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INFORMATION AND COMMUNICATION TECHNOLOGIES 'ICTS' IN THE SAUDI HOUSEHOLD

Muna D. Alsuraihi

Arts and Humanities College, Information Science Department, King Abdulaziz University Jeddah, Saudi Arabia

Heba Omar Bashraheel

Arts and Humanities College, Information Science Department, King Abdulaziz University Jeddah, Saudi Arabia

ABSTRACT

This is a study submitted originally to the Information Dept. Committee in Humanities and Arts College, King Abdul Aziz University, in Partial fulfillment of the requirements for the Degree of Masters in the Information Management Program. The goal of this study is to explore the Saudi household use of ICT 'Information and Communication Technology'; one the Saudi household clearly depends on nowadays. Most Saudi households have access to ICTs like mobiles and Internet connections. It is important to analyze to what extent are they used, the goals of their use, and its impact on the households. This paper focuses on five questions related to the ICTs use, awareness and effects as well as investigating the correlation between some households' characteristics and the raised issues. The sample was an accidental sample, and the study questionnaire was built and judged according to the study questions and purposes.

Keywords: ICT, Information and communication technology, Household, Saudi household.

INTRODUCTION

The world today is witnessing a huge and remarkable revelation in the great aspects of information and communication technologies (ICTs). This revelation conquered almost every household around the world. The latest statistics of the world Internet usage modified in June 30, 2012; showed that around 34.3% of the world population is using the Internet World Internet Usage (2013). Even in developing countries such as in the Middle East. This overwhelming trend (ICTs) plays a main role in shaping people's lives.

The following statistics empathize the fact that Saudi Arabia is following the nowadays ICTs revolution, especially regarding the internet usage (Saudi Arabia., 2013).

Table-1. (Worldly Internet Usage)

YEAR	Users	Population	% Pop.
2000	200,000	21,624,422	0.9 %
2003	1,500,000	21,771,609	6.9 %
2005	2,540,000	23,595,634	10.8 %
2007	4,700,000	24,069,943	19.5 %
2009	7,761,800	28,686,633	27.1 %
2010	9,800,000	25,731,776	38.1 %
2012	13,000,000	26,534,504	49.0 %

The statistics shows that almost half of the Saudi's households use the Internet. Therefore, in this paper the researcher explores the ICT factors that affect the Saudi society. ICTs specially the Internet make each part of the world affected by others.

Methodology

This study uses the survey methodology, through a questionnaire designed and tested before it was distributed to a wide range of population in Jeddah, Saudi Arabia. This exact methodology was carefully chosen because the study's goal was to examine different layers of the society. The study made sure to connect with all social types among Jeddah City; therefore, the survey was distributed to a random accidental sample.

Analysis

The questionnaire was distributed in paper and electronic forms. 500 paper samples were distributed and only 330 were retrieved for analysis (60%). And the samples content were manually added to the electronic form later. The electronic form was built using Google Docs, and it was sent through: email, Face book, Twitter and WhatsApp. The study collected 1000 samples, and the data were serviced and checked for errors. Then a statistics analysis was applied using SPSS. Statistics comparisons were generated using four variables namely: gender, age, education and finance stats. The sample was gathered and edited in the last five months of 2012.

Study Terms

1.4.1 ICT Stands for "Information and Communication Technologies." ICT refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums (ICT, 2012) The ICT concept is related to several technologies, which allow people to access information, and enables communication. These technologies are highly and constantly developed. The term "technology" combines the technical skill and the nature of science, while communication encompasses all means, tools or methods capable of transferring knowledge and ideas from one place or person to another. This interaction includes sharing experiences and ideas, persuasion and entertainment, etc. The communication could take many forms including the use of IT devices (such as radio, television, cellular phones, and computers), delivering lectures, attending seminars and launching

workshops. ICT as a term accordingly encompasses a set of tools and devices that facilitate storage, processing, dissemination and retrieval of information in a digital format. Any transfer of information through communication between individuals or groups through IT tools and applications, multimedia or video clips reflects ICT regardless of whether the transition was done directly or indirectly. ICT literacy can be defined as the ability to use digital technology applications, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society (Katz, 2001).

The term covers the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. The use of a single unified system of cabling, signal distribution and management is cost-effective and many businesses and institutions around the world have been remarkably shifting into this unified system.Van Damme (2003) defined the term as the combination of computer, video, and telecommunication technologies, as observed in the use of multimedia computers and networks along with services, which are based on them. Brynjolfsson and Hitt (2000) argue that ICTs can cut costs of coordination, communication and information processing. Researchers in various fields deal with the ICT as a term that basically covers the introduction and the use of any communication device or application. This includes computer devices, television, radio, electronic networks, cellular phones, etc. and also the various applications associated with them, such as videoconferencing that is used intensively nowadays in business and distance learning in educational contexts. This study is concerned with measuring these following devices in the Saudis' households:

- Telephones
- Cell phones
- Smart Phones
- Fax Machines
- Desktops
- Laptops
- Flash Memories (Flash Pens, Hard Desks, etc.)
- Portable Taps (iPad, iPod, Samsung Tabs, etc.)
- Video Games Devices (Wii, Xbox, PlayStation, etc.)
- Cable TVs.
- Smart TVs
- MP3 and MP4 Players
- Video Players
- Recording Devices
- DVD and CD Players
- Sounds Systems
- Smart Refrigerator
- Smart Oven and Microwaves

Household

The household is the basic unit of analysis in many social, microeconomic and government models. The term refers to all individuals who live in the same residence (Household., 2013)**.**

Statement of Problem

This is an exploratory study of the Saudi households ICTs use, and it is concerned with the uses' goals and perspectives. Moreover, this study measures the ICTs uses in communication, information collecting and informatics' applications over all.

