

The Interactional Effects of Intellectual Capital and Knowledge Management on Applying Total Quality Management (TQM): A Field Study on Commercial and Islamic Banks Working In Southern Governorates of Jordan

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Abstract

The aim of this study was to identify the nature of the relationship between intellectual capital and knowledge management, and their impact on applying total quality management in several commercial and Islamic banks working in southern governorates of Jordan. A questionnaire was developed to collect data from the sample of the study represented by 31 branches and 130 questionnaires were distributed. 15 were exempted and only 115 questionnaires were considered valid to be analyzed statistically. Analysis of the data indicated the following. First, the average of the respondents' answers regarding the level of intellectual capital development was moderate with a score of 3.44. Second, the mean score with respect to respondents' answers regarding the level of knowledge management processes was also moderate with a score of 3.60. Third, the results of the study have shown that there is a significant and positive relationship between intellectual capital investment and knowledge management processes. Finally, there is a significant and positive impact of both intellectual capital investment and knowledge management processes on applying TQM. This study recommended managers to pay more attention to recruit, retain and develop its talented employees internally and externally as well as to develop technology in knowledge management, especially in the processes of storing and distributing knowledge.

Keywords: Intellectual capital, knowledge management, total quality management, Banks, Jordan

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الآثار التفاعلية بين تنمية رأس المال الفكري وإدارة المعرفة وأثرهما في تطبيق الجودة الشاملة:
دراسة ميدانية على البنوك التجارية والإسلامية العاملة في محافظات جنوب الأردن

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ملخص

هدفت الدراسة إلى التعرف على طبيعة الآثار التفاعلية بين تنمية رأس المال الفكري وإدارة المعرفة وتأثيرهما على تطبيق إدارة الجودة الشاملة في عدد من المصارف التجارية والإسلامية العاملة في المحافظات الجنوبية في الأردن. وقد تم إعداد استبانة لجمع البيانات من عينة الدراسة التي تمثل 31 فرعا وعليه تم توزيع (130) استبانة. واعتبرت فقط 115 استبانة صالحة للتحليل الإحصائي. وأظهرت تحليل البيانات ما يلي: أولاً، كان متوسط إجابات المستجيبين فيما يتعلق بمستوى تنمية رأس المال الفكري معتدلاً حيث بلغ 3.44. ثانياً، كانت النتيجة المتوسطة فيما يتعلق بإجابات المستجيبين فيما يتعلق بمستوى عمليات إدارة المعرفة معتدلة بدرجة 3.60. ثالثاً، أظهرت نتائج الدراسة أيضاً وجود علاقة كبيرة وإيجابية بين الاستثمار في رأس المال الفكري وعمليات إدارة المعرفة. وأخيراً، وجدت الدراسة بأن هناك تأثير كبير وإيجابي على كل من استثمار رأس المال الفكري وعمليات إدارة المعرفة في تطبيق إدارة الجودة الشاملة. وأوصت هذه الدراسة المديرين بإعطاء المزيد من الاهتمام لتعيين والحفاظ وتطوير موظفيها الموهوبين داخلياً وخارجياً، فضلاً عن تطوير التكنولوجيا في إدارة المعرفة، وخاصة في عمليات تخزين وتوزيع المعرفة.

الكلمات الدالة: رأس المال الفكري، إدارة المعرفة، الجودة الشاملة، البنوك، الأردن

Introduction:

It is well accepted that employee is considered as an important source for organizations seeking for competitive advantage. Employees are what distinguish organizations from rivals to increase its organizations' productivity. In today's business landscape, the rapid technological and demographic changes require organizations to focus on the process through which they can hire qualified employees to execute its business strategy and maintain its competitive edge. Therefore, it is necessary for organizations to consider strategic methods for developing its intangible assets to adapt with these changes. Two of the main strategies that gain scholars attentions in maintaining competitive advantage are knowledge management and organizations' intellectual capital. The combination of disciplines which leads to more development of the processes by generating more similarity and eventually leading to elimination of old processes is called knowledge management. It has been argued that focusing on knowledge management in all of its dimensions (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application), might lead to success of organizations in achieving its goals that is eventually resulting in diversity of goods and increasing the quality of the provided services. On the other hand, intellectual capital refers to the sum of resources that assess the value of a firm and its competitiveness. Organizations started to assess their intangible assets in a way to develop their intellectual capital or through recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus.

