on the Information Society in Geneva 2003. Such a report presents the huge amount of efforts spent by the Saudi government in such regard. It presents the development and application of information technology in national planning, reviews current initiatives and projects, and presents the main indicators used to gauge the progress of the Saudi society towards an information society. The report concludes with that:

The efforts exerted by Saudi Arabia in ICT (Information and Communication Technology) fields may be measured through applying the different indicators of ICT penetration in the Saudi society, namely the indicators of Internet use, the use of ICTs in Saudi companies, the number of PCs, the number of fixed-line phones and mobile phones – all of which indicate an accelerating growth of such technologies in Saudi Arabia in recent years. (p. 20)

2.2.5 Rapid Urban Development

Saudi Arabia has a centralized system of government whereby federal ministries/agencies directly provide services through their field offices. The Ministry of Municipal and Rural Affairs administratively controls all municipalities. Municipalities are responsible for providing municipal services to the areas they cover. Big cities have more than one municipality, each covers portion of the city. The municipalities get their budgets from the federal government on the basis of population and specific projects. Unlike the case in many other countries, this gives the government a strong tool to intervene in the planning and development of all settlements (Al-Khedheiri, 2002).

The phenomenal economic growth of Saudi Arabia during the last few decades witnessed massive infrastructure projects in the cities to cater to the accelerated rate of urbanization. Al-Hathloul and Mughal (1999) mentioned that the rapidity and extent of urban growth can be gauged from the fact that a predominantly rural society was transformed into a predominantly urban society within a short period of 20 years only.

The rapid transformation of the exiting towns into larger ones created a tremendous pressure that has been greater than the nation's capacity to count-for in a systematic manner (Moustapha et al., 1985). Such a case created various urban

problems. Al-Hathloul and Mughal (2004) mentioned that the pace of development in Saudi Arabia was so rapid that the limited planning efforts were caused to be ineffective.

One of the Saudi government's recent trends in dealing with the widespread urban problems is decentralizing or democratizing the management of the municipal affairs. A step in this trend was done by giving more attention to consulting public in the issues related to local municipal affairs. As mentioned above, the municipal council election came to the light for the first time in the country in 2003 when the government decided to activate the municipal councils with half of their members be elected directly by the citizens (Ministry of Foreign Affairs, 2003). Such election was carried out in the Saudi cities during the first quarter of 2005.

2.3 Summary

The reviewed literature showed that there are generally many benefits for public participation in the decision making process and in using technology in such process. The reviewed literature also shows that women in Saudi Arabia are not given the chance they deserve (at least as men) for participating despite the efforts done by the Saudi government in such regard. The literature mentions important fact that Islam, the official religion in Saudi Arabia, does not forbidden women participation in public affairs as long as the participation is done in a conservative manner. The literature also mentioned that the Saudi government recently started to engage public in managing local affairs, but women still excluded to a far extent form such engagement. The literature showed that Saudi Arabia is undergoing huge technological advances which make adopting the

technological participatory approaches at widening female participation in the municipal affairs potentially successful. However, Renn, Webler, and Wiedemann (1995) found that different cultural and political contexts influence what work and what don't work in adopting a participatory approach to a decision making process. Accordingly, nobody knows whether technological approaches can work or not for widening female participation in Saudi Arabia in particular despite the fact that they have worked in many other countries. That gap in knowledge needs to be addressed.

3. PROBLEM STATEMENT

Although public participation in urban planning decision making has increased globally in recent years, there has been limited research and application of it in Saudi Arabia. Such limitations are more sever when considering in particular female public participation in urban planning decision making. Participation is not facilitated to women even at the small urban scales including the scale of urban community (the scale of interest in this research). Saudi women have no avenues (in such sex-segregated society) to express their views about their communities directly to the municipality officials. This is also true for the municipality officials who have no direct avenues to consult women. There is an obvious lack of communication between the two sides (or two sexes) leading to increasing the gap of common knowledge and understanding between them regarding the actual community needs and problems. This research is an attempt to study such a problematic communication and to suggest a solution. To focus the research, a highly-problematic community category of an interest to Saudi women has been chosen. Such a category is the community's outdoor recreational facilities which is completely lacked, not maintained, inappropriately allocated or/and badly designed in most of the Saudi urban communities. Having focused the problem of communication on a specific community category, and based on the technological approach of this research, the research problem can be stated clearly and unambiguously in the following question. Can the Internet/GIS technologies bridge the communication

gap for women participation in developing and re-developing (renovating, changing, maintaining, etc) the community outdoor recreational facilities in Saudi Arabia?

4. HYPOTHESES

As explained earlier in the literature review, the Internet and GIS have demonstrated great support for public participation in urban planning decision making in various countries. Based on the needs for public participation in Saudi Arabia, this research hypothesized the following:

a) *Hypothesis I:* Internet/GIS technology can bridge the communication gap for women public participation in Saudi Arabia.

- *Supporting Hypothesis for Hypothesis I:*

    - Government officials are receptive to developing a neutral electronic communication system to facilitate female citizens' participation.

    - Government officials are receptive to mediating community associations in the process of female citizens' participation via neutral electronic communication system.

    - Female citizens are receptive to developing a neutral electronic communication system to facilitate their participation.

    - Female citizens are receptive to mediating community associations in the process of their participation via neutral electronic communication system.

    - Community associations are receptive to developing a neutral electronic communication system to facilitate female citizens' participation.

    - Community associations are receptive to be mediated in the process of female citizens' participation via neutral electronic communication system.

b) *Hypothesis II:* An Internet/GIS participatory system can serve the public participation communication needs for development and re-development of a community's outdoor recreational facilities in Saudi Arabia.

- *Supporting Hypothesis for Hypothesis II:*

  • Submission and follow-up of public comments regarding outdoor recreational facilities can be effectively supported via Internet/GIS participatory system.

  • Public participation in the decision making process for development and maintenance of outdoor recreational facilities can be increased at lower cost than traditional systems using an Internet/GIS participatory system.

  • Receiving, storing, retrieving and responding to public comments about community's development and maintenance of outdoor recreational facilities is faster and more effective via Internet/GIS participatory system than the traditional methods.

  • The existing flow-of-information for development and maintenance of outdoor recreational facilities can be supported with Internet/GIS participatory system without major changes.

  • Updating the public with the latest information about the development and maintenance of outdoor recreational facilities is more effective via Internet/GIS participatory system rather than the traditional methods.

5. OBJECTIVES

Craig (1998) has defined three objectives for organizing public participation in a city. Some of the following research objectives are inspired by them.

- Investigate the public/official perceived importance of female public participation in urban planning decision making in Saudi Arabia;

- Expand the public female's role in defining questions and making decisions in the Saudi communities that have a bearing on the outdoor recreational facilities;

- Increase Saudi female public participation in the identification, creation, use and presentation of relevant information in the context of problem solving of the outdoor recreational facilities;

- Enable wider public involvement among the Saudi citizens in the decision making of urban communities through a computer-based public participation process; and,

- Establish guidelines for future uses of Internet/GIS technology at female public participation in the municipal decision-making of the Saudi urban communities.

6. RESEARCH DESIGN AND METHODS

This research was exploratory in nature, as using Internet/GIS technology for supporting public participation is new to Saudi Arabia. The research was guided by a theoretical framework called Enhanced Adaptive Structuration Theory 2 (EAST2) and used ethnographic data collection and analysis instruments (all explained below). The research was carried out in two phases where the current status of public participation in the Saudi community planning was investigated first, and then a prototype for Internet/GIS system for female public participation in a specific community category was developed.

6.1 Study Area and Sample

Jeddah, Saudi Arabia is the second largest city in Saudi Arabia with 2.8 million people in 2004 situated on the Red Sea coast (Central Department of Statistics, 2004). Based on the research problem and objectives mentioned earlier, five criteria were identified for selecting a community from Jeddah:

1) Community must be entirely managed by a single municipality branch so that more time and effort could be saved in collecting data,

2) Community must be mostly residential so that larger number of Saudi women could be found and reached,

3) Community must be mostly inhibited by Saudi families/extended-families with middle-income and different educational levels. This is to be able to find and

reach a variety of Saudi women with an income level similar to the most majority of the Saudi population,

4) Community must have an active local community association with an active female department. Community associations are the official organizations with which the government can negotiate and be more responsive to, and

5) Community's association leadership must be willing to take part in the study so that collecting data from them (especially subjective data) could be possible.

Based on such five selection criteria, Fawaz Community, Jeddah (Figure 2) was chosen. Fawaz Community consists of four distinct neighborhoods that collectively contain 1200 multiple-housing units. The neighborhoods are served by feeders with communal facilities spread in between them. The total estimated number of residents in Fawaz Community is 8,076 (based on the estimated household average size 6.73 in Saudi Arabia in 2005) (United Nations Human Settlement Program, 2002).

The study sample consisted of 66 individuals: 56 public females were selected from Fawaz Community, and 10 male/female key-officers were selected from Jeddah's Main Municipality, Jeddah's municipal council, the municipality branch of Fawaz Community (Called the South Municipality Branch), and the community association of Fawaz Community. The individuals of the study sample were selected in a non-probability method (convenience sampling).
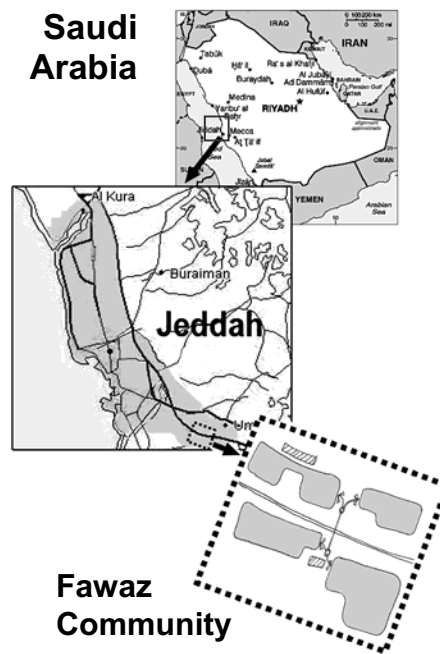
Fig. 2. Location of the study area (Fawaz community) in Jeddah, Saudi Arabia.

To avoid violating the Saudi customs regarding gender interactions (explained earlier in the literature review), the researcher has trained his wife (a Saudi graduate student) to play his role when direct interaction with females was required during data collection. She will be referred to, from now on, as the researcher's female assistant.

6.2 Theoretical Framework

This research is structured within a theoretical framework called Enhanced Adaptive Structuration Theory 2 (EAST2) (Figure 3), a GIS-oriented collaborative decision support theory (Jankowski and Nyerges, 2001). EAST2 consists of three groups of constructs (convening, process, and outcome) and detailed aspects describing

significant issues of participatory decision-making. Constructs reflect the structure, while aspects address the content of participatory decision-making. Aspects are tied through premises (P1-P7), which describe the relations among the nature of convening, process, and outcome phases of decision-making. The structuration process of what/who influences what/who is the embedding context for EAST-2. Neither technological nor social character of an organization predominates in change – they work together to structure and, hence, reconstruct each other – the fundamental idea underlying "adaptive structuration".
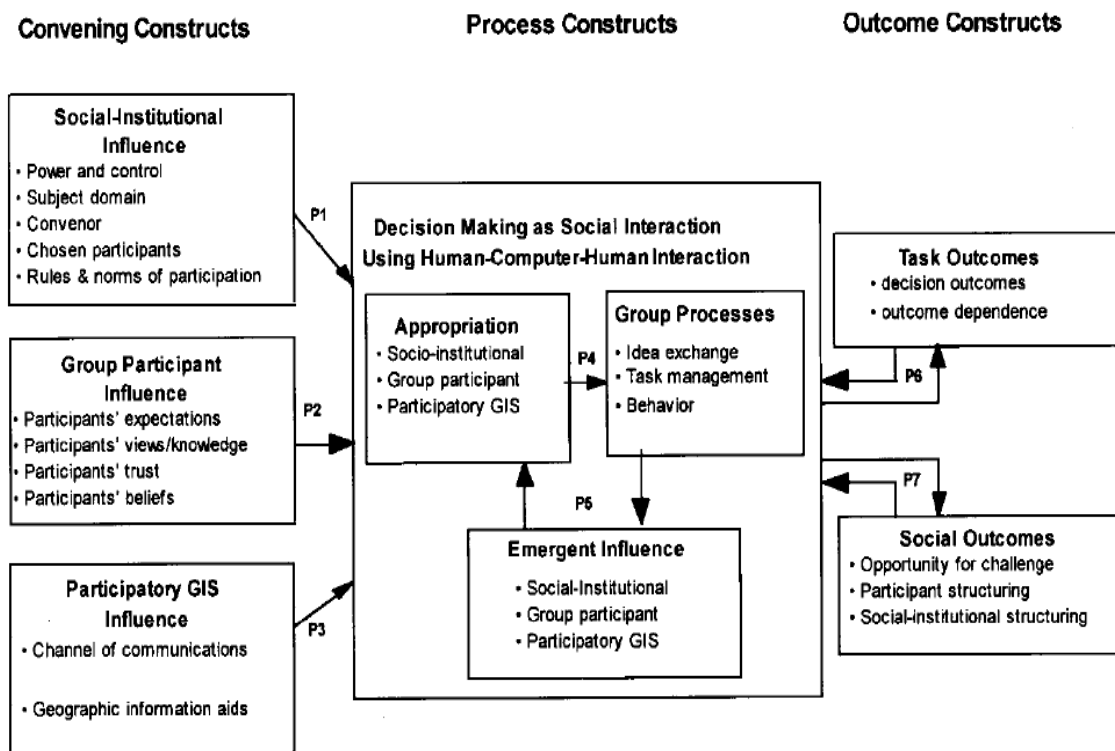
Fig. 3. Conceptual diagram of Enhanced Adaptive Structuration Theory II.

The power of EAST2 lies in linking premises with research questions and testable hypotheses. This may lead to verification of the theoretical framework and therefore a logical basis upon which to base guidelines for designing and using GIS in participatory decision making. The questions mentioned earlier and hypothesis of this research fall under the third premise of the theory. In other words, P3 of EAST2 has initiated the questions and testable hypothesis of this research (Table 1).

Table 1. Premises 3 of EAST2 and its corresponding questions initiated for this research

Convening Premise	Research Questions Motivated By Premise	Research Hypothesis
Premise 3. Participatory GIS influences affect the appropriation of social-institutional influences and/ or group participant influences.	- Can the Internet/GIS bridge the communication gap for women (Chosen Participants) public participation in Saudi Arabia?	*- Hypothesis I* *- Supporting hypothesis (Mentioned earlier)*
	- Can the Internet/GIS facilitate the communication needs for the development and re-development of community's outdoor recreational facilities (Subject Domain) in Saudi Arabia?	*- Hypothesis II* *- Supporting hypothesis (Mentioned earlier)*

6.3   Research Phases

6.3.1 Phase I: Investigating the Current Status of Public Participation

The investigation of the current situation of public participation at the level of residential community of this phase was done by focusing mainly on the following points:

- Learning how public females and municipality officials perceive the importance of public participation.

- Identifying all of the existing channels (regulated and non-regulated by law) that the community residents (males/females) use to submit comments/suggestions to the municipality.

- Identifying weather those existing channels ban most of the Saudi females from submitting comments/suggestions.

- Identifying and further investigating the most favored existing channels to the municipality and to the public females.

- Identifying the community categories that most of the public comments are about.

- Learning how currently the municipality receives, stores, retrieves and responds to those public comments.

- Learning the existing process and flow-of-information of developing and re-developing (renovating, changing, maintaining, etc) community's outdoor recreational facilities.

- Identifying the areas where more public female involvement is needed.

- Investigating the opinions of public females and municipality officials at mediating the Internet in the female public participation.

Collecting and analyzing data for such investigation points were done using ethnographic instruments and techniques. Ethnography, as defined by Fetterman (1998),

is "the art and science of describing a group or culture." (p.129). Ethnographic instruments reinforce one another in an attempt to draw a full picture of the environment under study. "Ethnographic methods are increasingly being used to study social structures of the workplace as an aid in the process of human-centered systems design." (Ellis, Quiroga, Shin & Pina, 2003, p. 5). The researcher has traveled to the environment under study and spent, as an insider, four months in order to capture the data needed for this research. In other words, the researcher was a long-term resident in the study area and that has improved his access to the necessary social infrastructure. During his ethnographic trip, the researcher kept in mind a very important principle in using ethnographic instruments which is to avoid causing harm to the people or the environment understudy (Fetterman, 1998). The researcher was not faced with any adverse reactions or research related complaints during the ethnographic trip.

6.3.1.1 Data Capturing Instruments

a) *Observation:* During the researcher's stay "living" in the environment under study, he and his female assistant met and talked to many related key-officers and public people during which they both recorded observations. Data were captured on tape or paper based on the agreement of the met people. The researcher did his best to record all of the details rather than filtering relevant information. Refining the data was done after detail collecting was complete.

b) *Written and electronic information:* Mission statements, administrative structure, workflow diagrams, job descriptions, maps, etc., all contain information that gives

initial understanding on how things ought to work. Information that differed from that in reality and discovered by the researcher has been further investigated as needed. Much written and electronic information was collected to gain an insight prior to the ethnographic trip took place.

c) *Interviews*: Interviews were the most important data gathering technique during the researcher's ethnographic trip. They were used to capture information that couldn't be found in literature or to clarify information that was not clearly understood using the other data gathering instruments. The interviews conducted during the ethnographic trip were of two types: formal interviews and informal interviews. Prior to using the formal and informal interview questions, the researcher obtained approval from his PhD committee and the Institutional Review Board of Texas A&M University.

1) *Formal Interviews (in-depth interviews):* These interviews were aimed at collecting data from the municipality and the community association of the study area. Prior to conducting the interviews, the interview questions were tested. The main purposes for the pre-testing were to determine an average length for the interview, to make sure each question was clear, to make sure the questions flowed well, and to make sure that the questions used adequate terminologies. This was particularly important because the questions comprising the instrument were to be asked to busy governmental officials where time and terminology are critical. Pre-testing was conducted with two experts separately. The first pre-test was conducted with an MBA holder who served in a leading governmental

position and is currently retired. The second pre-testing was conducted with a PhD holder who served in a different governmental position in the Ministry of Municipal and Rural Affairs and currently is a university professor a College of Environmental design. Both persons were chosen from outside the municipal body in order to avoid using a "live" sample for the pretests.

The actual (not-pre-testing) formal interviews were carried out in four sessions with four key-officers from Jeddah's Main Municipality, Jeddah's municipal council, the municipality branch of Fawaz Community (Called the South Municipality Branch), and the community association of Fawaz Community. Initially, the researcher had the agreement of six key-officers to be interviewed. However, only four of them were interviewed as mentioned above. Two key-officers didn't fulfill their promise despite three attempts the researcher made to meet them. This negatively impacted the study especially when knowing that such key-officers were from one department that was very relevant to the study.

All of the formal interviews conducted were first audio recorded, second transcribed and third entered into a computer to make searching and accessing them efficient and effective. The questions used in these interviews are listed in (Appendix A).

2) *Informal Interviews (focus-group discussions):* This method was chosen because of its great potential to generate more insightful information and because it encourages discussion participants to give more candid answers (Joppe, 2004).

The focus-group discussions were aimed at collecting relevant data from a number of women residing in the study area. Prior to using the discussion questions, they were pre-tested to determine an average length for the discussion session, to make sure that the questions flow well, and to make sure that the questions were easy to understand as well as discussed by lay females. One round of the pre-testing was conducted on September 23, 2005. The pre-testing session was moderated by the researcher's female assistant. Eight public women participated in such pre-testing. Those participants were selected from outside the study area in order to avoid using "live" sample for the pretest.

The actual (not-pre-testing) Focus-group discussions were carried out in five sessions with a total number of 37 women selected from the study area. The number of discussion sessions wasn't determined in advance, but the sessions continued until a pattern of feedback was clearly recognized by the researcher at the fifth session. Audio recording these interviews was impossible due to the refusal of the most majority of the participants. Therefore, the moderator was assisted by another female assistant just to write down what was being said during the discussions. The written information was then entered into a computer to make searching and accessing them efficient and effective. The questions used in these interviews are listed in (Appendix B).

d) *Kinesics and Outcroppings:* kinesics (or body language) of the participants was as important as their verbal answers. Body language was sometimes a signal to explore a specific topic further, change to another topic, or to end a discussion as soon as

possible. Outcroppings are observable conditions that can imply information about a context. Some kinesics/outcroppings recognized by the researcher and/or his female assistant were tested against other information because, in isolation, such clues and information could be easily misinterpreted.

e) *Folk tales:* Some stories of events heard repeatedly from people provided insight into the subjects of interest in the environment under study. They backed up and supported some of the other collected information as well.

6.3.1.2 Data Analysis Techniques

a) *Triangulation:* Triangulation was essential to the validity of ethnographic research. It involves testing one source of information against another to improve the quality and accuracy of the information and, as a result, the accuracy of the findings. In the context of this research, triangulation was used in examining comparable information collected from different sources to test the quality of both the information and the person sharing it. In addition, self–contained triangulation, in which an individual's own statements support or undermine his or her stated position, was a useful measure of internal consistency. Unsupported findings by other sources of data either were disregarded or served as a basis for more investigation as necessary.

b) *Patterns:* Looking for patterns is a form of ethnographic reliability. Patterns of thought and actions repeat in various and with various players. For example, as mentioned earlier, when the researcher started conducting the focus-group discussions, he began with a mass of undifferentiated ideas. However, with

conducting more discussions and comparing, contrasting and sorting collected data

conceivable patterns (out of the participant's responses) became identifiable by the

fifth focus group discussion.

c) *Visual Representations:* Maps, flowcharts, organizational charts, tables, and diagrams,

all were helpful to crystallize images, understand relationships and suggest new areas

to explore in the environment understudy.

6.3.2 Phase-II: Developing and Evaluating a Prototype for Female Public Participation

This phase is an attempt at developing and evaluating a prototype for an

Internet/GIS participatory system that bridges the communication gap between the

female community residents and the local municipality branch. Such a participatory

system was aimed at encouraging information exchange between the two sides for the

purpose of developing and re-developing the community's outdoor recreational

facilities. The developed prototype was named *Saudi Community Online Participatory*

System (SCOPS).

6.3.2.1 User Analysis

What types of reasons might people have for visiting the website to be

developed? What are they likely to be looking for? What are the characteristics of those

different users? Is the website targeting more than one type of user? The goal of

conducting the user analysis was to answer such questions through analyzing the

targeted users of the SCOPS website. The user analysis was guided by a framework for user analysis (Sawasdichai & Poggenphol, 2003) (Figure 4). Such a framework focuses on the user's cognitive factors that underlie and regulate personal behavior while searching though a website. These cognitive factors include user generic goals, user modes of searching, and user models. The framework helps systematically analyze and synthesize these factors in order to better anticipate user search behavior with the goal to eventually be able to determine the kinds of information and functions needed to include in different types of website design. Sawasdichai and Poggenphol explained their analytical framework as follows:

> *"In summary, one particular goal can be transformed into various intentions based on different user modes of searching, and further translated into various sequences of actions based on different user models. Therefore, it is important to recognize these connections among users' goals, intentions and action sequences, and understand the substantial factors that enable these transformations, so that users' behaviors, needs and expectations will be predicted more correctly or closely to how users really behave in actual cases." (p. 65, 66)*

User analysis helps to understand different types of website users and their cognitive factors and so helps the website developer to anticipate user courses of action. When all cognitive factors that regulate user behaviors are deliberately considered, such anticipation deliberately considered, such anticipation becomes more accurate. Based on such analysis, the next step, which is synthesis, helps the website developer to determine kinds of information and function needed by the intended users and hence help in both planning and evaluating website design. In this research, some of the information used in

the analysis was elicited directly from the female community residents who participated in the focus-group discussions.
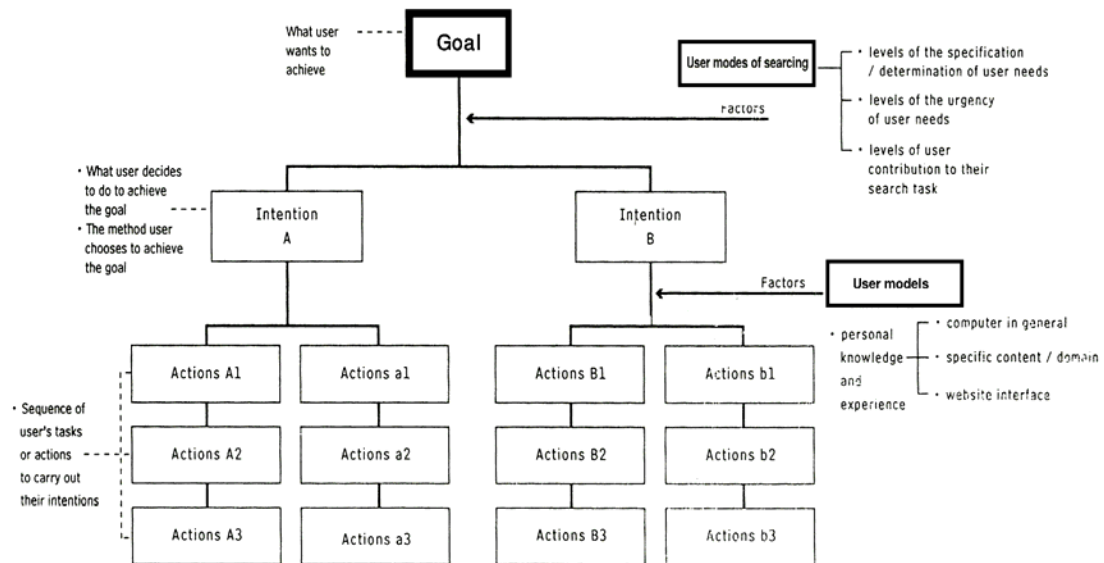
Fig. 4. Sawasdichai and Poggenphol model for user goal, intention and action.

6.3.2.2 Prototype Developing and Testing

Based on the user analysis and the data collected in phase I, a website was developed using Microsoft FrontPage to act as an open-access virtual meeting room for the local female community residents, the local community association, and the local municipality branch of the study area. After building the website, it was linked to a Microsoft Access database. The database was then linked to the GIS software ArcView 9.0. By linking together the three main components of the prototype and having them up and running, the first version of the prototype (SCOPS-01) became ready for testing.

The usability of the prototype's website was tested to make sure the website performs the function for which it is designed, with the minimum amount of user frustration, time, and effort (Pedersen, 2003). Shackel (1991) defined usability as "the capability to be used by humans easily and effectively" (p. 24). He explained that usability depends on the interplay of four components- user, task, tool, and environment. While the first component (i.e. user) was analyzed in the user analysis section, the three other components (i.e. task, tool, and environment) are considered here. The usability testing of the website was given to five female Internet users selected from the study sample. The steps followed in the usability tests were as follows:

1) A participant was seated to a computer with the attendance of the female researcher assistant.

2) The researcher's female assistant gave to the participant an information sheet about the research.

3) The researcher's female assistant asked the participant to think aloud during the test.

4) The researcher's female assistant starts reading the test tasks that examines different parts of the website (Appendix C) and asked the participant to perform them. While the participant was performing the tasks and thinking aloud, the researcher's female assistant recorded observations such as how long the participant takes to perform each task? What are the false starts the participant makes on those tasks? Any frustrations that arise? etc.

5) After completing the tasks, the participant was asked a set of questions (Appendix C) through which the participant's opinions on various aspects of the website were recorded.

The website was then modified according to the results and incorporated in the prototype which formed its second version (SCOPS-02) and then the system was published to the Internet for evaluation.

6.3.2.3 Prototype Evaluation

This was done after modifying the SCOPS-02 prototype based on the results of the usability testing. The evaluation was adapted from Adelman's multifaceted evaluation approach that includes technical, empirical, and subjective evaluations (Adelman, 1992).

1) *Technical Evaluation:* Because SCOPS-02 prototype has focused mainly on integrating applications from different off-the-shelf software, technical evaluation was limited to software selection and prototype testing. Criteria for software selection were flexibility, integrity, compatibility.

2) *Empirical Evaluation*: This evaluation assessed whether the system is practical and can actually improve performance. The goal was to assess, for example, whether the public women can express their opinions significantly easier when using the SCOPS-02 prototype rather than not using it.

3) *Subjective evaluation*: included online and off-line surveys in order to assess the opinions of users regarding system strengths and weaknesses, and to collect their comments with regards to suggested changes.

The empirical evaluation data and the subjective evaluation data were collected from a selected sample of public officials and public women as follows:

1) *Public officials:* The initial plan of the researcher was to meet and invite a number of public officials from Jeddah's main municipality, the municipality branch of the study area and the community association of the study area to participate in evaluating the SCOPS-02 prototype. However, such a plan was changed after the president of the community association of the study area advised the researcher to carry out such evaluation with the members of the local community council. Note that most of such a council's members are public officials, which means time and effort saving to the researcher. After the researcher agreed, the president of Fawaz Community Association arranged for a special meeting for the community council on January 6th, 2006 where the researcher had a chance to present his work and get verbal and written feedback on the SCOPS-02 prototype from the public officials. The written feedback was obtained by asking the participants to fill-out a number of follow-up evaluation questions (Appendix D).

2) *Public Women:* Inviting lay public women to participate in the prototype evaluation was done by the researcher's female assistant through direct personal

contacts and by spreading invitations through the female department of Fawaz Community Association. The invitation sheets included information about the study and this evaluation.

Public women's evaluation was done online. It was designed in a way that necessitates every evaluator to browse the prototype's website to be able to answer a set of follow-up evaluation questions (Appendix E). This was accomplished by designing the evaluation in two parts: Part-I consists of 5 tasks to perform in the website. Some of those tasks require entering data. Part-II consists of 14 evaluation questions. The first 4 questions ask about information that can only be known if the participant performed the 5 tasks of part-I in advance. All of the performed tasks and answered questions were stored automatically into the prototype's database. By the end of this evaluation, the researcher downloaded the data from the website's server and summarized the evaluations.

7. RESULTS

7.1 Phase I: Investigating the Current Status of Public Participation (Formal and Informal Interviews)

7.1.1 Pre-testing Interview Questions

a) *Formal Interview Questions:* Two pre-tests were conducted for the formal interview questions (or in-depth interview questions) with two experts. The approximate ages of the participants ranged between 50 60 years old; One participant is a PhD holder and the other is a Master holder; both participants has at least 30 years of governmental work experience; One participant has served in a leading governmental position and is currently retired while the other has served in a different governmental positions in the Ministry of Municipal and Rural Affairs and currently is a university full professor in the department of Urban and Regional Planning, College of Environmental design, King Abdul-Aziz University in Jeddah, Saudi Arabia.