Purpose of Study

- Sorting out what are the used ICTs in the family
- Figuring out the use level of the ICT in the Saudi household
- purpose in the Saudi household
- Understanding the ICT impact on the Saudi household's information awareness.
- Measuring the ICT impact on the Saudi household' budget.
- Figuring out the ICT impact on the real social communication in the Saudi household, and how individuals prefer the virtual world.

Study Questions

- What are the used Information and Communications techniques in the household?
- What is the ICT use level in the Saudi's households?
- What are the ICTs uses purposes in the Saudi household?
- How the ICTs affected the Saudi household's information awareness?
- How the ICTs uses affected the Saudi household's budget.
- How the ICTs affected on the Saudi's household actual communications and connections, and how some individuals prefer the virtual world.

ICTs Usage in Households

A Theoretical Perspective

The importance of ICTs is increasing in every day and the use of ICTs' applications is on the rise. ICT is diffused in many everyday aspects in our lives, and the fast and changing nature of our lives is mostly a consequence of developments in ICT applications. . ICTs facilitate quick and easy access to a wide range of data and information resources in any place in the world. They increase transparency and empower different segments of society to have access to information and knowledge gateways. Furthermore, ICT applications can improve planning and monitoring of developmental programs for public administrators and managers, help government institutions improve their services to citizens. Therefore, enabling ICT would ultimately lead to a remarkable improvement in the living conditions of many parts of societies. Capacity and knowledge are two basic human requirements to make a proper and effective use of these technologies. ICT incorporates digital technology, communications tools, and/or networks which all get the benefit of accumulated knowledge.

The use of ICTs can also be examined by the frequency of use perspective. This is also measured according to the purpose, age, gender, education and work of the user. Researchers are also concerned with the impact of ICTs usage on social, political and economic lives, widening the scope for the field to flourish in the few coming years. One of the important surveys that address the ICTs usage in households and by individuals is the annual European Commission Eurostat Community Survey, which is published at the first quarter of the year and collects data on the use

and applications of the internet, e-government and electronic skills in households and by individuals (ICT, 2012).

The use of ICTs is important to many social groups. For example, the applications can be used to improve socio-economic conditions directly to help the general population, or indirectly to help governmental or non-governmental organizations such as businesses and charity organizations. ICTs applications have introduced what is known as the Networked Economy, where societies, intellectuals, and businesses are linked with their partners enabling them to transform data and communicate with each other.

According to a study by Singh *et al.* (1996), most of the households who use ICT devices and applications focus more on activities rather than on the technology itself. They found that this enabled users to change their old ways of dealing with everyday life matters. It was also found that the ICT devices are distributed in the household according to their use. For example, television and radio sets, which are frequently used by households, are located in the most comfortable places such as the living rooms. The study stressed the hierarchy of ICT usage and emphasized that the control of information about activities and transactions as a key determinant of ICT usage.The role ICTs play in education is crucial. Teachers should educate themselves first the installation and maintenance of ICTs to provide content and tools and to demonstrate to students how such applications can be used. Coping with this, teachers and students alike would be able to help enhance the overall education process. Teachers praise the immediate interaction between educators and students in an always-developing learning process. Furthermore, ICTs enable learners to find useful information (for example through the Internet), enhance the e-learning process through supporting communication, discussion and interaction techniques, and assist librarians to manage references with librarians through the library automation system, for example. The proper and efficient use of ICTs requires the learner to acquire certain skills, which will ultimately help him/her network e-library services and facilitate resource sharing.

The impact of ICT is remarkable in political and economic aspects such as economic growth, investment and labor and multi-factor productivity, social concerns decision-making, achievement, motivation, and metacognitive learning. Politicians view ICT advancements as a means to expand political participation and to circulate interests of political parties and civil societies as well support new methods of governance and policy modeling. Economists deal with the role of the ICT as capital inputs and are concerned with the contribution of these capital inputs to output growth. In the business and banking sector, ICTs play another important role. The Internet facilitates e-commerce operations and online banking, while the ATM machines operate to deposit, withdraw or check money or pay bills. However, according to a study by Ssewanyana *et al.* (2007) about the use of ICTs in the economies of developing countries taking Uganda as a case study, in the business sector for example, the usage of computers and Internet is high in medium and large firms, and especially firms owned by foreigners. Small local firms have low usage because of the high

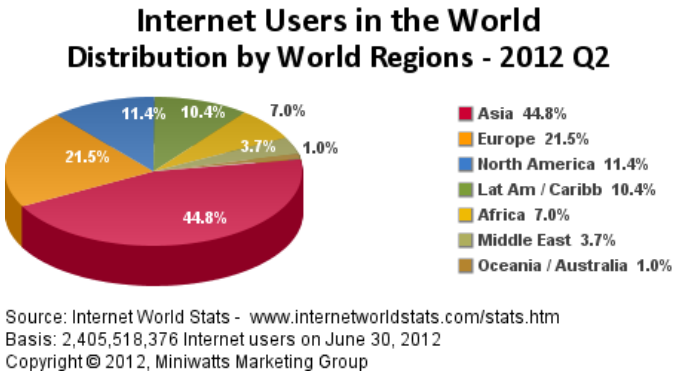
cost of required investment as well as limited knowledge and skills. The study suggested that there is a need to widen ICT training facilities for the local entrepreneurs and to lower the cost. It pointed out that businessmen usually appreciate having ICT in their firms, but they suffer from barriers including high costs of hardware, software, Internet and ICT professionals. Other studies were conducted to explore the ICTs impact on the environment. The OECD forum of September 2010, found that a wide range of ICT applications can help to mitigate the around 13% of global man-made GHG emissions ICT (2012)Indeed, ICTs advancements encourage innovations and ideas outflow, which in turn help a lot in fields like medicine, sports, training, journalism and almost everyday life activity as well as entertainment. The ICTs applications facilitate online chatting and multimedia sharing as easy as they transfer digital goods, such as music, to the ultimate consumers. The use of ICTs at home varies according to many factors including purpose and age. Electronic gadgets, personal computer and Internet applications are used for educational, entertainment, business and social purposes while facilitating storage, mutual interaction, and dissemination of information. Mobile phones are used intensively for chatting and business purposes among others. Digital music devices enable users to store and play thousands of sound files and audio devices such as DVD screens. New generation mobiles also facilitate audio communication. Smart devices are continuously developed to control electronic systems such as security and home heating and cooling as well as microprocessors and interactive television. Smart devices include all electronic products that are easily transportable and capable of cordless voice and video communication. They are capable to browse the Internet, search for people and places using geo-location detectors such as GPS and can operate to some extent autonomously.

