

Investigating the Role of Public Libraries in Reducing Digital Divide in Jordan: Using Computer and Internet

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Abstract

The purpose of this paper is to investigate the role of the public library in reducing the gap between digital divide and developing the Jordanian community. A quantitative research method has been employed. 110 questionnaires has been distributed randomly to respondents at two campuses of public libraries. Some questionnaires have been distributed at one of the branches of the library. Most respondents has complied to the request for immediate completion and return of the questionnaire. (90 %) of the questionnaire forms, which equate 100 forms, have been completed and returned. Findings indicate the existence of a digital divide, but also suggested that the availability of computers and Internet have assisted the community to overcome the substantial information divide and develop its culture. The paper has used a quantitative method and SPSS analysis for measuring digital divide and its effects on the users of public libraries in Jordan.

Keywords: Digital divide, Public libraries, Computer, Internet, Jordan.

1. Introduction

Public libraries which implement information technology play an important role in the development of communities in general, and in the Jordanian society in particular. This role sets to bridge the cultural gap between communities and their cultures at international and local levels. In addition, government and decision-makers are recommended through this research to give special attention to public libraries and usage of information technology to help the community to develop its culture as well as other different sectors. The study highlighted the importance and role of using information technology in public libraries on development of societies.

The objectives, questions, importance and methodology of this study as well as everything related to this study are as follows:

2. Objectives of the Study

1. Measure the extent of digital divide among users of public digital libraries in Jordan.
2. Measure the availability and use of information technology in public libraries.
3. Identify the role of public libraries in reducing digital divide and developing the Jordanian society.

3. Questions of the Study

How can using information technology (computers and Internet access) in public libraries reduce the digital divide and the development of the Jordanian society and its knowledge and culture?

4. Significance

It is presumed that the results of this research will help agencies, which are responsible for public libraries, and decision-makers realize the important role of public libraries in reducing digital divide, and also in development, community development and planning for more programs in computing. Moreover, it will provide public libraries with databases that include complete information and knowledge texts. This in turn will produce the conceptual framework which will help in conducting relevant research and studies in the future.

The importance of this study is represented by a combination of the following recommendations:

1. Developing the capabilities and potentialities of public libraries to provide researchers and lay people with digitalized contents of high value that will help them in performing and developing their works and acquire various related skills.
2. Establishing the necessary infrastructure of information technology to support the scientific research about knowledge of Arab societies which will have a direct and positive effect on society's development, knowledge and economy.
3. Developing training programs related to digital information technology for librarians, staff, and users of public libraries.

5. Methodology of the Research

This study used the descriptive analytical method to collect necessary data. -

Data have been collected by using various methods such as:

1. Identifying the theoretical framework of the study based on references, periodicals, scientific research and relevant university studies.
2. Using Statistical Package for Social Sciences (SPSS) in analyzing data to answer the research's questions, so as to achieve the objectives of the research, in order to state conclusions and discuss them based on the questionnaire designed for the purpose of this research in accordance with the methodology of the scientific research.

6. Literature Review

Internet is now considered to be a major source of information for people in many different environments and societies worldwide. Internet is widely used in higher education systems and at all academic levels. Several studies have been conducted in order to investigate students' behavior when they use the Internet.

There is a more developed research which investigates the use and impact of Internet-accessed information on libraries for promoting societies and their knowledge in public settings. The majority of these pieces of research or studies have been carried out in developed countries; meanwhile, there is no comparable literature or research that studied this issue in developing countries. While the available literature includes the role of Internet information access on reducing digital divide in public research communities, there is a shortage of data relevant to research related to the Arab World in general, and Jordan in particular. Studies that deal with the use of computer and Internet information access for the purpose of developing knowledge are not related to the present research purposes, therefore, they were excluded from this review.