Total quality management (TQM) has been known as a management approach to long-term success. In TQM, all employees work together on continual basis in order to improve organizations products, services, processes and culture. It is well argued that TQM focuses on inspecting organizational direct and indirect process with an emphasis on reducing defects in regard to satisfying customer needs. Banking sector is considered one of the important sectors in developing the national economy, which focus on providing the services on excellence and innovative basis. The rapid changes in the banking sector environment can be traced back to the considerable development that appears in the world of communication. This enforce banking sector to renew their knowledge system and their efforts to meet with these changes. Thus, banking sector started to refocus on the quality of its services and to search for the intangible resources, which

necessitate the development of intellectual capital and knowledge management when applying total quality management.

Consequently, the problem of the study is mainly focused on maximizing the capability of banking sector in maintaining and generating quality of services provided. This is done by understanding the mutual impact of intellectual capital alongside with knowledge management processes on the application of total quality management.

This can be achieved by answering the following questions:

- What is the level of intellectual capital Investment in commercial and Islamic banks working in southern governorates of Jordan?
- What is the level of knowledge management in commercial and Islamic banks working in southern governorates of Jordan?
- Is there an interaction influence of intellectual capital and knowledge management on the application of total quality management

The importance of the study

Banking sector of Jordan is considered as a one of the main important contributor to the national economy since it drives and supplies all the other sectors. The importance of the studied variables emerged from the following. First, in regard to intellectual capital investment, this variable is considered important since it contributes in finding talented employees who are able to achieve the goals of the organization efficiently and effectively. Also, it is well agreed that intellectual capital contributes in developing such employees, retaining them and recruiting others who have creative abilities that will benefit the organization. Second, knowledge management is considered as one of the modern methods that researchers became increasingly interested in. This might be due main role it plays in achieving organizational success. Furthermore, the interest in intellectual capital has increased so the organizations that are able to acquire, capture, store, retrieve and apply knowledge has become the most innovative and competitive organization within a competitive environment. Finally, the importance of TQM emerges from the fact that it is one of the modern concepts that is applied in many organizations to improve its performance and to achieve customer's satisfaction.

The objectives of the study

- To understand the level of intellectual capital Investment in commercial and Islamic banks working in southern governorates of Jordan
- To test the levels of knowledge management in commercial and Islamic banks working in southern governorates of Jordan
- To test the interactional effects of intellectual capital and knowledge management on the application of total quality management

Hypotheses and Model of the study

A hypothetical model was built as shown in Fig. (1) to achieve the objective of the study as it involves three main variables represented by intellectual capital investment by its dimensions (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital), knowledge management by its dimensions (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) and total quality management by its dimensions (senior management support, customer involvement, employees' empowerment and participation, strategic planning and continuous improvement). The independent variables of this study are: intellectual capital investment and knowledge management whereas the dependent variable is total quality management.

The following hypotheses are developed:

First Main Hypothesis (H01): there is no statistical significant relationship at $\alpha = 0.05$ between the dimensions of intellectual capital (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital) and the dimensions of knowledge management (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application).

Second Main Hypothesis (H02): there is no statistical significant impact at $\alpha = 0.05$ of intellectual capital and knowledge management processes in total quality management in commercial and Islamic banks working in southern governorates of Jordan.

First sub-hypothesis (H02:1): there is no statistical significant impact at $\alpha= 0.05$ of intellectual capital by its dimensions (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital) in total quality management in commercial and Islamic banks working in southern governorates of Jordan.

Second sub-hypothesis (H02:2): there is no statistical significant impact at $\alpha= 0.05$ of knowledge management processes by its dimensions (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) in total quality management in commercial and Islamic banks working in southern governorates of Jordan.

