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Role of Total Quality Management (TQM) in Increasing Information Security within Jordanian E-Libraries

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Abstract

Current study aimed at examining the role of TQM pillars (Product, Process, Organization, Leadership and Commitment) in increasing information security within Jordanian e-libraries. Quantitative approach was adopted through distributing an online questionnaire on (113) individuals working within libraries in Jordan that has an uploaded website online and present some of its services online for clients. Results of study indicated that all TQM pillars have an influence on information security in libraries, the most influential variables appeared to be commitment and process which could be highlighted in the libraries efforts to commit to security standards and secure log ins of members, in addition to the processes adopted by IT department in the library to follow any gaps in the website and secure it from hackers and misuse, among the influential variables there appeared that leadership is very impactful especially in the level of empowerment that is granted to leaders and their awareness of the important of connecting between TQM and information security in libraries. Study recommended that university libraries in particular derive its security from the university itself because it is an integral part of the university. Therefore, the study recommends the necessity of following up the total quality standards in the university itself because it reflects the total quality in all its facilities, the most important of which is the libraries.

Keywords: TQM, Information Security, Illegal Use, Hackers, Firewall, Log In, Library Member, E-Library, Information theft, Intellectual Rights, Patent

Introduction

Humanity today is going through a sharp turning point, and the unity of the turning point is evident to us in the profound radical change that the information age imposes on man in his ways of life, patterns of thinking, ways of life, learning systems, prioritization and other relationships, customs and traditions, and the creation of growing opportunities for remote human dealings, which in fact created the lived reality another group of new transactions, behaviors, literature and ethics takes place through computers and takes place over the Internet (Mukhopadhyay, 2020).

Information technology, in all its tools, forms and means, plays an important role in the internal and external operations of libraries, especially as they work to provide the necessary tools and means to facilitate the process of obtaining and exchanging information and making it accessible to the beneficiaries quickly and effectively, so we find ourselves in recent times in front of electronic information sources as a phenomenon An alternative to traditional sources - paper - by moving from the traditional world to the electronic world, where the beneficiary is able to roam freely within the electronic information resources available on the global networks (Abbas, 2020).

El-shaikh (2017) emphasized that we find ourselves once again in parallel with the bright face of modern technologies that we have previously mentioned in front of a new phenomenon that reflects the other side of the electronic environment, represented by fraud and electronic fraud that targets information "intellectual property" and which is the backbone of the new environment, so information money - Considering that information and data are like transferred money - it has a value in itself, as well as a scientific, cultural, economic, and political value. Therefore, the information and data accept the idea of possession just like the money transferred in its traditional form. This is why we find that the swindle

and fraud that affects in a direct way, information money "intellectual property" is considered one of the crimes that target the world of electronic publishing and is part of it (El-Shaikh, 2017).

The problem of the study is that libraries in general suffer a lot in the field of information security, as the sites of university or public libraries are easily penetrated, vandalized and destroyed, and thus, it is necessary to adopt measures that preserve the right of libraries to their information and secure these sites well, and thus, current study aims to demonstrate the impact of adopting the overall quality pillars on the security of libraries' information, meaning how TQM in the areas of (Product, Process, Organization, Leadership and Commitment) contributed to the level of information security and protection in e-libraries.

Realizing aim of study will be achieved through following a set of objectives including:

- Highlight areas of TQM in e-libraries management
- Identify how TQM can help secure information within the library
- Examine the influence of developing TQM pillars on information security in libraries

Based on what was mentioned above, researcher was able to build the following model as an approach to highlight the relationship between variables:

