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The impact of the internet of things on information institutions from the perspective of library employees

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ABSTRACT

This paper addresses the role of the Internet of Things applications in supporting knowledge management activities in information organizations and so their services improve. To achieve this objective, the research adopts the descriptive approach through the investigation and analysis of the intellectual outcome published in the Arab and foreign countries to identify the relationship between the Internet of Things and knowledge management activities in information institutions. The results indicated that information institutions benefited from the Internet of things in tracking all the physical and intangible entities in these institutions and defining their locations in case of loss or replacement. Moreover, they could define the numbers of visitors, peak hour and the most used sources. Hence, they offered fast and interactive services that comply with the aspirations of the beneficiaries. The research recommends that various information institutions should take the initiative to benefit from the Internet of things applications that fulfill the new requirements of their beneficiaries.

Keywords: Internet of Things, Knowledge management, Information institutions, Libraries

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1. Introduction

Knowledge acquisition has become an important resource for several institutions, including information institutions, which have realized the importance of the concept of knowledge management through the role of man in these institutions. This role is associated with activating this knowledge through the processes related to its production, organization and sharing, which improve its activities and services.Information and communication technologies along with the Internet diverse applications play a major role in knowledge management. Thus, information institutions attempt to comply with these variables as well as the changes and developments in information and communication technologies and the Internet sector. Knowledge management benefits from computer applications and so benefits from communication services and connection with other devices when devices of different types can be connected with each other [1-3]. This has increased in information institutions with the emergence of the Internet of things applications because they have various aspects that can adopted via these applications. They are concerned with the development of technology as the various devices associated with their work have increased. Information institutions, including libraries, have been affected by the progress of technology and the diverse uses of the Internet throughout the past two decades. This made it possible to benefit from the Internet of things, including knowledge management activities, which reflect the future of various information institutions [4, 5]. New and advanced technologies affect knowledge management within the institutions in the context of the Internet of things and reinforce knowledge activities.

In this sense, the present research investigates the literature published in the Arab region and worldwide on the areas of benefiting from the applications of the Internet of things in supporting knowledge management activities in information institutions. Applications of the Internet of Things have increased in the various aspects of life [6-9]. The institutions that seek excellence and survival attempt to keep pace with developments in the Internet of Things. This is the case for information institutions that witness successive developments in the era of information and knowledge. The beneficiaries' needs and interests have become inconstant, so the present research is conducted to identify the relation between the Internet of things and knowledge management in information institutions. This helps best identify how to benefit from these technologies to fulfill the beneficiaries' needs and present them rapid and interactive services [10-12].

The problem of the present research is defined in the following question: What is the impact of the Internet of Things on information institutions from the perspective of library employees?

Significance the research stems from the fact that it addresses the relationship between the Internet of Things and knowledge management in information institutions. Because the aspect has not been extensively investigated, it is substantial to cover the relevant literature and highlight how to benefit from the Internet of Things in supporting knowledge management activities in information institutions. The results will improve knowledge services provided by information institutions, so they will be more dynamic and interactive. Moreover, they will enrich the theoretical and cognitive aspects of the topic. ***Significance is defined, as follows:***

a) The Internet of Things has become more important than before through search engines.
b) Integrating the Internet of Things through the electronic screen in most information institutions.
c) It is a creative tool in the field of information work.
d) Data can be collected and transmitted in a while with less effort.

The present research aims to identify the impact of the Internet of things on information institutions for library employees. This objective can be achieved through adopting the following hypotheses:

- There are no statistically significant differences at the level of (0.05) between the experimental group that adopted the Internet of Things and the control group that adopted the traditional methods in the Internet of Things scale.
- There are no statistically significant differences at the level of (0.05) between the experimental group that adopted the Internet of Things and the control group that adopted the traditional methods in the Internet of Things scale according to the variable of gender (males and females).