6.1 Concept of digital divide

The number of Internet users has dramatically increased in the recent years, as advances in internet and related communication technologies have been eagerly utilized by individuals as means to effectively pursue their educational and social goals. In recent times, much pieces of scholarly research have been devoted to explore the benefits of accessing internet content as experienced by internet users from varying cultural, economic and language backgrounds. This research has given rise to genuine concerns about the consequences that may be felt by those who are hindered by apparent disparities in access to the Internet and its rich content. Such a concern is expressed by Wright, who notes, 'every technological repercussion and economic transformation threatens stratification by status and pushes the class situation into the foreground' (Wright, 2003, p. 6). Wright highlights how the Internet can be seen not only as a tool that propels users towards the fulfilment of their goals, but also as a vehicle that may further widen the gulf of social and other forms of inequality by being less accessible to certain groups and peoples than others.

Heuertz (2003) suggests that the concept of digital divide should not be defined merely by access to technology. The fact that many information professionals believe that it is access to content that is of value and interest to the user further supports this line of argument. Heuertz goes on to suggest that it is the skills and knowledge to access and evaluate information that is of foremost importance.

6.2 Public library and digital divide

Public Library Foundation is providing its services to all members of society in a certain area, and is supported by financial provision, whether public or private (International Federation of Library Associations, 2001). The mission of libraries within an information access paradigm is to use ICT to enable users to have access to content. The argument is if ICT is well utilized by libraries, it could enable users on both sides of the digital divide to have equal access to content. (Amadi, 1981; Heuertz, 2003). In addition, as there are different views as to what the term digital divide means, it indicates that while for some, the critical issue is about access to computers, others think it is also related to the issue of computer literacy. Salinas argues that 'digital divide' is an evolving term, and any definition should therefore reflect this evolution. For Salinas, digital divide refers to the disparity between individuals and/or communities who can use electronic information and communication tools such as internet to improve the quality of their lives from those who cannot. The factors that contribute to that disparity include whether they have the computer hardware or software, whether they are able to use these tools effectively; they are able to access the relevant information or not, and finally, whether the users are efficient in their use of information after it has been retrieved (Salinas, 2003; Birdsall, 2000).

The basic principle of public library is serving all levels of society without discrimination with regard to race, religion, or colour. It provides its services to all ages: children, youth, adults and the elderly, and also for all cultural levels, and its services are free of charge, regardless of financial allocations or support and their sources, whether they are public or private. Public libraries and cultural institutions preserve the cultural heritage of nations and its resources making them accessible to communities and thus are one of the most important tools to improve the dissemination of knowledge and upgrade the level of art and culture in the society. Much of the literature concerning 'digital divide', refers to this conception of the information 'haves' and 'have-nots'. Jurich

focuses on this distinction as he suggests, 'Instead of fostering a new equilibrium among countries, the ICT revolution may widen the gap between the *'haves'* and the *'have nots'*, and create a divide that may prove extremely difficult to close' (Jurich, 2000, p 42). More recently the definition has been expanded to mean 'the gap between those who have access to and can effectively use information technologies and those who cannot' (Wilhelm, 2001) as will be discussed in the following.

6.3 Information technology in public libraries

The concept of work in public libraries has changed, by virtue of recent developments in field of information services, retrieval and dissemination, (and dependence on services and new jobs,) It has become a figure of modern technology which is a necessary alternative to detail the work of libraries, and increase the level of performance and productivity. The emergence of information networks in our time, which have come as a result of developments in the field of speech-mail between computer devices, has facilitated the exchange and transfer of information of all kinds across countries where libraries in colleges and universities - historically - are competent to access information, management and administration sources, and with this emergence of computers, matters related to the information are more complex. The reason for this return may be due to our failure to reach a true understanding of the nature and requirements of technological change (Abo Eid, 2005).

With the advent of systems of local libraries with direct contact on-line, and information networks within universities, and personal computers in offices, along with the increasing demand, largely from the users of information from computers, the key issues arising from information technology in libraries began to emerge. All the librarians suddenly predicted some problems and ignored others. (Barraclough, 1998; Berndtson, 2002; Chisenga, 2004; Abo Eid, 2005; Galluzzi, 2009; Glaser, 1997; Hammond, 1999). Through services, librarians want to build a community facilitating the public's everyday information needs and reducing the digital divide.