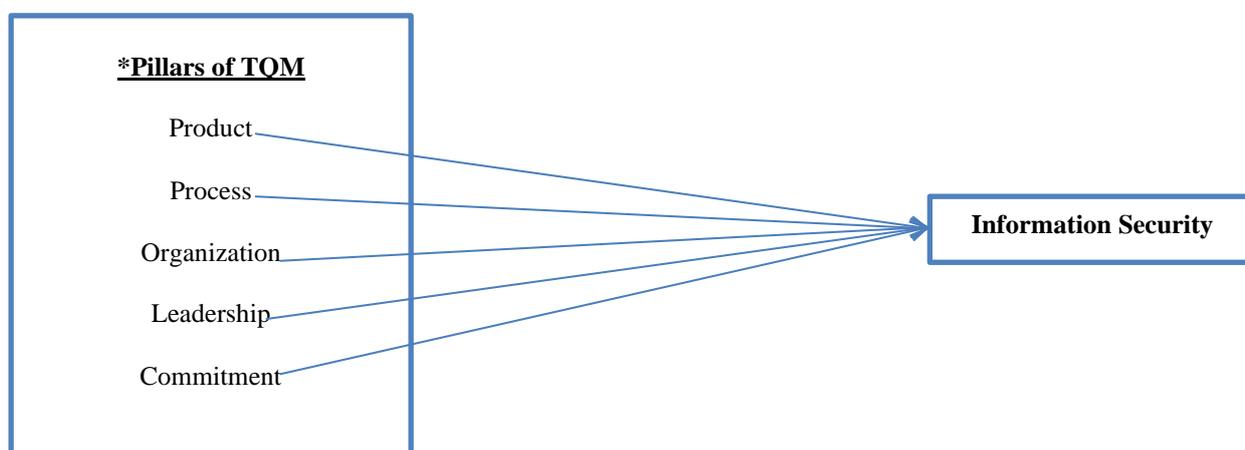


Figure 1. Study Model Roy and Kumar (2017:41); El-shaikh (2017)

Literature Review

TQM in Libraries

According to Roy and Kumar (2017), total quality management is a new concept in the field of libraries and information centers, as interest began with the end of the 20th century, and it is a comprehensive management method that aims to achieve the satisfaction of beneficiaries and their expectations by improving the quality of operations, activities, services and various events. Total quality management means the proper performance of work in libraries and information centers from the first time, with reliance on the evaluation of the beneficiaries to see the extent of improvement in performance (Stavridis and Tsimpoglou, 2012).

Gunasekaran et al (2019) argued that total quality management is based on several principles, the most important of which is the commitment of senior management and the identification of appropriate tools to measure and evaluate the current situation of the library, determine the quality strategy, teach and train trainers and workers on the method of total quality management, support its concept among departments and workers, adopt the principle of continuous development and spread the culture of quality among workers. AbdulRahman and Mohammad (2019) on the other hand stated that TQM in Arab libraries and information centers requires reshaping its culture, promoting and marketing it, education, training and continuous development, the necessity of seeking help from consultants in the field, forming work teams for this purpose, encouragement, supervision and continuous follow-up.

Information Security

According to Al-Dhahri et al (2017), information security is the science that researches the theories and strategies to provide protection for information from the risks that threaten it, and from a technical point of view it is the means, tools and procedures that must be provided to ensure the protection of information from internal and external dangers; from a legal perspective, information security is the subject of studies and measures to protect the confidentiality and integrity of the content and availability of information and combating the activities of threatening them and the exploitation of their systems in the commission of crime (computer and internet crimes).

Weishäupl et al (2018) defined information security as maintaining the availability, integrity, confidentiality, ownership and utilization of information, while AlGhamdi et al (2020) defined it as the set of approved methods and means to control all types and sources of information and protect them from theft, compromise, extortion, damage, loss, forgery, and illegal, unauthorized use. Pelantová and Šlaichová (2017) defined the concept of information security as the accurate protection, which is often achieved through the formulation of clear, specific and properly controls for security surveillance and their effective application within the framework of using a set of supervisory rules.

Information Security in Libraries

Fraud and electronic theft are two things inevitably present, and they are developing with the rapid development of technology, as whenever tools and means are built to prevent fraud and theft, we find the other developing tools and means that increase its ability to access information and data intended to be stolen, meaning that development can be both sides, and organizations should strive by all available means to protect their information and intellectual treasury from any manipulation, fraud, theft and destruction (Ali et al, 2020).

Tu et al (2018) and Herath et al (2020) indicated that there are many methods of electronic theft and fraud in the field of libraries, whether private, public or university. The idea is for the library to be electronic, with a website and its data and information uploaded on the network cloud, and among the means of theft and Fraud in the field of libraries that threaten information security:

- **Illegal copying**

Recent developments have helped produce some advanced tools and technologies that have contributed directly and indirectly to the spread of the phenomenon of unlimited copying of works and information on a large scale within the electronic environment, which led to the spread and popularity of the phenomenon of fraud and information fraud that negatively affects the adoption of electronic publishing from Among the most important techniques for assisting in the availability and exchange of information.

- **Information theft**

The phenomenon of information theft is one of the most important manifestations of fraud in the world of electronic publishing, which is one of the many negatives produced by modern technology, which would work to limit its spread within the academic environment.