The Internet of things: According to Khaled [13], it is an advanced concept of the Internet that expresses the idea of connecting various physical devices to the Internet in addition to the ability of each device to identify itself to other devices and perform specific functions via Internet protocols. It is also the manifestation of smart services that resulted from the transformation of things into smart, connected and capable of interaction with its surroundings. Theoretically, the concept involves everyday objects, including industrial machines and wearables. Using built-in sensors to collect data, actions are taken concerning data on the Internet. Procedurally, it is the information network that library staff use to store and arrange books and information in an electronic computerized manner.

Information institutions: According to [14], it is a system that involves all public, school, university, national, specialized, children, prison and hospital libraries which aim to make information cases accessible to the beneficiaries by collecting, organizing and storing them. Theoretically, they are institutions concerned with preparing information and presenting it to the community using diverse methods ways and media. They also seek to transform information into knowledge. Procedurally, they are institutions that comprise books, periodicals and electronic journals according to the format of particular specializations.

2. Theoretical framework and review of the literature

The Internet of things (IoT) applications have proven their importance in service sectors, such as transportation and airports, because of the advantages provided by the telecommunications sector, which can also be applied in the library sector. Thus, libraries present advanced services. libraries have been greatly affected by the rapid developments in information, communication and computing technologies, social media, and smart phones whose emergence represented a challenge despite benefiting from them in their activities. These technologies have been the foundation of IoT applications after the extensive reliance on modern wireless communication technologies in libraries, such as radio frequency technologies, sensors and mobile phones that can interact with

each other via modern identifier systems [15]. Pera [16] showed that libraries have a variety of resources, such as books, movies, music, equipment, staff, and diverse infrastructure of furniture and devices. To explain, the application of the Internet of things is very convenient and beneficial in libraries because it saves staff's time and improves service. Using the Internet of things, radio waves (RFID), Beacon technology or wireless beacons; it will be easy to access a source via a notification on smart phones or watches, define its location, and reduce sources loss by operating the tracking devices using phones. Moreover, it defines the most beneficial topics and sources or the places that are frequently visited in the library [17]. Qin [18] asserted that using Internet of Things applications will support the libraries ability access old collections via the Internet as well as provide realistic and accurate information. Consequently, librarians and beneficiaries can find physical objects and browse virtual resources in the library or information on the interests of beneficiaries. It also can be used to obtain information on the beneficiaries using their mobile phones and identify their current tendencies and moods and so suggest some appropriate sources or activities. For example, it defines the vacant devices and reading rooms. It can be adopted in consultation and training, as well. Along with artificial intelligence techniques, it helps prepare students for careers through lessons, workshops, reference materials, and specialized education [19].

Accordingly, library services that benefit from IoT applications, are defined, as follows:

- Sharing information on the level of dates, names and facts.
- Providing indexes and bibliographic information that help users access and search for and sources.
- Facilitating access to old and electronic information sources, whether by borrowing them or accessing them remotely.

In addition, other supporting services involve knowledge of the available spaces for beneficiaries inside the library as well as the devices and rooms designated for reading, training and consultations that increase the effectiveness of their use, information literacy programs and education programs that improve the quality of the information [20]. Hayek [4] demonstrated that the Internet of Things in libraries improves access to materials and services and provides learning opportunities without affecting the beneficiaries' privacy. Libraries over the past two decades have been affected by advances in technology and the Internet, so it is easy to identify how libraries will be in the next few years when they integrate their activities with the Internet of Things. Moreover, smart devices that will be linked to automating library tasks will change the method they work; for example, there will exist smart books and data on how to use them. This will create ideas for managing spaces that can be used for shows. The author demonstrated what Hillsboro Public Library in Oregon has done through a self-service kiosk to show the BOOK-O-MAT service, where the service is monitored miles away from the main library to track usage and alert the library to any requirements for developing the collection or identifying specific books [21].

BOOK-O-MAT is a service provided by the public library to beneficiaries to automatically access the resources in the library under the name of self-service book distributor, where the library expands its accessibility to the beneficiaries off duty, connected to (RFID) in areas frequented visited by the library beneficiaries, such as train stations or commercial areas. Library staff save the required items that have been booked by the beneficiaries who can obtain them later at their convenience through conducting simple steps on the touch screen in BOOK-O-MAT on their own [22].