The pre-testing results indicated that the average interview length was 75 minutes. The results suggested re-phrasing a number of questions and/or changing some of the terminologies to make the questions easier to understand or to correct them linguistically. For example, replacing the term "law" (*kanoon*) with "system" (*Nizam*) because the latter is the official used term by the Saudi government. Also, the results suggested merging a number of questions to save time and to avoid what could be perceived by the interviewees as repetitiveness. Bold font was used for

some of the important key-words in some questions so that, during the interviews, it would give a signal to the interviewer to stress on such key-words.

Based on the results of the pretests, changes were made to the questions. Nothing in the pretest results suggested a need for modification of interviewing protocol or substantive items in the interview questions. The instrument (i.e. the interview questions) that was tested and edited was later employed in the actual interviews (See Appendix A).

b) *Informal Interview Questions:* One pre-test was conducted for the informal interview questions (or focus-group discussion questions) with the participation of eight women. The ages of the participants ranged between 20-60 years old with the highest percentage (37.5%) *(3 women)* from the age-group of (20-29) and the lowest percentage (12.5%) *(1 woman)* from the age-group of (50-60). 25% *(2 women)* were from the age group of (30-39) and another 25% *(2 women)* were form the age group of (40-49). The participants have various educational levels that ranged from graduating high schools (12.5%) *(1 woman)* to completing some college (25%) *(2 women)* to completing Bachelor's degrees (50%) *(4 women)*. One participant didn't provide information in this category. As to the participants' occupations, 37.5% *(3 women)* were employed, 25% *(2 women)* were unemployed, but seeking work, another 25% *(2 women)* were from the category of full-time-at home and 12.5% *(1 woman)* were unemployed and not seeking work. The annual household income of the participants ranged between 48,000SR-120,000SR (SR is Saudi Riyal) which is equivalent to $12,800-$32,000. The highest percentage (62.5%) *(5 women)* was for

the income-group of ($25,600- less than $32,000). The lowest percentage (12.5%) *(1 woman)* was for the income-group of ($19,200- less than $25,600). 25% *(2 women)* of the participants were from the income-group of ($12,800- less than $19,200). Lastly, 50% *(4 women)* of the participants were novice at computer/Internet usage. 12.5% *(1 woman)* was beginner and 37.5% *(3 women)* were advanced users. Such collected information is graphed in Figure 5.

Based on the pre-test results, the discussion length of time was on 60 minutes. Some of the questions were difficult to comprehend by participants due to ambiguous phrasing or/and the use of unfamiliar terminologies. Also, the pre-test results suggested combining a number of consecutive questions and making them parts of a single question due to their strong relevance. The results suggested the need for adding a Likert scale to a number of questions that ask the respondents whether they agree or disagree with a statement.

Based on the evidence collected from the pretest, changes were made to the questions. Nothing in the pretest results suggested a need for modification of interviewing protocol or substantive items in the interview questions. The instrument that was pre-tested and edited was later employed in the actual interviews (See Appendix B).
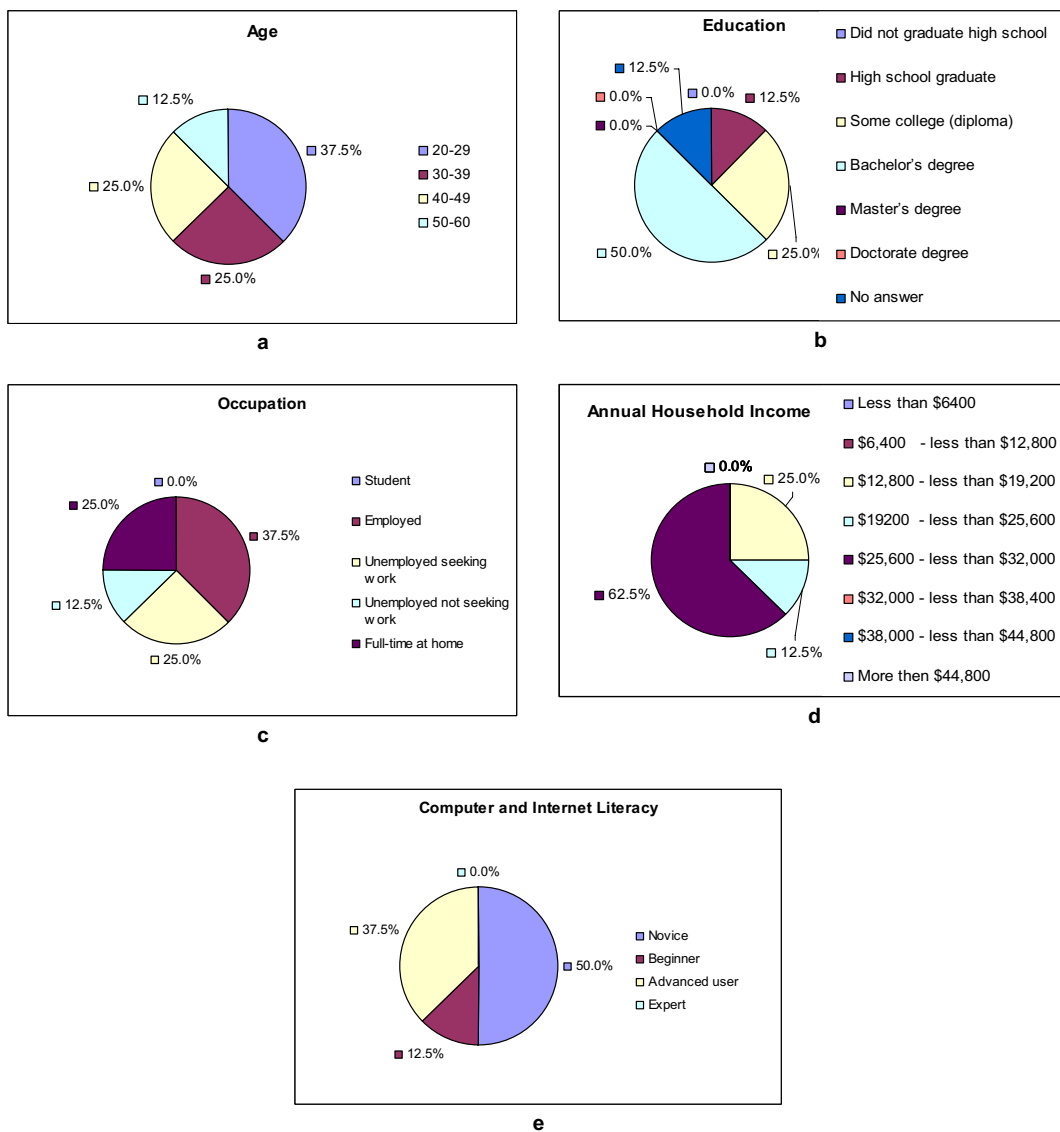
Fig. 5. Information about the eight women who participated in pre-testing the informal interview questions: (a) Age, (b) Education, (c) Occupation, (d) Annual household income, (e) Computer and Internet literacy.

7.1.2 Formal Interviews (In-Depth Interviews)

7.1.2.1 Municipality's Interviews

After pre-testing and modifying the formal interview questions (as explained earlier), they were used to interview two municipal officials. The interviews took place on October, 2005. The first interview was conducted with the General Manager of the Public Administration of Safety and Social Services, Deputy of Services, Jeddah's Main Municipality. This particular department was selected because it contains (until recently) the Administration of Community Associations, which aims at serving the community associations of Jeddah province at the operation level. The second interview was conducted with the General Manager of the South Municipality Branch, the municipality branch that manages the study area. The collected information from both interviewees is reported below.

Perceived Importance and Benefits of Involving Community Residents

Involving community residents in the municipality's decision making process that relates to communities is perceived by the two municipal officials as somewhat important to very important.

On a Likert scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'Strongly Agree', the interviewees were asked to show their agreement/disagreement about a number of statements about some benefits of involving community residents in the municipality's decision-making process. The answers (Table 2) were as follows:

Table 2. Interviewees' agreement/disagreement about a number of statements related to community residents involvement in the municipality decision making process

Involving the Community Residents…	Rate of Agreement on Five-Point Scale (5 = Strongly Agree and 1 = Strongly Disagree)		
	Interviewee #1	Interviewee #2	Total
Reduces costs of community's physical development.	5	4	9
Expedites community's physical development.	5	3	8
Reveals other valuable perspectives that improve the quality of the development.	3	5	8
Enhances understanding between the municipality and residents.	4	5	9
Gives the community residents one of their rights.	5	3	8
Helps evaluate the performance of the municipality.	5	4	9
Improves credibility and trust in the municipality.	5	5	10

- Both interviewees *agreed to different extents* that involving the community residents:

    • reduces costs of community's physical development

    • enhances understanding between the municipality and the residents

    • helps evaluate the municipality performance

    • improves credibility and trust in the municipality

- One interviewee *agreed* while the other was *neutral* about that involving the community residents:

    • expedites community's physical development *(Neutral: the increasing number of opinions will delay the process of decision making)*

- reveals other valuable perspectives that improve the quality of the development *(Neutral: It will reveal other irrelevant perspectives as well)*

- gives the community residents one of their rights *(Neutral: Residents rights are only defined by what the law states)*

- One of the interviewees added that involving the community residents:

    - increases the financial support of the government and the wealthy residents to the community projects, and

    - increases the residents loyalty to their community and thereby increases protection of its public facilities

The interviewees opinions about the statement, "Every resident, male or female, old or young, educated or uneducated has the right to participate in making the decisions that relate to the community in which he/she lives" were not the same. One of the interviewees strongly agreed with the statement while the other took a neutral position and was conservative. The latter mentioned that such a right can't be given equally to all people regardless of their rationality, organization, education, etc. Based on his experience, dealing with the less-educated individuals for example was unfruitful and in some cases was problematic.

Channels of Involving Residents

a) *Channels Regulated by the Law:* Community residents can have their voices be heard by the municipality through the following channels that are regulated by the law:

1) The community associations

2) The Councils of the Cooperative Citizen

3) Ad hoc committees that contain mosque's leaders (*Imams*) as representatives for their communities

4) Telephone (# 940) to inform about any problems related to facilities/services

5) Suggestion boxes

The interviewees were asked to rate how each of the above mentioned channels is suitable to the municipality. They were asked to show that on a scale of 1-5 where '1' means 'less suitable to the municipality' and '5' means 'most suitable to the municipality' (Table 3).

The community associations channel was chosen by the interviewees as the most suitable channel to the municipality. According to the interviewees, the community associations receive the resident's complaints/suggestions, study them, filter them, prioritize them, and then submit them to the municipality. Such a work by the community associations saves the municipality a tremendous amount of time and effort. According to the interviewees, the municipality trusts the key-officers of

the community associations because they are elected by the public; they are mostly

well-educated, well-organized, rational and easy to deal with.

Table 3. Rating the suitability of the existing channels (regulated by the law) for
resident's involvement

Channels of Cooperation	Rate of Suitability on Five-Point Scale (5 = Most Suitable and 1 = Less Suitable)		
	Interviewee #1	Interviewee #2	Total
The community associations	5	5	10
The Councils of the Cooperative Citizen	3	Unknown	3
Telephone # 940	2	3	5
Suggestion boxes	Not mentioned	3	3
Ad hoc committees	1	Not mentioned	1

As to the Councils of the Cooperative Citizens, one of the interviewees

mentioned that the idea of such councils started seven years ago. Such councils were

aimed at increasing and regulating the interactions between the municipality and the

citizens. However, because the idea wasn't enforced by the law, carrying out

meetings for such councils has never been regular and fruitful as whished. This is

true to the extent that one of the interviewees has never heard about it! According to

one of the interviewees, carrying out meetings for those councils was dependent on

how active have been the key-officers of the local municipality branches. In addition,

the public participants in those councils were not representatives because they used to be selected by the municipality based on its networking and preference.

b) *Channels NOT Regulated by the Law:* According to the interviewees, some community residents have their complaints and suggestions reach the municipality through some channels that are not regulated by the law. Those channels are:

   1) Speaking face to face with the municipality officials

   2) Speaking by phone with the municipality officials instead of speaking to the municipality operations (i.e. #940)

   3) Submitting letters to the municipality officials

   4) Using media (especially newspapers)

According to the interviewees, when the community residents use such channels, they waste the municipality officials' time and energy. This becomes worse when some of the submitted complaints, for example, appear to be vexatious. Therefore, collectively such channels are not advantaged to the municipality (Table 4).

Table 4. Interviewees' ratings for the suitability of the residents' involvement channels (not regulated by the law)

Channels of Cooperation	Rate of Suitability on Five-Point Scale (5 = Most Suitable and 1 = Less Suitable)		
	Interviewee #1	Interviewee #2	Total
Speaking face to face with the officials	1	1	2
Speaking by phone with the officials	1	1	2
Submitting letters to the officials	1	2	3
Using media	Not mentioned	2	2

Community Residents Interaction with the Municipality

Based on the experience of the interviewees, the resident's interaction with the municipality was in some cases very successful and fruitful while in some other times was very unsuccessful and unfruitful. It was very successful and fruitful in the cases where the community associations mediated such interaction. It was very unsuccessful and unfruitful in some of the cases where direct interaction between the residents and the municipality occurred (without mediating the community association). According to the interviewees, what makes the big difference is the quality of the people they deal with such as their education and rationality.

Public Accessibility to the Municipality Documents

Both interviewees pointed out that the municipality official reports and documents are not available to the public, but sometimes are provided when requested.

Also, it is mentioned that those documents are not prepared for the public, but for the high-ranking officials. Therefore, some of those documents exaggerate the facts of what has been accomplished for the sake of showing off!

Municipal Categories and Community Residents Involvement

According to the interviewees, there is always a need for residents input in a number of community's municipal categories. Such categories differ from community to another basically depending on the compositions of the residents. However, in general, the interviewees mentioned a number of particularly important municipal categories in such regards such as the category of public facilities—especially the outdoor recreational facilities and the category of community cleaning.

On one hand, the interviewees were asked to explain the process that the municipality follows to *develop new infill outdoor recreational facilities* in the communities and to identify where in that process resident's involvement occurs or ought to occur. The interviewees briefly described the process in the following consecutive steps (Figure 6):

1) *Defining what recreational facilities are needed in the community*

2) *Selecting a Location* (In most cases, the location of the public facilities is already defined in the master plan. If not, however, the municipality selects a location)

3) *Designing* (Done by the Public Administration of Parks and Beautification (PAPB) of the city's main municipality)

4) *Funding* (Done by the public or private sectors)

5) *Bidding*

6) *Constructing*

7) *Operating*

Note in Figure 6 that the municipality involves public in two steps: the designing and funding. However, that involvement occurs only sometimes and in a very limited manner. Therefore, the interviewees suggested widening such involvement and extend it to most of the other steps.
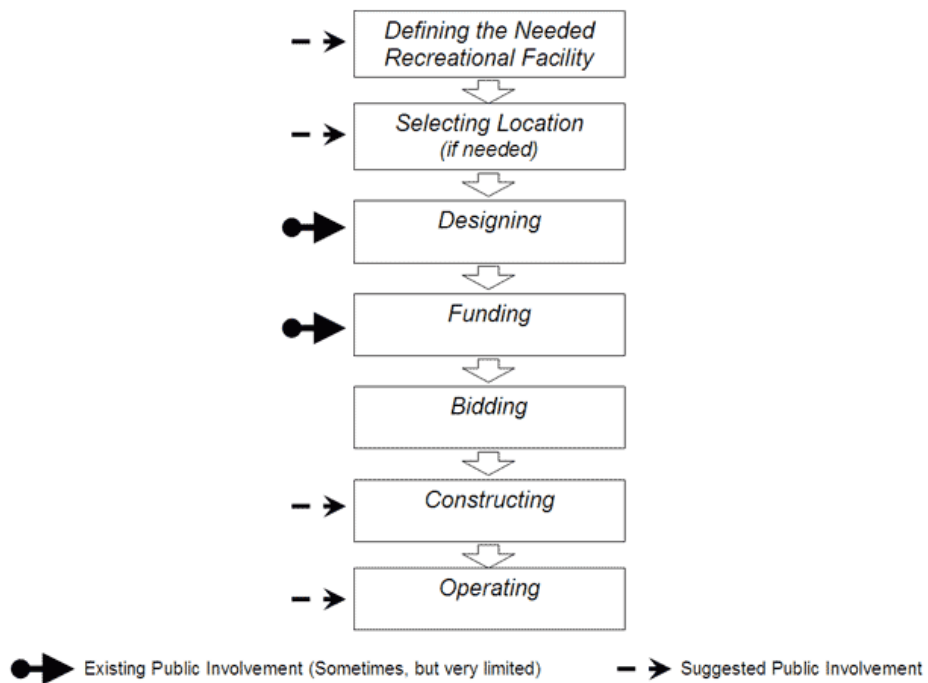
Fig. 6. The municipality process for developing a new infill outdoor recreational facility.

On the other hand, the interviewees were asked to explain the process that the municipality follows to *redevelop (change, add to, subtract from, etc.) the existing outdoor recreational facilities*. In addition, they were asked to identify where in such process resident's involvement occurs or ought to occur. The interviewees briefed the process in consecutive steps as follows (Figure 7):

1) *Requesting* (The local municipality branch submits a request to PAPB for changing, adding to or subtracting from an existing recreational facility)

2) *Studying and approving or disapproving* (PAPB studies the request and make decision based on the availability of funding)

3) *Designing* (If the request is approved, PAPB starts the design process of what was requested)

4) *Funding* (The project could be funded by the public or private sectors)

5) *Bidding*

6) *Constructing*

7) *Operating*

Unlike developing new facility, there is no any existing public involvement in any of the above steps. Therefore, the interviewees suggested introducing resident's involvement in such steps as indicated by arrows in Figure 7.
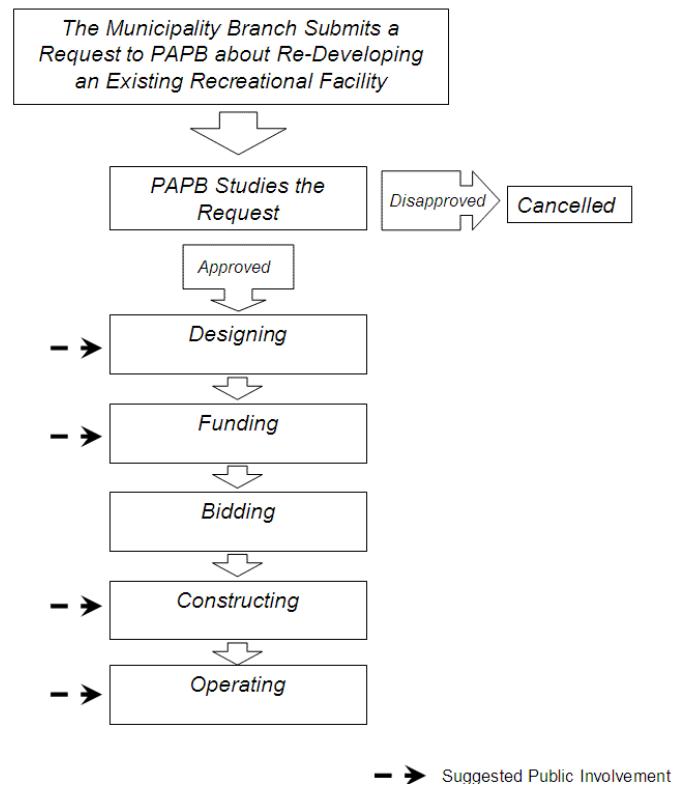
Fig. 7. The municipality of re-developing existing outdoor recreational facilities and where public involvement could occur in such process.

As to the information flow of residents' requests (complaints, suggestions, etc) about community's recreational facilities that are submitted to the municipality, the interviewees revealed the following steps (Figure 8):

1) *Receiving* (The request submitted by the public is received by the general manager of the local municipality branch)

2) *Inspecting* (The municipality appoints an inspector to visit the site of the request and write a report about the situation)

Local Municipality Branch

The Local Municipality Branch Receives a Public Request (Complaint, Suggestion, etc) about a Community's Public Recreational Facility

⇩

The Request is studied (if necessary, more investigation is done through Inspectors) and then Decides about

Disapproved ➤ Cancelled

Approved and CAN be Solved Locally

Approved, but CAN NOT be Solved Locally

Main Municipality

Mainly a Straight Forward Maintenance/Operational Issue that can be Taken Care of by the Dept. of Maintenance & Operation

PAPB Receives the Request from the Local Municipality

⇩

PAPB Studies the Request

Disapproved ➤ Cancelled

Approved

If about Developing New Recreational Facilities, then…

If about Re-Developing or Maintaining Existing Recreational Facilities, then…

Selecting Location (if needed)	Designing
Designing	Funding
Funding	Bidding
Bidding	Constructing
Constructing	Operating
Operating	

● ➤ Existing Public Involvement (Sometimes, but very limited)   - ➤ Suggested Public Involvement

Fig. 8. The present information flow of the public requests that are submitted to the municipality.

3) *Studying then Approving/Disapproving* (Based on the inspecting report, the general manager evaluates the case and decides whether to approve or disapprove it)

4) *Responding or Transferring* (If the request is approved by the local municipality branch, it is implemented by it if possible. However, if the request is beyond the capabilities of the local municipality branch it is transferred to the related department in the main municipality)

5) If the request is transferred to PAPB, then the process of *developing* or *re-developing outdoor recreational facilities* (explained earlier) is implemented

Involving Women

The interviewees perceive involving women as somewhat important to very important because they (especially mothers) know more about the needs of the family member more than the males do, according to the interviewees. However, the interviewees have mentioned that the municipality rarely involves public in the decision making process, but when involvement occurs it occurs for males only.

To find out some reasons for the complete exclusion of women from public involvement in the municipal decision making process, the interviewees were given some possible reasons and were asked to express their opinions on them (i.e. agree or disagree and to what extent) (Table 5). The interviewees' opinions are briefed below:

Table 5. Interviewees' agreement/disagreement about the reasons of not involving the women

Reasons for not Involving Female Community Residents	Rate of Agreement on Five-Point Scale (5 = Strongly Agree and 1 = Strongly Disagree)		
	Interviewee #1	Interviewee #2	Total
Religious reason	2	1	3
Traditional reasons and norms	4	4	8
Female residents don't want to participate and are not interested in participation	3	2	5
The difficulty to gain true representation of them	4	1	5
That it increases delays in community projects	5	1	6
That the women various perspectives will increase complexity and conflicts of community projects	2	2	4
The lack of resources to arrange for female participation	3	5	8
The little knowledge of females about the municipal issues	4	3	7

- The interviewees *agreed* that not involving the women is due to:

   • traditional reasons and norms

- The interviewees *disagreed to different extents* that not involving the women is due to:

   • religious reason

   • that the women various perspectives will increase complexity and conflicts of community projects

- One of the interviewees was *neutral* while the other *agreed* about that not involving the women is due to

  - the lack of resources to arrange for female participation

  - the little knowledge of females

- One of the interviewees was *neutral* while the other *disagreed* about that not involving the women is due to that:

  - female residents don't want to participate and are not interested in participation

- The interviewees were *in conflict of agreement* about that not involving women is due to:

  - the difficulty to gain true representation of them

  - that it increases delays in community projects

As to the areas at which women involvement should be considered, the interviewees mentioned the public facilities (especially recreational facilities), the commercial activities that relate to or employ women (such as women tailoring and hair styling shops) and the community cleaning service.

As to the possible channels for involving women, the interviewees said that in order to have an appropriate channel for female participation in Saudi Arabia such

channels have to avoid direct (face to face) interaction between women and men. That is because the Saudi society is a gender segregated society and so the two genders are not familiar with getting in touch with each other directly. Indeed, a minor number of people in the Saudi culture have overcome such a cultural restriction, but the majority has not.

The interviewees were asked to suggest possible channels through which female community residents can effectively participate in both developing and redeveloping the community's outdoor recreational facilities. The interviewees suggested mediating/using the community associations, the Internet, the municipality operations (i.e. telephone #940), the mosques, letters, and via closed circuit television system. The interviewees rated the suitability of each channel as shown in (Table 6).

Table 6. Rating the suitability of the possible channels for female's involvement

Channels of Cooperation	Rate of Suitability on Five-Point Scale (5 = Most Suitable and 1 = Less Suitable)		
	Interviewee #1	Interviewee #2	Total
The community associations	5	5	10
Internet	5	5	10
Telephone #940	2	4	6
Mosques	4	Not mentioned	4
Letters	1	3	4
Closed Circuit Television system	3	Not mentioned	3

As in Table 6, both interviewees see mediation through the community associations and the Internet as the most suitable channels among the suggested ones. However, the interviewees somewhat to strongly don't expect adopting the Internet in the time being due to different reasons; One interviewee mentioned that many of the key-decision-makers are against gender segregation and so are against any idea that supports it. The other interviewee sees the lack of financial and human resources as the presented reasons that are expected to change in the near future. He added, the Saudi government has been working towards e-government for about five years, and the Internet has already started to be used to deliver some public services.

7.1.2.2 Local Community Association Interviews

The information collected during the municipality interviews (mentioned above) and the information collected during the female community residents interviews (mentioned later) pointed out the high importance of mediation through the local community association between the municipality and the female residents. Therefore, two key-activists (a man and a woman) from the local community association of the study area were interviewed to investigate such mediation based on their experience.

The interviews of the local community association took place on October and November, 2005. The first interview took 50 minutes and was conducted via telephone with the president of the female department of the local community association. The second interview took 80 minutes and was conducted face-to-face with the Secretary of the Council of Community Associations of Jeddah province. He is also one of the seven

elected members of the municipal council of Jeddah province and also a member in the community council of the study area. The collected information from both interviewees is reported below.

Perceived Importance and benefits of Involving Community Residents

Both interviewees (community association activists) believe that it is 'very important' that the municipality involves community residents in the decision making process related to public facilities (streets, parks, pedestrian walkways, children playgrounds, adults' playgrounds…etc.). The interviewees mentioned that the residents know much more about the needs of their communities than the municipality do. As to the women involvement (in particular), one interviewee perceive it as 'very important' because women, according to such interviewee, have more time to commit to such involvement than men. The other participant perceives women involvement as 'somewhat important' because, according to such interviewee, men can convey the opinions of their women to the municipality, so involving women is relatively less important than men. However, this latter interviewee made it clear that he doesn't exclude women, but he is looking into the issue practically, according to him.

Why women are not involved?

According to the interviewees, the municipality rarely involves the public in its decision making process. However, when the municipality involves the public, it involves men only. One interviewee mentioned that women are completely excluded. He

added that even when women approach the municipalities, sometimes they are required to have male representatives to deal with.

To investigate some of the reasons for excluding women, the interviewees were given some possible reasons and were asked to express their opinions on them (i.e. agree or disagree and to what extent) (Table 7). The interviewees' opinions are briefly described below:

- The interviewees *agreed (similarly or to different extents)* that not involving women is due to:

    - the difficulty to gain true representation of them

    - the lack of resources to arrange for female participation

    - the poor knowledge of the women about the municipal issues

- The interviewees *disagreed similarly* that not involving women is due to:

    - religious reason

- One interviewee was *neutral* while the other *disagreed* about that not involving women is due to:

    - the local traditions and norms

    - that the women don't want to participate and are not interested to participate

    - that it increases delays in community projects

    - that the women various perspectives will increase complexity and conflicts of community projects

Table 7. Interviewees' agreement/disagreement about the reasons for not involving the women

Reasons for not Involving Women	Rate of Agreement on Five-Point Scale (5 = Strongly Agree and 1 = Strongly Disagree)		
	Interviewee #1	Interviewee #2	Total
Religious reason	1	1	**2**
Traditional reasons and norms	3	1	**4**
Female residents don't want to participate and are not interested in participation	1	3	**4**
The difficulty to gain true representation of them	5	5	**10**
That it increases delays in community projects	2	3	**5**
That the women various perspectives will increase complexity and conflicts of community projects	2	3	**5**
The lack of resources to arrange for female participation	5	5	**10**
The little knowledge of females about the municipal issues	5	4	**9**

Areas for Women Involvement

Both interviewees (community association activists) have agreed (to different extents) about the importance of women involvement in the decision making process at the community scale in general. Therefore, the interviewees were asked to specify a number of community's municipal categories that, in their opinion, involving women has a special importance at. In responding to this interview question, one interviewee has mentioned no specific category because, in her view, women involvement has to be considered in all community's municipal categories. The other interviewee has

suggested specific categories including the family oriented public facilities such as the recreational facilities, community's physical organization and beautification, community's cleaning and health related issues and community's security. This interviewee has added that involving women in such categories has many benefits; For example, mothers' feedbacks on the community's recreational facilities would increase the satisfaction of their children and teenagers and so would help in keeping them around in their community instead of looking for their favored recreational facilities somewhere else.

Community Associations

According to one of the interviewees, the community associations refer directly to the Organization of Community Associations which is a non-profit organization that belongs to the Ministry of Social Affairs. The Organization of Community Associations has an administrative board of 26 appointed and elected members. The appointed members are key-officers from a number of different governmental departments. One of those members is the mayor of the province who refers directly to the Ministry of Municipal and Rural Affairs. The organization has a council in all provinces. All of the community associations in a given province refer directly to the council of such province (Figure 9).

General Assembly

Administrative Board

President

Vice-President

Secretariat

Executive Committee

Administrative Coordinator

Secretary-General

Media Consultant

Treasurer

Activities Advisor

Province Council of Community Associations

Secretary of the Province Council of the Community Associations

Executive Manager of Community Associations in the Province

Community Association

Community Council / President of the Community Council

Treasurer

President of the Community Associations

Secretary

| Female Department | Public Services Committee | Activities Committees | Social Committee | Cultural Committee |

Fig. 9. Organization chart of the Organization of the Community Associations.

At the scale of the community association, the association has various committees for various tasks (Figure 9). The committee of public services administrates the communication between the community association and the local municipality branch. Two of the main tasks of such a committee are to receive and study the

community residents' views and suggestions and to help in providing the community with the needed public facilities.

The community council consists of appointed and elected members. The appointed members are officials from different governmental departments. The general manager of the local municipality branch is one of the appointed members in the community council. The elected members are selected from amongst the public. Usually the members elected for the province's municipal council are also elected for the community councils.