However, the existence of ICT devices does not necessarily present a perfect image for ICT advancements, as it is more important for individuals to have the ability to access their applications and use them in the most effective way. It is the duty of the government and educational bodies and as well as civil societies to facilitate such access. It is also the responsibility of the society's members to educate themselves to catch up with recent and updated applications. The Third World societies should always put in mind that the best use of ICTS will help narrow the widening gap between them and the industrial advanced ones. Meanwhile, there have been several interrelated and complementary forces that keep the importance of ICT ascending, including global economic competition; public policy initiatives by governments around the world; as well as literacy (Leu and Charles, 2000). Considering all the above, it is safe to say that ICTs socially impact is impressive.

A Historical Perspective

Worldwide Internet usage is on the rise. By the end of 201, #33% of the world population, or 2.3 billion people, has been using the Internet for various purposes, with nearly 45% of them under the age of 25. The bulk of users in 2011 are concentrated in Europe with 68.4% of the total, while the lowest number was in Africa (12.4%). The percentage of Arab users by the end of 2011 was estimated at 29.1%. As for the fixed telephone usage, the total number of users for such device

reached 1.2 billion, accounting for nearly 17% of the total population. Fixed Internet subscribers in Europe are estimated at 41 persons per 100 inhabitants, while only one person per 100 inhabitants subscribed to the fixed line telephone by the end of 2011. The Arab countries percentage stands at 9.6%. Mobile and smart mobile usage and is also soaring. By the end of 2011, the number of mobile subscribers increased to 85.7% of the total world population from only 15.5% in 2001. 34.3% of the households in the world use ICTs inside their homes by the end of 2011, with Arab households using only 25.7% of the sum. Around 79% of the households have a television, while only 30% have Internet access (ITU, 2012). In 2012, 49% of the world population has been using the Internet. The following chart is from the Internet World Stats provide statistics by regions in the second quarter of 2012:



The progressive nature of ICTs was explored academically on the thirties of the last century, when at that time researchers focused on IT advancements and accumulation of experiences and how they had been affecting the everyday life. Technical studies started to spread in the following decade with more concentration on specific aspects such as the way the rapid IT advancements changed the traditional methods in which information was stored and processed. Communication studies contributed to the discipline as an additional asset. The methods of communication conduction were discussed in depth, whereas the impact of the ICT on various segments of the society was remarkable in the fifties of the last century and onward.

The rise of the Internet in the 1990s was a milestone that affected both ICT research and applications. Scholars started since then to deal with ICTs as a necessity to narrow the expanding gap between the developed and the developing countries as well as between the stable and profitable firms and the emerging ones. The member countries of the Organization for Economic Cooperation and Development OECD (2002) defined ICTs in 1994 as a combination of manufacturing and service industries that capture, transmit and display data and information electronically. There is no single method to measure the effectiveness of the ICTs usage, but researchers have put several indicators that address and compare quality issues, ICT infrastructure, prices, diffusion of Internet technologies in larger and smaller firms, relative size of cross-border electronic transactions and barriers to e-commerce and trade, e-learning and other e-activities as well as the definition of the variables workforce and value added in the ICT sector. Benjamin and

Wigand (1995) argued that ICTs eliminated middlemen in businesses and thus reduced the overall cost. This allowed emerging companies to undergo better performance and maximize their returns. Negroponte (1998) emphasized the role of ICT applications as crucial in structuring what he called "The Information Economy". It is also important to note that one of the basic advantages of a successful Internet access is the ICT policies and infrastructure, which are very poor in many organizations especially in the emerging countries. Continuous work by governments should be done to strengthen the Internet infrastructure to incorporate goals and needs of different segments in the society. As Manda (2006) observes, Internet access is no longer a luxury. Another important wave of the ICT studies was introduced in the beginnings of the new millennium. The rapid advancements in IT and communication applications alike coupled with the revolution that accompanied information storage, creation and dissemination at present have gradually but successfully driven ICTs applications and devices into the so called "postindustrial society" and have turned to be an important symbol for the nowadays "information society".

The use of ICTs devices and applications has grown in importance and many studies were conducted to enhance skills of those who are using them. Ashcroft (2004) argued that the consistent emergence of new technologies in modern times made it a necessity for individuals to adapt and acquire new skills to gain awareness, meet demands and encourage thinking. Ostwalder (2004) divided the capacity to use ICTs into three main groups. The first is the ability to provide and maintain ICTs infrastructure at a reasonable price. The second is the capacity to provide useful content through imagination, creation and maintaining ICT applications that makes sense. The third is the capacity to understand and use such applications. Lowe and McAuley (2002) studied ICT literacy and defined the term as the necessary skills and abilities, which enables the use of computers and related information technologies in order to meet personal, educational, and labor market goals. It is also important to take into consideration the problems associated with the use of ICTs. Addressing such problems raises awareness among users and enhances the finding out of solutions. Chauhan (2004) identified some of these problems including the discomfiture in reading on the screen, Internet access and speed, poor infrastructure, lack of necessary and adequate skills and physical possession. Several studies have been undertaken in an aim to provide information about different countries' access to and use of computers, the Internet, and mobile phones. These studies depended on surveys as a methodology to gain a better understanding of how these technologies are influencing economy and society in general and households in particular.The academic research on the use of ICTs by households has taken many forms but the bulk of such research focused on three main criteria: how the household used the devices and their associated applications and services, what are the factors that influence the household decisions to buy or not to buy ICTs devices and/or applications, and what are the positive and negative outcomes of the households' use of ICTs.