Abdul-Zahra [23] showed the areas supported by the Internet of Things in libraries, including monitoring the movement of furniture and the number of visitors using motion and fires sensor cameras. Library will become more expanded through its objects connection with those in another library, controlling digital advertising screens, lending books and linking students with low-cost materials to enable them to develop practical applications [24].

2.2. Benefiting from the internet of things in knowledge management

Modern applications have played prominent roles in managing various aspects of daily life, including human knowledge management. Trees [25] indicated that knowledge management can benefit from the Internet of Things technology as it will have a role in supporting decision-making activities, investing smart technologies and accelerating data circulation [16]. Kaivo-oja et al. [26] defined the Internet of Things and large data as technological waves, which increase information and expand its scope, considering difficulties in achieving consistency in its content due to the different perspective. Its content comprises various disciplines as well as huge amount of information produced by individuals and their interactions. This affects knowledge and its

management and decision-making in an environment that has become increasingly based on smart business, intelligence and technology [27-29]. They indicated that the Internet of Things, as a recent information infrastructure connected to cloud computing and worldwide networks, has provided quantifiable resources for computing and communications and it is an appropriate foundation for the quality of business performance because it reinforces the economic and social effects on the management of various business activities. This positively affects the services provided. Knowledge is the foundation for organizational decision-making of information institutions. This can be notices in these institutions' interest in knowledge as their constant assets. In this context, the study highlighted that knowledge is treated as an object that can be identified and handled in information systems through a strategy of explicit and clear knowledge that can be captured; organized and communicated easily, and another of implicit knowledge that is difficulty obtained from persons. Smart information institutions can carry out processes of understanding and converting knowledge from implicit to explicit within organized structures and then into an asset that constitutes its competitiveness as long as it possesses learning mechanisms, competencies and valuable capabilities [30]. In terms of sharing knowledge, the study indicated the importance of having an open system over networks since knowledge is based on the existence of a flow of information within the institution that is distinguished by its interest in planning and future outlook, which constitute the foundation of its business intelligence. Furthermore, what will make the Internet of Things very important is the seriousness of digitization activities that will inevitably be reflected in management processes. Digital revolution can present smart solutions that enhance knowledge-based decision-making through digital services that can be provided by creating new interfaces characterized by interaction between service providers and beneficiaries. Service users will have a social value as they participate in activities production that reinforces the role of the Internet of Things in the production and economy of services and the development of innovation within institutions as joint operations. The Internet of things will contribute not only to the production of knowledge in smart institutions, but also to its integration within the framework of open systems in all aspects of decision-making and knowledge management. In addition, it makes knowledge work competently within the framework of these systems, so it can be exchanged and shared among institutions. Rot and Sobinska addressed information and communication technologies and their impact on developments in business models as well as the resulting need for giving more concern to knowledge management because its present systems are not adopted competently in decision-making due to lack of speed and the inability to provide data significantly on time. The study showed the great potential for benefiting from the Internet of Things in improving knowledge management processes in terms of weather fluctuations, positioning, acquisition, use and sharing, and everything related to publishing, saving, coding, archiving and collection. In addition, it improves the institutions learning because of their increased capabilities to obtain and share data. Moreover, their success is based on the extent to which they invest in knowledge and the organizational ability to adapt to the changing conditions. Also, their active staff enhance their ability to benefit from technology which improves their effectiveness and operational capabilities. This will reinforce their organizational processes, which in turn will contribute to making proper decisions based on knowledge. Furthermore, their activities will be reinforced by introducing digital services with interactive interfaces between service providers and beneficiaries [21]. As they seek to become smart institutions, they will transform information into knowledge resources by investing them in smart devices that make up the Internet of Things. These devices are distinguished by their superior capabilities to respond to the stimuli of storing and processing digital information. They also seek to transfer them to other resources via the Internet protocols and so support transforming information into knowledge. These aspects can be applied in university libraries that witness successive developments due to the changing environmental conditions and face challenges associated with modern digital developments that can be exploited via the Internet of Things application [31].In [32, 33], the authors provided by the Internet of Things to improve the tasks associated with creating, processing and transmitting data to serve decision-making that libraries can benefit from in improving their capabilities to work under changing conditions created by modern digital developments. Knowledge management should attempt to effectively benefit from the aspects of improving compliance with the environmental influences by improving access to knowledge and applications associated with library work and stimulating activities of knowledge creation, considering cost reduction and ensuring constant improvement of quality and effectiveness. The availability of a new generation of knowledge management systems in the era of the Internet of Things makes it possible to track, transfer, identify and improve information sources for different purposes and applications. In addition, it is possible to update them on demand to be used in the context of decision-making and identify the device data and user activity data, which improves the activities and ensures the interoperability of the various parts of knowledge management system. Modern technologies, such as smart computing, machine learning, large data, cloud computing, sensors and the Internet