- **Software theft:** it is to copy or forge programs, especially famous programs such as DOS "Disc only system" and others, and to use them illegally and re-promote them, hitting the wall, thus exposing the right to ownership of their owners. It is believed that about 90% of American computer programs are actually illegally copied.

Total quality has become closely related to libraries and their work, whether they are university libraries or public libraries, and with the development of technology, libraries have electronic sites through which beneficiaries can access the machine virtually and benefit from its services and access the information and data available in it. In the study of AbdulRahman and Mohammad (2016), it aimed to verify the extent of the application of total quality in the libraries of Sudanese universities. Through the use of the descriptive and analytical approach and case study on four libraries that included (the libraries of Omdurman Islamic University and Sudan University of Science and Technology (within Khartoum State) in addition to libraries of two government universities; Gezira University and West Kordofan University), the researcher came to the conclusion that the application of standards and Total quality practices in the libraries under study were weak, which negatively affected their performance and the

extent of their benefit to individuals, in addition to the negative effects on information security in them, and the extent of their ability to manage their affairs and promote their services.

Another study by Kharmet (2013) aimed at identifying total quality and its standards in information centers and libraries, and the study dealt with determining the importance of the issue of total quality management, in which information centers and libraries lack their foundations and rules. The study reached many results; including laying the foundations for the application of total quality that can be adopted in the sector of information centers and libraries, which shows the importance of applying some of the axes adopted by the TQM. In addition to that, study indicated the need to adopt systems and standards in the application of quality which will have a major role in the performance control processes and achieving the goal, such as the service quality measure and information security standards. The study included a number of recommendations, including that information centers and libraries should increase awareness of the importance of applying the principles and specifications that quality urges, and work to develop special programs for each type of information institution. As well as working on training all employees of these institutions at the level of the various departments and departments that are closely related to them.

Based on literature presented earlier, researcher was able to develop the following set of hypotheses:

Main Hypothesis

***H:** There is a statistically positive influence of TQM pillars on e-libraries information security in Jordan*

Sub-Hypotheses:

***H1:** There is a statistically positive influence of product on e-libraries information security in Jordan*

***H2:** There is a statistically positive influence of process on e-libraries information security in Jordan*

***H3:** There is a statistically positive influence of organization on e-libraries information security in Jordan*

***H4:** There is a statistically positive influence of leadership on e-libraries information security in Jordan*

***H5:** There is a statistically positive influence of commitment on e-libraries information security in Jordan*

Methods

Achieving aim of current study was done depending on quantitative approach. A self-administered questionnaire was developed by researcher utilizing studies of El-shaikh (2017); Roy and Kumar (2017:41) and AbdulRahman and Mohammad (2016), the questionnaire was built as according to likert 5 scale and was uploaded online and distributed on employees and workers within Jordanian e-libraries which present its services online and has a website on the internet. Population of study consisted of all individuals working within libraries in Jordan, a convenient sample of (150) individuals was chosen to represent population of study. After application process; researcher was able to retrieve (113) properly filled questionnaire which indicated a response rate of 75.3% as statistically accepted. SPSS was used in order to screen and analyzed gathered primary data, tests such as descriptive analysis, multiple regression and simple regression were used. Reliability test was adopted in order to measure consistency of study tool. Reliability test indicated through Cronbach alpha as Alpha value for the scale =0.957 was acceptable since it was greater than the cutoff value 0.60.

Analysis and Discussion

Sample Characteristics

Table 1. Sample Characteristics According to Demographics

Gender		
	f	%
Male	67	59.3
Female	46	40.7
Education		
BA	27	23.9
MA	84	74.3
PhD	2	1.8
Age		
22-28	19	16.8
29-35	56	49.6
36-42	23	20.4
+43	15	13.3
Experience		
1-3	26	23.0
4-6	38	33.6
7-9	33	29.2
+10	16	14.2
Total	113	100.0

As it can be seen in table 1 above, sample characteristics according to demographics indicated that majority of respondents were males forming **59.3%** of total sample who aged between **29.35** forming 49.6% of the sample and who held an educational level of MA degree forming **74.3%** of the total sample with an experience within libraries and their use that ranged between 4-6 years forming **33.6%** of the total sample which took part in the study.