There are members' overlaps amongst the community council, the municipal council, the province council of the community associations, the administrative board of the Organization of Community Associations, the local municipality branch and the main municipality. Collectively, such overlaps provide two parallel avenues for conveying public comments to the high-ranking decision makers. One avenue is through the appointed members and the other avenue is through the elected members. For example, when an important issue is being discussed in the community council, it can be conveyed if necessary to the immediate larger council (i.e. the municipal council) through both the general manager of the municipality branch (appointed) and the elected member of the municipal council. On one hand, the former can convey such an issue to his manager (the province's mayor) who is the president of the province's main municipality, a member in the municipal council and a member in the Province Council of Community Associations. The mayor can convey such an issue to his manager who is the Minister of Municipal & Rural Affairs. On the other hand, the latter (i.e. the elected

member of the municipal council) can convey such an issue from the community council to the municipal council. An attempt for showing such overlapping responsibility amongst different governmental non-governmental parties is illustrated in (Figure 10).
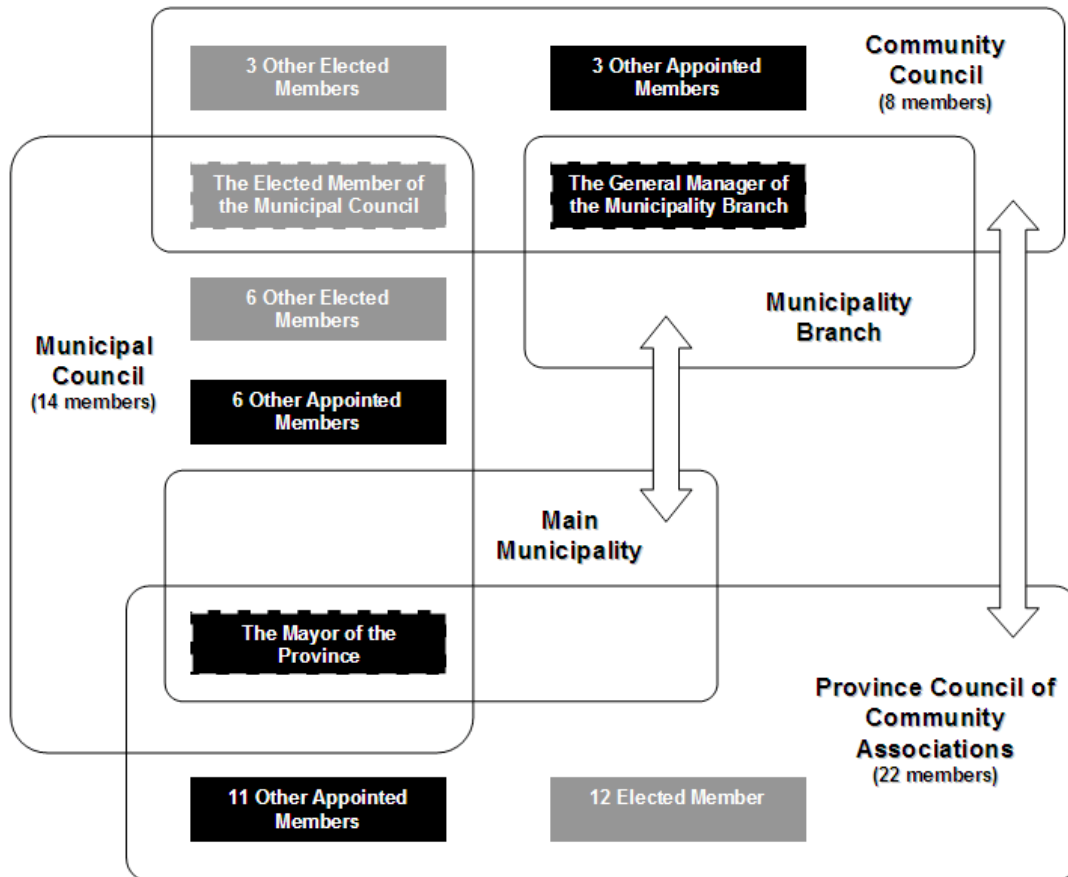
Fig. 10. Overlapping responsibilities amongst the different related councils and parties.

The interviewees were asked to explain how the community association receives and processes public requests (complaints, suggestions, etc) about a public facility in

their community. Their answers are shown in the information flow illustrated in (Figure 11).
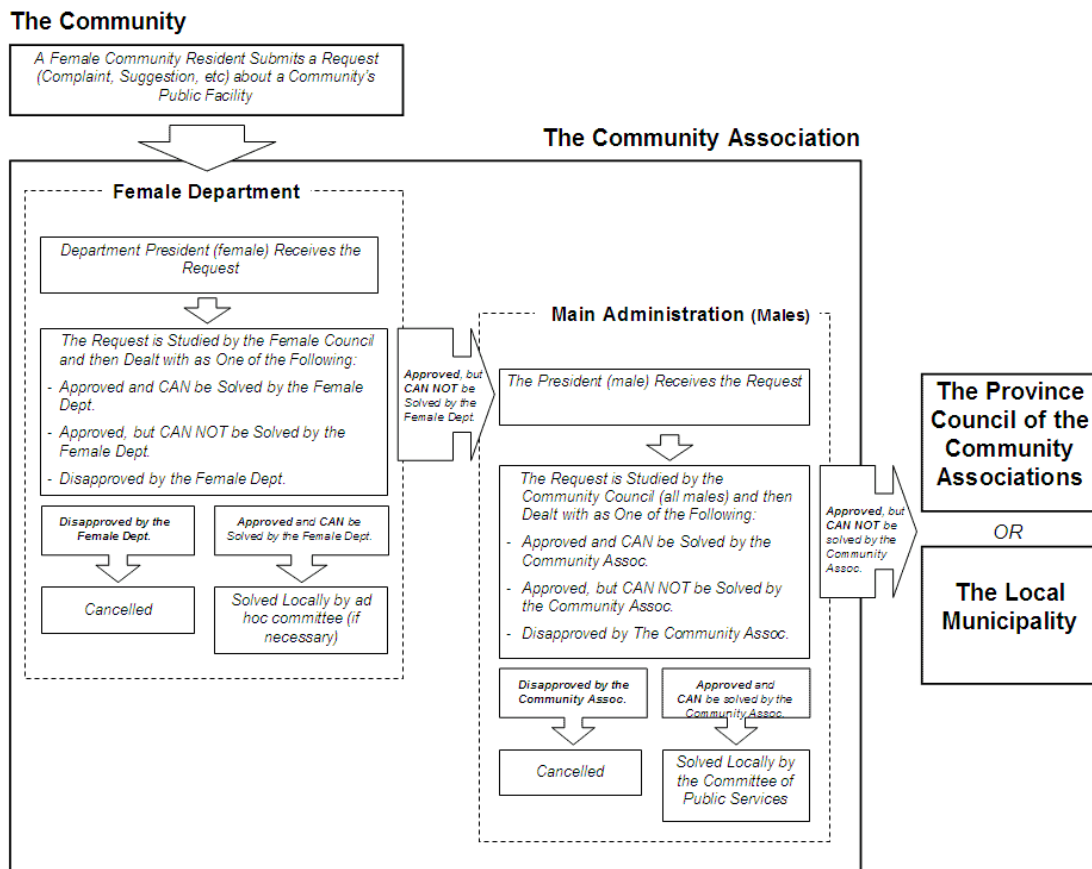
Fig. 11. The information flow of female public comment in the community association.

Community Association's Role in Involving Women

The interviewees were asked if there is an existing (or possible in the future) effective role that the female departments of the community associations play (or can play in the future) to enhance the communication between the female community residents and the municipality. According to the interviewees, there is currently a very

minor role for the community associations in that communication. However, the interviewees strongly believe that the community associations can do much more if such communication is systemized and organized as well as if the community associations are supported with better human and financial resources.

a) *Communication between Fawaz Community Association and Fawaz Community's Female Residents:* The interviewees were asked about the success/failure of the interaction between Fawaz community association and the community's residents. One interviewee has mentioned that the interaction between Fawaz community association and the community's residents has started since only a short period of time (3-4 months prior to conducting the interview). Since then, the interaction has been "very successful". According to the interviewee, many residents are willing to help voluntarily. The other interviewee has not yet interacted with the female community residents in particular, but he sees it very promising based on his previous experience in dealing with female students and volunteers during some of the academic events.

The interviewees have suggested a number of channels for the communication between the community association and the community's female residents. Some of those suggested channels can work in two ways: the Internet, the telephone and the female representatives for the community's sub-areas. Some other suggest channels can work in one way only: Sending SMS messages to the cell

phones of the female residents, handling pamphlets, and posting flyers in public areas and streets (Table 8).

Table 8. Interviewees ratings for the suitability of the suggested channels of communication between the community association and the female residents

Suggested Channels of Communication between Community Association and Female Residents	Rate of Suitability on Five-Point Scale (5 = Most Suitable and 1 = Less Suitable)		
	Interviewee #1	Interviewee #2	Total
Internet	4	5	9
Female representatives for the sub areas of the community	3	Just mentioned that the female community association has to play an intermediary role	3
Cell phone messages	3		3
Flyers and banners	5		5
Telephone	3		3

As in Table 8, from amongst the suggested channels, mediating the Internet in such communication was given a high suitability scores by the interviewees because, according to the interviewees, it is an easy and effortless way of participation. In addition to that it complies with the local cultural constraints. However, one interviewee expressed a concern that the number of the Internet users in Saudi Arabia is currently small which means that many people cannot use it for participation. Therefore, the interviewee suggested that using the Internet is more promising in the future than in the time being.

The interviewees were asked if an appropriate Internet technology is developed to enable female participation in the decision making process of the communities, would Fawaz community association accept/refuse adopting such a system. Their answers were very positive. One of the interviewees said, that using the Internet is a good idea as it recognizes our constraints. He added, "Everybody will love it". The other interviewee has said it is "an excellent idea". She added that if launching such a system becomes a reality, the female department of Fawaz Community Association can provide short courses for training the female residents on how to participate via it.

b) *Communication between Fawaz Community Association and the Local Municipality:* The interviewees were asked to list the issues or types of issues (requests, problems, etc.) that Fawaz Community Associations usually ask the municipality and how frequently that happens. The interviewees said that they haven't dealt much with the municipality since the establishment of Fawaz Community Association (3-4 months prior to conducting the interviews). However, during such months the female department of the community association only asked for the municipality help in preparations for a number of events. The interviewees said that the communication between the two sides is very limited and should be strengthened and systemized.

The interviewees were asked about the characteristics that ought to exist in a participatory channel in order to be appropriate for female participation in the municipal decision making process. The interviewees said that such a channel has to

be in accordance with the Islamic law, used for communication between females only or females and trained males. The interviewees have recommended three channels through which the female department of Fawaz Community Association and the local municipality can communicate (Table 9):

1) Establishing a new municipal department dedicated for and operated by females only.

2) Mediating the main administration of Fawaz community association (males).

3) Mediating the Internet (mentioned to the interviewees and strongly agreed upon).

The interviewees have recommended mediating the Internet between the community association and the municipality branch more than mediating it between the community association and the female residents because it is easier to train the community association's activists to use a system that mediates the Internet than to train a huge number of female residents to do so.

7.1.3 Informal Interviews (Focus-Group Discussions)

7.1.3.1 Female Community Residents Interviews

After pre-testing and editing the questions of the focus-group discussions (as mentioned earlier), five focus-group discussion sessions took place during the months of October and November of 2005. The discussions were conducted with 37 public females (six participants in the first discussion, seven in the second discussion and eight in each

of the third fourth and fifth discussions). Initially, 10-12 people (as was available) were invited to participate in each focus-group discussion, but the response rate was never 100% (Table 10).

Table 9. Interviewees ratings for the suitability of the suggested channels of communication between the community association and the municipality

Suggested Channels of Communication between the Community Association (Female Dept.) and the Local Municipality Branch	Rate of Suitability on Five-Point Scale (5 = Most Suitable and 1 = Less Suitable)		
	Interviewee #1	Interviewee #2	Total
Internet	5	5	10
Female municipal department	3	Just mentioned that the female community association has to play an intermediary role	3
Main administration of the community association	4		4

Table 10. Invitation response rates for the five conducted focus-group discussions

Focus-Group Discussion	Number of People Invited	Number of Participants	Response Rate
#1	10	6	%60
#2	11	7	%64
#3	10	8	%80
#4	12	8	%67
#5	10	8	%80

The ages of the participants ranged between 20-60 years old with the highest percentage (43%) *(16 women)* from the age-group of (20-29) and the lowest percentage (5%) *(2 women)* from the age-group of (30-39). 22% *(8 women)* were from the age group of (40-49) and 30% *(11 women)* were from the age group of (50-60). The participants have various educational levels: 22% *(8 women)* didn't graduate high school, 42% *(16 women)* are high school graduates, 30% *(11 women)* have Bachelor's degrees, 3% *(1 woman)* have Master's degrees and 3% *(1 woman)* have PhD degrees. As to the participants occupations, the highest two percentages were of the students (40%) *(15 women)* and of the category of full-time-at home (38%) *(14 women)*. The lowest percentage (3%) *(1 woman)* was of the category of unemployed who are seeking work. 19% *(7 women)* of the participants were employed. The annual household income of the participants ranged between 48,000 Saudi Riyal ($6,400) and more than 192,000 Saudi Riyal ($51,200). The highest percentage (21%) *(8 women)* was for the income category of (More than $51,200). The lowest percentage (3%) *(1 woman)* was of each of the two income categories of ($12,800- less than $19,200) and (19,200- less than $25,600). Lastly, 35% *(13 women)* of the participants were novice at computer/Internet usage. 32% *(12 women)* were beginners, 14% *(5 women)* were advanced users and 19% *(7 women)* were expert users. Such collected information is graphed in Figures 12.

About half (48%) of the participants perceived the subject of the discussion as completely new to them, (%27) have a little knowledge about it, (%22) have advanced knowledge and no one is a professional at it (Figure 13). More than half (53%) of the participants have no experience in submitting a complaint, suggestion…etc to the

municipality, %30 have some skills/experience, 11% had a good skills/experience and 3% had professional knowledge at it (Figure 14).
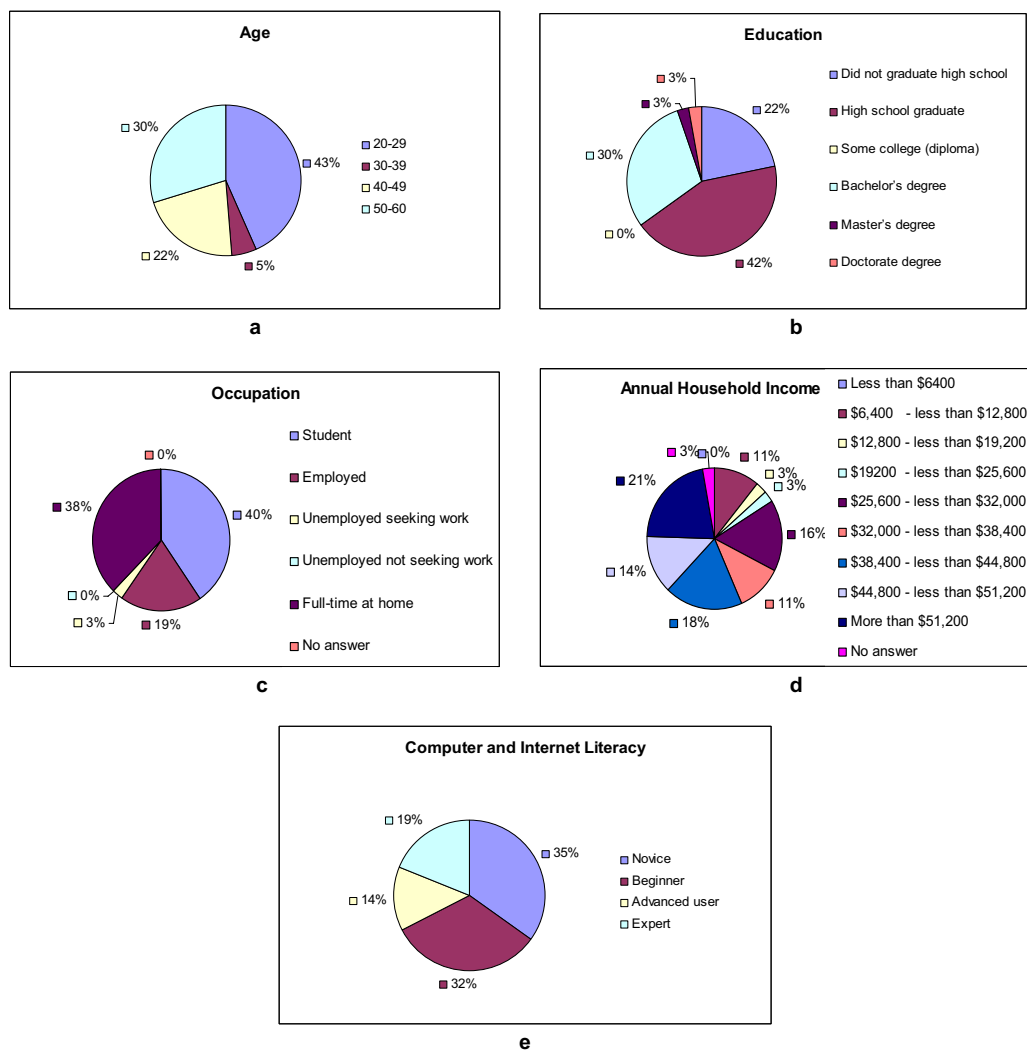
Fig. 12. Information about the 36 women who participated in the focus-group discussions: (a) Age, (b) Education, (c) Occupation, (d) Annual household income, (e) Computer and Internet literacy.

Pervious Knowledge about the Subject of the Discussion

- 3%
- 0%
- 22%
- 48%
- 27%

Novice
With little knowledge
With advanced knowledge
Professional
No answer
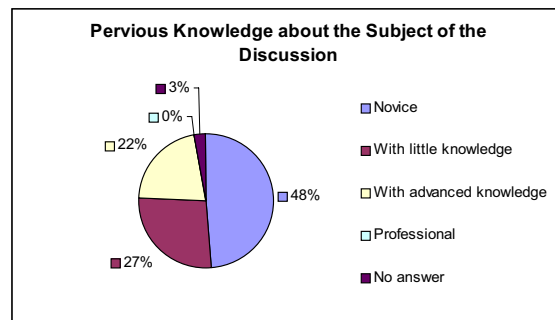
Fig. 13. Previous knowledge of the participants about the subject of public participation in the municipality decision making process.

Experience in Submitting Complaints, Suggestions,Etc. to the Municipality

- 3%
- 3%
- 11%
- 53%
- 30%

Novice
With some skills or experience
With a good skills and experience
Professional
No answer
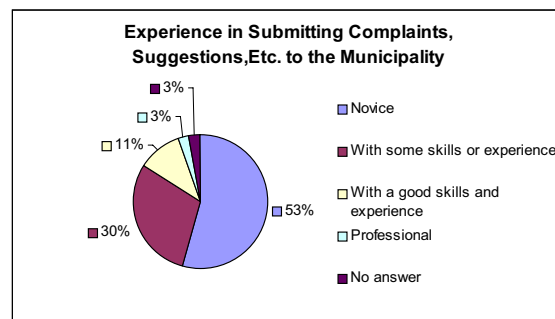
Fig. 14. Experience of the focus-group discussion participants in submitting complaints, suggestions, etc. to the Municipality.

Perceived Importance and benefits of Involving Community Residents

Involving community residents in the municipality's decision making process that relates to communities was collectively perceived as 'very important' by three focus-groups, 'important' by one focus-group and 'very unimportant' to one focus-group (Table 11).

Table 11. Perceived importance of involving community residents by the focus group discussion participants

Focus-group Discussion	Perceived Importance of Involving community residents (approximate average on Five-Point Scale where 5 = V. Important and 1 = V. Unimportant)
#1	1
#2	5
#3	5
#4	4
#5	5

On one hand, the groups who perceived residents involvement as 'important' or 'very important' focused their justifications on that the community residents know about their community needs much more than the municipality do and that the municipality can't be aware of the real community needs in isolation from the residents of the community. The participants mentioned a number of examples of municipal projects that eventually failed to achieve their goals, according to the participants, due to excluding the community residents. The participants mentioned that the community residents are the ones who will eventually be benefited or harmed by the municipality decisions and so their voices ought to be heard and considered seriously. The role of the municipality will be more effective if it is continuously in touch with the residents, according to the participants. A number of participants claimed that the municipality never cared about filling the communication gap with the residents. For example, a participant has mentioned an initiative for a community project suggested by a resident, but was never looked at seriously by the municipality.

On the other hand, the only focus-group (or indeed its eloquent two speakers) who perceived the residents involvement as 'very unimportant' have mentioned that the municipality has plans that just need implementation. According to them, what have to be developed in the communities are not complicated and so the municipality need not to consult the residents about. This group has said that there is a public misunderstanding about the cause of the trouble; the public think the problem is in the municipality, but indeed the trouble is budgetary. However, this group agreed that there is a gap of communication between the municipality and the community residents.

Involving Women

After discussing the perceived importance and benefits of involving community residents in the municipality decision making process in general, the researcher's female assistant (the discussion moderator) had focused the discussions on the involvement of female community residents in particular. The discussions investigated how the participants perceive the importance of such female involvement, why females are presently not involved, in what areas they should be involved, what are the appropriate channels to be used for that involvement. The information collected regarding such points is detailed below.

a) *Perceived Importance:* Four out of the five focus-groups perceived involving female residents in the decision making process of the community's public facilities as 'very

important' while one focus-group only perceived it as 'somewhat important'. The groups of the 'very important' have mentioned the following reasons:

- Women (especially mothers) play a distinguished role in the Saudi family which qualifies them to be aware of the needs of each family member more than men

- Most of the time children enjoy the community's outdoor recreational facilities accompanied by their mothers. Accordingly, those mothers know much about their children's recreational needs

- Women are not allowed to drive in Saudi Arabia. Therefore, considering her opinion about the public facilities that locate in the community where she lives (can walk to at any time without the need for transportation) is very important

The group of 'somewhat important' has mentioned the following reasons:

- Women opinions can be conveyed by their male relatives

- Some of the facilities especially the outdoor recreational facilities are not used most of the year due to the hot weather

- Women have more important issues to consider than this

b) *Why Women are not involved?* The participants were asked who among the community residents is currently involved with the municipality. The majority of the

participants said 'nobody' while some others said 'males only', and some others don't know. No participant mentioned any form of female involvement.

All of the focus-group participants (except one) believe that both female and male community residents should be consulted by the municipality in order for the municipality to be more aware of the community needs. A number of participants said that women know about the community needs more than men, but men are easier to get in touch with the municipality.

The participants were asked to rate (on a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'Strongly Agree') their agreement/disagreement about some of the possible reasons for not involving female residents by the municipality in the community planning and decision-making process (Table 12). Briefly, in the discussions of this question:

- All of the focus-groups *disagreed to different extents* that not involving women is due to:

  - religious reasons

- At least one focus-group was *neutral* while the other focus-groups *agreed* about that not involving the women is due to:

  - the local traditions and norms

  - the lack of resources to arrange for female participation

Table 12. Agreement/Disagreement of the focus-group discussion participants on a number of possible reasons for not involving women

Reasons for not Involving Women	Agreement/Disagreement (approximate average on Five-Point Scale where 5 = Strongly Agree and 1 = Strongly Disagree)					
	Focus-group Discussion					
	#1	**#2**	**#3**	**#4**	**#5**	**Total**
Religious reason	1	1	1	2	2	**7**
Traditional reasons and norms	4	3	3	4	4	**18**
Female residents don't want to participate and are not interested in participation	1	1	3	2	2	**9**
The difficulty to gain true representation of them	2	1	4	4	2	**13**
That it increases delays in community projects	1	1	2	3	1	**8**
That the females various perspectives will increase complexity and conflicts of community projects	1	1	3	2	2	**9**
The lack of resources to arrange for female participation	5	5	3	4	4	**21**
The little knowledge of females about the municipal issues	4	4	5	3	2	**18**

- At least one focus-group was *neutral* while the other focus-groups *disagreed* that not involving the women is due to:

  - female residents don't want to participate and are not interested in participation

  - the females various perspectives will increase complexity and conflicts of community projects

- that it increases delays in community projects

- The focus-groups were in *conflict of agreement* about that not involving women is due to:

  - the difficulty to gain true representation of them

  - the little knowledge of females about the municipal issues

c) *Areas for Women Involvement:* A number of focus-group participants have mentioned that women should be involved in all community issues. Some other participants have mentioned the following community categories:

- Public facilities especially the recreational ones

- Community elements that require aesthetic emphasis

- Commercial activities that relate to or employ females such as female tailoring shops and female hair styling shops

- Schools allocation

- Community cleaning

- Community security

- Transportation

- Health

d) *Possible Channels for Involving Women:* According to the focus-group participants, any suggested participatory channel for females in Saudi Arabia has to provide a

solution other than the direct face to face conversation with males. Also, such a channel should be easy to use, not expensive and available to all females.

The focus-group participants were asked to suggest possible channels through which female community residents can effectively participate in both developing and redeveloping the community's outdoor recreational facilities. The participants were also asked to rate the suitability of the channels they suggest. All focus-groups have highly recommended use of the community associations for involving female residents. Using the Internet was mentioned and recommended to different extents by the participants, but many have concerns that presently the Internet literacy is still low in Saudi Arabia and so many people will not be able to use it for participation. Three focus-groups have mentioned and recommended using questionnaires as well as establishing a new department in the municipality operated and dedicated for serving women only. Carrying out periodical meetings with the municipality via closed circuit television system as well as using suggestion boxes (located at public places or attached to home doors) all was mentioned and highly recommended by two focus-groups. Using telephone to talk to the municipality officials, asking one of the male relatives to convey the female opinions to the municipality officials, and carrying out periodical meetings among females all was recommended to different extents by two focus-groups only. Employing female representatives to speak to the municipality as well as using mail each was mentioned and highly recommended by one focus-group only. The idea of publishing a local community bulletin that informs the residents with the municipality plans and projects was mentioned by one focus-

group. Lastly, one focus-group mentioned, but didn't favor carrying out face to face periodical meetings with the municipality (Table 13).

Table 13. Suggested participant channels for women participation in both developing and redeveloping the community's outdoor recreational facilities

Channels of Cooperation	Suitability on Five-Point Scale (approximately on Five-Point Scale, 5 = Most Suitable and 1 = Less Suitable)					
	Focus-group Discussion					
	#1	#2	#3	#4	#5	Total
The community associations	4	5	5	5	4	23
Internet	3	4	3	4	4	18
Female municipal department	X	4	5	x	4	13
Questionnaires	X	x	3	4	5	12
Periodical meetings with the municipality via closed circuit television system	X	4	4	x	x	8
Suggestion Boxes	4	x	x	x	4	8
Telephone	X	3	4	x	x	7
Conveying through Relative males	X	x	x	3	4	7
Periodical meetings with female residents	X	x	2	x	4	6
Female representatives	X	x	x	x	5	5
Mail	X	x	x	4	x	4
Local community periodical	3	x	x	x	x	3
Face to face periodical meetings with the municipality	X	x	x	1	x	1

e) *Mediating the Internet and the Community Association in Women Participation:* The focus-group participants were asked for their opinion on whether there is an existing (or possible) effective role that the female departments of the community associations play (or can play) in the communication between the female community

residents and the municipality. According to the participants, there is a very minor role for the community associations in such regard. However, the participants strongly believe that the community associations can play a good role as mediators between the two sides if they are given enough resources. Some participants expressed concerns that many community residents don't know about the community associations and their activities, so the community associations have to let the residents know about them prior to asking for their participation via the Internet or any other method.

Most of the participants anticipated that the community associations would accept mediating the Internet in involving women while few participants were neutral and very few don't anticipated that. The participants' common concern was that developing and adopting such a technology would require a financial support as well as a qualified people in the community associations and the municipalities.

7.2 Phase II: Developing and Evaluating a Prototype for Female Public Participation

This phase was for developing a prototype for an Internet/GIS participatory system for female participation in the municipal decision making process of the outdoor recreational facilities. The final prototype development was based on the data collected in Phase I and in this phase as well. The prototype was named the Saudi Community Online Participatory System (SCOPS).

7.2.1 SCOPS Conceptual Design

SCOPS incorporates a GIS part and an Internet part. The GIS part is the tool of retrieving, analyzing and visualizing data. The Internet part is the channel of communication that offers a dynamic loop for feed and feed-back among three groups of actors: the female community residents, the community association activists and the municipality officials. As in (Figure 15), the female community residents can post comments in the SCOPS's Website. Such postings are stored in Database-1 of the local community association. The key-activists of the community association can locate and retrieve the postings from Database-1 via the GIS software ArcView 9.0. They can then study them and filter them based on the presently existing work flow (illustrated earlier in Figure 11). The filtered postings can then be stored in Database-2. After that, a copy from such filtered postings is sent to the local municipality's database. The local municipality officials can retrieve such information from their database via the GIS software ArcView 9.0 and process them based on the existing and presently followed work flow (illustrated earlier in Figure 8). SCOPS can also be used by the local community association and the local municipality to inform the residents about the news, plans, projects, regulations, etc of their community. Also, via SCOPS the community residents can retrieve some more spatial information about their community by downloading a GIS file and opening it by ArcExplorer 2.0, a lightweight free GIS data viewer developed by ESRI (explained more latter).