of things along with the Information potentials of the Internet, have formed an importance for what must be done with the management of large data warehouses and the discovery of knowledge that rapidly increase. Thus, data and knowledge management have to be effectively conducted in a modern developed institution whose major activities involve the effective selection and filtering of data obtained from different sources that include some inaccurate data. This improves information and knowledge and so legitimizing decisions, especially those relevant to inaccurate information [31, 34]. Developed libraries do further activities related to storing and retrieving information to select the best ones for decision-making purposes in addition to preserving the value of storing, retrieving and using information. It is important to consider that the increased supply of information lies in defining what is required accurately and rapidly. In this context, cloud computing and the Internet of Things simplify what knowledge management system does in improving effectiveness and access to information in real time, which will improve knowledge management activities in the library and the services provided to the beneficiaries, either the staff or the targeted students and researchers. Thus, time and sound decision-making are among the important aspects of benefiting from the Internet of Things. For example, tracking the peak presence of beneficiaries inside the library and the resulting confusion can be addressed by sending instant data and making quick and appropriate decision as effective solutions. Likewise, it can be handled in the activities of provision operations, organizing cases of information, searching for it or borrowing it through the objects associated with each other [35]. In [36], they showed the benefit from the existing structures of communication that allow the exchange of data without restrictions between devices, including fixed and mobile office devices as well as sensors. This results in achieving tangible returns from investment in the Internet of things in terms of effectiveness, better use of financial resources, operating cost, as well as the value of new products and services. Thus, there will be an optimal benefit from the Internet of Things where the integrated devices are constantly connected to human resources and data. One of the most important things that can be concluded in the aspects of benefiting from the Internet of Things in enhancing knowledge management activities in libraries through a study is that it stems from the premise that knowledge management has become one of the important strategies that any organization pays attention to in order to activate its knowledge, as it is concerned with this through specific processes. Its basis is to generate knowledge, then organize it, share it and apply it, and what entails benefiting from it as a tangible service. Among the most important things that can be concluded from their study in the field of benefiting from the Internet of things in libraries is:

An important aspect of benefiting from the internet of things in reinforcing knowledge management activities is based on the fact that knowledge management has become an important strategy that any institution prioritizes to activate its knowledge based on creating, organizing, sharing and applying, and making use of it as a tangible service. The results illustrate that the library is concerned with monitoring knowledge from its various sources through creating it and encouraging its staff to put their ideas into practice while making sure that there are programs and systems that help create new knowledge. Adopting the Internet of Things, libraries will redefine their goals as following knowledge will be more than ever before. They will also have the ability to communicate and obtain its various forms, which will result in new analyses and services as well as expectation to benefit from experiences that are more effective. Moreover, there is common creation of new knowledge for its user through sensors and integrated technology, where wireless networks will contribute to the transmission of data in on time. This will create new data that require interaction with it giving more concern to future expectations. Modern applications have allowed transmission of this data automatically without human intervention [27]. Using devices equipped with the Internet service will increase. Because they are equipped with sensors, services will improve. Pugh and Poole [30] indicated that some areas in knowledge management can benefit from the Internet of things, such as information processing, organization, thinking and cooperation. This denotes that the Internet of things creates convergence of technical, social and leadership capabilities. This convergence is supported by the low cost, and the small size of the sensor technology to the extent that it can be integrated into most of the elements or components. In knowledge management, the focus is on the life cycle of knowledge, which is related to the process of its creation, which represents the major aspect of knowledge management processes. It is conducted by people whose role is maximizing as they exchange ideas and actions, i.e. they are knowledge platforms [17]. Pugh and Poole [30] showed the importance of the Internet of Things platforms that activate good data for the knowledge that is created in interaction with the ecosystem through the components of the Internet of Things represented in sensing this data that is collected and then analyzed. When necessary, this is conducted on search and vocabulary algorithm by knowledge practitioner to cope up with business needs using the Internet of Things and considering access, size, diversity, and speed. They stressed that knowledge practitioners should consider the importance of the awareness of the set of entities that are dealt with within a specific topic, such as obtaining knowledge, designs and strategies that include source, price, related topics,