Questionnaire Analysis

Table2. Questionnaire Analysis

Statement	Mean	Std. Deviation
Pillars of TQM*		
Product		
All material are uploaded on secure cloud and only members have access to them	3.59	
The management takes into perspective the validity of every material uploaded online	3.44	
Employees make sure that every material is supported with a backup copy	3.54	
Material is organized in a way that ease looking for it	3.42	
Individuals who have access can't modify the organization of the material	3.47	
Process		
No one can log into the website without a user and password from the management	3.29	
Updating is done quarterly or biannually	3.32	
IT department follows every log in that take place on the website	3.26	
IT department makes sure that the website is fully protected from hackers	3.38	
The process of uploading and saving material is protected through developed tech equipment	3.43	
Organization		
The management is aware of its mission and vision	3.33	
Higher management have positive attitude towards quality in library services	3.52	
The library is aware of the importance of change management	3.49	

Quarterly or biannually, the library update its tech equipment	3.50
The library is aware of social responsibility and its positive influence on library outcomes	3.42
Leadership	
Every department has a trained leader who follows its activities	3.74
Leaders are trained on skills of acquisition, indexing, classification, extraction, information retrieval, and computer and its applications	3.69
Leaders have skills of constructive critical thinking, logical analysis, and innovative and creative thinking skills.	3.73
Empowerment is a major concept that is granted to leaders in order to present high quality service	3.63
Commitment	
Library is committed to presenting up-to-date material	3.88
Individuals are always able to answer beneficiaries queries either online or through the phone	3.58
Management is committed to solving problems and managing conflicts	3.77
All security standards are adopted within the library all the time	3.81
Library is commitment to delivering the most secure service to individuals	3.58
Information Security	
The library provides strategies and theories that ensure protection of information from threats	3.66
The library periodically monitors any technical or legal assault activities	3.57
The library guarantees the protection and confidentiality of its information and combats abuse and exploitation activities	3.48
The library follows up on research, strategies and legislation related to information security in terms of technology and performance	3.58
Library activities are confidential and reliable	3.28
The library adopts all necessary measures in order to protect its site from abuse, piracy and destruction	3.32

Table 2 above presented mean and standard deviation of questionnaire statements as according to respondents' answers. As it can be seen, all statements of questionnaire scored higher than mean of scale 3.00 which is statistically acceptable as it showed a positive attitude from respondents towards the presented ideas within statements. The most positively answered statement appeared to be "*Library is committed to presenting up-to-date material*" which scored a mean of 3.88/5.00 and indicating that the library is committed to following any technological up date that take place of software and applications presented for individuals. As for the least positively answered statements, it can be seen that "*IT department follows every log in that take place on the website*" scoring a mean of 3.26/5.00 and indicating that there might be a sense of shortage in following log ins that takes place on library website.

Taking a larger view, the following table 3 presented attitudes of respondents towards variables of study, as it can be seen within the following table that respondents had a positive attitudes towards the variable of "*commitment*" as it scored a mean of 3.72/5.00 compared to the least positive attitude from respondents which was scored by the variable of "*process*" as it scored a mean of 3.33/5.00.

Table 3. Descriptive Statistics of Variables

Variable	Mean	Std. Deviation
Product	3.4920	1.01279
Process	3.3363	.92592
Organization	3.4531	.92929
Leadership	3.6991	.88462
Commitment	3.7221	.76599
Security	3.4823	.82926

Hypotheses Testing

Main Hypothesis

H: There is a statistically positive influence of TQM pillars on e-libraries information security in Jordan

Table 4. Testing Main Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.727 ^a	.529	.507	.58251		

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.713	5	8.143	23.997	.000 ^b
	Residual	36.307	107	.339		
	Total	77.020	112			

Coefficients						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.463	.287		1.614	.110
	Product	-.004	.077	-.005	-.048	.962
	Process	.251	.091	.280	2.741	.007
	Organization	.095	.089	.106	1.070	.287
	Leadership	.049	.101	.052	.484	.629
	Commitment	.453	.116	.419	3.913	.000

Multiple regression was used to test the main hypothesis, it appeared that $r = 0.727$ reflected high and strong relationship between pillars of TQM and information security. Also, it was found that the independent variables explained **52.9%** in the variance of the dependent variable. F value was significant at 0.05 level which meant that the main hypothesis was accepted and basically "TQM pillars have an influence on e-libraries information security in Jordan"

Sub-Hypotheses:

H1: There is a statistically positive influence of product on e-libraries information security in Jordan

Table 5. Testing 1st Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.509 ^a	.259	.252	.71699		

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.958	1	19.958	38.824	.000 ^b
	Residual	57.062	111	.514		
	Total	77.020	112			

Coefficients						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.027	.243		8.336	.000
	Product	.417	.067	.509	6.231	.000

Linear regression was used to test the first sub-hypothesis, it was found that $r = 0.509$ reflected medium and positive relationship between product and information security. Also, it was found that the product as a variable of TQM pillars explained **25.9%** in the variance of the dependent variable. With an F value

being significant at 0.05 level , the hypothesis was accepted and "there is a statistically positive influence of product on e-libraries information security in Jordan".