Introducing SCOPS into the participation process of the community residents with the municipality would make some changes in the relevant existing work flow of

the municipality and the local community association. (Figures 16 & 17) shows how the existing work flow in the community association (illustrated earlier in Figure 11) as well as the work flow in the local municipality (illustrated earlier in Figure 8) would be changed if SCOPS-02 is to be implemented.
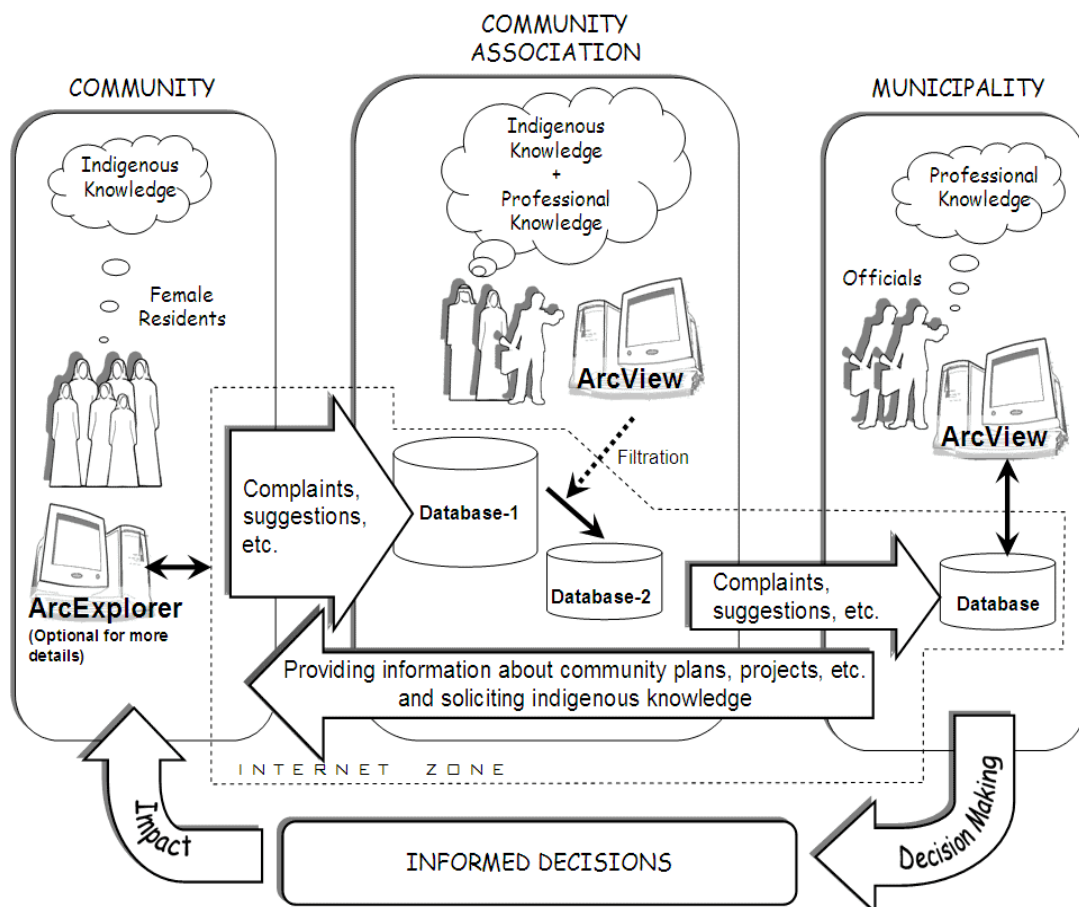
Fig. 15. The conceptual design of the Saudi Community Online Participatory System (SCOPS).
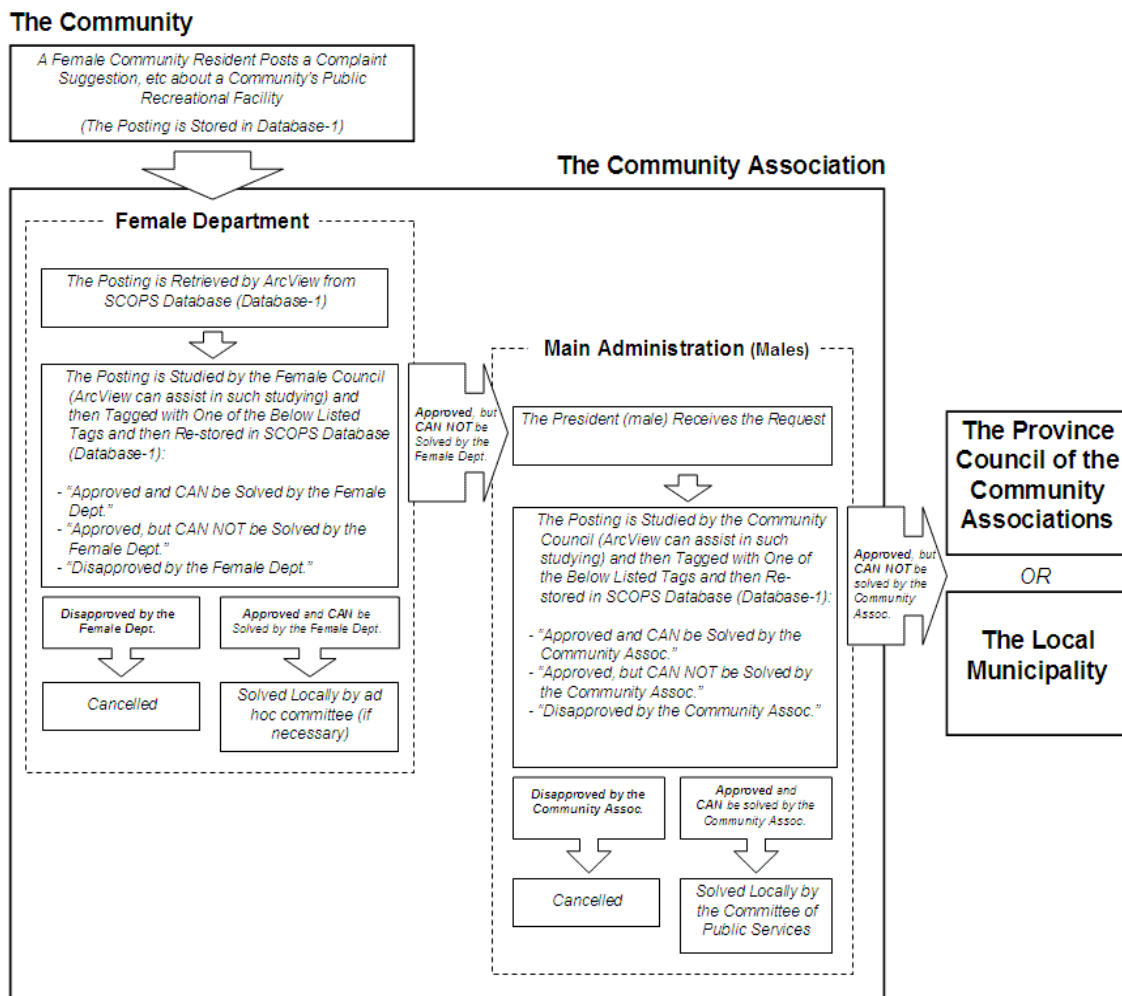
Fig. 16. Modified version of the existing work flow (of the female residents' comments) if SCOPS-02 is to be implemented in the community associations.

Local Municipality Branch

The Local Municipality Branch Receives via SCOPS a Public Request (Complaint, Suggestion, etc) about a Community's Public Recreational Facility.

The Request is Retrieved from the Municipality's Database using ArcView

The Local Municipality Branch Studies the Request (if necessary, more investigation is done through Inspectors) and then Decides about. (ArcView may Assists in such Studying)

Disapproved → Cancelled

Approved and CAN be Solved Locally

Approved, but CAN NOT be Solved Locally

Main Municipality

Mainly a Straight Forward Maintenance/Operational Issue that can be Taken Care of by the Dept. of Maintenance & Operation

SCOPS is used for updating the Community and Getting their Feedbacks

PAPB Receives the Request from the Local Municipality

PAPB Studies the Request

Disapproved → Cancelled

Approved

If about Developing New Recreational Facilities, then...

If about Re-Developing or Maintaining Existing Recreational Facilities, then...

Selecting Location (if needed)

Designing

Designing

Funding

Funding

Bidding

Bidding

Constructing

Constructing

Operating

Operating

Public Involvement via SCOPS

Fig. 17. Modified version of the existing work flow (of the residents' comments) if SCOPS-02 is to be implemented in the local municipality. (PAPB: Public Administration of Parks & Beautification).

7.2.2   User Analysis

Prior to developing SCOPS, a user analysis study that is guided by a framework for user analysis (Sawasdichai & Poggenphol, 2003) was carried out. For more details, see the section of the research design and methods.

7.2.2.1   User's Cognitive Factors

This user analysis study focuses on the user's cognitive factors that underlie and regulate personal behavior while searching though a website. Such cognitive factors include *user generic goals, user modes of searching, and user models*. These factors will be analyzed and synthesized in order to better anticipate user search behavior with the goal to eventually be able to determine the kinds of information and functions needed to include in the SCOPS website design.

Generic User Goals

1. *Primary:* To use the Website as an alternative communication channel to communicate and connect with other people: The Website is an alternative communication channel to other traditional ones, such as telephones, letters, face to face, etc.

   - *Secondary:* To communicate with the activists of Fawaz community association for the purpose of developing and redeveloping the local outdoor recreational facilities.

2. *Primary:*   To use the Website as an alternative channel to access the needed

information: The Website is used as an alternative channel to other traditional

channels such as books, magazines, newspapers, television, radio, consultants,

etc. Some users may need information only to stay updated; others may need

information to fulfill their specific inquiry or for additional decision making.

- *Secondary:* To get updated information about the news, plans, projects,

etc of the outdoor recreational facilities in Fawaz Community.

- *Secondary:* To get information about a specific existing element of the

local outdoor recreational facilities in Fawaz Community.

User Modes of Searching

For the sake of this research and as mentioned earlier in the research design and

method section, a number of participants are going to be asked to evaluate SCOPS when

it is up and running. Such evaluation will be done once by each participant (*Frequency:*

once). During the evaluation, the users will be given specific tasks to perform in the

Website (*known-item searching*). In addition, since the Website will be used by lay

people (and they are voluntarily doing the evaluation) it is expected that the users will

not spend a lot of effort and time in such searching (*Effort:* less) and (*Time:* short).

Based on this, the *Intensive known-item searching mode* was selected for this study from

amongst the 15 user modes defined in the search framework (Table 14). According to

the search framework, the characteristics of the selected mode are:

- Users know exactly or specifically what they want. The answer is definite. There is only one answer

- Users need to fulfill their goals immediately. They tend to search for an answer seriously. They try to find the quickest way to complete their tasks and achieve their goals

- Users are willing to spend only short period of time, and want their goal to be met in one search

Table 14. The classification of user modes of searching (Adapted form Sawasdichai and Poggenphol, 2003)

Specification / determination of user needs

		Definitely conclusive	Expensively conclusive	specifically confined	Generally confined	Indistinct	
Urgency of user needs	Extreme	Intensive Known-item Searching	Intensive comprehensive searching	Intensive topical searching	Intensive existence searching	Intensive exploratory searching	Time: *Short* + Frequency: *Once* + Effort: *Less*
	Moderate	Limited Known-item Searching	Limited comprehensive searching	Limited topical searching	Limited existence searching	Limited exploratory searching	Time: *Moderate* + Frequency: *Limited* + Effort: *Moderate*
	None	Extensive Known-item Searching	Extensive comprehensive searching	Extensive topical searching	Extensive existence searching	Extensive exploratory searching	Time: *Long* + Frequency: *Several* + Effort: *Much*

Contribution of user of search task

User Models

Relevant information about user models was collected early from the 24 Internet users who participated in the focus-group discussions of Phase-I. Figure 18-a shows that 83% of them was novice or had a little knowledge about the issue of female public participation in the municipal decision making process. Only 17% of them had advance knowledge while no one had professional knowledge about such an issue. As to the experience of the sample of the Internet users in submitting comments to the municipality, 54% were novice while 38% were with some skills or experience. Only 8% were with a good or professional skills and experience in submitting such comments (Figure 18-b). Half of the 24 Internet users are beginners when considering their level of computer and Internet experience while the other half is shared equally between the advanced users and experts (Figure 18-c). Some technical information collected from this sample is shown in (Figures 19).

Based on the above collected information, from amongst a classification of thirty user models defined in the used framework (Table 15), the following user models were selected for this study:

- *First-time User / Novice / Beginner*

- *First-time User / Novice / advanced*

- *First-time User / Learner / beginner*

- *First-time User / Learner / advanced*

Table 16 shows the characteristics of the above selected user models according to the framework theorists.
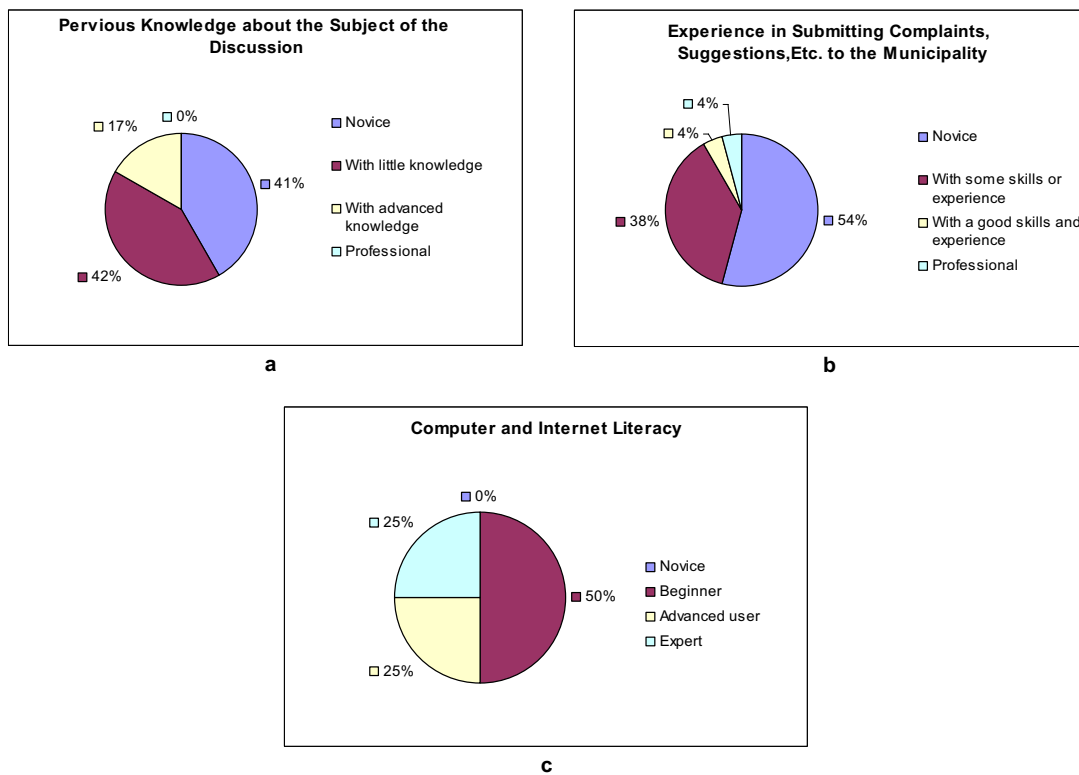
Fig. 18. Information about the 24 Internet users: (a) Pervious knowledge about the subject of the discussion, (b) Experience in submitting complaints, suggestions, etc. to the municipality, (c) Computer and Internet literacy.

a

b

c
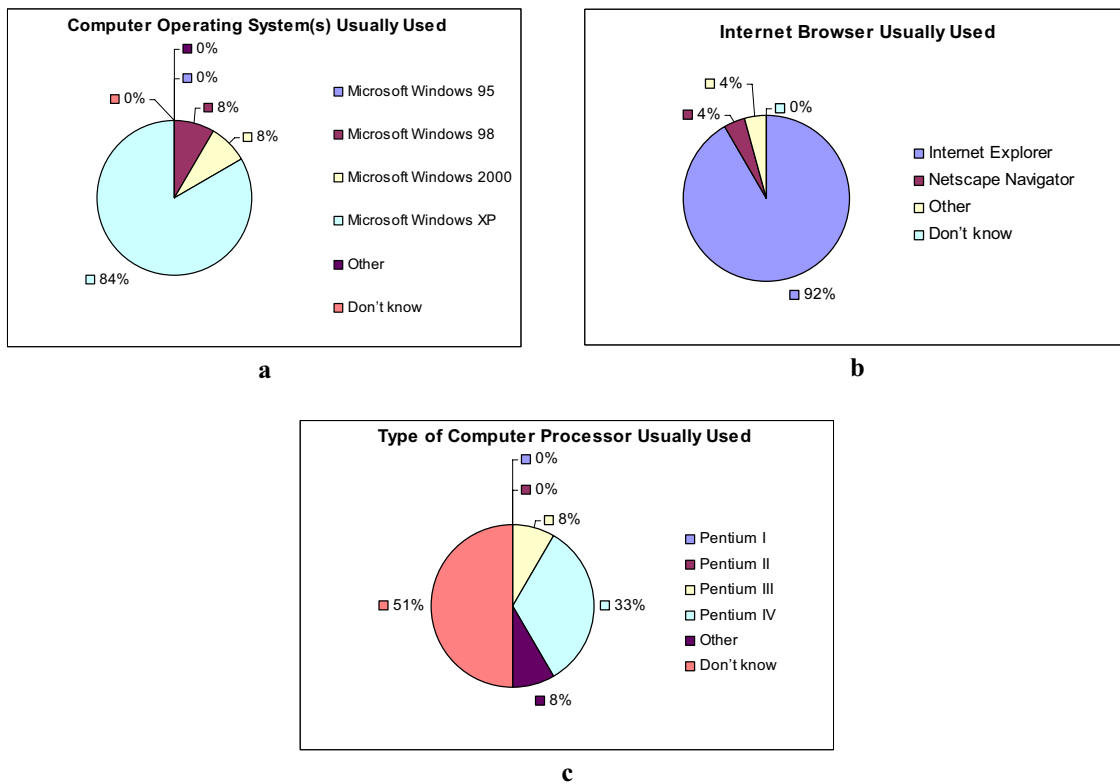
Fig. 19. Technical information collected from the 24 Internet users: (a) Computer Operating System(s) Usually Used, (b) Internet Browser Usually Used, (c) Type of computer processor usually Used.

Table 15. The classification of user models (Adapted from Sawasdichai and Poggenphol, 2003)

			User's level of computer and internet literacy		
		Knowledge in the content and intended task	Beginner	Advanced	Professional
Familiarity with the website interface	**First-time User**	Novice	1	2	3
		Learner	4	5	6
		Advanced Learner	7	8	9
		Professional	10	11	12
	Return User	Learner	13	14	15
		Advanced Learner	16	17	18
		Professional	19	20	21
	Regular User	Learner	22	23	24
		Advanced Learner	25	26	27
		Professional	28	29	30

Table 16. Characteristics of the selected user models (Adapted form Sawasdichai and Poggenphol, 2003)

Selected User Model	User Model Characteristics
First-time User / Novice / Beginner	- First-time user totally unfamiliar with the interface - Knows nothing about the contents - Has no skill or experience in the intended task - Knows something and has some experience with computer or Internet- occasional use
First-time User / Novice / Advanced	- First-time user totally unfamiliar with the interface - Knows nothing about the contents - Has no skill or experience in the intended task - Knows a lot of things and has good experience with computer or Internet- often use
First-time User / Learner / Beginner	- First-time user totally unfamiliar with the interface - Knows the content from reading story telling or second-hand experience - Has some skill or experience in intended task-occasional performing - Knows something and has some experience with computer or Internet- occasional use
First-time User / Learner / Advanced	- First-time user totally unfamiliar with the interface - Knows the content from reading story telling or second-hand experience - Has some skill or experience in intended task-occasional performing - Knows a lot of things and has good experience with computer or Internet- often use

7.2.2.2 Design Analysis and Synthesis

Having defined the three essential users cognitive factors (i.e. generic user goals, user modes of searching, user models), the analytic framework demonstrated earlier in this research (Figure 4) can be used to help systematically analyze such factors. Figures 20-23 show the applied analytical framework used for design analysis as well as design synthesis of SCOPS website.

Primary goal:
- Communicating with People

Secondary goal:
- Communicating with the activists of Fawaz Community Association for the purpose of participating in developing and redeveloping the local outdoor recreational facilities.

Modes of Searching
- Intensive known item searching

Intention
- To submit a complaint / suggestion about a recreational facility and follow-up with it later

Search Strategy
- Quick, specific searching

Search Method
- Use search box or browse through menus that appear to link directly to the intended action

User Model
Novice / First-time user / beginner

User Model
Novice / First-time user / advanced

User Model
Learner / First-time user / beginner

User Model
Learner / First-time user / advanced

User course of actions

1. Read the content of the homepage and few pages beyond to get familiar with website interface
2. Read menu (navigation links)
3. Choose and click on a link (even if not sure)
4. Read the content of the opened page
5. Make a decision whether such a page is the right one for the intended task.
6. If the page is not the right one, then repeat step 2-5
7. If the page is the right one, then submit a complaint / suggestion about a recreational facility

———————————————
1. Follow-up with the submitted complaint / suggestion through step 2-5
2. If the page is not the right one, then repeat step 2-5
3. If the page is the right one, then Follow-up with the submitted complaint / suggestion

User course of actions

1. Read the content of the homepage and few pages beyond to get familiar with website interface
2. Read menu (navigation links)
3. Choose and then clink on a link or look for search box
4. When get retrieval results, read to find the closest results to expectation and click it
5. Scan the content of the opened page
6. Make a quick decision whether such a page is the right one.
7. If the page is not the right one, then repeat step 2-6
8. If the page is the right one, then submit a complaint / suggestion about a recreational facility

———————————————
1. Follow-up with the submitted complaint / suggestion through step 2-6
2. If the page is not the right one, then repeat step 2-6
3. If the page is the right one, then Follow-up with the submitted complaint / suggestion

User course of actions

1. Scan the content of the homepage and few pages beyond to get familiar with website interface
2. Scan menu (navigation links)
3. Choose and click on a link (even if not sure)
4. Scan the content of the opened page
5. Make a quick decision whether such a page is the right one for the intended task. .
6. If the page is not the right one, then repeat step 2-5
7. If the page is the right one, then submit a complaint / suggestion about a recreational facility

———————————————
1. Follow-up with the submitted complaint / suggestion through step 2-5
2. If the page is not the right one, then repeat step 2-5
3. If the page is the right one, then Follow-up with the submitted complaint / suggestion

User course of actions

1. Scan the content of the homepage and few pages beyond to get familiar with website interface
2. Scan menu (navigation links)
3. Choose a link (if sure) otherwise look for search box
4. When get retrieval results, scan to find the closest results to expectation and click it
5. Scan the content of the opened page
6. Make a quick decision whether such a page is the right one.
7. If the page is not the right one, then repeat step 2-6
8. If the page is the right one, then submit a complaint / suggestion about a recreational facility

———————————————
1. Follow-up with the submitted complaint / suggestion through step 2-6
2. If the page is not the right one, then repeat step 2-6
3. If the page is the right one, then Follow-up with the submitted complaint / suggestion

Fig. 20. Applied analytic framework used for design analysis (Primary goal: Communicating with people).

Primary goal:

- Accessing information

Secondary goal:

- Staying updated about the new, plans, projects, etc of Fawaz Community's outdoor recreational facilities.

Modes of Searching

- Intensive known item searching

Intention

- To seek particular information about a recreational facility.

Search Strategy

- Quick, specific searching

Search Method

- Use search box or browse through menus that appear to link directly to the intended action

User Model	**User Model**	**User Model**	**User Model**
Novice / First-time user / beginner	Novice / First-time user / advanced	Learner / First-time user / beginner	Learner / First-time user / advanced

User course of actions

1. Read the content of the homepage and few pages beyond to get familiar with website interface
2. Read menu (navigation links)
3. Choose and click on a link (even if not sure)
4. Read the content of the opened page
5. Make a decision whether such a page is the right one for the intended task.
6. If the page is not the right one, then repeat step 2-5
7. If the page is the right one, then get the particular information about the recreational facility

User course of actions

1. Read the content of the homepage and few pages beyond to get familiar with website interface
2. Read menu (navigation links)
3. Choose and then clink on a link or look for search box
4. When get retrieval results, read to find the closest results to expectation and click it
5. Scan the content of the opened page
6. Make a quick decision whether such a page is the right one.
7. If the page is not the right one, then repeat step 2-6
8. If the page is the right one, then get the particular information about the recreational facility

User course of actions

1. Scan the content of the homepage and few pages beyond to get familiar with website interface
2. Scan menu (navigation links)
3. Choose and click on a link (even if not sure)
4. Scan the content of the opened page
5. Make a quick decision whether such a page is the right one for the intended task. .
6. If the page is not the right one, then repeat step 2-5
7. If the page is the right one, then get the particular information about the recreational facility

User course of actions

1. Scan the content of the homepage and few pages beyond to get familiar with website interface
2. Scan menu (navigation links)
3. Choose a link (if sure) otherwise look for search box
4. When get retrieval results, scan to find the closest results to expectation and click it
5. Scan the content of the opened page
6. Make a quick decision whether such a page is the right one.
7. If the page is not the right one, then repeat step 2-6
8. If the page is the right one, then get the particular information about the recreational facility

Fig. 21. Applied analytic framework used for design analysis (Primary goal: Accessing information).

Primary Goal:
- Communicating with People

Secondary Goal:
- Communicating with the activists of Fawaz Community Association for the purpose of participating in developing and redeveloping the local outdoor recreational facilities.

Modes of Searching
- Intensive known item searching

Intention
- To submit a complaint / suggestion about a recreational facility and follow-up with it later

Search Strategy
- Quick, specific searching

Search Method
- Use search box or browse through menus that appear to link directly to the intended action

User Models

		Novice / First-time user / beginner	Novice / First-time user / advanced	Learner / First-time user / beginner	Learner / First-time user / advanced
These characteristics will be different in accordance with **User goals and user modes of searching**, but will be similar for all types of user models.	**Main Characteristics**	Users need to: • Reach to the right page (of the targeted facility) where they can submit complaint / suggestion about that particular facility • Reach to the right page where they can follow-up with the submitted complaint / suggestion			
	Information Needed	• Large scale spatial information (not detailed) • Small scale special information (detailed) • Information that give sense of place (where I'm?)			
These problems may be different in accordance with **user models and user modes of searching,** but can be found similarly in all types of user goals.	**Main Problems**	• **Reading spatial info**	• **Reading spatial info** • **Determining starting point:** users are unable to determine from where to start to do a specific task • **Understanding classification of the contents determined by website:** users are unable to anticipate the contents in each category or menu on website, or don't know what is to expect beyond those categories		
These characteristics will be different in accordance with user **models and user modes of searching**, but will be similar for all types of user goals	**Time-Spending Needed**	> Requires Less time > • Less time browsing categories • Less time reading detail descriptions	• Less time browsing categories • Less time reading detail descriptions	• More time browsing categories • More time reading detail descriptions	
	Features / Functions Needed	• Banners that leads to hot issues	• Site Map	• Bullet points/ summary information	• Site map • Keyword search • Bullet points/ summary information
		• Nested maps that leads form Large scale areas to small scale and more detailed ones • Photographs that give sense of place			

Fig. 22. Applied analytic framework used for design synthesis (Primary goal: Communicating with people).

Primary Goal:
- Accessing information

Secondary Goal:
- Staying updated about the news, plans, projects, etc of Fawaz Community's outdoor recreational facilities.

Modes of Searching
- Intensive known item searching

Intention
- To seek particular information about a recreational facility.

Search Strategy
- Quick, specific searching

Search Method
- Use search box or browse through menus that appear to link directly to the intended action

User Models

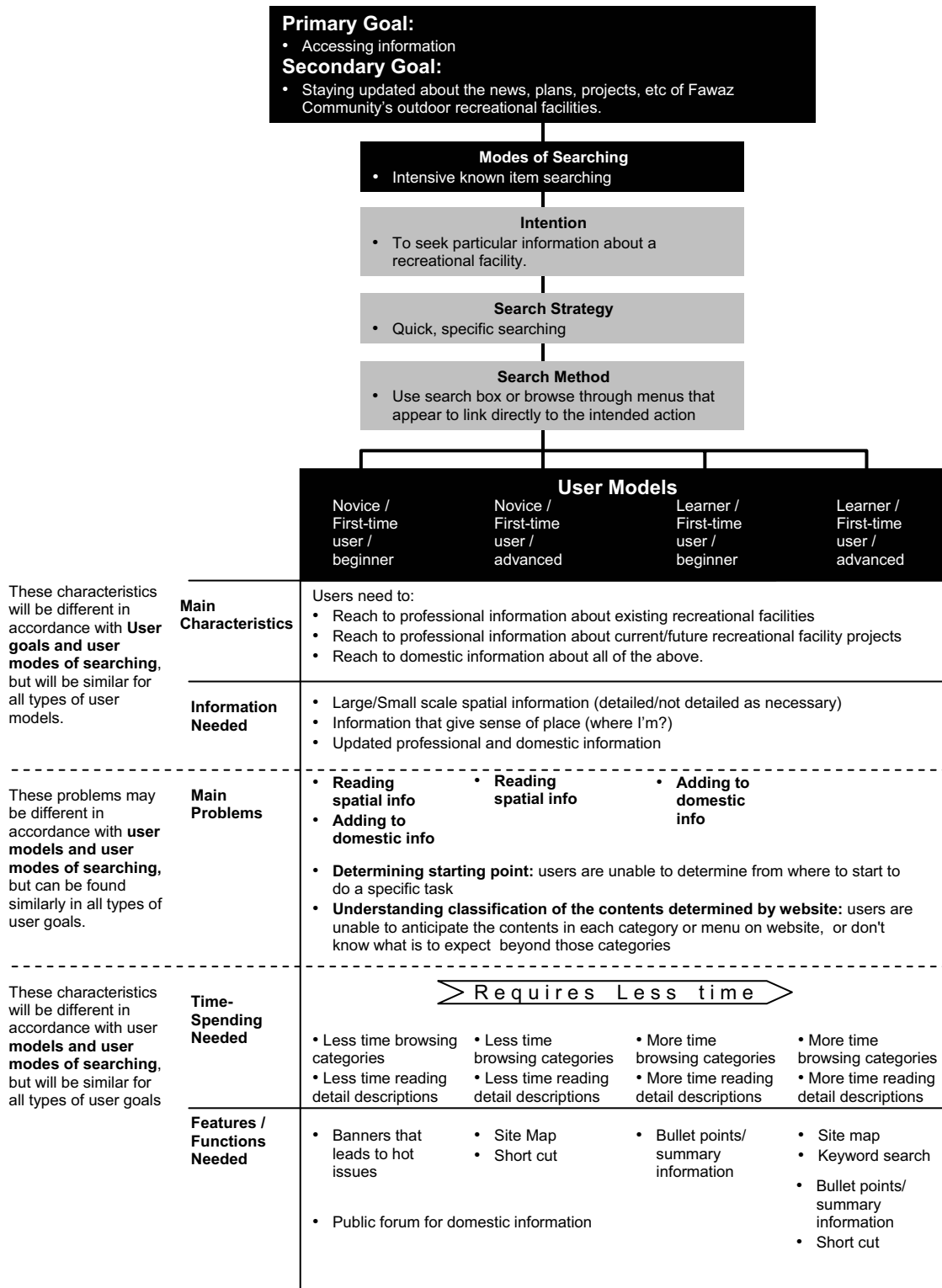|		Novice / First-time user / beginner	Novice / First-time user / advanced	Learner / First-time user / beginner	Learner / First-time user / advanced
These characteristics will be different in accordance with **User goals and user modes of searching**, but will be similar for all types of user models.	**Main Characteristics**	Users need to: • Reach to professional information about existing recreational facilities • Reach to professional information about current/future recreational facility projects • Reach to domestic information about all of the above.			
	Information Needed	• Large/Small scale spatial information (detailed/not detailed as necessary) • Information that give sense of place (where I'm?) • Updated professional and domestic information			
These problems may be different in accordance with **user models and user modes of searching,** but can be found similarly in all types of user goals.	**Main Problems**	• **Reading spatial info** • **Adding to domestic info**	• **Reading spatial info**	• **Adding to domestic info**	
		• **Determining starting point:** users are unable to determine from where to start to do a specific task • **Understanding classification of the contents determined by website:** users are unable to anticipate the contents in each category or menu on website, or don't know what is to expect beyond those categories			
These characteristics will be different in accordance with user **models and user modes of searching**, but will be similar for all types of user goals	**Time-Spending Needed**	⟩ R e q u i r e s L e s s t i m e ⟩			
		• Less time browsing categories • Less time reading detail descriptions	• Less time browsing categories • Less time reading detail descriptions	• More time browsing categories • More time reading detail descriptions	• More time browsing categories • More time reading detail descriptions
	Features / Functions Needed	• Banners that leads to hot issues • Public forum for domestic information	• Site Map • Short cut	• Bullet points/ summary information	• Site map • Keyword search • Bullet points/ summary information • Short cut

Fig. 23. Applied analytic framework used for design synthesis (Primary goal: Accessing information).