Most studies have discussed the importance of using information technology in public libraries. It was the invention of printing, and it had a significant impact on the stock of human science. It cannot be compared with previous ones before this important event, which encouraged those interested in libraries to create classification systems and adopt scientific methods of indexing and extraction. Today we are in front of an information and communication revolution. We know that the traditional methods that were used in paper systems are no longer valid to meet the tremendous growth in the volume of information which has reached unimaginable levels. So professionals need to devise a term to describe this phenomenon (information explosion). Libraries can deploy today's modern indexes and information retrieval systems and their own through its website, therefore, enabling the user to obtain this information at office or at home, making it easy to identify the book or article to be photographed and therefore request it. Libraries can build a modern optical system for archiving techniques to replace the thumbnail film, in order to save images of important articles, reports, periodicals, pamphlets, and can thus enter recent articles and retrieve them easily. Libraries can also deal with modern digital electronic books, and can achieve maximum benefit from using information retrieval of full text. (Hawkins, 2001; Ibrahim, 2006; IFLA, 2001; Merrick, 2009; Renaud, 2001; Sin, 2011; Skov, 2004; Uday M, 2006; Witte, 2011). The following section shows how citizens and communities benefit from public library digital community services, and how these services build the community.

6.4 Benefits of public library digital community services

Technology media is an important element in building library collections, and important principles that must be taken into account in the construction and development of groups in the public library to achieve a balance between the various sources of information, so that not only sets the library on the source paper (printed) only, such as reference books, periodicals and handouts, but should allow for sources of information including non-paper (not printed) material, such as films, tapes, slides and multi-media technology. One of the main modes of technology used in all libraries is the computer. Computers are used in administrative technical organization, bibliography (classification, indexing and subject headings), and in preparation of activities and services programs, which are characterized by the following:

- Speed in dealing with the data.
- Accuracy of the results (output).
- Improvement of methods and means of cooperation with users.
- Reducing the duration of routine work.
- Reducing paperwork.
- Providing high-capacity storage for data.
- Low cost of operations performed by them.
 - It became difficult for readers and researchers to control the sources of information.

Because of the exponential increase in the amount of information published, this stage was called intellectual or information explosion. Public Library's traditional means has also become incapable of acquiring this vast

amount of information so organizations, were called on to search for modern methods to help narrowing the gap between the source of this information and users (Aabø, 2005; Aabø, 2010; Adkins, 2004; Alhelali, 2006; American Library association, n.d.; Audunson, 2011).

In the end 'the future of physical libraries is not under threat. Space for books and other 'hard copies' will be needed for a long time to come and alongside space for computers for public use.' (Berndtson, 2002)

7. Tool of study

The researcher has explored the raw data of the study field by using a tool (the questionnaire), which has been designed based on previous studies and the theoretical framework for the study. The questionnaire consists of two main sections; first section contains questions on demographic characteristics of the sample of the study, while the second section includes four parts which are as follows:

Part I: contains the questions related to the extent of use of computers and Internet access.

(Information Technology and Communication).

Part II: includes questions measuring the extent of the use of the library and its impact on the development of Jordanian society.

110 questionnaire forms were distributed to subjects and recollected from them later after they have been answered by the respondents. 10 questionnaires have been excluded for lack of data. For the purposes of statistical treatment of data, the researcher used the analytical methods of descriptive statistics, using SPSS analysis program. The researcher used the mean, standard deviation, analysis of variance test of unilateral; to show the impact of use of information technology on development of Jordanian society.

20 questions assessed the respondents' opinions and attitudes regarding the impact of information technology on their culture and building the community. Twenty attitudinal statements compiled by the researcher were presented to the respondents in order to determine their level of agreement or disagreements using 'Likert' Scale which were given relative weights (Table, 1). The measuring scale is: (1) *Strongly disagree*, (2) *Disagree*, (3) *Neutral* (4) *Agree*, and (5) *Strongly agree*.