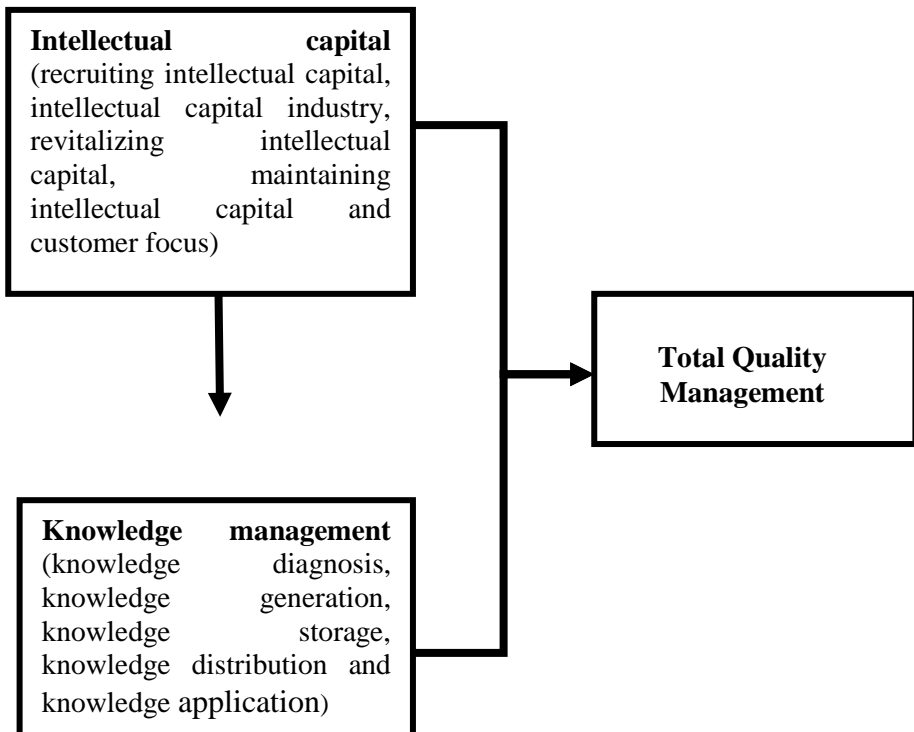


Figure (1) Study Model

Literature review and Definitions of terms

Daft, (2001) refers to intellectual capital as a set of information resources, which consist of two types of knowledge: explicit knowledge that can be expressed or written, and implicit knowledge that based on personal experiences and the rules that are used in the development of the organization. According to Daft (2001), intellectual capital has the five main dimensions: firstly, recruiting intellectual capital, this includes the process of finding talented individuals and attracting and providing them with suitable infrastructure and financial and moral incentives. Secondly, intellectual capital industry which concentrates on strengthens the capacities of employees through practices and training programs in order to motivate their creativity and to create a competitive advantage. Thirdly, stimulating intellectual capital postulates that it is inadequate for an organization to employ efficient individuals but the organizations must work on the activation of those competencies to be able to create a competitive advantage that can be done through brainstorming of personnel, material and moral motivation. Fourthly, maintaining intellectual capital refers to organizations' ability to maintain its intellectual capital by enhancing their loyalty in regard to the organizational culture. Finally, customer focus (or customer capital) refers to the relationship that employees develop with customers in order to identify their needs and find the services that meet their desires.

The second variable of interest is knowledge management. Knowledge management is defined as a multidisciplinary process to achieve organizational goals by creating, distributing, using and managing the knowledge to be used in any organization. According to (Kandelgi et al., 2005), the knowledge management process involves the following main dimensions. First, knowledge diagnosis aims to identify internal and external knowledge sources. Internal knowledge sources identify the gaps by comparing what knowledge is available with what knowledge is required in the organization. However, external resources of knowledge should be identified so that the organization could attract and utilize it. These diagnoses must be precise in order to identify individuals who possess the knowledge and their attitudes. Second, knowledge generation is done by the developing task duties and working groups. Hence, knowledge generating helps in achieving organizational competitive advantage and enables organizations to solve problems faced by organizations efficiently and effectively. The third dimension is knowledge storage. After diagnosing

and generating knowledge, knowledge must be stored, which includes the access of knowledge when it is needed. Fourth, knowledge distribution means delivery of knowledge to the right person at the right time and at the suitable form and cost. Knowledge is distributed through either formal ways, (such as reports, official meetings and training), or through informal ways that are accomplished through small groups. Therefore, the integration of formal and informal methods is best for the distribution of knowledge within the organization. Finally, knowledge application is the last process of knowledge management. Here organizations must apply the knowledge at the best way. Possessing the knowledge by the organization does not guarantee a great performance unless that knowledge is applied efficiently and effectively. In order to achieve organizational goals, the role of management is important in creating an organizational culture that supports the application of knowledge.