Valantine and Pattie (2005) found that most of the children they surveyed prefer to use ICTs to play games and also for educational purposes. Children under 6 years old for example use the

Internet to search for a clip art on the web, draw picture using an art package, color in a sheet printed off from a website or play CD Rom games. Children above that age use an email program to contact with others, use a word processing program to write an assignment or letter, fill a spreadsheet to make graphs for mathematical projects or access websites for subjects revisions. Youth as well as adults use ICTs applications and services for more complicated and technical purposes also.

Some researchers emphasize the importance of addressing the ICTs problems as well as their benefits. Leu and Charles (2000) refer precisely to three challenges that will determine the speed and effectiveness of the convergence that is occurring. The first set of challenges are related to budget considerations, the second related to professional development, and the last challenge is related to using technology in ways that will make all of our lives better. The scholars argue that the literacy community must begin to explore these new contexts for literacy and learning if we wish to prepare children for their literacy future. In marketing studies or surveys to measure the state of ICT usages and marketing, countries and companies rely on commissioning a private sector for that purpose and cannot be judged as academic research. For the interest of the current study, Saudi Communications and Information Technology Commission (CITC, 2009-2010) commissioned a study conducted in 2009 and published in 2010 to survey leaders or professionals working actively in the KSA ICT sector, Knowledge economy teachers and students, ICT products, services and solutions manufacturers/wholesalers/resellers, Existing/ Prospective license holders for telecommunication/ IT/ media broadcasting services, and ICT investors. To the interest of the current study the Household/Individuals Field Survey provided market insights.

Alongside the field survey CITC conducted The Online Household/Individual Survey for the first time in Saudi Arabia in l2010. The main purpose of the study was to determine or identify the varying awareness, needs, demands, adoption and usage levels across both field and online individual/household respondents. Based on the comparison of results across both field and online surveys strong evidence suggests the online users have greater ICT Literacy levels, understand the benefits ICT can bring to the personal and business life, have greater appetite for new products and services, are more inclined to use electronic transactions, self-help and value added services provided over fixed, mobile and internet". Other surveys covered in this report are the Establishments Survey, Service Providers Survey, and the ICT Services and Technology Suppliers Survey (CITC, 2009-2010).The presence of the important ICT is not a benefit in itself, but rather a means to the purposes we strive to achieve. It is not enough to have the best ever equipment, hardware and networks or to purchase the fastest broadband Internet, but rather to maximize benefits and stimulate further applications to fulfill our needs. In order to do this properly, we need to provide the adequate technical environment for the provision of services and maximize the benefits and to maintain a new organizational structure that will help raise human awareness and prepare individuals to use ICT in the best way according to their demand.

ICT Usage in the Saudi Household Questionnaire Analysis

Regular Analysis for the Study Questions

Socio-Demographic Information (Sample Characteristics):

Table-2.1. (Age Group, Sex and Social Status)

Age Group			**Sex**			**Social Status**		
	No.	**%**		**No.**	**%**		**No.**	**%**
15- 20 Y	376	22.5	Female	1346	80.5	Married	674	40.3
21 - 30 Y	824	49.3	Male	326	19.5	Single	898	53.7
31 – 40 Y	276	16.5	**Total**	1672	100.0	Divorce	86	5.1
above 41 Y	196	11.7				Widow	14	.8
Total	1672	100.0				**Total**	1672	100.0

The sample covered all age groups; however, we find that the age group (21-30 Y) excels the other groups; probably because this group is considered a majority in the Saudi population. As for gender, the survey tried to reach both genders but females cooperated more. However, the male group was well covered. As far as social status, all types were covered, but we found that widows and divorcées were less than married people and singles.

Table-2.2.(Education Level and Employment Status)

Education Level			**Employment Status**		
	No.	**%**		**No.**	**%**
No education	44	2.6	Unemployed	454	27.2
Basic education	42	2.5	Student	550	32.9
High school education	159	19.0	Gov. Employee	412	24.6
Bachelor	998	59.6	Private sector employee	202	12.1
Master	236	14.1	Private job	38	2.3
Professor/ Doctor	34	2.0	Retired	16	1.0
Total	1672	100.0	**Total**	1672	100.0

All education levels and employment status were covered, though a clear variation stands out in the education level. Bachelor students excel the sample.

Table-2.3. (Geographical Area And Household Income)

Geographical Area			**Household Income**		
	No.	**%**		**No.**	**%**
Northern area	650	38.9	Less than 10.000 SR	754	45.1
South area	348	20.8	More than 10.000 SR to 20.000 SR	592	35.4
Midtown	456	27.3	More than 20.000 SR to 30.000 SR	170	10.2
Eastern area	218	13.0	More than 30.000 SR to 40.000 RS	48	2.9
Total	1672	100.0	More than 40.000 SR to 50.000 SR	44	2.6
			More than 50.000 SR	64	3.8
			Total	1672	100.0

As we can see in the table above (2.3), north Jeddah's sample were the highest, but it was not dominant. All regions were covered and we should mention that the eastern part of Jeddah actually has less population. As for the household income, most people are between the first two categories: less than 10.000 SR and more than 10.000 SR to 20.000 SR.

What are the used information and communications technologies in Saudi households?