Table (1) level of answer and the level of the relative importance

Extent	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Relative weight	1	2	3	4	5
Percentage	Less than 20%	20-40%	40-60%	60-80%	More than 80%
Statistical significance	Degree of influence of non-existent	Low degree of influence	Degree of influence of medium	High degree of influence	Very high degree of influence

7.1 Test of credibility

To ensure the accuracy of questions formulation in the questionnaire and the accuracy of its clauses clarity, they have been presented to a group of professional arbitrators in the field of information technology. the questionnaire's reliability, which was established by using Cronbach Alpha for internal consistency, was (86.4) indicating a high degree of reliability and consistency of procedures of the answers that can be relied on to test hypotheses.

8. Descriptive Analysis

Presentation of the data in this paper follows the sequence in which questions were presented to respondents in the questionnaire.

8.1 Demographic Information

In Part A of the questionnaire, respondents were presented with five questions (A1-A4) which aimed to establish basic demographic data, including their educational and general background.

Table (2) Gender of respondents

Categories	Frequency	%
Male	49	49.0
Female	51	51.0
Total	100	100.0

As indicated in Table 2, the sample of the study consisted of male (49.0%, n=49) and female (51.0%, n=51) respondents which accurately reflect the distribution of male and female users of public libraries.

Table (3) Age of respondents

Categories	Frequency	%
20-29	5	5.0
30-39	13	13.0
40-49	28	28.0
50-Upward	54	54.0
Total	100	100.0

Age variable reported in Table 3 indicates that the category which has the highest distribution ranges from 50 years and upward (54.0%, N=54) and the second highest category was 40-49 years (28.0%, N=28). While results indicated that there were fewer respondents in the first two age categories which range from 20-29 years (5.0%, N=5), and from 30-39 years (13.0%, N=13). *But in the end (N=0) of sample responses who use the library, this result may be due to the community in the age of 50 and upward (might be illiterate people).* These results indicate that users at public libraries in Jordan are mainly elderly people. These results relating to age are also likely to be quite relevant in assessing the role of information technology in reducing digital divide and changes in the culture environment.

Table (4) Level of Education

Categories	Frequency	%
Less than tawjehi (Secondary) certificate	11	11.0
Tawjehi certificate	18	18.0
Diploma degree	18	18.0
Bachelor degree	43	43.0
Master degree	5	5.0
Doctoral degree	5	5.0
Total	100	100.0

The information in Table 4 explores the respondents' education level or their last degree obtained, ranging from less than tawjehi (secondary) certificate to doctoral degree. Almost 43.0% (N=43) of the respondents have finished their Bachelor degree and the lowest ratio of respondents was from users who had finished their master and doctoral degree, 5.0% (N=5).

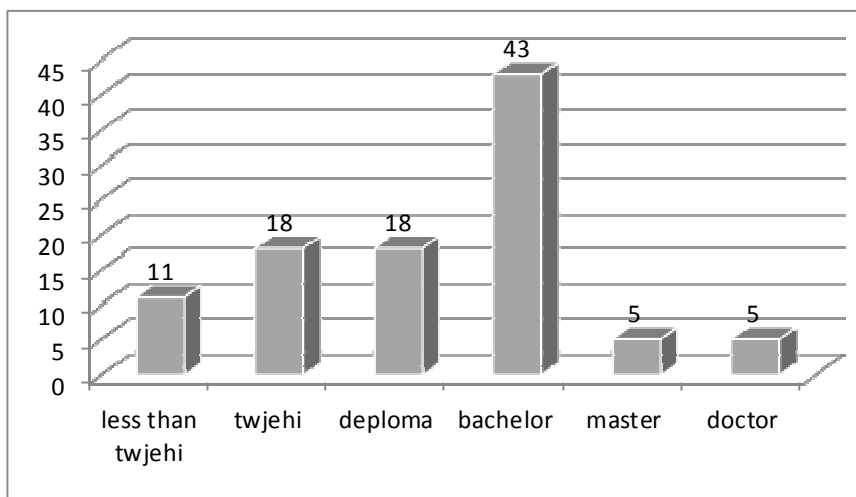


Figure (1) education level

Table 5 shows the distribution of respondents according to the kind of job or profession. The kind of job most frequently represented amongst the respondents was the category that (48.0%, N=48) work in government or public sector. The rest of the respondents (20.0%, N=20) represented those who retired or superannuated from work, and the lowest two categories were those who do not work or unemployed (18.0%, N=18), and private sector (14.0%, N=14).