The third variable of interest is total quality management. Kreitner and Kinicki (2007) have defined it as a culture of training and continuous improvement to achieve customer satisfaction. Reviewing the relevant literature show that TQM has the following dimensions.

First, senior management support: is a must to implement total quality principles, because the role of senior management is related to creating an organizational culture that contribute and facilitate the application of the principles of total quality also senior management sets the quality objectives and seeks to achieve them by providing the essential resources (Prajogo & Sohal, 2006). Second, customer involvement: all organizations seek to satisfy the customer by delivering needed products and services. The relationship with the customer is always considered as one of the main principles applied by the total quality management because the customer the organizations seek to build long-term strategic relationships with customers. All of which leads to achieve a competitive advantage (Zakuan et al., 2008). Hence, organizations always pursue constantly what the customers want, in order to meet their needs and to even exceed their expectations.

Third, employees' empowerment and participation: since total quality management seeks to develop continuous improvement to meet customer needs, employee empowerment will increase the ability of workers making decisions and participate in solving problems effectively. Furthermore,

employee empowerment will increase the employees' sense of responsibility, so strategic goals cannot be achieved without enabling employees (Hananee, 2011; Jodeh, 2012). Fourth, strategic planning: when seeking to achieve long term goals there should be a strategic planning processes to avoid surprises. When organizations have the ability assess the internal and external environment thoroughly, total quality management is based on strategic planning and a high degree of accuracy. Finally, continuous improvement: refers to the process of ongoing improvement of products service and processes all over the organization. This can be achieved by, for example, by continuous training to reach quality levels and competitiveness. The Japanese school has considered this dimension as the philosophy of total quality management (Madhoun, 1999).

Previous Studies

Alrousan and Alajlouni study (2010) aimed to investigate the availability of intellectual capital in knowledge and identifying the degree of its attraction, industry, revitalization and customer focus and its relationship with innovative capacities. The most important results that the five dimensions of intellectual capital do not receive the appropriate attention. The study shows that the dimensions of intellectual capital (industry, revitalization, maintenance) have a positive impact on the development of capacities, while the dimensions (attraction, customers) do not have an influence on the development of capacities. The most important recommendation was to pay more attention to the subject of cognitive and intellectual assets and to revitalize industry and to attract intellectual capital.

Study of Abu Zyadeh, (2011) aimed to identify the level of application of total quality management dimensions in and the impact of applying total quality management on organizational performance in Palestinian commercial banks. The study concluded that there is a statistical significant impact of the dimensions of TQM as a whole (senior management support and conviction, customers' involvement, motivation and participation of workers, focus on banking operations, strategic planning and continuous improvement) on organizational performance. The study recommended senior management and staff at all managerial levels to be more aware of the importance of total quality management and the benefits resulting from its application.

Abu Alghenem (2012), in his study, identifies the level of intellectual capital investment and its impact in the effectiveness of strategic information systems at food industry companies in Jeddah. The study concluded that the perception of the respondents of the level of intellectual capital and the level of the effectiveness of the information systems were low. Also, the intellectual capital dimensions (industry of the capital, its revitalization and interest in it) have a significant impact on the organizational performance.

In another study, Odwan and Suleiman (2012) aimed to identify how intellectual capital and its dimensions influence organizational innovation. One of the main conclusions found in this study was there is a significant and direct relationship between the intellectual capital and organizational innovation. Through the results, the researchers came up with number of for example: insurance companies need to develop strategies to support organizational innovation and offer possibilities for implementation, directing the attention toward their human capital and support it in the first place.

Study of Sarayreh and Najdawi (2012) aimed to investigate the role of intellectual capital and total quality management in improving the performance of companies and the impact of intellectual capital in applying total quality management. One of the most important results is that there an impact of the components of intellectual capital which is human capital, structural capital, and customer capital on total quality management in number of pharmaceutical companies. This study recommended management to pay more attention to develop the intangible assets of the companies and to consider quality as its first priority.

Study of Aladroos (2012) aimed to identify the concept of knowledge management as an approach to improve quality in Saudi Universities and to identify the processes of knowledge management that contribute to achieve quality in universities. The study concluded that lack of experience of the leaders and lack of incentives and lack of training programs make it harder to apply knowledge management. The study recommended that it is essential to apply knowledge management as an approach to achieve quality.