7.2.3 SCOPS's First Version (SCOPS-01)

After carrying out the study of user analysis, SCOPS-01's Website was developed with Microsoft Office FrontPage 2003. The Website included HTML pages and Active Server Pages (ASP) that can work only on a server-based Website located on a Web server running FrontPage Server Extensions. Also, the Website included nested maps with hotspots that link to other pages, forms, data viewing windows, and a downloadable GIS file. It also includes a hidden feature of passing parameters in hyperlinks to forms in order to automate filling out a number of fields in such forms.

Because of that the most majority of the Saudi Internet users use low-speed Internet connection (dial-up), SCOPS Website was intentionally developed to be light to browse by using an average computer. In addition, the Website was not connected to a heavy Internet Map Server (IMS). More details about SCOPS Website are mentioned later.

7.2.4 Usability Testing for SCOPS-01

To make sure SCOPS Website performs the function for which it is designed, five sessions of usability testing were conducted with five different users. The average time of the usability testing session was 15.7 minutes. Tables 17-20 view the information collected during the five sessions of usability testing.

Table 17. Time of completion of the usability testing tasks per user. '*': gave-up after *the time mentioned*

Tasks	Task's Time of Completion for Each of the Five User (In minutes)					Task's Average Time of Completion (In minutes)
	# 1	# 2	# 3	# 4	# 5	
1. The municipality is planning for a project of developing a children playground at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so it identified four possible vacant lands for such a project and is asking the local residents to select one a- Try to find the webpage of this project	0.5	0.5	0.5	0.5	0.5	0.5
b- Select anyone of the four possible sites	1	0.5	1.5	*1.5	1	1
2. Find the fax number of the Community Association – female department	0.25	0.25	0.5	0.25	0.5	0.35
3. Place any pretended comment about Fawaz park located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community and then write down the serial number that issued for your pretended comment	4.5	3.75	3.5	3.5	3	3.65
4. You want to check the status of the comment submitted in the previous task. How would you do that?	3	3	2.5	3	2	2.7
5. Place any pretended comment about the sidewalks near Masjid Bajabir in the N.W. neighborhood of Fawaz Community	4	1	2.5	2.5	2.5	2.5
6. You want to get information whether there is a volleyball court in 'Fawaz Park' located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so in what page can you find that piece of information (give the name of the page only)?	3.75	2.25	*3	2	3.5	2.9
Participant's Total Time to Complete Tasks (In minutes)	17	11.25	14	13.25	13	
Tester's Total Time to Read Tasks (In minutes)	2	2	2	2	2	
Total Time to Read and Complete Tasks (In minutes)	19	13.25	16	15.25	15	

Table 18. Collective observations recorded by the researcher's assistant during tasks completion by users

Tasks	Researcher Assistant's Observations
1. The municipality is planning for a project of developing a children playground at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so it identified four possible vacant lands for such a project and is asking the local residents to select one a- Try to find the webpage of this project	- Four users found the right webpage of the specified project directly while one user made false start by going to the Suggestion/Complaint page, spending sometime there and then going to the write page (i.e. Community's Projects)
b- Select anyone of the four possible sites	- While one user only did this selection without false starts, the other four users clicked on the red stars associated with the sites to make selections. However, when such an action didn't work, they scrolled-down and found the option-buttons through-which they made their selection - After two users made their selection and so the confirmation page appeared, two users perceived it as an error page so they go back to make the selection again!
2. Find the fax number of the Community Association – female department	- While three users found the fax number directly by clicking on the page 'Contact Us', two users made false starts: one user went to the page 'GIS information' then 'Home' and then to the right page, while the other user opened the page 'Community's Projects' then the right page

3. Place any pretended comment about Fawaz park located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community and then write down the serial number that issued for your pretended comment.	- All of the five users were confused by this particular task as follows:
	  - One user made false start by going first to the page 'Community's Projects' then to the right page (i.e Suggestion/Complaint)
	  - All users found it very difficult to read locate the targeted park on the large scale map
	  - Four users were confused by the meaning of the form's fields 'Title of the Posting'
	  - One of the users suggested re-arranging the form fields

4. You want to check the status of the comment submitted in the previous task. How would you do that?	- One user mad a false start by going first to the page 'Contact us'. - Two users couldn't know how. They read some text and then did it

5. Place any pretended comment about the sidewalks near Masjid Bajabir in the N.W. neighborhood of Fawaz Community	- The users have taken some experience through performing task 3 which is similar to this one. However, there are still some persisted problems mentioned in task 3 and repeated below:
	  - All users found it very difficult to read and locate the targeted park on the large scale map
	  - Some users were confused by the meaning of the form's fields 'Title of the Posting'

6. You want to get information whether there is a volleyball court in 'Fawaz Park' located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so in what page can you find that piece of information (give the name of the page only)?	- Three users mad false starts by going first to the page 'Community's Projects' - All users didn't understand the abbreviation 'GIS' which is used as is without translation into Arabic

Table 19. Collective answers of the users to the usability testing questions

Questions	Participant's Answers
1. Does the homepage of this website looks and feels (i.e., general design, colors, navigation buttons, etc) appropriate for the purpose of this website?	- Four users answered with yes. One said it needs to be revitalized by adding more colors
2. Can you, by the first glimpse to the homepage, get the "big picture" of what is offered by the website?	- The five users answered with yes. One user added, but GIS abbreviation is not understood
3. Are the navigation buttons organized in a proper sequence or you suggest other sequence?	- The five users answered with yes
4. What is the page 'Facilities Forum' is all about?	- Communication between residents 　- Opinions and suggestion of the residents 　- Communicating with residents 　- Communicating with officials 　- Discussing the Community's problems 　- Getting the community residents to know each others 　- Information a bout the officials
5. Is this website an easy to browse or it needs effort and time before the user would become familiar with? Why?	- Four users said it is easy to browse wile one said it needs a lot of reading. Also, one said the use of the GIS abbreviation is not understood
6. Do you consider this website a good model for the participation with the Community Association and consequently with the municipality or it still needs a lot of changes to be acceptable? Why?	- All users said the website can be considered as a good model to different extents. However, it still need some improvements which will be mentioned below in answering question 7
7. What would you like to change, add or subtract from this website so it functions better?	- The recommendations given by the users were: 　- Entering the website is abnormal! The navigation buttons don't appear in the welcoming page! 　- In the Home page, there is no need to explain what is in each links, as nobody read it 　- To lower the probability of confusing, add two clear links in the first page of 'Suggestion/Complaint' one leads to suggestions page and one leads to Complaints page 　- Give more colors to the design of the website 　- Colors the detailed maps to simplify identifying its features 　- Reduce the amount of text or replace it with symbols that speak loudly and save time 　- Some pictures (identified to the researcher's assistant) confuse more than help

Table 20. Average time of completion of the usability testing questions per user

Questions	Questions Time of Completion for all of the Five Users (In minutes)
1 – 7	± 3 (almost the same to all users)

Based on the above collected information, the following modifications to SCOPS-01 were done:

1) The abbreviation 'GIS' which is written on a navigation button was changed to 'Information about Facilities' because it was too professional for the users to understand.

2) The names of the navigation buttons "Community's Projects" and "Community's Forum" were changed to "Facilities Projects" and "Facilities Forum" to be more specific. Also, the name of the navigation button "Suggestions/Complaints" was changed to "Facilities Suggestions/Complaints" for the same reason.

3) The name of the navigation button "Important Links" was changed to "Related Links" because the listed links could be unimportant to some users.

4) Two distinguished buttons were added to "Suggestions/Complaints" page. One button leads to submitting new suggestions/complaints and one leads to checking the status of already submitted suggestions/complaints. This was done because many users couldn't go to the targeted page before reading the text in the page.

5) A background color was added to all pages to make the website more colorful.

6) In the page of Suggestion/Complaint, the last map among the nested maps was colored to be more readable.

7) The map's hotspots was colored and animated to be more visible.

8) Reduce the amount of text as much as possible by using more symbols.

9) The confusing thumbnail color images at the sides of the first map in the page "Suggestions/Complaints" were made black and white and composed in such a map.

10) The suggestions/complaints form fields were re-arranged and one field was renamed.

7.2.5 SCOPS's Second Version (SCOPS-02)

The Website of SCOPS-02 has incorporated all of the modifications mentioned at the end of the previous section. The Website in its Second version contains 17 pages in total: Homepage (1 page), Facilities Projects (4 pages), Information about Facilities (1 page), Facilities Suggestions/Complains (7 pages), Facilities Forum (1 page), Contact Us (2 pages), Site Map (1 page), and Related Links (1 page). All pages share one interface template (Figure 24) with a top horizontal bar that carries the name of the study area (i.e. Fawaz Community) and a vertical bar on the right with eight navigation buttons.

The homepage of SCOPS-02 Website (Figure 24) contains a welcoming paragraph that emphasizes the importance of the female participation in the community decision making process. It also, briefly explain the role of the Website as a bridge between the female residents, the local community association (female department), and the local municipality.
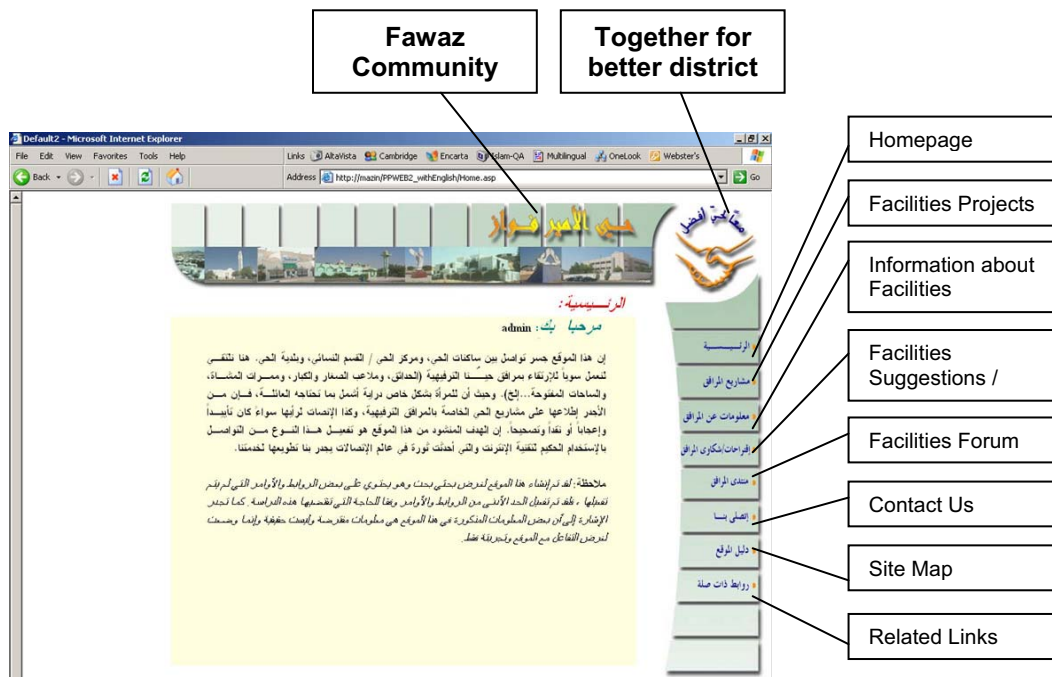
Fig. 24. The homepage interface of SCOPS-02's Website.

The second navigation button from the top is "Facilities Projects". It leads to a page that provides information about the community's current and future projects. Also, the page contains a resident's consultation example. It asks the residents to select a location from among four locations suggested for a new children playground. When the user selects a location, the location's number is sent to the website's database and a confirmation page appears to the user. Figures 25-a through 25-d show screenshots for the pages of completing such a task from start to end.

Fig. 25a. Facilities Projects' Web-page 1. When clicking on the Facilities Projects link this page opens. It has two lists for the intended and under construction recreational facilities' projects. When clicking on the second hyperlink from top (Constructing Playground in *Masjid Ba Jabir* Sub-area), the webpage in Figure 25b opens.

Fig. 25b. The page of Constructing Playground in *Masjid Ba Jabir* Sub-area asks the visitor to nominate one of the highlighted four locations for constructing such playground. When clicking on one of the locations, hidden parameters about the clicked location are sent to the next page shown in Figure 25c.
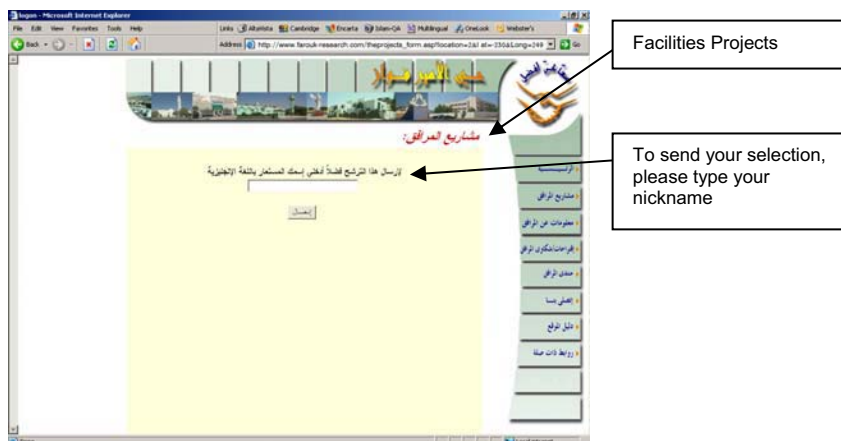
Fig. 25c. This page has a form that includes some hidden fields (filled out with the parameters of the selected location). The only field that appears asks for typing the nickname of the person. When clicking on submit button, a confirmation page opens (Figure 25d).
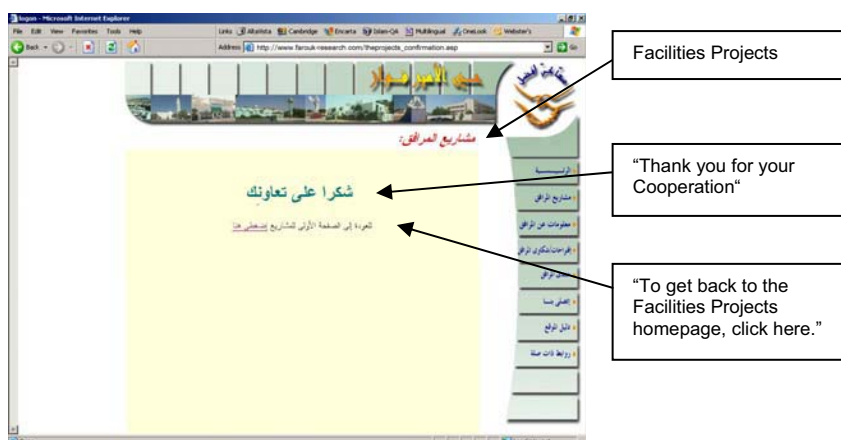
Fig. 25d. This is a thank you page that confirms submitting the information of nominating a location for the intended project of the children playground.

The third navigation button from the top is "Information about Facilities". It leads to a page that contains two downloadable files. The file "Fawaz Community's Facilities" (88.1KB) contains spatial information for a selected area (as an example)

from Fawaz Community. The steps followed by the researcher to make "Fawaz Community's Facilities" file are mentioned briefly below:

1) In *AutoCAD:* Draw the area's different layers of interest and save each layer in a single DWG file
2) In *ArcCatalog*: Create a new Personal Geodatabase
3) In *ArcToolbox*: Export the AutoCAD files (those were created in step 1) to Geodatabase
4) In *ArcMap*: Add the Feature Classes of the Personal Geodatabase
5) In *ArcToolbox*: Convert the Personal Geodatabase content to Shapefiles
6) Insert the Shapefiles to ArcExplorer
7) Save the file as ArcExplorer project "Fawaz.AEP"

The second file is the software "ArcExplorer 2.0" (12.8MB) that can open the files with the extension "AEP" such as "Fawaz Community's Facilities.AEP" (Figure 26). ArcExplorer 2.0 is a lightweight free GIS data viewer developed by ESRI. It offers an easy way to perform a variety of basic GIS functions such as panning, zooming in and out, searching for features, presenting labels, measuring distances, supporting different images formats including JPEG, GIF, TIFF and other, and supporting CAD files such as DWG.

The fourth navigation button from the top leads to "Facilities Suggestions/ complaints" page. Such a page has two large buttons one leads to submitting new suggestions or complaints and one leads to checking the status of already submitted ones. The page of submitting new suggestions/complaints has a map with imbedded photos for a number of well-know physical features in Fawaz Community. Such photos give a sense of place especially to the visitors who are not familiar with reading maps. Such a map has a number of blinking pink circles that are hotspots lead to more detailed maps. Each detailed map has similar hotspots that lead to other more detailed colored

maps. To post a suggestion/complaint about an outdoor element (parks, children/adults playgrounds, walkways, open spaces, vacant lands, etc.), the user has to click on one of such element on the map. When clicking on an element, a hidden parameter that identifies such a clicked element is passed in a hyperlink to a form in another page. After filling out and submitting the form, the submitted information is sent to a database file that is linked to the ArcView so that the Community Association (as a mediator between the public females and the municipality) can review the submitted comments (This will be further explained below). A confirmation page with an automatically generated serial number for such a posting will appear after submitting such a form. Figure 27a through 27f show screenshots for the pages of completing such a task from start to end.
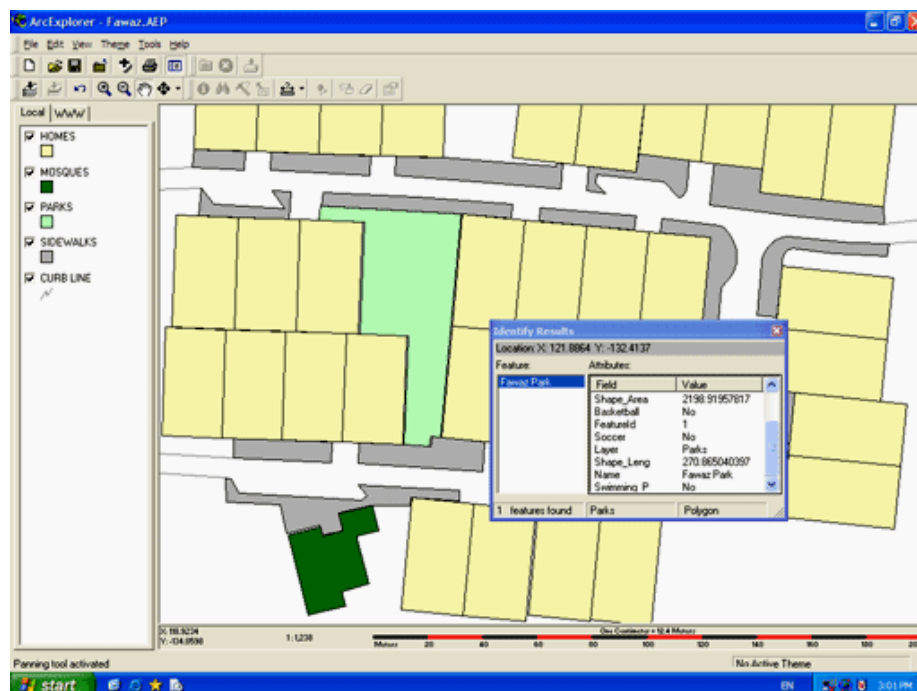
Fig. 26. A snapshot for the file "Fawaz Community's Facilities" opened in ArcExplorer 2.0.
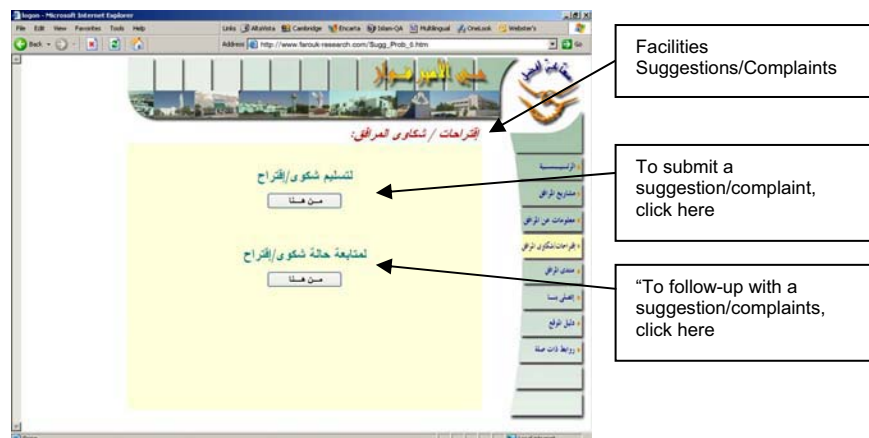
Fig. 27a. When clicking on the Facilities Suggestions/Complaints link this page opens. It has two buttons. When clicking on the button of submitting a suggestion/complaint, the page shown in Figure 27b opens.

Fig. 27b. When clicking on the upper highlighted hotspot of *Masjid Ba Jabir* sub area, the page shown in Figure 27c opens.
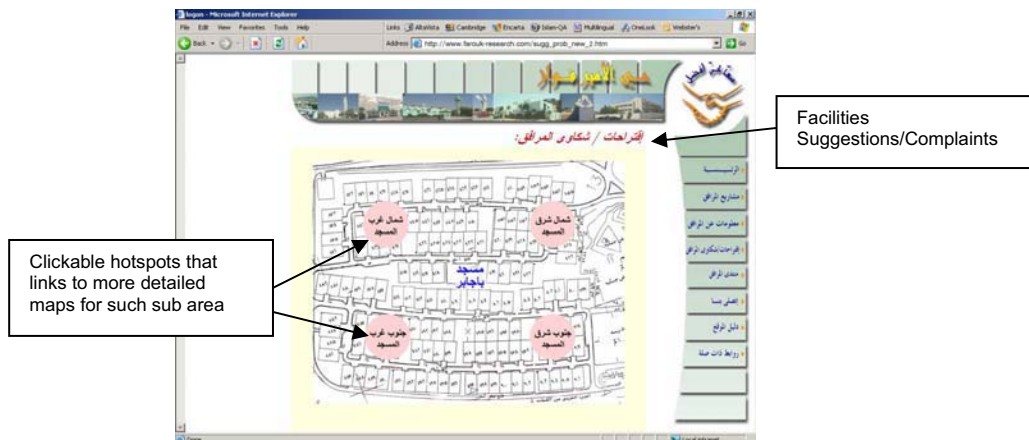
Fig. 27c. When clicking on the top left highlighted hotspot in *Masjid Ba Jabir* sub area,
the page shown in Figure 27d opens.

Fig. 27d. This page has clickable colored zones for different outdoor recreational elements. When
clicking on an element of interest, hidden parameters about it are sent to the next page
shown in Figure 27e.

Facilities Suggestions/Complaints

Nickname, comment type, comment topic, and the comment itself.

Fig. 27e. This page has a form with hidden fields (filled out with the parameters of the clicked element on the previous page). When filling out the form and clicking on the submit button, a confirmation page opens (Figure 27f).

Facilities Suggestions/Complaints

Please type in your nickname to be given a serial number for the posted comment

Displays the comment, its given serial number and the person's nickname.

To get back to the homepage of the Facilities Suggestions/Complaints, click here."

Fig. 27f. This is a thank you and a confirmation page. It also can display the serial number that is given to the posted comment. The person can save the serial number for the follow-up.

Back on the first page of suggestions and complaints, the page of checking the status of the previously submitted suggestions/complaints has the forms filed for entering the complaint's or suggestion's serial number. By submitting the serial number,

the title and the status of the suggestion or complaints are retrieved from the database and viewed to the user.

As mentioned earlier, when clicking on an element of interest in the community map (shown in Figure 27d) to post a comment (suggestions/complaints), hidden spatial parameters about the clicked location is transferred to the form of the next page. Such spatial parameters include the location's coordinates in X and Y format. After submitting the comment form such coordinates data are stored in a database together with the other submitted data. This enables the community association to easily visualize the location of the comment as well as to identify its type by using ArcView . When the submitted comment is a suggestion, a green circle appears in ArcView in the location where such suggestion was posted. When the comment is a complaint, a red triangle appears in ArcView in the location where such complaint was posted (Figure 28). This was done in ArcView by drawing categories using unique values of one field which is the 'Type' filed of the public comments database. In other words, the X and Y coordinate data of the table of public comments were added to the map as a layer. Using such symbology would ease the role of the community association to identify, study and then filter such comment prior to submitting them to the municipality database.
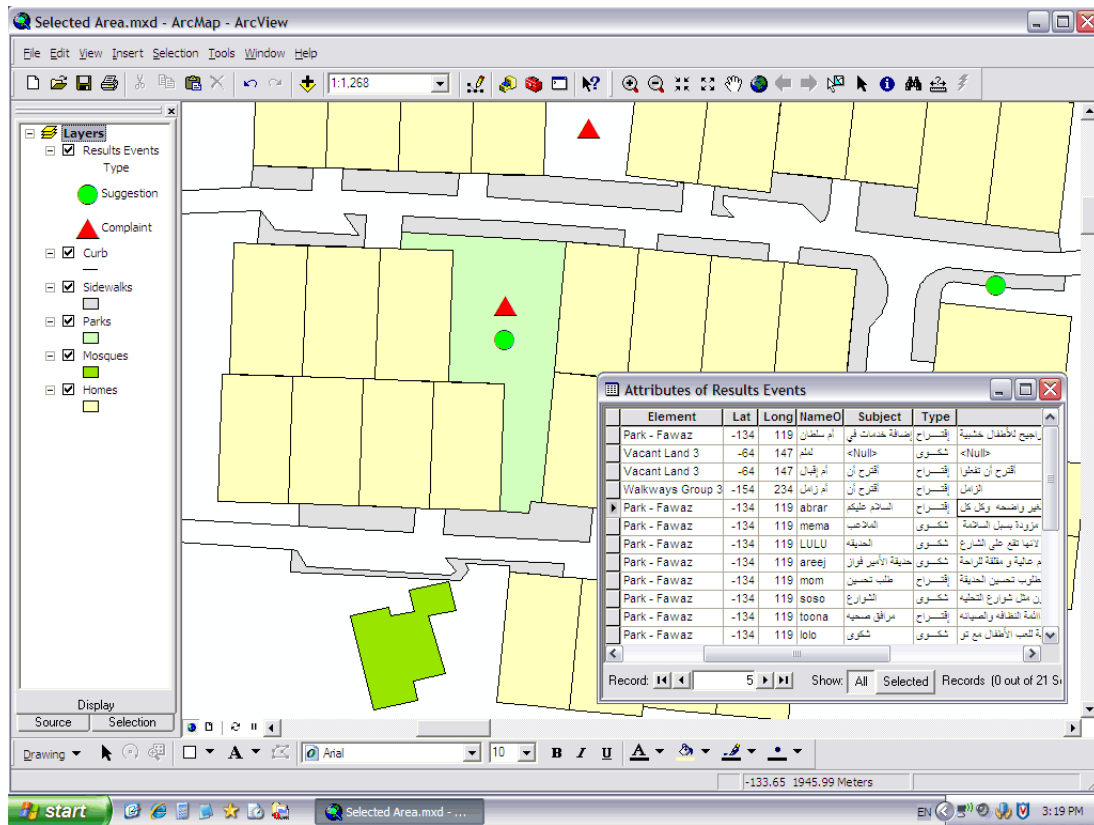
Fig. 28. Using symbology in ArcView to visualize the location and the type (suggestion/complaint) of the public comment that are submitted via SCOPS-02

The fourth navigation button from the top leads to "Facilities Forum" page. Such a page is for public discussions, information and opinions shared among the community residents. This link is for future development.

The fifth navigation button from the top leads to "Contact Us" page. The sixth button leads to "Site Map" page. And the seventh (last) navigation button leads to "Related links" page which include hyperlinks to a number of related governmental and non-governmental websites such as the website of The Ministry of Municipal and Rural Affairs, Jeddah's Main Municipality and The Organization of Community Associations.

7.2.6 SCOPS-02 Prototype Evaluation

7.2.6.1 Evaluation by Public Officials

On January, 2006 the researcher had a chance to present SCOPS-02 in the place of Fawaz Community Association. The presentation was attended by the president and the vice-president of the community council in addition to four other key-members. The presentation started by a brief introduction about this research and SCOPS-02 (Figure 29). The researcher then presented SCOPS-02 in real-time (Figure 30). The entire presentation was audio recorded, so that all verbal feedbacks could be acquired. After the presentation, written feedbacks were collected using the sheet of follow-up evaluation questions.

Fig. 29. The researcher and the attendants during the introductory presentation.

Fig. 30. The researcher and the attendants during the SCOPS-02 real-time presentation.

Feedbacks Collected During the Presentation

The feedbacks are sorted below based on the time they were mentioned during the presentation. Some feedbacks were based on some other previous ones.

- When a resident submits a complaint or a suggestion via SCOPS-02, she should be informed about the estimated time that processing such a comment would take

- The webpage of checking the status of submitted complaints or suggestions should link to a tracking system that shows where each submitted complaint or suggestion is located in the work flow. This would enhance the transparency of the process and keep the user more informed about the work flow and about her comment in that work flow

- In the form of submitting suggestions/complaints, add an email filed, so the user email can be used to update her about the status of the submitted suggestion or complaint. Sending such email could be done automatically as the suggestion/complaint moves through the work flow virtual map

- In order to reach to such a level of automatic responding, the community association has to have a well-trained staff to operate such a system. However, prior to this, the community association has to organize its own work-flow

- To minimize SCOPS-02 limitation and bias, some of its features (e.g. selecting a location for a new park) can be done also by using the telephone through an Automatic Voice Recognition system

Feedbacks Collected After the Presentation

After the presentation, all participants were given sheets of follow-up evaluation questions. The evaluation sheets consisted of eleven questions in addition to some personal questions that solicited information about the participant's position in the first Job and the position in Fawaz community association (Table 21). Five participants out of the six participants have filled out the sheets (Figure 31).