Table (5) Job

Categories	Frequency	%
Government sector	48	48.0
Private sector	14	14.0
Superannuation(Retired)	20	20.0
Not work	18	18.0
Total	100	100.0

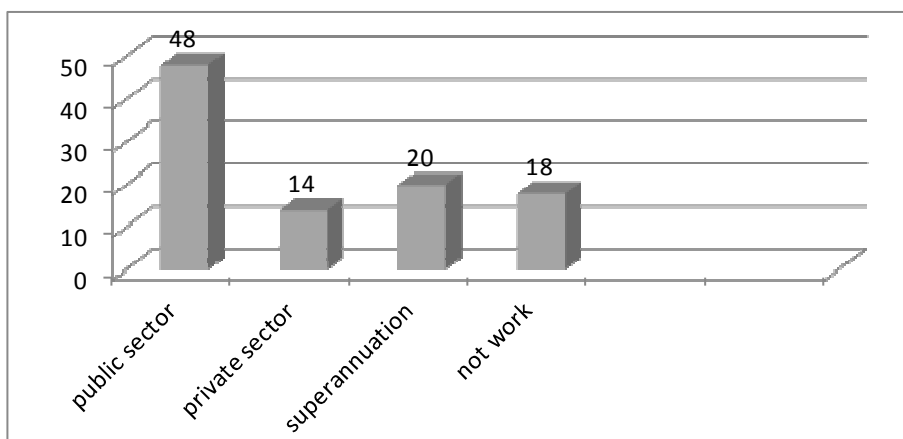


Figure (2) type of job

9. Using information technology

In Part II of the questionnaire, respondents were asked questions which aimed at assessing to which extent the users use information technology by access on computer and connection to the Internet at public libraries. Further questions investigated respondents' opinions on the Internet's impact on their lives and developing them.

Respondents were asked to indicate the location where they used and accessed computer and Internet. Two options were provided and respondents could choose all those which applied to them. The responses indicated that the use of the computer at library was (62%) and access to the Internet at home was (54%), and 92% of the respondents mentioned that they have a computer at home. The results, of questions about the length of time of using the Internet by the respondents, reported that more than half of sample (57%) have been using the Internet for four years and more.

Respondents were asked to choose from a list of seven reasons that might commonly be given for using the Internet for activities, those that applied to them. They were invited to choose as many responses as appropriate to their cases. The most two common reasons given (68%) by the respondents were sending and receiving e-mails, then search for information related to their interests was the second most common reason for using the Internet (Table 6).

Table (6): frequencies of responses about use of information technology in public library.

Statements	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5	Mean
1. I am interested in learning more about using the Internet	5	4	11	35	45	4.11
2. I am aware of the potential benefits of using the Internet	4	6	4	36	50	4.22
3. Finding information on the Internet is easier than using traditional sources	5	4	20	31	40	3.97
4. The Internet contains information relevant to my interests and culture	9	2	14	40	35	3.9
5. The Internet has become the most important information source for developing my knowledge	6	2	17	39	36	3.97
6. Since I began using the Internet, I have spent less time using printed information resources	10	7	19	39	25	3.62

The results indicate that Jordanian society has a generally positive attitude towards the use of information technology including Internet for activities and developing the culture of community. 86 respondents indicated that they either ‘Strongly agree’ or ‘Agree’ with the statement that they are aware of the potential benefits of the Internet. It is also apparent that the substantial majority of the respondents see these benefits come from their interest in learning more about using the Internet, with 80% reporting that they either ‘Strongly agree’ or ‘Agree’ with the first reason. These results can be also compared to the result with academic environment in Jordan when reported in a recent study by (Obeidat, 2010) that 88.7% of the sample either ‘Strongly agree’ or ‘Agree’ with the statement that “they are aware of the potential benefits of the Internet”. Respondents were also apparently convinced of the easiness of using the Internet, with (71) indicating that they either ‘Strongly agree’ or ‘Agree’ with the proposition that ‘Finding information on the Internet is easier than using the traditional sources’. In response to a further question, (75) of the respondents reported that they either ‘Strongly agree’ or ‘Agree’ with the statement that ‘The Internet has become the most important information source for developing my knowledge’.