H2: There is a statistically positive influence of process on e-libraries information security in Jordan

Table 6. Testing 2nd Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.604 ^a	.365	.359	.66391		
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.095	1	28.095	63.740	.000 ^b
	Residual	48.925	111	.441		
	Total	77.020	112			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	1.678	.235		7.154	.000
	Process	.541	.068	.604	7.984	.000

Linear regression was used to test second sub-hypothesis, it was found that $r = 0.604$ reflected medium and positive relationship between process as a variable and the dependent variable. Also, it was found that the independent variable explained **25.9%** in the variance of the dependent variable. The F value was significant at 0.05 level, that means there was a "statistically positive influence of process on e-libraries information security in Jordan"

H3: There is a statistically positive influence of organization on e-libraries information security in Jordan

Table 7. Testing 3rd Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.532 ^a	.283	.277	.70520		
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.820	1	21.820	43.876	.000 ^b
	Residual	55.200	111	.497		
	Total	77.020	112			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1	(Constant)	1.842	.256		7.187	.000
	Organization	.475	.072	.532	6.624	.000

Linear regression was used to test 3rd sub- hypothesis, $r = 0.532$ reflected medium and positive relationship between the independent variable (organization) and the dependent variable. Also, it was found that the independent variable explained **28.3%** in the variance of the dependent variable. The F value was significant at 0.05 level, that means "there is a statistically positive influence of organization on e-libraries information security in Jordan".

H4: There is a statistically positive influence of leadership on e-libraries information security in Jordan

Table 8. Testing 4th Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.577 ^a	.333	.327	.68010		
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.678	1	25.678	55.515	.000 ^b
	Residual	51.342	111	.463		
	Total	77.020	112			
Coefficients						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.480	.276		5.358	.000
	Leadership	.541	.073	.577	7.451	.000

Linear regression was used to test above hypothesis, $r = 0.577$ reflected medium and positive relationship between the independent variable (leadership) and the dependent variable. Also, it was found that the independent variable explained **33.3%** in the variance of the dependent variable. F value was significant at 0.05 level, that means "there is a statistically positive influence of leadership on e-libraries information security in Jordan".

H5: There is a statistically positive influence of commitment on e-libraries information security in Jordan

Table 9. Testing 5th Hypothesis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.657 ^a	.432	.427	.62795		
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.250	1	33.250	84.322	.000 ^b
	Residual	43.770	111	.394		
	Total	77.020	112			
Coefficients						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.835	.294		2.836	.005
	Commitment	.711	.077	.657	9.183	.000

Linear regression was used to test the 5th sub-hypothesis, $r = 0.657$ reflected medium and positive relationship between the independent variable (commitment) and the dependent variable. Also, it was found that the independent variable explains **43.2%** in the variance of the dependent variable. F value was significant at 0.05 level, that means "there is a statistically positive influence of commitment on e-libraries information security in Jordan".

Discussion

The current study aimed at examining how TQM pillars may facilitate information security within libraries in Jordan, pillars of TQM included (Product, Process, Organization, Leadership and Commitment). A questionnaire was distributed on sample of (113) employees within libraries that

present e-services for its clients and is supported with a website that is uploaded on internet. SPSS v. 26th was used in order to screen and analyze gathered data, results of study was able to point out the following:

- Respondents had a positive attitude towards statements of study and it appeared that e-libraries in Jordan enjoy a good level of information security based on the fact that the sample taken into consideration was a employees and workers within the libraries which give them the ability to determine the level of TQM that is applied within the library and its role in developing the level of information security.
- Study was able to identify that all TQM pillars taken into consideration of study were applied within Jordanian e-libraries which facilitated their security level and increased he reliability and authenticity of services presented to clients.
- All TQM pillars appeared to be influential, in the 1st rank there appeared a high influence of commitment which explained 43.2% of the variance and indicating that it was the most supported variable of all.
- All other TQM pillars scored a good level of variance as they managed to present a medium and positive relationship to information security which explained that TQM does have an influence on the level of security that e-libraries in Jordan have.