acquisition level, what must be considered in smart processing to interpret its flow, collection and the way it is described automatically, as well as the relevant data through certain readings including history data as well as device and location identifier [37].

Table 1. It shows the summarize of literature review

Title	Author, date and place	Sample & number	Objective	Tool	Statistical means	Results
The effectiveness of the Internet of things adoption in developing self-efficacy and its aspects among the members of the counseling group	Ali (2011), Iraq [38]	(13) students	Identifying the effectiveness of the Internet of things adoption in developing self-efficacy and its aspects among the members of the counseling	Social self-efficacy scale	T-test of one sample Pearson Correlation Coefficient	There are no statistically significant differences in the mean scores of the participants in the social self-efficacy scale
The impact of the Internet of things on the development of social responsibility in a sample of children	Al-Smadi and Al-Zoubi (2013) Palestine [39]	(30) orphan students	Identifying impact of the Internet of things on the development of social responsibility in a sample of children	Development of social responsibility scale	T-test of one sample Pearson Correlation Coefficient	The Internet of things develops social responsibility

3. Discussion

Sample of Ali (2011) in [38] involved (13) students and that of Al-Smadi and Al-Zoubi (2013) comprised (30) employees. However, sample of the present research consists of (80) library employees at Baghdad, Mustansiriya and Al-Iraqiya universities. Ali (2011) aimed to identify the effectiveness of the Internet of things adoption in developing self-efficacy and its aspects among the members of the counseling group.

Al-Smadi and Al-Zoubi (2013) in [39] aimed to identify the impact of the Internet of things on the development of social responsibility in a sample of children. The present study aims to aims to identify the impact of the Internet of Things on information institutions for library employees. Both studies as well as the present study adopted the experimental approach. Ali (2011) as well as Al-Smadi and Al-Zoubi (2013) adopted tests and scales. The present study adopted the Internet of things scale. The authors adopted Pearson correlation coefficient, arithmetic mean, standard deviation, t-test for one sample and two independent samples, and Cronbach Alpha equation. The authors used the same statistical means to process the research data. Cloud computing can be studied as future trend [40].

3.1. Aspects of benefit from the previous literature

- Defining the problem and its importance.
- Determining the research variables theoretically and procedurally.
- Defining the statistical means appropriate for the present research.
- Discussing and interpreting the results.

The author adopted the experimental approach due to its appropriateness for the research procedures and achieving the results. Experimental design is a program that shows how to conduct an experiment by controlling the surrounding conditions and factors. In addition, it is the first step carried out by the researcher. Every experimental research must have its own design to ensure its safety and accuracy of results.

Table 2. Experimental design

Group	**Independent Variable**	**Dependent Variable**	**Test Type**
Experimental	The Internet of things	Information institutions	The Internet of things scale
Control	———		

The population comprised (215) library staff at Baghdad, Mustansiriya and Al-Iraqiya universities.

Table 3. Population

No.	**University**	**Males**	**Females**	**Total**	**Total**
1	Baghdad University	45	82	127	215
2	Mustansiriya University	15	48	63	
3	Al-Iraqiya University	12	13	25	

The sample comprised (81) library employees, with a percentage of (37.20%), who were randomly selected from Baghdad, Mustansiriya and Al-Iraqiya universities.