The evidence from the survey is therefore strongly indicative of respondents appreciating the benefits of using information technology (computer and Internet access), in terms of either culture or knowledge-related content that it provides, and the easiness of using it, so it has become, for the majority of theme respondents, as their most important, accessible and feasible tool and choice. For a not insignificant minority, however, the result of using public library as printed resources has not declined as a consequence of their use of the Internet as a new technology for the public.

10. Reasons for digital divide

Examination of the literature on digital divide in developing countries indicates that it has been slowly developing. While debate about localised forms of digital divides began in developed countries in the early 1990s. Similar studies which were conducted in developing countries started to appear at the turn of the 21st century, after the United Nations’ summits in Geneva (2003) and Tunis (2005) where the international divide was identified as an important issue.

Table (7) frequencies of responses about reasons of digital divide.

Statements	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5	Mean
1. I lack sufficient computer skills and knowledge to search the Internet	16	16	26	28	14	3.8
2. There is a lack of access to the Internet at library	7	13	23	36	21	3.51
3. I don’t have the time to use the Internet	11	21	20	35	13	3.18
4. I lack the desire to use the Internet	3	1	19	41	36	4.06
5. There is a lack of support for using the Internet at library	6	7	26	35	26	3.68
6. I don’t have equipment and facilities to use the Internet	6	8	20	43	23	3.69
7. Access to the Internet is interrupted by system errors or equipment failure	6	8	30	36	20	3.56
8. Public libraries community in western countries have a technological advantage in using the computer and Internet	10	5	18	32	35	3.77
9. Public libraries community in western countries have a linguistic advantage in using the computer and Internet	8	8	19	37	28	3.69

The results in table 7 showed that only 42% (n=42) of the respondents ‘Strongly disagree’ or ‘Disagree’ (26% neutral) that they ‘lack sufficient computer skills and knowledge to search the Internet’. And more than half of the respondents (57%) showed some level of skill deficiency in using the Internet. Respondents are not always in the best position to assess their own skill level. It might be of some concern, however, that over a quarter of the respondents feel some level of discomfort with their ability ‘to search the Internet’. The respondents, (more than 70%) indicated that they ‘lack the desire to use the Internet’ with high mean (4.06) regarding this statement.

There are two broad causes that might account for the lack of Internet access in developing countries. These are inadequate access to facilities (hardware) frequently due to various shortfalls in infrastructure and funding, as well as poor connections due to inadequate telecommunications. Both of these possibilities were

examined in further questions. In all, 66% (mean=3.69) strongly agreed or agreed with the proposition that there was a shortfall in ‘equipment and facilities to use the Internet’; and more than half 56% (mean= 3.56) agreed to some extent with the suggestion that access ‘is interrupted by system errors or equipment failure’. For both questions there was comparatively high ‘Neutral’ response (20% and 30% respectively).

It is notable that 67% (mean=3.77) of the respondents indicated that they either ‘Agree’ or ‘Strongly agree’ with the proposition that ‘Public libraries community in western countries have a technological advantage in using the Internet’. Nonetheless, a majority of respondents believe that they are at disadvantage in this regard when compared to researchers in western countries. This suggests that part of the respondents’ perception of the digital divide is that the divide is technology-infrastructure based. As discussed previously, another important aspect of the digital divide examined in this research is that related to language; or more precisely the possible under-representation of Arabic on the Internet when compared to English and other languages used for building content and community in Arab world. In all 65% (mean=3.69) of respondents indicated that they either agreed or strongly agreed that, ‘Public libraries community in western countries have a linguistic advantage in using the Internet’ (mean=3.90). Therefore, on the basis of these responses a slightly higher number of respondents believe that the linguistic disadvantage for Jordanian society is more of an issue than their technological disadvantage. Only 16% of respondents do not agree that western community have an advantage with regard to language (19% neutral).