Through analysis, it was concluded that there is a statistically positive influence of TQM pillars on e-libraries information security in Jordan, which means the man hypothesis was accepted. Also, sub-hypotheses were accepted as well referring to an influence of all TQM pillars (Product, Process, Organization, Leadership and Commitment) on information security.

The most influential variable came in favor of commitment which scored a variance of **43.2%** and indicating that the commitment of library management to adopt all security tools, strategies and approaches play a huge role in defining all the security measures within a library especially if it presents its services online.

In the 2nd rank of influence there appeared that leadership is very influential with a variance of **33.3%** as an explanation of the relationship between variables. This result give an indication that leadership is influential in increasing security of information within e-libraries which can be manifested in the way leaders manage employees and their tasks, the regulations that leaders adopt and apply on their teams in addition to the level of awareness that leaders have towards the idea of TQM and the importance of information security in libraries.

The study concluded that the application of the principles and standards of total quality in libraries is of increasing interest due to the significant impact that quality management has on the security of services and networks provided by the library. The results of the study correlated with what was stated in the study of El-shaikh (2017); Roy and Kumar (2017:41) and AbdulRahman and Mohammad (2016) who indicated that the security of information is of great importance in libraries so that - in some countries - taxes are imposed on them more by expanding the mutual relationships between customers, suppliers and partners. On the other hand, information security is a means for any organization, whether service or productive, to be prepared to deal with weaknesses, threats, and non-compliance with policies that may exist in neighboring environments.

On the other hand, the study demonstrated that the number of information security efforts that exist today in Jordanian electronic libraries need to create compatibility in operational tools with requirements and expectations. Unfortunately – as Kharmeeet (2013) and current study indicated - it has been proven through the study that electronic libraries in Jordan depend on old and traditional security analyzes carried out by a number of experts or on data collected exclusively by security assessment tools, such as password policies, firewall technologies, or on metrics. Such as the average time between system failures and this is subject to comprehensive quality practices, dimensions and standards.

In addition to that, study was able to reach result that matched with Tu et al (2018) and Herath et al (2020) on the fact that total quality standards and their application to the organization in terms of leadership, management, process and commitment have a great role in planning, developing and implementing information security policies in electronic libraries, and the focus is through the administration's adoption of total quality standards and at the same time the focus on integrating with professionals in the field of information technology to ensure the highest level of information security in the library.

The study also confirms that there are many technological threats that electronic libraries may be exposed to, including the risks of computers that are within the jurisdiction of the Information Technology Department, the risks of laws and regulations that are of interest to the departments and leaders in them, in addition to the level of commitment found in the library, which is usually subject to the discipline of working individuals from all departments and the extent of their task with the importance of total quality in operations, services, products and also decision-making processes.

The process of implementing total quality management in Arab libraries and information centers faced many problems, the most important of which was the failure to encourage higher management to focus on aspects of quality, failure to provide the necessary resources and requirements, preoccupation with routine work and resistance to change among some administrators, workers and others. Although the issue of total quality in Arab libraries and information centers has been discussed in specialized seminars and conferences, it is still in the theoretical framework and has not been applied in an integrated manner in most libraries and information centers.

Conclusion and Recommendations

The great development in the field of information and communication played an important role in disseminating information at an amazing speed and thus transforming the world into a village in which all paradoxes dissolve and all borders open, which facilitated the availability of information and access to global information sources and the issue of rules and information banks and the free access to information without obstacles. He made it a blessing that opened the doors to everyone and at the same time turned into a curse by taking some of the weak-minded from this environment the scene of their crimes, from violation, sabotage and piracy to confusion and alteration of information, taking into account neither the privacy nor the confidentiality and security of these files, striking at the wall the moral and legal-legislative controls - Governing work in the electronic environment.

Based on previous discussion and conclusion, current study recommends the following:

- The necessity of moving in the field of total quality management from theory to practical application.
- Study the perceptions of libraries' workers regarding their awareness of TQM and its interconnectedness with information security
- The university library in particular derives its security from the university itself because it is an integral part of the university. Therefore, the study recommends the necessity of following up the total quality standards in the university itself because it reflects the total quality in all its facilities, the most important of which is the libraries.

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