Table-3.1. (Devices 1)

Queries	Devices							
	Telephone		Regular cellphone		Smart phones		Fax	
	No.	%	No.	%	No.	%	No.	%
NO	262	15.7	210	12.6	318	19.0	1244	74.4
Yes, I hardly use it	672	40.2	146	8.7	84	5.0	166	9.9
Yes, I use it daily	532	31.8	1262	75.5	1226	73.3	40	2.4
Yes, but I don't use it	206	12.3	54	3.2	44	2.6	222	13.3
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-3.2. (Devices 2)

Queries	Devices							
	Desktop		Laptop		Flash memory		Portable tap	
	No.	%	No.	%	No.	%	No.	%
NO	706	42.2	136	8.1	234	14.0	584	34.9
Yes, I hardly use it	370	22.1	408	24.4	344	41.1	220	13.2
Yes, I use it daily	306	18.3	1072	64.1	632	37.8	754	45.1
Yes, but I don't use it	290	17.3	56	3.3	118	7.1	114	6.8
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-3.3. (Devices 3)

Queries	Devices							
	Video games		TV Cable		Smart TV		Home Theater	
	No.	%	No.	%	No.	%	No.	%
NO	574	34.3	102	6.1	950	56.8	1150	68.8
Yes, I hardly use it	434	26.0	254	15.2	152	9.1	164	9.8
Yes, I use it daily	306	18.3	1238	74.0	360	27.5	250	15.0
Yes, but I don't use it	358	21.4	79	4.7	110	6.6	108	6.5
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-3.4. (Devices 4)

Queries	Devices							
	Video Player		CD/ DVD Player		Sound System		Data show	
	No.	%	No.	%	No.	%	No.	%
NO	902	53.9	576	34.4	1068	63.9	1276	76.3
Yes, I hardly use it	296	17.7	539	32.2	284	17.0	206	12.3
Yes, I use it daily	156	9.3	239	14.2	166	9.9	60	3.6
Yes, but I don't use it	318	19.0	320	19.1	152	9.1	130	7.8
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-3.5. (Devices 5)

Queries	Devices							
	MP3/4 Player		Recorder		Dig. Camera		Prof. Camera	
	No.	%	No.	%	No.	%	No.	%
NO	792	47.4	1062	63.5	572	34.2	1014	60.6
Yes, I hardly use it	356	21.3	286	17.1	586	35.0	280	16.7
Yes, I use it daily	270	16.1	120	7.2	310	18.5	250	15.0
Yes, but I don't use it	254	15.2	204	12.2	204	12.2	128	7.7
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-3.7. (Devices 7)

Queries	Devices					
	Smart Refrigerator		Smart Oven/Microwave		Smart vacuum	
	No.	%	No.	%	No.	%
NO	1028	61.5	670	40.1	938	56.1
Yes, I hardly use it	92	5.5	196	11.7	146	8.7
Yes, I use it daily	466	27.9	710	42.5	654	28.3
Yes, but I don't use it	86	5.1	96	5.7	114	6.8
Total	1672	100.0	1672	100.0	1672	100.0

Tables (3.1, 3.2, 3.3, 3.4, 3.5, 3.6 and 3.7) show that the majority of the respondents use all kinds of average technologies such as: iPads, laptops and smart phone…etc., but not the more advanced technologies, like smart refrigerator, smart vacuums, in their households. When it comes to the old technologies like fax, recording devices, telephones and so on; the Saudi society neglects such devices and uses other alternatives.

Furthermore, according to a report by the Saudi Communications and Information Commission in 2009-10, 60% of Saudis tend to change their cellphones (which we can consider as the most used ICT device) every 1 to 2 years. 17% change it every 7 to 11 months while 16% keep it for more than 2 years. 7% of the survey sample (the lowest percentage of the survey sample) responded that they regularly change their cellphones every 1 to 6 months (CITC, 2009-2010).

What is the ICT use level in the Saudi's households?

Internet Connection

Table-4.1.1. (Modem, DSLand Broadband)

Queries	Internet Connection					
	Modem (Dial up)		DSL		Broadband	
	No.	%	No.	%	No.	%
I don't have it	1276	76.3	496	29.7	1034	61.8
I have it, and I basically use it	482	17.0	1074	64.2	496	29.7
I have it, but I rarely use it	112	6.7	102	6.1	142	8.5
Total	1672	100.0	1672	100.0	1672	100.0

Table-4.1.2. (3g/4g USB Connect and Mobile Connection)

Queries	Internet Connection			
	3G/4G USB Connect		Mobile Connection	
	No.	%	No.	%
I don't have it	952	56.9	394	23.6
I have it, and I basically use it	360	21.5	888	53.1
I have it, but I rarely use it	360	21.5	390	23.3
Total	1672	100.0	1672	100.0

As seen in tables (4.1.1 and 4.1.2) the Internet connection in Saudi Arabia as we previously mentioned is reasonably developed. Half of the Saudi households use Internet connection 24/7. All available types of connections are used, but not as highly preferred like DSL connection and mobile connection. However, the field and online surveys made by the Saudi Communications and Information Commission showed different rates of mobile Internet connections use. Field survey results showed that 11% of Saudis uses mobile Internet connection, and 89% don't use it. In the other hand, online survey results that 56% of Saudis use mobile Internet services provided by their mobile's operators, and 44% don't. Furthermore, we could see that the society's use for this type of connection is increasing today (CITC, 2009-2010).