The issue that is most prevalent in the literature is the extent and significance of the problem. (Willinsky, 2003; Ishaq, 2001). Smith (2003) cites World Health Organization’s conclusion that global inequity in access to the Internet was greater than any other inequity. The statistics are alarming! Foster (2006) reports that developing countries have computer and Internet penetration rates that are 1/100th of the rates found in North America and Europe. It is reported that there are less than six personal computers per 1000 people in India, whereas more than six out of ten people in the United States own a computer. In a study undertaken between 1999 – 2001 in 161 countries, (Chinn and Fairlie, 2007) examined rates of Internet use according to the following:

- Economic variables: including income per capita; years of schooling; illiteracy; trade openness,
- Demographic variables: including youth and aged dependency ratios, rates of urbanization,
- Infrastructure indicators: including telephone density and electricity consumption, and
- Telecommunications pricing measures.

11. Discussion of results and test hypotheses

Main Hypothesis: The use of information technology has no effect on the development of Jordanian society.

Table (8) T-test results for all the paragraphs of the main hypothesis.

Variables	Mean	Standard deviation	Value of T	Denote T *
first area collectively	3.52	0.3803	14.853	0.000

* Statistically significant at a level ($\alpha \geq 0.05$)

The impact of using information technology on developed Jordanian society. Data in table (8) indicated that (t) test results for all the vocabulary of the field overall, and the results indicated that the mean is 3.51 and standard deviation is 0.3803. This is the center-top of the center-premise (3), which represents the degree of interest in medium for these controls and compared with the average answers to the study sample. The results of the (t) test for all the paragraphs of significant statistical area at the level of ($\alpha \geq 0.05$), as the value of T (14.853) and statistically significant (0.000) and thus reject the hypothesis of nihilism and accept the alternative hypothesis.

Table (9) T-test results for all the paragraphs of the first area collectively

Variables	Mean	Standard deviation	Value of T	Denote T *
first area collectively	3.51	0.3994	13.955	0.000

* Statistically significant at a level ($\alpha \geq 0.05$)

The first sub-hypothesis: there is no statistically significant impact at the level of ($\alpha \geq 0.05$) of use of computers and the Internet on the development of society.

To test the first sub-hypothesis regarding the existence of an impact of use of computers and Internet on the development of society in the digital age, table (9) shows the results of (t) test for all the statement of the field combined, and the results indicated that the mean was 3.51 and standard deviation was 0.3994, *this is the center-top of the center-premise (3), which a medium degree of exercise of these factors and compared with the average answers to the study sample. The results of the (t) test for all the paragraphs of significant statistical area at the level of ($\alpha \geq 0.05$), as the value of T (13.955) and statistically significant (0.000) and thus reject the hypothesis of nihilism and accept the alternative hypothesis.*

Table (10) T-test results for all the paragraphs of the second area collectively

Variables	Mean	Standard deviation	Value of T	Denote T *
Second Area Collectively	3.52	0.3803	14.853	0.000

* Statistically significant at a level ($\alpha \geq 0.05$)

The second sub-hypothesis: there is no statistically significant impact at the level of ($\alpha \geq 0.05$) the use of public library on development of the society.

To test the second sub-hypothesis regarding the impact of public library use on the development of Jordanian society. Table (10) shows the results of (t) test for all the statement of the field overall, and the results indicated that the mean was 3.52 and standard deviation was 0.3803. This is the center-top of the center-premise (3), which represents the degree of interest is medium for these controls when compared with the average answers to the study sample. The results of the (t) test for all the paragraphs of *significant statistical area at the level of ($\alpha \geq 0.05$), as the value of t (14.853) and statistically significant (0.000)* thus reject the hypothesis of nihilism and accept the alternative hypothesis.