Table 4. Distribution of the participants according to gender

No.	University	Males	Females	**Total**
1	Baghdad University	9	8	80
2	Mustansiriya University	6	6	
3	Al-Iraqiya University	5	6	

Table 5. Distribution of the participants to the experimental and control groups

No.	Group	Sample	Males	Females	Total
1	Experimental	40	20	20	80
2	Control	40	20	20	

3.2. Equivalence of the experimental and control groups

Equivalence of the two groups is necessary for the research design. The authors attempted to make them equivalent so that the differences in their performance would not be based on the differences between the two groups. Thus, equivalence was conducted according to the following variables.

Table 6. Equivalence of the two groups

Group / Variable	Experimental		Control		Freedom Degree	T-Value		Significance level (0.05)
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		Calculated	Tabulated	
Chronological age of the participants in months	112.21	4.57	114.18	5.76	78	0.321	1.980	Insignificant
Intelligence	24.14	5.71	21.18	6.51		0.673		
Previous information test	15.16	5.23	16.21	4.36		1.152		

To achieve the research objective, the author designed the Internet of Things scale adopting the following steps:

- Defining the measured feature.
- Defining the procedurally measured attribute.
- Analyzing the measured feature.
- Forming the scale items
- Analyzing items.
- Defining validity and reliability indicators (Abdelrahman, 1993).

Before formulating the items, their total number that tackles the Internet of Things has to be defined. The scale comprised (40) items after the experts' review.
The authors attempted to make the scale's instructions clear and accurate, as it requires the participant to check one of the three options for the scale's items (always, sometimes, seldom) and answer them honestly and objectively using the answer sheet that the at the end of the scale. This procedure is dedicated to scientific research. The authors also indicated that no answer was right or wrong because the participant had to express his/her opinion without mentioning the name as well as only the authors would see the answer. (3) is given to (always), (2) to (sometimes), and (1) to (seldom).

3.3. Items analysis

To verify its validity, the preliminary form of the (4) items was reviewed by the specialists in information, libraries, measurement and evaluation to modify and evaluate the appropriateness, relevance, clarity, and wordiness of the items. They approved it, with a percentage of (80%). To identify the clarity, items and options of the instructions of the Internet of Things scale, response time as well as the unclear items, the authors applied the scale to a sample of (80) employees who were randomly selected from university libraries in Baghdad governorate. They detected that the scale's instructions, items, and options were clear.

Table 7. Response time

Time in minutes	Pilot time		Total	Sufficient time
	First participant's response	Last participant's response		
	10 minutes	15 minutes	25 minutes	12.5 minutes

3.4. Statistical analysis of items

The calculated T value of the items ranged from (1. 342) to (8.650), which is greater than the tabular T value of (1.980) at a significance level of (0.05) and with freedom degree of (78), which indicates that most of the scale items are distinct. The authors verified the validity of the scale, as follows:

- The relationship between the score of each item and the total score. The authors prepared (80) statistical analysis forms to identify the correlation between the scores of the item and the total score of the scale. They used the Pearson correlation coefficient for the critical values of the correlation coefficient at the level of (0.05) and with freedom degree of (79). correlation coefficients ranged from (0.162) to (0.783). All correlation coefficients were statistically significant compared to the tabulated value of (0.114).
- Correlation between the items and its domain
- To achieve this, the authors adopted Pearson correlation coefficient to identify the correlation between the scores of the item and the score of its domain. Then, they used T-test to test significance of correlation coefficients which were statistically significant, which indicates their validity and appropriateness for measuring the domain that they were developed to measure.
- The relationship between the score of the domain and other domains (correlation between the domains of the scale)

Internal correlations between each domain and the other domains of the scale were identified using Pearson correlation coefficient. All correlation coefficients were significant at the level of (0.05).

3.5. Scale validity

a. Face validity

The authors verified face validity when the scale was reviewed by som experts to represent the items of the Internet of Things concept.

b. Construct validity

Construct validity of the scale was obtained by estimating the distinct aspect of the items, relation between the item and the total score of the scale, the relation between the items and the domain to which they belong, and the relation between the domain and the domain.