The participants were asked how good/bad they perceive SCOPS-02 as a model for female public participation with the local community association and consequently with the municipality. All of the participants perceived SCOPS-02 as a "Very good model".

The participants were asked to list what they perceive positive and what they perceive negative about SCOPS-02. Their answers are shown in (Tables 22 and 23).

Table 21. Positions of the five participants who filled out the evaluation sheets

Participant	Position at First Job	Position in Community Association
#1	University Professor	President of the Community Council
#2	- Elected member in the municipal council of Jeddah Province - Executive manager of a petroleum services company	Vice-President of the Community Council
#3	- General Advisor in the Administration of Operations and Follow-up at Jeddah's main municipality - University Professor	Member in the Community Council
#4	School Principal	Member in the Community Council
#5	Retired	Member in the Community Council

Fig. 31. The attendants while filling out the follow-up evaluation questions.

Table 22. Participants' perceived positives about of SCOPS-02

Perceived Positives	Participants					
	1	2	3	4	5	Total
- Participating without conflicting with Islam	X	X	X	X	X	5
- Participating without conflicting with the local traditions	X	X	X		X	4
- Participation of various types of females (i.e. disabled- workers- busy mothers…etc.)	X	X		X	X	4
- Participating of a greater number of females	X	X	X		X	4
- Participating easily	X			X	X	3
- Participating without the need for getting together in a specific place	X	X			X	3
- Participating without the need for getting together in specific time	X	X			X	3
- Participating anonymously	X	X		X	X	4
- Other Perceived Positive		- Informing residents - Easily locating and informing about community problems				

Table 23. Participants' perceived negatives about of SCOPS-02

Perceived Negatives	Participants					
	1	2	3	4	5	Total
- The small number of public female Internet users	X	X	X	X	X	5
- The absence of face-to-face dialog					X	1
- Increases social isolation						0
- Expensive			X			1
- Eases expressing aimless public opinions		X				1
- Doesn't ensure serious consideration of the public comments by officials					X	1
- Other Perceived Negatives						0

Based on the given presentation, the participants were asked on how easy/difficult they perceive storing and retrieving public complaint/suggestions using SCOPS-02 in comparison with the existing method(s). Four out of the five participants mentioned that it is easy (to different extents) (Figure 32).

As to how extent that Fawaz Community Association and the local municipality are capable to adopt a system like SCOPS-02 in the time being and/or in the near future, the participants have different opinions and reasons (Table 24 and 25).

To the best knowledge of the participants (two of them are governmental officials), SCOPS-02 doesn't conflict with the Saudi governmental policies or any of its regulations.
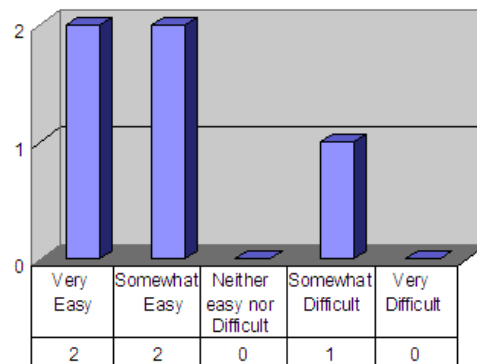
Fig. 32. Degree of easiness participants perceive storing and
retrieving public comments using SCOPS-02.

Table 24. Participants' views about adopting a system such as SCOPS-02 by the Community Association

Participant	Capability of Adoption (on Five-Point Scale where 5 = Strongly believe and 1 = Strongly disbelieve)		Reason
	In the time being	In the near feature	
#1	-	5	Lack of financial/human resources in the time being
#2	3	5	Fawaz Community Association is creating a database for the community and its facilities
#3	2	2	---
#4	5	5	There is a good interaction between the community association and the residents
#5	5	-	---
Total	15	17	

Table 25. Participants' views about adopting a system such as SCOPS-02 by the municipality

Participant	Capability to Adoption (on Five-Point Scale where 5 = Strongly believe and 1 = Strongly disbelieve)		Reason
	In the time being	**In the near feature**	
#1	5	-	Availability of financial/human resources in the time being
#2	5	5	Jeddah's main municipality is currently working on developing a system that has some similarity to the SCOPS-02
#3	5	4	---
#4	5	5	It has many advantages to the society
#5	3	-	---
Total	**23**	**14**	

The participants were asked to mention some areas (other than the recreational facilities) at which the Internet can be mediated between the female community residents, the community associations and the governmental departments. The participants mentioned the commercial, educational, agricultural, social and health domains.

7.2.6.2 Evaluation by Female Community Residents

A number of 14 female community residents have participated in the online evaluation of SCOPS-02. Their ages ranged between 20-49 years old; their education levels ranged between bachelor and below bachelor; the majority was students; and their

annual household incomes ranged between 24,000-192,000 Saudi Riyals ($6,400-$51,200) which is a range of low to high-middle incomes (Figures 33).

As mentioned before, the first four questions were put to confirm that the evaluators have completed the given tasks, and so they know the website well enough to evaluate it. Most of the participant's answers to such questions were correct. However, some answers were unknown, wrong or left without answer (Figure 34).
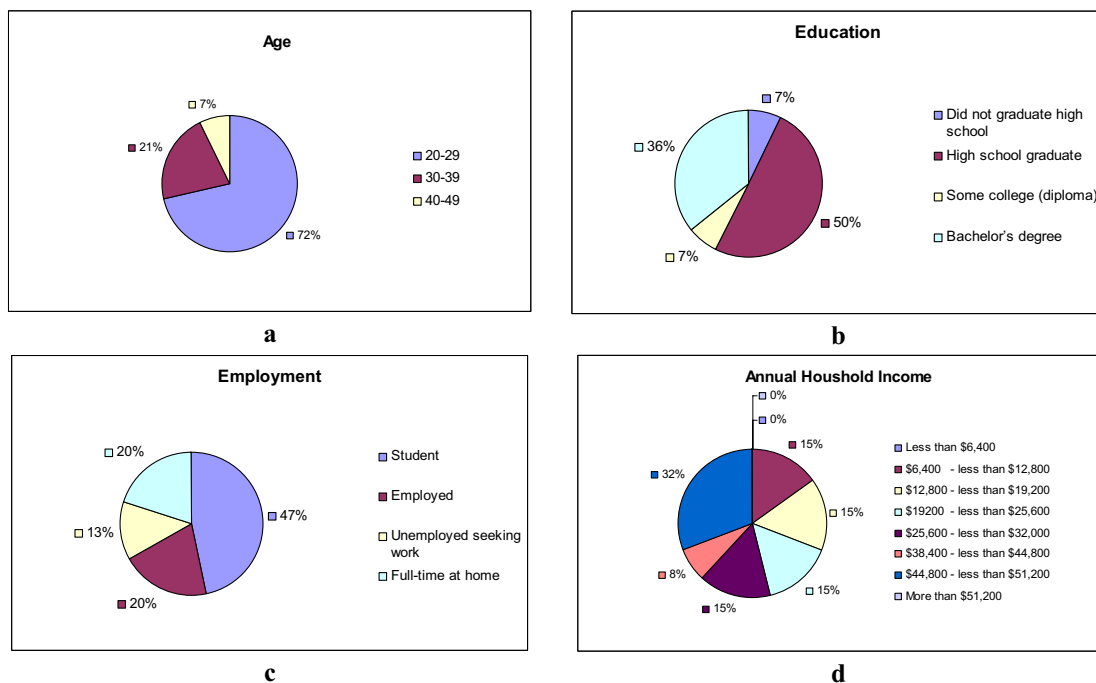
Fig. 33. Information about the 14 female community residents who have participated in the online evaluation of SCOPS-02: (a) Age, (b) Education, (c) Employment, (d) Annual household income.

Status of answers to Q1-Q4
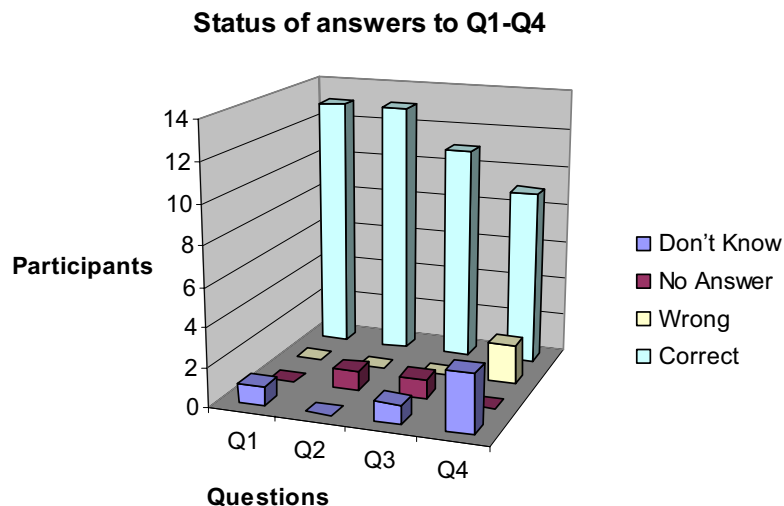
Fig. 34. Status of answers to Q1-Q4 by the 14 female community resident evaluators.

The evaluators were asked to rate how it is easy/difficult to submit comments to the municipality using the following ways: Speaking face-to-face with the officials at the municipality, speaking by telephone with the officials at the municipality, submitting a letter to the municipality, speaking face-to-face with the activists of the female department of the local community association, speaking by telephone with the activists of the female department of the local community association, and via the participatory website of SCOPS-02. The participants' ratings are shown in (Figures 35).

The participants were asked to tick on items of two given lists of possible positives and negatives for using SCOPS-02 (Table 26). The number of participants ticked each positives/negatives are shown in (Figure 36).

Face to Face with the Municipality

a

Call the Municipality by Telephone

b

Writing Letters to the Municipality

c

Face to Face with the Community Associhiation

d

Call the Community Associhiation by Telephone

e

Use SOCPS-02

f

Fig. 35. Evaluators' opinions about the easiness/difficulty of submitting comments by using different means: (a) Face to face with the municipality, (b) Call the municipality by telephone, (c) Writing letters to the municipality, (d) Face to face with the community associations, (e) Call the community association by telephone, (f) Use SCOPS-02.

Table 26. Participants' perceived positives and negatives about SCOPS-02

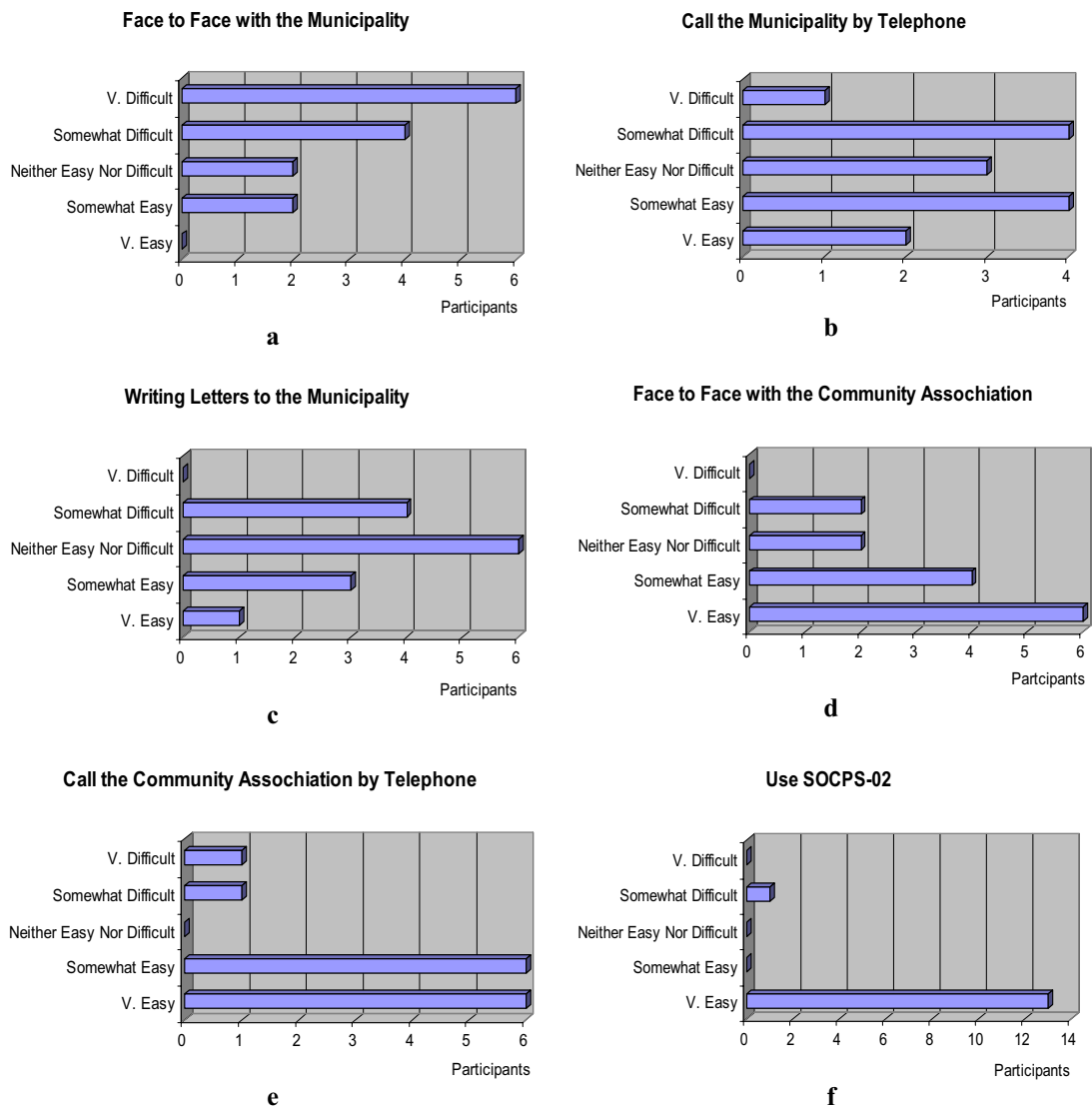| *List of Possible Perceived Positives:*	*List of Possible Perceived Negatives:*
P1. Participating without conflicting with Islam P2. Participating without conflicting with the local traditions P3. Participation of various types of females (i.e. disabled- workers- busy mothers…etc.) P4. Participating of a greater number of females P5. Participating easily P6. Participating without the need for getting together in a specific place P7. Participating without the need for getting together in specific time P8. Participating anonymously	N1. The small number of public female Internet users N2. The absence of face-to-face dialog N3. Increases social isolation N4. Expensive N5. Eases expressing aimless public opinions N6. Doesn't ensure serious consideration of the public comments by officials
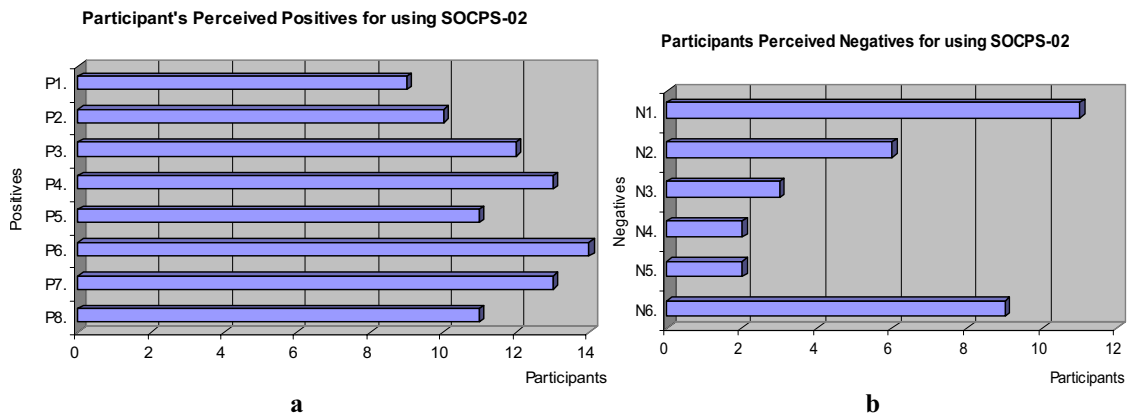
Fig. 36. Participants views about the positives/negatives of SCOPS-02: (a)Participants perceived positives for using SCOPS-02 (Refer to table 26 for the meaning of P1 through P8), (b) Participants perceived negatives for using SCOPS-02 (Refer to table 26 for the meaning of N1 through N8).

In addition to selecting from among the positives/negatives lists, four evaluators added four additional positives to using SCOPS-02. Those added positives are translated below without repeating what is already mentioned in the list of positives given above:

- Participating in a quick manner without facing bureaucratic hurdles

- Knowing about the community and what is happening in it

- Ensuring reaching the suggestions/complaints

- Opening the doors for discussing the importance of female public participation on wider ranges

No evaluator typed additional negatives to using SCOPS-02.

The evaluators were asked whether the Internet users need to spend time and effort to get familiar with SCOPS-02; the majority of them said, "Yes" (Figure 37). Six evaluators have written the following statements when asked for giving their suggestions for improving SCOPS-02:

- Everything is good and no need for any changes or additions

- Website design needs to be improved. For example, the pages are slow to download

- Good and no need for additions

- Nothing… the website is very good

- Website colors have to be improved to more refreshing ones in order to make browsing the website more enjoyable

- The names of the community's sub-areas have to be changed to the locally used ones (i.e. North East Sub-area, North West Sub-area…etc.)

The evaluators were asked how good or bad SCOPS-02 as a model for public participation with the local community association and the local municipality branch. Their answers were positive (Figure 38).

Does the participatory website require time and effort before the user can get familiar with?
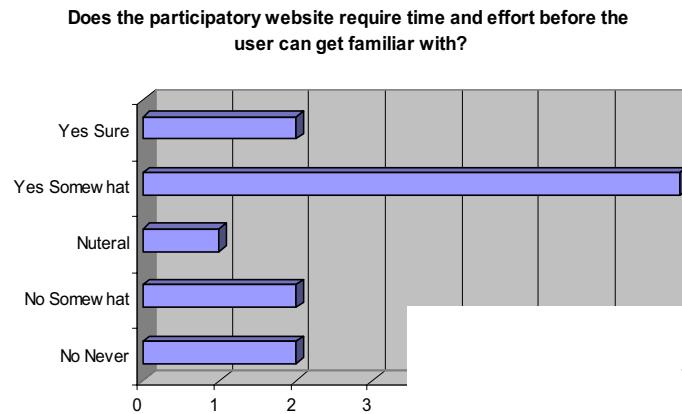
Fig. 37. Participant opinions on whether SCOPS-02 demands time and effort before users get familiar with.

Participants Ratings for the Website as a Model
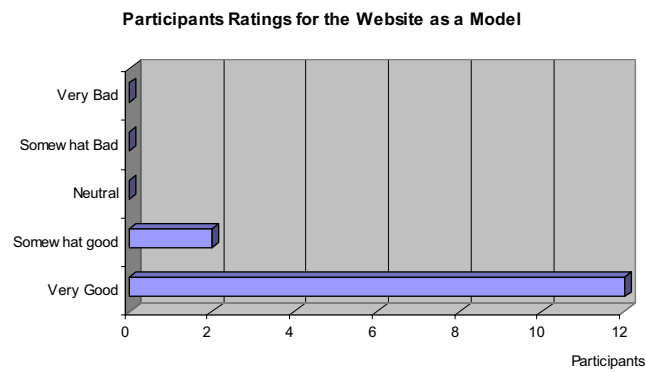
Fig. 38. Participants opinions whether SCOPS-02 is a good model for public participation.

Finally the evaluators were asked to list other public areas at which mediating the Internet can be useful in their opinions. Four evaluators mentioned the following:

- All governmental departments that deal with women at their various affairs related to health, education, finance, etc

- Connecting the community residents with schools and mosques leaders, sending invitations at various events, informing the community residents about employment opportunities as well as diseases and deaths

- Informing female community residents about the community's events and new projects

- Education

8. DISCUSSION

8.1 Study Findings

8.1.1 Female Public Participation

All members of the study sample have affirmed the importance and benefits of the female participation in the decision making process of the issues related to urban communities. This finding supports what has been explained earlier in the literature review that public participation is important morally and professionally.

Despite such importance of female public participation, females in Saudi Arabia are not involved by the government in the decision making process of the issues related to urban communities. As to the reasons for such un-involvement, all participants agreed that such un-involvement is not due to a religious reason. This finding complies with the literature that says some of the Islamic lawful rights to women, such as participating in public affairs (Badawi, 2002), are not given to women in Saudi Arabia (Erturk, 1991; Vidyasagar & Rea, 2004). Also, some participants agreed while some others were neutral that the un-involvement is due to a lack of skills to implement female participation and not due to governmental regulations. Such a reason was mentioned officially after the very first municipal election held in Saudi Arabia in 2005. Also, some participants agreed while some others were neutral with that such un-involvement of females is due to local traditions and norms. This reason was agreed about in the study of Abu-Khalid (2004) as mentioned earlier in the literature review.

Based on the findings of this research, the Saudi people believe that female participation in the municipal decision making processes that relate to all community issues is needed because the females are also affected like males by the community related decisions. Specifically, the findings of this research show that Saudi people believe that such female participation is more needed in the particular areas of the community's recreational facilities, community's female commercial facilities (e.g. tailoring and hair styling shops), community beautification, cleaning, security, education, and health. Based on the findings, involving females in such categories has many benefits. For example, mothers' feedbacks on the decision making process of developing and redeveloping community's outdoor recreational facilities would increase the satisfaction of their children and so would help in keeping them around in their community instead of looking for their favored recreational facilities somewhere else. Note that such category (i.e. community's outdoor recreational facilities) and the rest of the categories mentioned above (except education) were also mentioned by a number of Saudi working women (from various professions) in interviews held with them by Al-Ramlawi and Al-Miflih (2004), as mentioned earlier in the literature review. Therefore, it can be concluded that female public participation in Saudi Arabia should be at least more emphasized on the categories related directly to the females or their family members. The people interviewed during this research believe that women (especially mothers) play a distinguished role in the Saudi family and that such a role makes them aware of the needs of each family member more than men.

This study has found that the majority of the Saudi women are not used to interacting directly (face to face) with the foreigner males (not close relatives). Vidyasagar and Rea (2004) have pointed out to this after they interviewed a number of Saudi physician women by stating that "… most of the senior women had gone abroad for their higher training and had become used to working alongside men." Such findings have pushed this study toward the approach of looking for other alternatives than direct face to face interaction between public females and official males in Saudi Arabia.

Based on the findings, the study sample members were homogeneous at the cultural value of sex segregation. On one side, the only given statement that was agreed upon by all public female evaluators was that SCOPS-02 allows for participating without the need for getting together in a specific place. Such consensus in agreeing support the finding (discussed above) that the majority of the Saudi women are not used to interact directly with foreigner males and so would prefer to find other alternatives to interact with them. On the other side, the only given statement that was agreed upon by all male evaluators of SCOPS-02 was that it allows for participating without conflicting with the Islamic values. Such compatible opinions among the study sample members point out to the homogeneity of the study sample at the particular value of sex segregation.

8.1.2 Municipality and Community Association

This study has found that, usually the comments/suggestions submitted by the key-activists of the community associations to the government officials are practical, comprehensive and well-studied. Such a thing helped in strengthening the trust of the

government officials in the community associations and, consequently, made them more responsive to such community associations. Planners, in particular, pay attention to public participation and community organizations (Jones 1990) because community input is critical for defining local issues.

Based on the findings of this research, all participants favored mediating the community associations between the female community residents and the government officials (Figure 39). According to the participants, community residents usually trust the key-activists of the community associations and believe that they are more capable to work towards enhancing the quality of their communities. Olson (1965) said that participants in such organizations see opportunities to achieve individual goals through collective actions.

It has been mentioned earlier in the literature review that the structure of any inter-organizational relationship is established by specifying information flow, procedures, roles, obligations, rights, data, analysis, and computational methods used in the relationship (Kumar & Van Dissel, 1996). However, based on the findings of this research, most of the information flows of the municipalities and the community associations are not regulated by documented and specified sets of procedural steps. Not only that, but procedural steps are also subject to dramatic changes when key-positions in any of the two organizations (i.e. municipality and community association) are held by new officers. Therefore, such ever-changing information flows makes it so hard for the two organizations to build an efficient inter-organizational relationship.
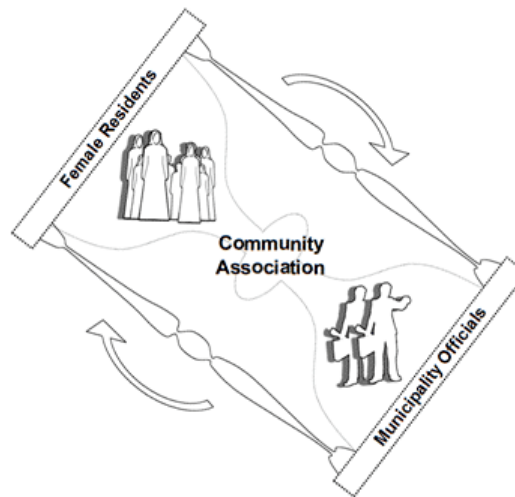
Fig. 39. The community association as a mediator and filter between the
female community residents and the municipality.

Public accessibility to the governmental documents is an important support for informative public participation. However, there is no regulated public access to the government documents in Saudi Arabia. In other words, there is no law that provides the right for the public to access government information. Therefore, citizens are (sometimes) provided with requested information. When public are sometimes provided with the information they request, public participation in such a case could be placed in the lowest rung of the public participation ladder of Weidmann and Femers (1993) which was explained earlier in the literature review section. Accordingly, Saudi Arabia in general could be placed at the lowest rung of such a ladder of public participation. Indeed, what could make such a placement of the country below the lowest rung of the ladder of Weidmann and Femers is that some of the governmental documents contain inaccurate information, as explained earlier in the results section.

8.1.3 Scops-02 Prototype

The SCOPS-02 prototype is an attempt for creating a channel (using Internet) and a data storage (using GIS) for female public participation in the municipal decision making process of urban communities. It is an attempt that helps the females living in an area to articulate their desire for change by being involved in the planning and enactment of that change and maintaining and building on that change in the future, which complies with the definition of public participation by Rowe & Wales (1999) that was mentioned earlier in the literature review.

SCOPS-02 is a two-way interactive channel of communication between female community residents and their local municipalities. Via SCOPS-02, on one hand, female community residents can obtain official information about their community as well as its recreational facilities and its related plans and projects. Also, the female community residents can submit their suggestions/comments to the local municipality. Via SCOPS-02, on the other hand, the municipality can consult female community residents. This combination assists not only in opening the doors for the female voice to reach the urban planning officials in Saudi Arabia, but also in making the females more informed about their community issues and eventually in improving the quality of the planning and design decisions of the Saudi urban communities.

Based on the findings of this research, female public participation can be done more easily when using SCOPS-02 than when done with the traditional methods (speaking face to face, by telephone or by sending letters to the officials). Also, based on the findings, SCOPS-02 positives outweigh its negatives. This complies with the

reviewed literature that supports using IT at public participation (Alkodmany, 2001; Batty, 1998; Kingston, et. al 2000; Howard, 1999; Graham 1996).

The findings of this research showed that female community residents are willing to use the technology when they have an interest in the subject matter. Such willingness is because of that the technology can provide them with communication alternatives other than the direct face to face conversation with males.

This study has found that the Internet is a promising channel of communication between public females and official males in Saudi Arabia. Most members of the study sample agreed about mediating the Internet in such communication while only a small number from among them were neutral at that regard. Those who agreed said that the Internet has many advantages at female public participation in our country. One of the participants was very positive about it and said, "Everybody will love it". However, the common concern among all members of the study sample was that if an online public participation is implemented in the time being in Saudi Arabia, the most majority of the people will not be able to participate because the most majority are not Internet users. Nevertheless, such a concern would lessen as the time passes because the number of the Internet users in Saudi Arabia is increasing rapidly as the statistics says (mentioned earlier in the literature review).

This study also has found that using GIS greatly helps the community association and the municipality to receive, store and retrieves public comments about developing and re-developing (renovating, changing, maintaining, etc) community's outdoor recreational facilities. The GIS have powerful tools for analyzing spatial data as well.

This is especially obvious when comparing doing such activates (i.e. receiving, storing, retrieving and analyzing public comments) using ArcView for example vs. doing them manually which is the most common case at the local community associations and the municipalities in the time being. Such finding complies with the view that define GIS based on what it does, as a toolbox. Peter Burrough (1986) defined GIS as "a powerful set of tools for storing and retrieving at will, transforming and displaying spatial data from the real world for a particular set of purposes" (p. 6).

8.1.4   Scops-02 Implementation

Based on the findings, implementation of the SCOPS-02 prototype on a national scale is difficult in the time being due to the lack and/or shortage of the financial and human supports to the community associations. Therefore, to help release the financial problem, Zamzami (2004) has recommended supporting the community associations by the government, businessmen, banks, etc.

A hurdle for the implementation of SCOPS-02 prototype is the proprietary nature of the software that SCOPS-02 uses. ArcExplorer is free software, so there should be no problem in its regard. However, ArcView is commercially available software that cannot be freely distributed to the community associations. A joint venture between the local municipalities and the community associations could be a good idea to purchase a multiple seat ArcView license from ESRI.

Implementation of the SCOPS-02 prototype on a small scale would not be as difficult as implementing it on a national scale (explained above). On one hand , a great

deal of the information is already being put in a digital format by Jeddah's main municipality and can be readily used in most desktop mapping and GIS applications. This demonstrates that a large budget is not needed to obtain data. On the other hand, development of the SCOPS-02 prototype was done with very little technical support to the researcher who put up the system. This demonstrates that sophisticated technical qualifications are not needed at least in the early days of the prototype implementation. If SECOPS-02 is implemented, it should be simple in its early days. A small financial, technical and human supports by the government or/and donations by the private sector or persons could have the system up and running. As time passes and the system proves its utility and the public users become more knowledgeable, the system can grow in functionality. Such growing should also consider changes in the local culture and technology.