12. Results and recommendations

Based on the results presented and the discussion, it is possible to draw some conclusions regarding the potentialities of public digital library services in reducing digital divide as it is experienced in Jordanian community. The conclusions exclude issues of general ICT development and implementation; and related funding issues in order to concentrate on matters that address the key issue of the role of digital information in reducing digital divide.

The purpose of conclusions is to answer the research question—which is, ‘How can public libraries reduce digital divide by using information technology (computers and Internet access) and help the Jordanian society to develop, and for the development of its culture and knowledge? Rather than to address issues which are beyond the scope of libraries. The general findings of the research also support the contention that digital divide is as much a product of social and cultural inequality and difference as it is one of technology imbalance.

The Jordanian government has enunciated a policy for national growth and development that is grounded in the nexus between ICTs (access computer & Internet) and community, and there is no reason to believe that this will be changed. Whatever issues remain in terms of availability of ICTs including computer and Internet are therefore likely to be addressed quite rapidly, due to a marriage between government policy and the increasing affordability of core ICT components and infrastructure.

A thread running through the research results is that Jordan suffers from a comparatively immature digital culture. This is manifested in several ways that impact the issue of digital divide. The Government is prone to underfunding computer and Internet access through the knowledge station at all cities in Jordan with the opportunity to engage in research. However, this need must be considered seriously, if bridging digital divide is considered a priority.

While collaboration between libraries, even to the point of undertaking cooperative collecting programs, has had an important role in public libraries, the advent of digital content has placed a premium on libraries working cooperatively. Whereas libraries working in a print environment were forced to look for libraries located in close physical proximity when seeking partners, the digital library operates with technologies that allow for a much wider geographical dispersion. But while physical geography becomes a somewhat redundant consideration in the digital library context, it might still make sense for Jordanian libraries to collaborate within a framework of cultural geography. That is, if content and services are to be developed, then Jordan’s public libraries should collaborate with similar libraries from the Arab Middle East in order to provide access to the necessary content in the local language.

Another area of need with regard to librarians’ role in delivering digital services that became apparent from the research was a greater visibility in terms of the promotion of ICTs in the public environments. The evidence suggests that this could be achieved in two ways:

Firstly: Librarians become more active advocates for the benefits of ICTs and of informing researchers of relevant developments that would benefit their access to information.

Secondly: Increasing their profile as the recognized experts in digital content and services by providing more training opportunities for users.

This study provides baseline data regarding the extent of digital divide in Jordanian society. This inevitably raises the question as: “to what extent this data might be true for other Arab societies?” This is far from a homogenous group of countries in terms of their economic capacity; their adoption of ICTs; the development in public sector, and other key factors related to this research. On the other hand, they also share some important elements. These include their general status in terms of their current levels of development, and the use of forms of Arabic as a common language. These countries also have in common many similar cultural and social norms resulting from heavily inter-connected ethnic, religious and historical influences.

As the conclusions of this research are also inextricably tied to the cultural circumstances of the Arab world, therefore it might be assumed that other local cultural ‘realities’ would produce a different set of issues and outcomes. Hence while it is likely that non-Arab developing countries would find some of the findings of this research to be relevant, it is also the case that they will face particular localized issues regarding digital divide and development of digital libraries. However, the following are the main conclusions:

- Importance of having public access especially for those who do not have alternative access to computers and the Internet;
- Policy oriented communities Increase will help to overcome content and cultural barriers.
- Primary recommendations for improvement of services in public libraries, and national strategy will help to ensure coordinated efforts and widely dispersed benefits. While many distinct efforts from government are presently under way (i.e. Knowledge Station), panelists cautioned that piecemeal efforts would do little to alleviate this complex problem.
- Significance of public library, community relevance and Involvement is essential in bridging the gap of digital divides.
- Communities are strongly recommended to be involved in government strategies to increase use of information technology tools and their use in solving the existing community problems.
- It is imperative that solutions are culturally relevant and acceptable to the community involved.
- In order to combat the problem of digital divide, continuing research, data collection and evaluation are important by consistently assess community access to technology and engage the community in ways to solve access problems or to create better uses for existing access.

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