3.6. Scale reliability

Reliability of the test was verified adopting the following methods:

a) *Retesting:* Applying the scale to the same sample twice in different intervals. To achieve this, the scale was re-applied after (15) days. The number of the reliability sample was (40) employees who were randomly selected from the research p. Moreover, reliability was explained by the interpreting variance, which denotes the variance of scores based on the real scores, and the correlation coefficients were calculated. The higher the percentage of the interpreting variance, the more acceptable the reliability coefficients.

b) *Cronbach's Alpha coefficient***:** The authors adopted Cronbach's Alpha equation to identify stability, which is based on the statistics of the items. The coefficients are acceptable because they explained more than (50%) of the variance of their true scores.

Table 8. Scale reliability coefficients

Sample size	Retesting	Interpreting variance	Cronbach's Alpha equation	Interpreting variance
40	705.0	%6.70	0,781	%84.4

In light of the traditional theory, it is possible to reveal self-validity indicator, which removes the effects of chance errors, through the value of the square root of the reliability coefficient because this concept is consistent with the interpretation of reliability through the correlation of the real scores of the measurement tool if it retested the same sample.

On 2/3/2021, the authors applied the scale that consisted of (40) items to a sample of (80) employees who were selected randomly from the population of (1209). The authors adopted SPSS

4. Results

Statistical analysis of data showed that the mean score of the experimental group was (100.45), while that of the control group was (68.75). To identify significance of the difference between them, T-value was estimated, where the calculated value was (10.328), which is smaller than the tabulated T-value of (1.980) at the level of (0.05) and with freedom degree of (78). This suggests that it is significant in favor of the experimental group.

Table 9. T-value of the total scores of the two groups.

Group	Sample	Arithmetic mean	Standard deviation	Variance	T-value		Statistical significance
					Calculated	Tabulated	
Experimental	40	100,45	9,790	95,844	10.328	1,980	significant at (0.05)
Control	40	68,75	16.763	281,013			

Statistical analysis of the data showed that the mean score of males was (76.33), while that of females was (97.78). To identify significance of the difference between them, T-value was estimated, where the calculated value was (-7.0742). When it was compared with the tabulated value of (1.980) at the level of (0.05), it was

shown that there were no statistically significant differences in the mean scores of males and females in the scale. This suggests accepting the null hypothesis.

Table 10. T-value of differences significance between males and females

Variable	Sample	Arithmetic mean	Standard deviation	Variance	T-value		Statistical significance
					Calculated	Tabulated	
Malea	40	76,33	15,088	227,661	7.0742-	1,980	Insignificant at the level of (0.05)
Females	40	97,78	8,911	79,410			

a) Results of the first hypothesis show statistically significant differences in the mean scores of the experimental and control groups in testing the scale in favor of the experimental group because the experimental group that used the Internet of Things, had a significant role in the information institutions within the scope of work, the control group did not use it.
b) Results of the second hypothesis show no statistically significant differences in the mean scores of the male and female participants of the experimental group in the scale testing because the age of both genders is close. In addition, they have similar psychological, social and cognitive changes. This result is consistent with Al-Samadi and Al-Zoghbi (2007) and Ali (2011) that showed no differences in using the Internet of Things by males and females.

5. Conclusion

a) The Internet of things affected the role of information institutions for library staff.
b) The employees' needed the Internet of Things to develop their information capabilities.
c) The employees' need for the Internet of Things encouraged them to actively participate in their Information office work.
d) The Internet of Things positively affected Information institutions.

6. Recommendations

a) Presenting seminars by the computer and internet specialists to the library staff .Encouraging the employees to know all types of information networks.
b) The Ministry of Higher Education and Scientific Research should prepare a handbook that addresses the methods of institutional information work.
c) Studying the impact of the Internet of Things on developing positive work among the employees.
d) A correlative descriptive study to identify the relationship between the Internet of Things and sustainable development.
e) A study to identify the impact of the Internet of things on organizing office work.

Declaration of competing interest

The authors declare that they have no any known financial or non-financial competing interests in any material discussed in this paper.

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