Internet Usage

Table-4.2. (Internet Usage)

B. Is your internet connection	No.	%	C. How many hours "daily" do you spend using the internet?	No.	%
On, 24/7	1292	77.3	1 hour or less	180	10.8
On, most of the day	196	11.7	2 hours	272	16.3
On and off, I just use it when I need it	118	7.1	3 to 4 hours	518	31.0
I don't have an internet connection	58	3.5	4 to 5 hours	180	10.7
I don't know!	8	0.5	5 to 6 hours	144	8.6
Total	1672	100.0	More than 6 hours	378	22.6
			Total	**1672**	**100.0**

The average of Internet usage as we see above is quite high. The analyses show that people with internet connections have their connections on for most of the day. Moreover, 31% of the sample uses the Internet for 3 to 4 hours a day, and 22.6% use it for more than 6 hours a day.

What are the ICTs uses purposes in the Saudi household?

Table-5.1. (Communication / Education and Research)

Purposes			Purposes		
A. Communication	**No.**	**%**	**B. Education and Research**	**No.**	**%**
Send and receive Emails	1158	41.6	Using databases or libraries	786	37.6
Social networks (Facebook, Twitter, etc.)	1182	42.5	Using information resources	498	23.8
Texting and Chatting (Messenger, What's app,	370	13.3	Free readings	450	21.5

etc.)					
Voice and video calls over the internet (Skype, Viber, etc.)	12	0.4	Online courses	54	2.5
Nothing from above	58	2.0	Downloading course materials (PDF, MP3, software, etc.)	95	4.5
Total	2780	100	Consulting forms or interest groups	114	5.4
			Nothing from above	88	4.2
			Total	2085	100

Table-5.2. (Electronic Government / Banking)

C. Electronic Government	**No.**	**%**	**D. Banking**	**No.**	**%**
Obtaining information from authorized websites (Agencies).	1206	72.1	Paying bills	1124	35.7
Downloading and sending legal forms and applications.	138	8.2	Money transactions	888	28.2
Using public service (Visa, passport, etc.)	94	5.6	Account checkups and updates	870	27.6
Using payment service (fees, speed tickets, etc.)	68	4.0	Stocks and investments	92	2.9
File a complaint regarding public services or so.	14	0.8	Nothing from above	170	5.4
Nothing from above	152	9.06	**Total**	3144	100
Total	1672	100			

Table-5.3. (Healthcare / Electronic Commerce)

E. Healthcare	**No.**	**%**	**F. Electronic Commerce**	**No.**	**%**
General search for available health services	1094	63.0	Online shopping	1020	50.8
Reservations and appointments	200	11.5	Trading purchases online	384	19.1
Healthcare updates and reports (X-rays and test's results…)	42	2.4	Looking for investments and investors	82	4.0
Live contact with doctors	80	4.6	I have an online job	284	14.1
Contact with support groups (like diabetes groups) and exchange expertise	40	2.3	Nothing from above	236	11.7
Buying and requesting medications	84	4.8	**Total**	2006	100
Nothing from above	196	11.2			
Total	1736	100			

Table-5.4. (Travel And Tourism /Gaming And Entertainment)

G. Travel and Tourism	**No.**	**%**	**H. Gaming and Entertainment**	**No.**	**%**
Booking a flight	854	35.8	Playing via gaming networks (PlayStation, Xbox, etc.)	710	29.1
Booking in a hotel, spa or so	792	33.2	Playing avatar games (3D, second life games, etc.)	54	2.2
Finding vacations' offers	252	10.5	Playing internet games (Billiard, the farm, etc.)	266	10.9

Serving the net for info and full reviews for your destination	334	14.0	Listening and downloading audio books and lectures (etc.)	324	13.2
Nothing from above	150	6.2	Listening and downloading music	232	9.5
Total	2382	100	Watching, downloading and sharing YouTube videos	210	8.6
			Watching and downloading movies	332	13.6
			Watching and downloading TV. shows	228	9.3
			Nothing from above	82	3.3
			Total	2438	100

As seen in the previous tables (5.1, 5.2, 5.3 and 5.4), users were able to choose more than one answer in each category. Therefore, we were only able to figure out the cumulative percentage, in the communications category, 41.6% used ICTs for sending and receiving Emails, and 42.5% use them for social networks. Face book latest statistics cleared that 5,536,280 Saudi citizen are using Face book in September 2012. (World Internet Usage, 2013).

For the education and research category, 37% use ICTs for the benefits of databases and libraries. This indicates that the ICTs have an improvement impact on Saudi education and research. As for the E-Government category, we found that Saudis mostly use ICTs for obtaining information from authorized websites. Other E-Government services were not used as expected. The survey indicates that ICTs were highly used in banking services; mostly accounts' checkups, money transactions and paying bills, healthcare services were not useful for our users.

As they mostly (63%) said that the use the ICTs only for general search for available health services. And other choices were mostly neglected. In Online commerce, 50% of users said that they use ICTs for online shopping, and the other choice had less percentage. In travel and tourism category, a 35.8% said that they use ICTs for booking flights, which is not as highly as expected. And only 33.2% are using them for booking a hotel, spa or others. Finally, gaming and entertainment category has almost equal percentages but the highest percentage indicates that respondents use ICTs for playing via gaming networks.

How the ICTs affect the Saudi household's information awareness?

ICT impact on households

Table-6.1.1. (Questions 1)

	Latest worldwide news		**Latest Locale news**		**Society and family news**		**General information**	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
I agree	602	36.0	594	35.5	624	37.3	700	41.9
I definitely agree	968	57.9	978	58.5	740	44.3	884	52.9
I don't agree	102	6.1	100	6.0	308	18.4	88	5.3
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-6.1.2. (Questions 2)

	Latest researches and techniques in your field		Personal interests		New readings		Latest software and hardware	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
I agree	668	40.0	532	31.8	1424	42.6	568	34.0
I definitely agree	760	45.5	996	59.6	742	44.4	968	57.9
I don't agree	244	14.6	144	8.6	218	13.0	136	8.1
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

As stated in tables (6.1.1 and 6.1.2) sample mostly agrees that ICTs have a magnificent effect on the household's information awareness in all areas searched, for both individuals and families as a whole.