It is important to stress heretofore that the implementation of the SCOPS-02 prototype, whether on a large scale or a small one, cannot be achieved without collaborative agreements on a number of issues among the two organizations of the municipalities and the community associations. Two of such issues that found to be extremely important, based on the findings of this research, are specifying information flows and computational methods used in the relationship. Such two issues are among the criteria mentioned by Kumar and Van Dissel (1996) that the structure of any inter-organizational relationship has to be established on (as mentioned earlier in section 8.1.2). On one hand, specifying the information flows of the two organizations (i.e. the municipalities and the community associations) is an absolute pre-requisite. However,

based on the findings, most of the information flows of the two organizations are not regulated by documented and specified sets of procedural steps. Not only that, but also the currently followed procedural steps are also subject to dramatic changes when key-positions in any of the two organizations are held by new officers. Therefore, such ever-changing information flows makes it so hard for the two organizations to build an efficient inter-organizational relationship. On the other hand, specifying the computational methods used in the relationship between the two organizations (i.e. the municipalities and the community associations) ensure improving how software works together as well as ensures overcoming cultural barriers against sharing data. Specifying a single policy (a standard) for hardware and software to be used is important to avoid incompatible systems in the future. Incompatibility of information systems can affect the level of sharing of information which basically SCOPS-02 is all about. Recently, in its efforts for launching e-government, the Saudi government has put a unified framework that includes cross-governmental specifications and policies, to enable cross-governmental integration and facilitate G2G transactions and data sharing. Such a framework specifies a set of policies to be adopted by government institutions that standardize the way the information that will be exchanged and the shared services that will be used.

As mentioned earlier, this research has found that the municipality official reports and documents are not available to the public, but sometimes are provided when requested. Therefore, legislating a law that provides the right for the public to access government information is important pre-requisite for the Implementation of SCOPS-02.

Such a law would give citizens more authority that will allow them to participate more informatively and so more effectively.

The political willingness for supporting or not-supporting the implementation of SCOPS-02 in Saudi Arabia is very critical as it can expedite, hinder or even prevent the implementation process of SCOPS-02. Based on the findings of this research, the implementation of the SCOPS-02 prototype doesn't conflict with the Saudi government policies and regulations. Indeed, there is no straight forward evidence in the literature that supports such a particular finding, but the literature points out that the Saudi government started recently to give more attention to consulting public in managing local affairs. Moreover, very recently the Saudi government attached high significance to the e-government concept and the transformation process that leads to its realization.

Finally, sharing responsibilities and roles among different levels of policy makers and public activists would gradually lead to better planning decisions and so to better and more satisfactory communities. When '*planning with the public' rather than 'planning for the public*', such a concept of sharing responsibilities is put into practice. Giving the right for the Saudi public (in general) and for the Saudi women (in particular) to participate with their views in making a decision that would affect them is an indicator for the democracy level practiced in the country. The relevant literature and the findings of this research affirmed the moral, professional and social importance and benefits of the female participation in the decision making process of the issues related to urban communities. The future of implementing e-participation in Saudi Arabia is promising especially after the recent governmental initiative for launching e-government. As

mentioned officially, the main objective of e-government in Saudi Arabia is "providing better services". If enabled, public feedback about the governmental services in general is a priceless key-factor that can make such services better ones.

8.2 Study Limitations

To what extent can the results of this study be generalized from the specific sample that was studied to a larger group of subjects and from the set of environmental conditions that was studied to other environmental conditions? An answer to this question of generalization (or external validity) is discussed below by examining the research findings against a number of related threats to external validity mentioned by Gay and Airasian (2000).

a) *Pretest-Treatment Interaction:* (The pre-test sensitizes participants to aspects of the treatment and thus influences post-test scores). In this research, the researcher has avoided using a "live" sample for the pretests. However, only one person who participated in the usability testing of the SCOPS prototype has participated later in its online evaluation.

b) *Selection-Treatment Interaction:* (The non-random or volunteer selection of participants limits the generalizability of the study). In this research, the individuals of the study sample were selected in a non-probability method (convenience sampling). Such a selection affects negatively the representation of the study sample to the targeted population (i.e. Saudi people). However, Saudi population can be considered as relatively homogeneous.

c) Experimenter Effects: (Conscious or unconscious actions of the researcher affects participants' performance and responses). In this research, the researcher and his female assistant tried their best to be consistent in their behavior while interacting with the individuals who participated in the in-depth interviews, the focus-group discussions and the usability testing of SCOPS. However, avoiding the threat of experimenter effect can't be guaranteed in this research because the research was ethnographic and so interacting with people was the main source for collecting data.

d) Reactive Effects: (The fact of being in a study affects participants from their normal behavior). As an example, in this research a number of public females were asked to go online and evaluate the SCOPS-02 prototype. Some of them were responsive while some others weren't. Both know for sure that this is a study. If such evaluation was asked by the municipality in real conditions, it is highly expected that responding rate would be different.

Deciding on a sample size for this research was difficult because the research is qualitative. The sample size was dependent on what the researcher wanted to know based on the purpose of the research and on the time and resources that were available. The researcher was looking for a larger sample size, but the number of public people to participate in the online evaluation was relatively small while very time and effort consuming. Consequently, the relatively small sample size of this study is one of the factors that limit the research findings generalizability.

As to the potential errors in the findings of this research, a number of issues have to be mentioned here. First, the experimenter effect (discussed above) could have also been a cause for random error. During the in-depth interviews, for example, may be the interviewees had to make-up some answers because they were face to face with the researcher. Second, because there was no audio recording during the focus-group discussions, some of the written down information could be inaccurate or have errors. Third, during the focus group discussions, the moderator asked questions that required rating some answers verbally on a Likert scale. The moderator then ticked on the Likert scale according to the majority of the answers. Therefore, writing down such answers was subject to errors or inaccuracy in measuring. And forth, during the interviews respondents might also have given incorrect answers to impress the interviewer.

Despite the fact that this research was exploratory in nature, the generalizability of its findings is limited, and it has some possible errors, it could still provide some significant insights when considering that it is being done for the first time in SA.

9. CONCLUSION

In Saudi Arabia, the segregation of the sexes (not permitting women to mix with unrelated men) is one of the important features that deeply influence every aspect of social life in the country. Misapplication (or radical application) of the institutional mechanism of such segregation has created a wide communication gap between the two genders. One of the results is that, at the urban community scale, it is almost impossible for the pubic female voice that expresses the public female opinions in their community to reach the municipal officials. In the same time, the municipal officials have no efficient and locally acceptable means to consult the public females. There is an obvious communication gap between the two sides. What makes such a problem more complicated is that there is a public participation gap with the municipal officials. Public people who suffer from a municipal problem in their community can choose either to struggle silently or to complain to the local municipality through manes that most of them are not regulated by law, inefficient and time and effort demanding. By considering such compound problem of female public participation with the municipality as well as to focus the research in such a problem, the questions of this research were: can the Internet/GIS technologies bridge the communication gap for women public participation in Saudi Arabia? And can the Internet/GIS technologies facilitate the communication needs for the development and re-development of the community's outdoor recreational facilities in Saudi Arabia?

The attempt of this research was to expand the margins of the existing female public participation in Saudi Arabia, so it started with finding out about how people (officials and public) perceived the importance of such female participation. The research has revealed in the community that was studied that the public officials and the public women associated high importance to the female public participation with the municipality in the community planning. Such associated importance was examined further and found to be applicable to the particular area of decision making process of the development and re-development of the urban community's outdoor recreational facilities. One of the reasons given by the people interviewed during this research for such perceived importance was that the Saudi women have more time to commit to such involvement than the Saudi men, as the latter are busier with providing for their families. Another reason was that women (especially mothers) play a distinguished role in the Saudi family that qualifies them to be aware of the needs of each member in their families more than men. However, despite that the interviewed people attached high importance to women involvement, a few of them believe that involving men is more important than involving women because men can convey the opinions of their women to the municipality officials who are all men (but not vice versa), so involving women is important but relatively less important than men in their views. However, despite such perceived importance and benefits of public people involvement in general and in public-women involvement in particular, this research has found that public people including public women (the focus of this research) in Saudi Arabia are not given the opportunity to participate that they deserve.

Also, this research has revealed in the community that was studied that the factors of limiting the female public participation are not basically religious (unchangeable), but mostly traditional and managerial (changeable). All of the official and public people (without exceptions) who were interviewed personally or participated in the focus-group discussions during this research have agreed (to different extents) to that not involving the women in Saudi Arabia is not due to a religious (Islamic) factor; All of such people (except one) agreed or were neutral to that such un-involvement is due to local traditions and norms; and the most majority of such people agreed while the rest of them were neutral to that the reason of such un-involvement is due to the lack of resources to arrange for female participation.

In order to find appropriate channels for female public participation, this research has first investigated all of the existing channels used for public participation whether they are regulated by the law or not. Then the channels that found to be appropriate to the municipality as well as to the public females were further investigated. The research has found that using the channels that provide options other than face to face communication between men and women are generally perceived as appropriate by the officials and public people who were interviewed during this research. After evaluating the different possible channels for female participation and comparing them against each others by the study participants, the research has found that using the Internet together with mediating the local community associations are the most appropriate channel for female public participation with the municipality.

The technological approach (using the Internet) to supports the female public participation (with all respect to the local traditions and norms) was explored in this research. The attitude of this research was primarily to adapt the technology to the existing local traditions and norms not to adapt the existing local traditions and norms to the technology. For example, the researcher attempted to develop the proposed system of this study (i.e. SCOPS-02) in a way that complies with the local cultural value of sex-segregation after he made sure that such a value is completely agreed upon by the study sample. For another example, the researcher did his best to develop SCOPS-02 in a way that supports the existing relevant workflows of the municipality and the community associations and not to make dramatic changes to them. To note that compare Figure 8 to Figure 17 to see the municipality's present and modified workflows of the public requests about developing and re-developing outdoor recreational facilities. Also, compare Figure 11 to Figure 16 to see the community association's present and modified workflows of the public female requests about developing and re-developing outdoor recreational facilities.

The evaluation results of the SCOPS-02 prototype were positive to a large extent. Based on such results, female public participation via SCOPS-02 is more appropriate and easier than by using the traditional methods (speaking face to face, by telephone or by sending letters to the officials). Also, based on such results, SCOPS-02 helps in making the public females better informed about their community issues, participate without getting together in a specific place and time and participate anonymously when they like.

This research was structured within a theoretical framework called Enhanced Adaptive Structuration Theory 2 (EAST2), a GIS-oriented collaborative decision support theory (Jankowski and Nyerges, 2001). As explained earlier, the fundamental idea underlying "adaptive structuration" is that the social character and the technological character of an organization work together to structure and, hence, reconstruct each other. This research has been mainly focusing on examining the technological character and whether it can facilitate female public participation in the decision making process of the outdoor recreational facilities in the Saudi society.

The findings of this research contribute to the evolving literature regarding community development projects around the world that involve public participation. The research is the first in its particular scope in Saudi Arabia. It suggests, as many other studies suggest (Craig et al. 2002), that the cultural and political contexts rather than hardware and software are the main obstacles to successful public participation in decision-making. This is especially true in the case of this research because of two reasons. First, the research was carried out in a distinctive sex-segregated culture. And second, the female public participatory system (i.e. SCOPS-02) has employed relatively simple information and communication tools. Therefore, this research has been focusing on finding out whether the proposed technological participatory system for female participation can be culturally accepted more than focusing on the efficiency of the technical aspects of such a system. Nevertheless, applications and research about participatory decision-making are rooted both in social-behavioral sciences and in broadly defined information science and technology (Jankowski et al. 2001).

The management of a web-based public participatory system presents a multitude of challenges that range from building the system to training people on the use of it to maintaining and further improving it. As to building and putting in service a real version (not a prototype) of SCOPS-02, that wouldn't be a big challenge especially when considering that the SCOPS prototype was successfully built by the researcher without receiving high technical assistance. In addition, the system should be simple in its early days. As the time passes and the system proves its utility, it can be then further improved in functionality by highly qualified technical personnel. Training the people on the use of SCOPS-02 is of two categories: Training the public females to use the SCOPS-02 website and training the municipality officials together with the community organization officers to use and run the entire system of SCOPS-02. On one hand, training the public females can be carried out in the local community association place and free or very affordable charge, as the president of the female community association of the study area said to the researcher. In addition, making the website's interface more user-friendly could ease such a training task or could shrink the public need for it. On the other hand, training the municipality officials and the community association officers to use and run the entire system of SCOPS-02 would require a higher level of trainers and so more financial supports by the government or/and the private sector. Maintaining the system may be the biggest challenge in the management of a web-based public participatory system. System failure most often occurs because long-term maintenance is not provided. Personnel with sufficient expertise must be available and committed to

providing system maintenance or it will not be dependable and will be quickly abandoned.

This research has stimulated the researcher's critical thinking and raised some questions and issues that need to be addressed in future research. How do we make sure that the views expressed by the female community residents are a true representation of the whole females in the community rather than a group of individuals who are interested in a subject while such a subject may affect others in the same community? Further research is needed to identify such a bias. Is it possible to abandon the traditional public participation techniques (discussed earlier in the results section) and to insist on using the proposed new technological technique by both females and males or such traditional techniques must stay side by side with the technological one? Although SCOPS-02 might make public participation easier, it will not help unless decision makers make the effort to integrate the participants' comments and suggestions in the decision-making process; the question is how to ensure such integration? Also, future research must incorporate into SCOPS-02 new tools such as online sketchpad for increased public participation, with increased interactivity. Similarly, future research must incorporate into SCOPS-02 more sophisticated GIS technologies (such as online map service), as the use of the broadband Internet becomes more wide spread among public people in Saudi Arabia. As to the community organizations, there is a need for research that find networks of vertical (governmental) and horizontal (public) supports to them so that they can effectively play the intermediary role between the public females and the local municipality. Through these and such as these research projects, we can

develop evidence about the value of SCOPS-02 and its versions to come for supporting female public participation in the planning and decision-making process of developing and redeveloping outdoor recreational facilities in the Saudi Communities.

Finally, the work of this research is a humble start and should be followed by long-term research and development that incorporate community participation and take in consideration the specificities of the Saudi culture. As it is the case with any model, SCOPS-02 is a simplification of a much more complex reality. The researcher is very interested in seeing this quite basic model expands to capture the more complex realities of access and participation to the women in Saudi Arabia.

REFERENCES

Adelman, L. (1992). *Evaluating decision support and expert systems*. New York: Wiley.

Al-Ahmed, A. (2005, April 26). Saudi sham: W's dilemma. *New York Post*. Retrieved May 8, 2005, from http://www.nypost.com/postopinion/opedcolumnists/45319 .htm

Al-Gahtani, S. (2003). Computer technology adoption in Saudi Arabia: Correlates of perceived innovation attributes. *Information Technology for Development, 10,* 57–69.

Al-Habib, A., (2005, February 14). اكتمال الإنتخابات *[Completion of election]*. *Al-jazira*. Retrieved August 22, 2006, from http://archive.al-jazirah.com.sa/2005jaz/feb/14/ ar5.htm

Al-Khedheiri, A. A. (2002). The Role of Secondary Cities in the National Development Process of Saudi Arabia. Riyadh, Saudi Arabia.

Al-Kodmany, K. (2001). Online tools for public participation. *Government Information Quarterly, 18*, 239-341.

Al-Hathloul, S., & Mughal, M. A. (1999). Creating identity in new communities: Case studies from Saudi Arabia. *Landscape and Urban Planning, 44*, 199-218.

Al-Hathloul, S., & Mughal, M. A. (2004). Urban growth management-the Saudi experience. *Habitat International*, *28*, 609-623.

Al-Munajjed, M. (1997). *Women in Saudi Arabia today*. London: Macmillan.

Al-Qaradawi, Y. (1997). *The status of women in Islam*. Cairo: Islamic inc. Publishing & Distribution. Retrieved February 11, 2007, from http://www.witness-pioneer.org/vil/Books/Q_WI/default.htm

Badawi, J. (1971). The status of women in Islam. *Al-Ittihad, 8(2)*. Retrieved January 23, 2007, from http://www.islamfortoday.com/womensrightsbadawi.htm

Baderin, M. (2003). International human rights and Islamic law. Oxford: Oxford University Press.

Batty, M., Dodge, M., Jiang, B., & Smith, A. (1998). *GIS and urban design* (Working Paper, No. 3). London, UK: University College London, Centre for Advanced Spatial Analysis.

Burrough, P. A., (1986). *Principles of Geographic Information Systems for land resources assessment*. Oxford: Clarendon Press.

Campbell, H. J., & Masser, I. (1991). The impact of GIS on local government in Great Britain. In *Proceedings of the Association for Geographic Information Conference* (pp 251-256). London: AGI.

Carver, S., & Peckham, R. (1999). Using GIS on the Internet for planning. In J. Stillwell, S. Geertman, & S. Openshaw (Eds.), *Geographical information and planning* (pp. 361-380). Berlin: Springer.

Central Department of Statistics. (2004). *Preliminary results of the census operation 1425 H -2004*. Riyadh, Saudi Arabia: Ministry of Economy and Planning. Retrieved April 9, 2005, from: http://www.planning.gov.sa/docs/census25.htm

Coleman, I. (2004). The payoff from women's rights. *Foreign Affairs*. Retrieved June 3, 2007, from http://www.foreignaffairs.org/20040501faessay83308/isobel-coleman /the-payoff-from-women-s-rights.html?mode=print

Craig, W. (1998). The Internet aids community participation in the planning process. *Computers, Environment and Urban Systems, 22,* 393-404.

Craig. W. J., Harris, T. M., & Weiner, D. (Eds.). (2002). *Community participation and Geographic Information System.* London & New York: Taylor & Francis.

Creighton, J. (1981). *The public involvement handbook*. Cambridge, MA: Abt Books.

Dedekorkut, A. (2002, November). What makes collaborations work? An empirical assessment of determinants of success in interorganizational collaboration. Paper presented at the 44th Annual Conference of ACSP, Baltimore, MD.

Ellis, C. D., Quiroga, C., Shin S., & Pina, R. J. (2003). GIS and human-centered systems design: Using ethnographic data collection and analysis methods to design a utility permitting support system. *Journal of the Urban and Regional Information Systems Association, 15*(2) 5-22.

Ember, C.R., & Ember, M. (1988). *Anthropology.* Prentice Hall: New Jersey.

Erturk, Y. (1991). Convergence and divergence in the status of the Moslem women: The cases of Turkey and Saudi Arabia. *International sociology, 6*(3), 307-320.

Fatany, S. (2004, 12 October). The status of women in Saudi Arabia. *Arab News*. Retrieved August 2, 2005, from http://www.arabnews.com/?page=7&section =0&article=52784&d=12&m=10&y=2004

Fetterman, D. (1998). *Ethnography: Step by step* (2nd ed.). Thousand Oaks, CA: Sage.

Fisher, P. (1998). Geographic information science and systems: A case of the wrong metaphor. In T. K. Poiker, & N. R. Chrisman (Eds.), *Proceedings of 8th International Symposium on Spatial Data Handling* (pp. 321–330). Burnaby, BC, Canada: Simon Fraser University, Department of Geography. International Geographical Union. Geographic Information Science Study Group.

Gay, L. R., & Airasian, P. (2000). *Educational research: Competencies for analysis and application* (6th ed.) Toronto: Prentice Hall.

Graham, S. D. N. (1996, 18 April). Flight to the cyber suburbs. *The Guardian*, 2-3.

Howard, D. (1999). Geographic information technologies and community planning: Spatial empowerment and public participation. In W. Craig, T. Harris, & D Weiner, *Empowerment, marginalization and public participation GIS. Report of Varenius Workshop,* 15-17 October 1998 (pp. 41-43). Santa Barbara: NCGIA.

Jacobs, J. (1961). *The death and life of great American cities.* New York: Vintage Books.

Jankowski, P., & Nyerges, T. (2001). *Geographic Information Systems for group decision making.* Taylor & Francis, London.

Jeddah's Main Municipality. (2004, June 1). بلدية الجنوب تعقد اجتماعها الدوري لمجلس المواطن [*South municipality carries out its periodical meeting of the citizen's council*]. Retrieved April 11, 2005, from http://www.jeddah.gov.sa/JeddahMunicipality/Press/ default.aspx?Detail=1&PressDetailNo=54&Pg=38

Joppe, M. (n.d.). *The research process*. Retrieved April 18, 2004, from http://www ryerson.ca/~mjoppe/rp.htm

King Abdulaziz Center for National Dialogue. (2003). *The second national meeting for intellectual dialogue: Final statement and recommendations*. Retrieved August 2, 2005, from http://www.kacnd.org/second_recm.asp

King Abdulaziz Center for National Dialogue. (2004). *The third national meeting for intellectual dialogue: Final statement and recommendations*. Retrieved August 2, 2005, from http://www.kacnd.org/third_recm.asp

King Abdulaziz City of Science and Technology. (1999). الخطة الوطنية الشاملة للعلوم والتقنية بعيدة *[The national comprehensive plan for* المدى في المملكة العربية السعودية: دراسة الحاسب الآلي *science and technology in the Kingdom of Saudi Arabia: Study about computers].* Retrieved November 29, 2004, from http://www.kacst.edu.sa/events/ np/4-8.html

Internet Service Unit. (2004). *Number of Internet users in Saudi Arabia.* Retrieved November 29, 2004, from http://www.isu.net.sa/surveys-&-statistics/num-users.htm

Kingston, R., Carver, S., Evans, A., & Turton, I. (2000). Web-based public participation geographical information systems: An aid to local environmental decision-making. *Computers, Environment and Urban Systems, 24*, 109-125.

Klosterman, R. (1998). The what if? Collaborative planning support system. *Environment and Planning B: Planning and Design, 26,* 393-408.

Kumar, K., & van Dissel, H. G. (1996) Sustainable collaboration: Managing conflict and cooperation in interorganizational systems. *MIS Quarterly 20*(3), 279-300.

Leitner, H., McMaster, R. B., Elwood, S., McMaster, S., & Sheppard, E. (2002). Models for making GIS available to community organizations: Dimensions of difference and appropriateness. In W. J. Craig, T. M. Harris, D. Weiner (Eds.), *Community participation and Geographic Information System* (pp. 37-52). London & New York: Taylor & Francis.

Madar Research Group. (2002). Internet penetration in the Arab world. *Madar Research Journal. 1*(Zero), 8-10. Retrieved on April, 8, 2003, from http://www. madarresearch.com/news/newsdetail.aspx?nwsId=1

Ministry of communication and information technology. (2006). *E-government program.* Riyadh, Saudi Arabia. Retrieved December 6, 2006, from http://www.yesser.gov. sa/english/news01.asp

Ministry of Education. (2005). *Role of women.* Riyadh, Saudi Arabia. Retrieved August 2, 2005, from http://www.moe.gov.sa/openshare/EnglishCon/About-Saud/ RoleofWomen.htm_cvt.htm

Ministry of Foreign Affairs. (2004). *The basic system of governance.* Riyadh, Saudi Arabia. Retrieved February 2, 2007, from http://www.mofa.gov.sa/Detail.asp? InNewsItemID=35297

Ministry of Foreign Affairs. (2003). *Council of Ministries 13/10/2003*. Riyadh, Saudi Arabia. Retrieved April 9, 2005, from: http://www.mofa.gov.sa/Detail.asp? InSectionID=3948&InNewsItemID=34421

Moote, M. A., McClaran, M. P., & Chickering, D. K. (1997). Theory in practice: Applying participatory democracy theory to public land planning. *Environmental Management, 21*, 877–889.

Moustapha, A. F., Costa, F. J., & Noble, A. G. (1985). Urban development in Saudi Arabia: Building and subdivision codes. *Cities, 2*(2), 140-148.

Nyerges, T., Jankowski, P., & Drew, C. (2002). Data gathering strategies for social-behavioral research about participatory geographical information system use. *International Journal of Geographical Information Science, 16*(1), 1-22.

Oliver, C. (1990). Determinants of interorganizational relationships: Integration and future directions. *Academy of Management Review, 15*(2), 241-265.

Pedersen, S. (2003). *Design Project #3: Usability Test*. Retrieved December 3, 2003, from Texas A&M University, College of Education and Human Development, Educational Psychology Department, Educational Technology Program, EDTC621 Graphic Communication and Interface Design Website: http:// www.coe.tamu.edu/~edtc621/

Qatirgy, N. (n.d.). شبهات حول حقوق المرأة في الإسلام [Suspicions around the rights of woman in Islam]. *Saaid Alfawaed*. Retrieved April 23, 2005, from http://saaid.net/daeyat/ nohakatergi/57.htm

Roche, S., & Humeau, J.-B. (1999). GIS development and planning collaboration: A few examples from France. *Journal of the Urban and Regional Information Systems Association, 11*(1), 5-14.

Rowe, A., & Wales, A. (1999). *Changing estates: A facilitator's guide to making community environment projects work*. London: Groundwork Hackney.

AMEX (n.d.). *Role of women in Saudi Arabian society -2*. Retrieved April 23, 2005, from: http://www.saudinf.com/main/h62.htm

Sawasdichai, N., & Poggenpohl, S. (2003). User analysis framework: Thoughts on cognitive factors for information design on web-based media. *Visible Language. 37*(1), 95-91.

Shackel, B. (1991). Usability - context, framework, definition, design and evaluation. In B. Shackel & S. Richardson (Eds.), *Human factors for informatics usability* (pp. 21-37). Cambridge: Cambridge University Press.

Salith, R. M. (2003, October 27). No role for women in Saudi council. *Aljazeera Network*. Retrieved October 27, 2003, from http://english.aljazeera.net/NR/exeres/30B283A9-BA54-4A86-8861-6D9C62F45B12.htm

Sowayan, S. (2007, May 30). 'Religious Police' face citizens' wrath as Saudis confront taboos in the courtroom. *SaudiDebate*. Retrieved June 3, 2007, from http://www.saudidebate.com/index.php?option=com_content&task=view&id=782&Itemid=119

Smith, L. G. (1982). Alternative mechanisms for public participation in environmental policymaking. *Environments*, *14*, 21–34.

Teriaky, M. (2002). *Personal computers.* Industry Canada. Retrieved March 16, 2005, from http://strategis.ic.gc.ca/epic/Internet/inimr-ri.nsf/en/gr-71043e.html

United Nations Human Settlement Program. (2002). *Saudi Arabia*. Retrieved October 10, 2004, from http://www.unhabitat.org/habrdd/conditions/westasia/sarabia.htm

Renn, O., Webler, T., & Wiedemann, P. (1995). *Fairness and competence in citizen participation: Evaluating models for environmental discourse*. Dordrecht: Kluwer Academic Publishers.

Vidyasagar, G. & Rea, D. M. (2004). Saudi women doctors: Gender and careers within Wahhabic Islam and a 'westernised' work culture. *Women's Studies International Forum, 27*, 261-280.

Weidmann, I. & Femers, S. (1993). Public participation in waste management decision making: Analysis and management of conflicts. *Journal of Hazardous Materials, 33*, 355-368.

Wheeler, D. L. (2000). New media, globalization and Kuwaiti national identity, *Middle East Journal, 54*(3), 432-444.

Zamzamy, Y. M. (2004, April). مراكز الأحياء: تجربة واقعية ونظرة مستقبلية *[Community associations: A practical experimentation and a future looking]*. Paper presented at the meeting of King Fahad Security College. Riyadh, Saudi Arabia. Retrieved February 20, 2005, from http://www.minshawi.com/other/zamzamy.htm

APPENDIX A

Formal Interviews (in-depth interviews)

Municipality Involves Community Residents

1. I have read in the website of Jeddah's main municipality that the South Municipality branch get in touch with the community residents through the 'Councils of the Cooperative Citizen'. Is this practice carried out by the other municipalities? What's its size and since when?

2. Based on the previous experience, how would you rate the success/un-success of the interaction between the municipality and the community residents?

Very Unsuccessful and Unfruitful	Somewhat Unsuccessful and Unfruitful	Neither Unsuccessful nor Successful	Somewhat Successful and Fruitful	Very Successful and Fruitful
[ ]	[ ]	[ ]	[ ]	[ ]

3. Why do you think that interaction was [*As selected*] ? Please tell me about the positives and the negatives.

4. What are the existing mechanisms/channels (REGULATED by the system) for involving community residents in some of the municipality decisions? Explain please.
    a- …………………………………
    b- …………………………………
    ……………………………………

5. For the answer of the previous question, on a scale of 1-5 where '1' means 'less suitable to the municipality' and '5' means 'most suitable to the municipality', how would you rate the suitability of those existing mechanisms/channels (REGULATED by the system)? Let's take them one by one…

	Less Suitable 1	2	3	4	Most Suitable 5
a- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
………………	[ ]	[ ]	[ ]	[ ]	[ ]

6. Before any participation event (such as those of the Councils of the Cooperative Citizen), how and when does the municipality makes the invitation for participation?

7. Is the municipality required by the system to involve community residents in (or in some) of its decisions?

8. Is the access to the official reports and other materials of the municipality open to the community residents?

Community Residents Approach Municipality

9. What are the existing mechanisms/channels (NON-REGULATED by the system) that community residents use to comment or express the problems and needs of their communities to the municipality?

> a- …………………………………
> b- …………………………………
> …………………………………………

10. For the answer of the previous question, on a scale of 1-5 where '1' means 'less suitable to the municipality' and '5' means 'most suitable to the municipality', how would you rate the suitability of those existing mechanisms/channels (NON-REGULATED by the system)? Let's take them one by one…

	Less Suitable				Most Suitable
	1	**2**	**3**	**4**	**5**
	▼	▼	▼	▼	▼
a- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
b- ………………	[ ]	[ ]	[ ]	[ ]	[ ]

……………………………………………………………..

11. For the mechanisms/channels mentioned in the previous question, , how would you rate the approximate frequency of receiving comments using each one of those mechanisms/channels on a scale of 1-5 where '1' means 'less frequent' and '5' means 'most frequent'? Again let's take them one by one…

	Less Frequent 1	2	3	4	Most Frequent 5
	▼	▼	▼	▼	▼
a- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
b- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
c- ………………	[ ]	[ ]	[ ]	[ ]	[ ]

………………………………………………………………………

12. What are they most frequently about?

13. Is the municipality required by the system to consider the comments that are submitted via the NON- REGULTED by the system mechanisms/channels?

14. How frequently does the municipality receive comments, suggestion…etc from the Community Associations (males/females)? Does the quality of those comments (i.e. organization, importance, scale) differ from those submitted using other channels/mechanisms?

15. What are the community issues/problems that are frequently reported to the municipality by the Community Associations (males/females)?