Personal technologies awareness

Table-6.2.1. (Questions 1)

	Figure out what technology you must use and how to use it to achieve a specific result.		Find out where to look for your info in all these websites		Find a piece of information that you need	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**
I don't think so	106	6.3	110	6.6	96	5.7
Yes, easily!	1002	59.9	1016	60.8	1124	67.2
Yes, I guess	564	33.7	546	32.7	452	27.0
Total	1672	100.0	1672	100.0	1672	100.0

Table-6.2.2. (Questions 2)

	Use a suitable searching engine		Use a suitable search keywords		Surf the net in a short period of time and find what you want	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**
I don't think so	116	6.9	138	8.3	176	10.5
Yes, easily!	1174	70.2	952	56.9	908	54.3
Yes, I guess	382	22.8	582	34.8	588	35.2
Total	1672	100.0	1672	100.0	1672	100.0

Table-6.2.3. (Questions 3)

	Use your ICTs without any damages (viruses, software failures, etc.)		Do you think that your ICT's usage skills are:		
Query	**No.**	**%**		**No.**	**%**
I don't think so	290	17.3	Sufficient	420	25.1
Yes, easily!	682	40.8	Excellent or good	988	59.1
Yes, I guess	700	41.9	I can almost handle it!	94	11.2
Total	1672	100.0	Very poor, I need help!	20	1.2
			Very poor, but I don't care!	56	3.3
			Total	1672	100.0

The sample showed as seen in tables (6.2.1, 6.2.2 and 6.2.3) that most people in Jeddah have a good or excellent expertise using the ICTs. The highest percentage knows how to deal with

research techniques but the lower percentage does not. However, these results can be tested in a future experimental study to verify them.

How the ICTs uses affect the Saudi household's budget?

Table-7.1. (Questions 1)

	ICTs affected your own budget		ICTs affected your household budget		It is very expensive to keep up with all these ICTs around you?		A huge part of my own budget goes on buying/ maintaining ICTs	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
I agree	676	40.4	696	41.6	542	32.4	470	28.1
I totally agree	542	32.4	482	28.8	810	48.4	254	15.2
I don't agree	182	10.9	202	12.1	136	8.1	426	25.5
I totally don't agree	272	16.3	292	17.5	184	11.0	522	31.2
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-7.2. (Questions 2)

	A huge part of my household budget goes on buying/ maintaining ICTs		Sometimes I have to use premiums' offers to buy ICTs		Sometimes I need loans to buy ICTs		My need to buy ICTs affects my other purchases badly	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
I agree	450	26.9	222	13.3	96	5.7	366	21.9
I totally agree	236	14.1	146	8.7	106	6.3	178	10.6
I don't agree	428	25.6	726	43.4	830	49.6	582	34.8
I totally don't agree	558	33.4	578	34.6	640	38.3	546	32.7
Total	1672	100.0	1672	100.0	1672	100.0	1672	100.0

Table-7.3. Questions 3)

	My short budget sometimes keeps me from buying ICTs		I'm earning money by using these ICTs (like having an online business or so)		I want to cut or limit my ICTs expenses	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**
I agree	544	32.5	380	22.7	476	28.5
I totally agree	296	17.7	168	10.0	304	18.2
I don't agree	424	25.4	656	39.2	464	27.8
I totally don't agree	408	24.4	368	28.0	428	25.6
Total	1672	100.0	1672	100.0	1672	100.0

Tables (7.1, 7.2 and 7.3) show that a high percentage agreed that ICTs affected their own and households' budget. Almost the same percentage agreed that they cannot spend a huge part of their budget buying or maintaining ICTs. A high percentage mentioned that they don't agree to buy ICTs with loans or premiums' offers. A 32.5% of the sample agrees that their budgets are keeping them from buying new ICTs while 39.2% of the sample does not agree that using ICTs made them earn

money. Nonetheless, we found that he sample indicates that people are split between agreement and disagreement when it comes to cutting or limiting their ICTs expenses.

How the ICTs affected on the Saudi's household actual communications and connections, and how some individuals prefer the virtual world?

Table-8.1. (Questions 1)

	Did the ICTs affect your relationships with your family and friends?		Did it make you contact your distant family member or friend?		Did the ICTs make you know your close/ distant family members more?	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**
I don't think so	100	6.0	32	1.9	126	7.5
Yes, in a bad way	9	1.1	0	0	0	0
Yes, in a good way	784	46.9	1220	73.0	902	53.9
Yes, I guess	558	33.4	330	19.7	416	24.9
Maybe	212	12.7	90	5.4	228	13.6
Total	1672	100.0	1672	100.0	1672	100.0

Table-8.2. (Questions 2)

	Did the ICTs enlarge your social circles?		Did the ICTs make you follow your friends' happy/ sad occasions?		Did the ICTs make it easier for you to create or know about social and public events?	
Query	**No**	**%**	**No**	**%**	**No**	**%**
I don't think so	96	5.7	60	3.6	78	4.7
Yes, in a bad way	2	.1	0	0	0	0
Yes, in a good way	946	56.6	1022	61.1	1056	63.2
Yes, I guess	434	26.0	430	25.7	404	24.2
Maybe	194	11.6	160	9.6	134	8.0
Total	1672	100.0	1672	100.0	1672	100.0

Table-8.3. (Questions 3)

	Did some of the ICTs force you to contact some unwanted members you know?		Do you spend a lot of time using the ICTs instead of real quality time with your family and friends?		Do you prefer being online and use your social accounts instead more often than be with your family and friends?	
Query	**No.**	**%**	**No.**	**%**	**No.**	**%**
I don't think so	360	21.5	296	17.7	736	44.0
Yes, in a bad way	8	.5	20	1.2	8	.5
Yes, in a good way	428	25.6	478	28.6	266	15.9
Yes, I guess	494	29.5	564	33.7	294	17.6
Maybe	382	22.8	314	18.8	368	22.0
Total	1672	100.0	1672	100.0	1672	100.0

Table-8.4. (Questions 4)

	Do you think that your online persona (in social accounts) describe you and your thoughts much better?	Do you think that the ICT is a blessing gift? Has it changed your life?

Query	No.	%	No.	%
I don't think so	328	19.6	146	8.7
Yes, in a bad way	2	.1	6	.4
Yes, in a good way	590	35.3	866	51.8
Yes, I guess	410	24.5	462	27.6
Maybe	342	20.5	192	11.5
Total	1672	100.0	1672	100.0

As seen in tables (8.1, 8.2, 8.3 and 8.4) the sample indicates that people benefit from ICTs in a good way in their communications and connections with others. A majority percentage mentioned that their social lives became more efficient but it also showed that people nowadays are spending a lot of time using social networks instead or real social life. It the contrast, a high parentage mentioned that they prefer to spend time quietly with their friends and families instead of social networking. Moreover, a high personage thinks than their online persona describes them better than their real identities.

Cross Analysis

Cross statistical analysis was performed using chi-square of independence test, which measures the presence of the relationship between the two variables in the questionnaire at 95 % level of confidence and 5% level of significance of some variables to figure out the relationships of some variables. When taking the variable level of education of the user with ICTs possession, it is clear to us from the results of the analysis that the value of chi-square computational (42.10) at 18 degrees of freedom and level of significance of 5%, and the value of chi-square tabular (28.87), which was less than the calculated value, and therefore we found statistically significant relationship between the level of education of the user and possession of ICTs such as (Phone Ground - Smart Phone - Fax - tablets - Desktops - laptop).

The second variable was age group with communication on the Internet, electronic services, and electronic commerce. It is clear to us from the results of the analysis that the value of chi-square computational (219.01) at 12 degrees of freedom and level of significance of 5%, and the value of chi-square tabular (21.03), which was less than the calculated value, and therefore there are relationships statistically significant between ages (21-30) with communication on the Internet and E-Services and E-Commerce. The Third variable was sex with Internet surfing, information searching, and search engine using. It is clear to us that females excel males in the value of chi-square view computational (8.135) at 2 degrees of freedom and level of significance of 5% and the value of chi-square tabular (5.99), which was less than the calculated value, and thus there is a relationship with statistical significance between sex and internet surfing, information searching and appropriate use for a search engine.

The Fourth variable is household budget with the negative impact on buying some of these ICTs. It is clear to us via the given value of chi-square computational (31.215) at 15 degrees of freedom and level of significance of 5% and the value of Kai square tabular (37.199), which was less than the

calculated value, that there is a statistical significant relationship between the household budget and the ability to buy some ICTs and it was found that there is an effect for not buying what the respondents wished to buy. The Fifth variable was social status with education and research. It is clear to us that status (single) comes first in connection with education and research, and then status (married) comes second. As such, given chi-square value calculations (250) at 45 degrees of freedom and level of significance of 5% and the value of chi-square tabular (67.5), which was less than the calculated value, there is a relationship with statistical significance between the social statuses and education or research.

CONCLUSION

In this part of the study we conclude by relating the analysis to the research questions raised in this paper. The questionnaire analysis in part two answered the study questions, which were mentioned before at the beginning. These questions' answers were:

What are the used Information and Communications technologies in the household?

As the survey showed, most ICTs were used in the Saudi households and there is a great correlation between the user education level, household income and ICTs usage.

What is the ICT use level in the Saudi's households?

As far as the Internet usage is concerned, households were highly depending on regular Internet connections provided by Saudi operators. Some of the household members spend a huge time using these ICTs daily.

What are the purposes of ICTs use in the Saudi household?

The study indicated eight categories for ICTs use purposes:

A. Communication	**B**. Education and Research
C. Electronic Government	**D**. Banking
E. Healthcare	**F**. Electronic Commerce
G. Travel and Tourism	**H**. Gaming and Entertainment

These eight categories differed a lot in percentages, some categories were highly mentioned by users and some were neglected or they were less interested in. The purposes of use in the categories of communication, education and research, banking, E-Commerce, travel and tourism, gaming and entertainment, had a high level of response. The purposes in E-Government and healthcare had a much lower response. Most respondents checked one or two options while the other options they dismissed the other options.

How the ICTs affect the Saudi household's information awareness?

The survey shows that ICTs had a significant impact on household; ICTs made it easy for the Saudi household to be updated on world and local aspects. The study also indicates that individuals were increasingly interested in using and learning about available ICTs services.

How does the use of ICTs affect the Saudi household's budget?

As mentioned before; there's a great connection between household income and ICTs uses. Households with lower income use basic ICTs and try to control its effect on their household. The households with higher income do not worry about the ICTs impact on their household budget and try to keep up with the new technologies. When using chi-square test we found that the group participating in the study is affected by the budget variable when considering buying ICTs even though they wish to do so.

How the ICTs affected the Saudi's household actual communications and connections, and how some individuals prefer the virtual world?

ICTs clearly had a strong influence on Saudi households, as the study showed that a high percentage think that ICTs made their life easier and more efficient. In contrast, ICT's may have a bad influence on the Saudi household regarding the new social networks and online persona orientations, as individuals are spending more time online than a quality time with their families. The study showed that the Saudi household is developing a recognizable interest in ICTs, and that this interest is changing the households into a more efficient, up-to-date and developed entities. The study also showed varieties in the given sample; some households clearly find ICTs as a brilliant step toward the future while some ho still do not accept the idea of letting ICTs lead their lives. However, the majority think that ICTs are blessing innovations, and that ICTs are changing their way of living.

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