Perceived Importance of Public Involvement by the Authority:

16. How important do you perceive involving residents and consulting them about the decisions made by the municipality about their communities? (*If 'Very Unimportant', 'Unimportant' or 'Neither' is selected, then go to Q 20.*)

Very Unimportant	Somewhat Unimportant	Neither Unimportant nor Important	Somewhat Important	Very Important
[ ]	[ ]	[ ]	[ ]	[ ]

17 On a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'strongly agree', to what extent do you agree/disagree with the following:
Involving residents in the decision-making process of the communities…

	Strongly Disagree 1	2	3	4	Strongly Agree 5
Reduces costs of community's physical development.	[ ]	[ ]	[ ]	[ ]	[ ]
Expedites community's physical development.	[ ]	[ ]	[ ]	[ ]	[ ]
Reveals other valuable perspectives that improve the quality of the physical development.	[ ]	[ ]	[ ]	[ ]	[ ]
Enhances understanding between the municipality and residents.	[ ]	[ ]	[ ]	[ ]	[ ]
Gives the community residents one of their rights.	[ ]	[ ]	[ ]	[ ]	[ ]
Helps evaluating the performance of the municipality.	[ ]	[ ]	[ ]	[ ]	[ ]
Improves credibility and trust in the municipality.	[ ]	[ ]	[ ]	[ ]	[ ]

Others, please specify...

18. To what extent do you agree or disagree with this statement: "Every citizen, male or female, old or young, educated or uneducated has the right to participate in making the decisions that relate to the community in which he/she lives."

Strongly Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Strongly Agree
[ ]	[ ]	[ ]	[ ]	[ ]

19. Why is that? (*For the answer of the previous question*)

Areas and Levels of Citizen Involvement in the Decision-Making of Outdoor Recreational Facilities:

20. The responsibilities of the municipality are various, so in which areas the involvement of community residents could be useful?

21. How important do you perceive involving residents in the decision-making of the outdoor recreational facilities in particular?

Very Unimportant	Somewhat Unimportant	Neither Unimportant nor Important	Somewhat Important	Very Important
[ ]	[ ]	[ ]	[ ]	[ ]

22. What are the administrative processes that the municipality follows for DEVELOPING new infill outdoor recreational facilities in communities? Please explain those process step by step.
    a- …………………………………
    b- …………………………………
    ……………………………………

23. For the answer of the previous question, in which of these process community residents participation occurs? What is the nature of that participation?
    a- …………………………………
    b- …………………………………
    ……………………………………

24. Would you please brief the administrative processes that the municipality follows for RE-DEVELOPING (renovating, changing, etc.) community's outdoor recreational facilities?
    a- …………………………………
    b- …………………………………
    ……………………………………

25. For the answer of the previous question, in which of such process community resident's participation occurs? What is the nature of that participation?
    a- …………………………………
    b- …………………………………
    ……………………………………

26. When the municipality receives a complaint about an outdoor recreational facility from community residents, what are the procedures that are taken in its regard? I.e. how such a complaint is received, stored, retrieved and responded to?

Involving Female Community Residents

27. Who among the community residents (i.e. males/females) should the municipality consult when developing or re-developing community's outdoor recreational facilities?

Neither Males nor Females	Only Males	Only Females	Both Males and Females
[ ]	[ ]	[ ]	[ ]

28. Whom among the community residents (i.e. males/females) are currently being involved in the process of developing and/or re-developing the communities' outdoor recreational facilities? (*If 'Female only' or 'Both…' is ticked, then go to Q.30*)

Neither Males nor Females	Only Males	Only Females	Both Males and Females
[ ]	[ ]	[ ]	[ ]

29. On a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'strongly agree', to what extent do you agree/disagree about the following statements:
   Not involving female community residents is due to…

	Strongly Disagree 1 ▼	2 ▼	3 ▼	4 ▼	Strongly Agree 5 ▼
Religious reason.	[ ]	[ ]	[ ]	[ ]	[ ]
The local traditions and norms	[ ]	[ ]	[ ]	[ ]	[ ]
The female residents don't want to participate and are not interested to participate.	[ ]	[ ]	[ ]	[ ]	[ ]
The difficulty to gain true representation of them.	[ ]	[ ]	[ ]	[ ]	[ ]
That it increases delays in community projects.	[ ]	[ ]	[ ]	[ ]	[ ]

Continued in next page…

	Strongly Disagree				Strongly Agree
	1 ▼	**2** ▼	**3** ▼	**4** ▼	**5** ▼
That the females various perspectives will increase complexity and conflicts of community projects.	[ ]	[ ]	[ ]	[ ]	[ ]
The lack of resources to arrange for female participation.	[ ]	[ ]	[ ]	[ ]	[ ]
The humble knowledge of the females about the municipal issues.	[ ]	[ ]	[ ]	[ ]	[ ]

Others please specify...

30. In what community's municipal categories female involvement in particular needs to be considered? Why?

31. How important do you perceive involving female residents in particular in the planning and decision-making of community's outdoor recreational facilities?

Very Unimportant	Somewhat Unimportant	Neither Unimportant nor Important	Somewhat Important	Very Important
[ ]	[ ]	[ ]	[ ]	[ ]

32. Why is that? (*For the answer of the previous question*)

33. In your view, what are the possible avenues (mechanisms/channels) through which female community residents can effectively participate in both developing (newly creating) or redeveloping (renovating, changing, maintaining the existing) outdoor recreational facilities in their communities?

    a- …………………………………
    b- …………………………………
    ………………………………………

34. Based on our conservative culture, please rate the suitability of these avenues to the municipality? Why?

	Less suitable				Most suitable
	1 ▼	**2** ▼	**3** ▼	**4** ▼	**5** ▼
a- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
b- ………………	[ ]	[ ]	[ ]	[ ]	[ ]

35. What are the characteristics that ought to exist in any participatory channel appropriate for female participation with the municipality?

36. Is there an existing (or a possible) effective role that the female Community Associations plays (or can play) to connect the female community residents to the municipality?

37. On a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'strongly agree', to what extent do you agree/disagree with that the Internet can be an appropriate channel of communication between the two sides?

Strongly   Strongly
Disagree   Agree

1   **2**   **3**   **4**   **5**
▼   ▼   ▼   ▼   ▼

[ ]   [ ]   [ ]   [ ]   [ ]

38. If an appropriate Internet technology is developed to enable female involvement in community planning and decision-making process, do you expect that the decision makers would accept adopting such a system? Please indicate that on 1-5 scale where '1' means 'Strongly don't expect' and '5' means 'Strongly expect' and explain why?

Strongly   Strongly
Don't Expect   Expect

1   **2**   **3**   **4**   **5**
▼   ▼   ▼   ▼   ▼

[ ]   [ ]   [ ]   [ ]   [ ]

39. Before we end this interview, do you have anything that you may want to add?

---Thank you very much for ---

APPENDIX B

Informal Interviews (focus-group discussions)

PART 1: DISCUSSION QUESTIONS

1. To improve the quality of the community's public facilities (i.e. streets, parks, pedestrian walkways, children playgrounds, adults playgrounds…etc.), do you think the municipality is in need for involving community residents by consulting them and be open to receives their complaints, suggestions…etc.? Why?

2. a) How important do you perceive that involvement? I.e. is it…

Very Unimportant	Somewhat Unimportant	Neither Unimportant nor Important	Somewhat Important	Very Important
[ ]	[ ]	[ ]	[ ]	[ ]

b) Why?

3. a) In your opinions, who among the community residents (i.e. males/females) **should** the municipality consults in order to be aware of the community needs?

Neither Females nor Males	Only Females	Only Males	Both Females and Males
[ ]	[ ]	[ ]	[ ]

b) Is this the case in reality? If not, then what is the case now?

4. On a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'strongly agree', to what extent do you agree/disagree about the following statements:
    Not involving female community residents is due to…

	Strongly Disagree 1 ▼	2 ▼	3 ▼	4 ▼	Strongly Agree 5 ▼
Religious reason.	[ ]	[ ]	[ ]	[ ]	[ ]
The local traditions and norms	[ ]	[ ]	[ ]	[ ]	[ ]

	Strongly Disagree				Strongly Agree
	1 ▼	**2** ▼	**3** ▼	**4** ▼	**5** ▼
The female residents don't want to participate and are not interested to participate.	[ ]	[ ]	[ ]	[ ]	[ ]
The difficulty to gain true representation of them.	[ ]	[ ]	[ ]	[ ]	[ ]
That it increases delays in community projects.	[ ]	[ ]	[ ]	[ ]	[ ]
That the females various perspectives will increase complexity and conflicts of community projects.	[ ]	[ ]	[ ]	[ ]	[ ]
The lack of resources to arrange for female participation.	[ ]	[ ]	[ ]	[ ]	[ ]

The humble knowledge of the
females about the municipal issues.
Others please specify...

5. In your views, in what community's municipal categories female consultation (in particular) has to be considered? Why?

6. How important do you perceive involving female residents (in particular) in the decision making of community's outdoor recreational facilities?

Very Unimportant	Somewhat Unimportant	Neither Unimportant nor Important	Somewhat Important	Very Important
[ ]	[ ]	[ ]	[ ]	[ ]

7. Why is that? (*For the answer of the previous question*)

8 . In your view, what are the possible avenues through which females can effectively participate in both developing and redeveloping (renovating, changing, maintaining the existing) outdoor recreational facilities?
   a- …………………………………
   b- …………………………………

9. Based on our conservative culture, please rate the suitability of these avenues to the municipality?

	Less suitable				Most suitable
	1	**2**	**3**	**4**	**5**
	▼	▼	▼	▼	▼
a- ………………	[ ]	[ ]	[ ]	[ ]	[ ]
b- ………………	[ ]	[ ]	[ ]	[ ]	[ ]

……………………………………………………………………

10. What are the characteristics that ought to exist in a participatory channel to be appropriate for female participation with the municipality?

11. Is there an existing/possible effective role that the female Community Associations plays/can play to connect the female community residents to the municipality?

12. On a scale of 1-5 where '1' means 'Strongly Disagree' and '5' means 'strongly agree', to what extent do you agree/disagree on that the Internet can be an appropriate channel of communication between the municipality and the female residents?

Strongly Disagree				Strongly Agree
1	**2**	**3**	**4**	**5**
▼	▼	▼	▼	▼
[ ]	[ ]	[ ]	[ ]	[ ]

13. If an appropriate Internet technology is developed to enable female involvement in the community planning and decision-making process, do you expect that the Community Associations would accept adopting such a system? Please indicate that on a 1-5 scale where '1' means 'Strongly don't expect' and '5' means 'Strongly expect'. Also, please explain why?

Strongly Don't expect				Strongly expect
1	**2**	**3**	**4**	**5**
▼	▼	▼	▼	▼
[ ]	[ ]	[ ]	[ ]	[ ]

14. Before we end this interview, would you like to add anything?

PART 2: **FOLLOW-UP PERSONAL QUESTIONS (to be answered privately in writing by each participant.)**

1. In what level you may rate your pervious knowledge in the content of what we already discussed in this meeting (i.e. the municipality consults female community residents about their communities as well as receives their comments about them)? (*Please tick one answer only*.)

    NOVICE (I have no prior knowledge about the discussed content.)   [ ]

    HAVE LITTLE KNOWLEDGE (I have some prior knowledge about
    the discussed content. I gained my knowledge from second-hand
    experience or previous reading.)   [ ]

    HAVE ADVANCED KNOWLEDGE: (I have a good prior knowledge
    of the discussed content. I gained my knowledge from first-hand
    experience and previous reading.)   [ ]

    PROFESSIONAL: (I have a very good prior knowledge of the discussed
    content. I gained my knowledge from my education or occupation or   [ ]
    practice.)

2. In what level you may rate your ability and experience in submitting a complaint, suggestion…etc about a particular element in your community to the municipality? (*Please tick one answer only*.)

    NOVICE: (I have no skill and experience with this. I don't know how to
    begin and I can't perform it efficiently.)   [ ]

    HAVE SOME SKILLS OR EXPERIENCE: (I do it occasionally and
    can complete it nicely.)   [ ]

    HAVE GOOD SKILLS AND EXPERIENCE: (I often do it and can
    complete it efficiently.)   [ ]

    PROFESSIONAL: (I have a very good prior skill and experience with
    this. I perform it regularly and able to complete it very efficiently.)   [ ]

3. In what level you may rate your computer and Internet literacy? (*Please tick one answer only*.)

    NOVICE: (I'm unable to use computer and Internet in any way. I know nothing regarding computer operation and Internet use.) *(If selected, please continue in question 7)*   [ ]

    BEGINNER: (I'm able to use the computer and Internet at a basic level. I know how to operate a personal computer and use the Internet in general. I may use the computer and Internet occasionally.)   [ ]

    ADVANCED USER: (I'm able to use computer and Internet well. I know how to operate a personal computer and use the Internet efficiently, or have much experience. I use computer and Internet quite often.)   [ ]

    EXPERT: (I'm able to use computer and Internet very well. I'm well informed about computer operation and Internet use, or have extensive experience from proper training in my education, occupation or practice. I use the computer and Internet regularly.)   [ ]

4. What type of computer(s) do you usually use? (*Please tick all that apply*.)

    Pentium I   [ ]

    Pentium II   [ ]

    Pentium III   [ ]

    Pentium IV   [ ]

    Others, please specify: …………………………………….   [ ]

    I don't know   [ ]

5.　　What is/are the computer operating system(s) installed in the computer(s) you usually use? (*Please tick all that apply*.)

Microsoft Windows 95　　　　　　　　　　　　　　　　[ ]

Microsoft Windows 98　　　　　　　　　　　　　　　　[ ]

Microsoft Windows 2000　　　　　　　　　　　　　　　[ ]

Microsoft Windows XP　　　　　　　　　　　　　　　　[ ]

Others, please specify: …………………………………　　[ ]

I don't know　　　　　　　　　　　　　　　　　　　　[ ]

6.　What Internet browser do you usually use? (*Please tick all that apply*.)

Internet Explorer　　　　　　　　　　　　　　　　　　[ ]

Netscape Navigator　　　　　　　　　　　　　　　　　[ ]

Others, please specify: …………………………………　　[ ]

I don't know　　　　　　　　　　　　　　　　　　　　[ ]

7.　What is the highest grade or level of education you have completed?

Did not graduate high school　　　　　　　　　　　　　[ ]

High school graduate　　　　　　　　　　　　　　　　[ ]

Some college (diploma)　　　　　　　　　　　　　　　[ ]

Bachelor's degree　　　　　　　　　　　　　　　　　　[ ]

Master's degree　　　　　　　　　　　　　　　　　　　[ ]

Doctorate degree　　　　　　　　　　　　　　　　　　[ ]

8. Are you: (*Please tick all that apply*.)

Student	[ ]
Employed	[ ]
Unemployed seeking work	[ ]
Unemployed not seeking work	[ ]
Full-time at home	[ ]

9. Which age category do you fit into? (*Please tick one answer only*.)

20-29	[ ]
30-39	[ ]
40-49	[ ]
50-60	[ ]

10. Which income category does your family as a whole fit into? (*Please tick answer*.)

Less than SR 2,000	[ ]
SR 2,000 - Less than SR 4,000	[ ]
SR 4,000 - Less than SR 6,000	[ ]
SR 6,000 - Less than SR 8,000	[ ]
SR 8,000 - Less than SR 10,000	[ ]
SR 10,000 - Less than SR 12,000	[ ]
SR 12,000 - Less than SR 14,000	[ ]
SR 14,000 - Less than SR 16,000	[ ]
More than SR 16,000	[ ]

--- Thank you very much ---

APPENDIX C

Website Usability Testing

PART 1: TEST TASKS

1. Let us pretend that the municipality is planning for a project of developing a children playground at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community. The municipality has identified four possible vacant lands for such a project and is asking the local residents to select a location from among them. Please do the following tasks:
   a- Try to find the webpage of this project.
   b- select anyone of the four possible sites.

2. Find the fax number of the Community Association – female department.

3. Place any pretended comment about Fawaz park located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community and then write down the serial number that issued for your pretended comment.

4. You want to check the status of the comment submitted in the previous task. How would you do that?

5. Place any pretended comment about the sidewalks near Masjid Bajabir in the N.W. neighborhood of Fawaz Community.

6. You want to get information whether there is a volleyball court in 'Fawaz Park' located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so in what page can you find that piece of information (give the name of the page only)?

PART 2: TEST QUESTIONS

1. Does the homepage of this website looks and feels (i.e., general design, colors, navigation buttons, etc) appropriate for the purpose of this website?

2. Can you, by the first glimpse to the homepage, get the "big picture" of what is offered by the website?

3. Are the navigation buttons organized in a proper sequence or you suggest other sequence?

4. What is the page "Community's Forum" is all about?
5. Is this website an easy to browse or it needs effort and time before the user would become familiar with? Why?

6. Do you consider this website a good model for the participation with the Community Association and consequently with the municipality or it still needs a lot of changes to be acceptable? Why?

7. What would you like to change, add or subtract from this website so it functions better?

---Thank you very much---

APPENDIX D

SCOPS-02 Evaluation by Public Officials

AFTER PRESENTATION (Follow-up evaluation questions):

Job position:……………………………………………………………………………
Position in the Community Association:…………………………………………………..

1. In general, how would you rate (good/bad) the suggested web-based participatory system as a model for public participation with the Community Association and consequently with the municipality?
   ☐ Very good model   ☐ Somewhat good model   ☐ Neutral   ☐ Somewhat bad model   ☐ Very bad model

2. Please tick all what you perceive as positive in using the suggested web-based participatory system:
   ☐ Participating without conflicting with the Islamic tradition
   ☐ Participating without conflicting with the local norms and traditions
   ☐ Participation of more variety of females (i.e. disabled- workers- busy mothers…etc.)
   ☐ Participating of a greater number of females
   ☐ Participating more easily
   ☐ Participating without the need for getting together in specific place
   ☐ Participating without the need for getting together in specific time
   ☐ Participating anonymously
   Other, please specify……………………………………………………………………..

3. Please tick all what you perceive as negative in the suggested web-based participatory system:
   ☐ The little number of public female Internet users
   ☐ The absence of face-to-face dialog
   ☐ It increases social isolation
   ☐ It is expensive
   ☐ It eases expressing aimless public opinions
   ☐ It doesn't ensure serious consideration of the public expressed opinions by the officials
   Other, please specify……………………………………………………………………..

4. How would you rate (easiness/difficulty) archiving and retrieving public comments, suggestions with the support of the database of the suggested web-based participatory system in comparison with the existing method?

☐ Very easy ☐ Somewhat easy ☐ Neither easy nor difficult ☐ Somewhat difficult ☐ Very difficult

5. What would you like to change, add or subtract from the suggested web-based participatory system so it functions better?

6. Based on your knowledge, does the suggested web-based participatory system comply/conflict with the government's policies or any of its regulations? Please discuss.

☐ Completely Comply ☐ Somewhat Comply ☐ Neutral ☐ Somewhat Conflicts ☐ Conflicts

7. Do you believe a system such as the proposed one can be adopted by the Community Association?

In the time being

Strongly Disbelieve   Strongly Believe
1   2   3   4   5
▼   ▼   ▼   ▼   ▼
[ ] [ ] [ ] [ ] [ ]

In the near feature

Strongly Disbelieve   Strongly Believe
1   2   3   4   5
▼   ▼   ▼   ▼   ▼
[ ] [ ] [ ] [ ] [ ]

8. Why? (to the answer of the previous question.)

9. Do you think a system such as the proposed one can be adopted by the main municipality /municipality branch?

In the time being

Strongly Disbelieve   Strongly Believe
1   2   3   4   5
▼   ▼   ▼   ▼   ▼
[ ] [ ] [ ] [ ] [ ]

In the near feature

Strongly Disbelieve   Strongly Believe
1   2   3   4   5
▼   ▼   ▼   ▼   ▼
[ ] [ ] [ ] [ ] [ ]

10. Why? (to the answer of the previous question.)

11. The focus of this study is on the recreational facilities only, so in what other areas do you believe the Internet can be mediated similarly amongst the female residents, the Community Associations and the other governmental departments?

- If you have any addition, please write it below:

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

--- Thank you very much ---

APPENDIX E

SCOPS-02 Evaluation by Public Women

FIRST: EVALUATION TASKS:

1. Let us pretend that the municipality is planning for a project of developing a children playground at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community. The municipality has identified four possible vacant lands for such a project and is asking the local residents to select a location from among them. Please do the following tasks:
   a- Try to find the webpage of this project.
   b- select anyone of the four possible sites.

2. Find the fax number of the Community Association – female department and write it down on a piece of paper.

3. Place any comment (pretended) about Fawaz park located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community and then write down the serial number issued for such a comment.

4. You want to check the status of the comment submitted in the previous task. Do what's needed to do that and then write down the status on a piece of paper?

5. You want to get information whether there is a volleyball court in 'Fawaz Park' located at Masjid Bajabir area in the N.W. neighborhood of Fawaz Community, so in what page can you find that piece of information (write down the name of the page only)?

SECOND: EVALUATION QUESTIONS

Your website evaluation:

1. Tick the box of the fax number you have found in the second task
   ☐ 622-3345
   ☐ 620-1019
   ☐ 691-2433
   ☐ Don't know

2. Write in the textbox the serial number you were given in the third task (if you don't know type "0").

☐ ☐ ☐

3. Tick the box of the status of the comment you have found in the fourth task.
☐ Under study
☐ Approved
☐ Refused
☐ Don't know

4. Tick the box of the name of the page you have found and written down its name in the fifth task
☐ Home
☐ Facilities Projects
☐ Information about Facilities
☐ Facilities Suggestions/Complaints
☐ Public Forum
☐ Contact Us
☐ Site Map
☐ Related Links
☐ Don't know

5. As a female resides in Fawaz Community, how would you rate (in terms of easiness/difficulty) that you (personally) submit a suggestion/complaint about a recreational facility to the municipality through the following ways:

- Speaking face-to-face with the officials at the municipality:
☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

- Speaking by telephone with the officials at the municipality:
☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

- Submitting a letter to the municipality:
☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

- Speaking face-to-face with the activists of the female department of the Community Association:

    ☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

- Speaking by telephone with the activists of the female department of the Community Association:

    ☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

- Via the participatory website suggested in this study:

    ☐ Very easy   ☐ Somewhat easy   ☐ Neither easy nor difficult   ☐ Somewhat difficult   ☐ Very difficult

6. Please tick all what you perceive as positive in using the participatory website suggested in this study:

☐ Participating without conflicting with the Islamic tradition
☐ Participating without conflicting with the local norms and traditions
☐ Participation of more variety of females (i.e. disabled- workers- busy mothers…etc.)
☐ Participating of a greater number of females
☐ Participating more easily
☐ Participating without the need for getting together in specific place
☐ Participating without the need for getting together in specific time
☐ Participating anonymously
Other, please specify……………………………………………………………………..

7. Please tick all what you perceive as negative in using the participatory website suggested in this study:

☐ The little number of public female Internet users
☐ The absence of face-to-face dialog
☐ It increases social isolation
☐ It is expensive
☐ It eases expressing aimless public opinions
☐ It doesn't ensure serious consideration of the public expressed opinions by the officials
Other, please specify……………………………………………………………………..

8. Does the suggested website require time and effort before the user can get familiar with?

☐ Yes   ☐ Somewhat Yes   ☐ Neutral   ☐ Somewhat No   ☐ No

9. What would you like to change, add or subtract from this website so it functions better?

10. How would you rate (good/bad) the suggested website as a model for public participation with the Community Association and consequently with the municipality?

☐ Very good model   ☐ Somewhat good model   ☐ Neutral   ☐ Somewhat bad model   ☐ Very bad model

11. In what other areas do you see the Internet can be mediated amongst the female residents, the Community Associations and the other governmental departments?

Please tell us about yourself:

12. What is the highest grade or level of education you have completed? (*Please tick one answer*.)

Did not graduate high school	[ ]
High school graduate	[ ]
Some college (diploma)	[ ]
Bachelor's degree	[ ]
Master's degree	[ ]
Doctorate degree	[ ]

13. Are you: (*Please tick all that applies.*)

Student	[ ]
Employed	[ ]
Unemployed seeking work	[ ]
Unemployed not seeking work	[ ]
Full-time at home	[ ]

14. Which age category do you fit into? (*Please tick one answer*.)

20-29	[ ]
30-39	[ ]
40-49	[ ]
50-60	[ ]

15.   Which income category does your family as a whole fit into? (*Please tick one answer*.)

Less than SR 2,000	[ ]
SR 2,000 - Less than SR 4,000	[ ]
SR 4,000 - Less than SR 6,000	[ ]
SR 6,000 - Less than SR 8,000	[ ]
SR 8,000 - Less than SR 10,000	[ ]
SR 10,000 - Less than SR 12,000	[ ]
SR 12,000 - Less than SR 14,000	[ ]
SR 14,000 - Less than SR 16,000	[ ]
More than SR 16,000	[ ]

--- Thank you very much ---

APPENDIX F

IRB Approvals

VpR
Office of the Vice President for Research
Texas A&M University

August 12, 2005

MEMORANDUM

TO: Mr. Farouk Fouad Daghistani
              Dept. of Landscape Architecture and Urban Planning
              MS 3137

FROM: Dr. Alvin Larke, Jr., Chair   *Alvin Larke, Jr.*
             Institutional Review Board
             MS 1186

SUBJECT: IRB Protocol Review

Title: Web-based GIS: An Aid to Widening Female Public Participation for Revitalizing Outdoor Recreational Facilities of the Saudi Residential Neighborhoods. A Case Study in Fawaz District, Jeddah, Saudi Arabia
Protocol Number: 2005-386
Review Category: Expedited Review
Approval Period: August 12, 2005 – August 11, 2006
The approval determination was based on the following Code of Federal Regulations: 45 CFR 46.110(b)(1) - some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk.

Remarks: Approved under categories 6 and 7.

This study has been approved for one (1) year. As principal investigator, you assume the following responsibilities:

1) Renewal/Completion – This protocol must be renewed each year in order to continue after the initial approval period. The proper paperwork must be submitted 30 days before the end of the approval period. Failure to do so may result in processing delays and/or non-renewal. When the protocol has been completed, the proper paperwork must be submitted to the IRB to close out the file.
2) Adverse events – Any adverse events must be reported to the IRB office immediately.
3) Amendments – Any changes to the protocol must be reported to the IRB and approved before being implemented.
4) Informed consent - Information must be presented to enable persons to voluntarily decide whether or not to participate as a research subject.

TEXAS A&M UNIVERSITY
VICE PRESIDENT FOR RESEARCH - OFFICE OF RESEARCH COMPLIANCE

1186 TAMU
College Station, TX 77843-1186
1500 Research Parkway, Suite B-150

979.458.1467
FAX 979.862.3176
http://researchcompliance.tamu.edu

Institutional Biosafety Committee   Institutional Animal Care and Use Committee   Institutional Review Board

---

DATE: 01-Sep-2006

MEMORANDUM

TO: DAGHISTANI, FAROUK FOUAD
TAMU-LANDSCAPE ARCHITECTURE & URBAN PLAN(00059)

FROM: Office of Research Compliance
Institutional Review Board

SUBJECT: Request for Continuation

Protocol Number: 2005-0386

Title: Web-based GIS: An Aid to Widening Female Public Participation for Revitalizing Outdoor Recreational Facilities of the Saudi Residential Neighborhoods. A Case Study in Fawaz District, Jeddah, Saudi Arabia.

Review Category: Expedited

Approval Period: 01-Sep-2006 **To** 31-Aug-2007

Approval determination was based on the following Code of Federal Regulations:
45 CFR 46. 110(b)(1) - Some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk.

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

----

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation or quality assurance methodologies.

(Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b) (3). This listing refers only to research that is not exempt.)

Provisions: Consent Documents: IRB contact information must be corrected from Ms. Angelia M. Raines to Ms. Melissa McIlhaney, IRB Program Coordinator, (979)458-4067, mcilhaney@tamu.edu.

This research project has been approved for one (1) year. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed each year in order to continue with the research project. A Continuing Review along with required documents must be submitted 30 days before the end of the approval period. Failure to do so may result in processing delays and/or non-renewal.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB Office.
3. **Adverse Events:** Adverse events must be reported to the IRB Office immediately.
4. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB Office for review. The Amendment must be approved by the IRB before being implemented.
5. **Informed Consent:** Information must be presented to enable persons to voluntarily decide whether or not to participate in the research project.

This electronic document provides notification of the review results by the Institutional Review Board.

TEXAS A&M UNIVERSITY
VICE PRESIDENT FOR RESEARCH - OFFICE OF RESEARCH COMPLIANCE

1186 TAMU
College Station, TX 77843-1186
1500 Research Parkway, Suite B-150

979.458.1467
FAX 979.862.3176
http://researchcompliance.tamu.edu

Institutional Biosafety Committee   Institutional Animal Care and Use Committee   Institutional Review Board

---

DATE: 20-Jul-2007

MEMORANDUM

TO: DAGHISTANI, FAROUK FOUAD
                 TAMU-LANDSCAPE ARCHITECTURE & URBAN
                 PLAN(00059)

FROM: Office of Research Compliance
                 Institutional Review Board

SUBJECT: Request for Continuation

Protocol Number: 2005-0386

Title: Web-based GIS: An Aid to Widening Female Public Participation for Revitalizing Outdoor Recreational Facilities of the Saudi Residential Neighborhoods. A Case Study in Fawaz District, Jeddah, Saudi Arabia.

Review Category: Expedited

Approval Period: 01-Sep-2007 **To** 31-Aug-2008

Approval determination was based on the following Code of Federal Regulations:

45 CFR 46.110(b)(1) - Some or all of the research appearing on the list and found by the reviewer(s) to oinvolve no more than minimal risk.

----
(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation or quality assurance methodologies.

(Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b) (3). This listing refers only to research that is not exempt.)

Provisions: Data Analysis Only

This research project has been approved for one (1) year. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed each year in order to continue with the research project. A Continuing Review along with required documents must be submitted 30 days before the end of the approval period. Failure to do so may result in processing delays and/or non-renewal.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB Office.
3. **Adverse Events:** Adverse events must be reported to the IRB Office immediately.
4. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB Office for review. The Amendment must be approved by the IRB before being implemented.
5. **Informed Consent:** Information must be presented to enable persons to voluntarily decide whether or not to participate in the research project.

This electronic document provides notification of the review results by the Institutional Review Board.

VITA

Name: Farouk Daghistani

Address: Prince Fawaz District, Villa# 639, Jeddah, Saudi Arabia

Email Address: farouk.d@gmail.com

Education: Ph.D. in Urban and Regional Sciences, Texas A&M University, 2007
                        M.L.A. (Master of Landscape Architecture), University of Colorado
                          at Denver, 2000
                        B.S. Landscape Architecture, King Abdul-aziz University, Jeddah
                          Saudi Arabia, 1995