A study conducted by Alzoubi and Abu Alghenem (2012) aimed to identify the role of knowledge management functions in shaping quality service provided by two Jordanian authorities; the Water Authority of Jordan, and the electricity company in the South provinces of Jordan. The study has reached that there is a statistically significant impact of the knowledge management dimensions (knowledge creation, knowledge acquisition, knowledge dissemination, knowledge organization and knowledge usage) on the quality of the services provided. The study recommended that senior management should be directed to adopt an organizational culture that promotes generation, sharing and application of knowledge.

Study of Ooi, Lin, Teh and Chong (2011) empirically examined the link between TQM practices (i.e., leadership, customer focus, strategic planning, personnel management, information analysis, and process management) with innovation performance as perceived by managers working in number of companies in Malaysia. The results of this study show that TQM has a significant positive relationship with innovation performance. In particular, the findings of this study show that process management, strategic planning, people management and customer focus have positive relationships with innovation performance of firms surveyed in Malaysia. Therefore, both researchers and practitioners are advised to consider these relevant TQM practices when assessing the innovation performance of an organization.

Finally, Alshaar (2014) aimed at investigating the impact of quality management practices in terms of: product innovation, process innovation, and product innovation in several Jordanian industrial firms. The results indicated that quality management practices affect the product innovation, process innovation, as well as the administrative innovation. However, results showed that there is no effect for supplier relationships on product innovation. Moreover, the results indicated that customer relationships and human resource management do not affect the process innovation and administrative innovation. The study recommended that quality management need to focus more in fostering innovative products besides their traditional role in improving quality.

Based on the literature review, this study is different from previous studies in which it is the first to empirically examine the interaction effects of intellectual capital (and its dimensions) and knowledge management (and its dimensions) on TQM in a Middle Eastern setting i.e., Jordanian context.

By examining the interaction effects of intellectual capital and knowledge management, we hope to contribute to the literature both theoretically and empirically. For a theoretical perspective this study responds to previous calls by Alzoubi and Abu Alghenem (2012) to focus on the joint influence of knowledge management in the workplace environment. Furthermore, our study enriches the TQM literature that knowledge management influences intellectual capital to affect TQM.

Population and sample

The study population consists of managers, heads of departments, and employees in the branches and offices of commercial and Islamic banks in the southern province. The number of branches and offices is 31. (130) copies of the questionnaire were distributed to the study sample and (15) copies were excluded because they either not fully completed or were invalid for the purposes of analysis. Table (1) shows the distribution of the sample in terms of gender, age and educational level.

Table (1) Distribution of the individuals of the study

Variable		Number
Gender	Male	60
	Female	55
	Total	115
Educational level	Secondary	10
	Diploma	12
	Bachelor	72
	Higher studies	21
	Total	115
Age	30 or less	37
	31 – 40	34
	41 – 50	27
	51 or more	17
	Total	115

The validity and reliability of the instrument of the study

In order to assess the psychometric properties of the survey, validity and reliability were assessed. In terms of validity, the questionnaire was presented to number of arbitrators to ensure its validity and convenience to the hypotheses of the study, and then the questionnaire was modified according to their suggestions. On the other hand, in order to assess reliability, Cronbach's alpha was used to ensure the level of reliability of the questionnaire where the acceptance level is equal to 60% according to Sekaran (2006). Table (2) illustrates the reliability coefficient of each dimension.

Table (2) Reliability Cronbach's alpha of the questionnaire

Variable	Dimension	Reliability coefficient
Intellectual capital investment	Recruiting	0.80
	Industry	0.83
	Revitalizing	0.81
	Maintaining	0.80
	Customer focus	0.84
	Total	0.88
Knowledge management Processes	Knowledge diagnosis	0.83
	Knowledge generation	0.85
	Knowledge storage	0.80
	Knowledge distribution	0.83
	Knowledge application	0.86
	Total	0.90
Total quality management		0.91

Results:

Results related to the first question: What is the level of intellectual capital Investment in commercial and Islamic banks working in southern governorates of Jordan? To answer this question, the arithmetic means and standard deviations of the level of intellectual capital in commercial and Islamic banks operating in the southern province was calculated as shown in the Table (3):

Table (3) Results of question one of the study

Dimension	Arithmetic mean	Standard deviation	Rank	Level
Recruiting	3.56	.85	2	Moderate
Industry	3.34	.76	4	Moderate
Revitalizing	3.24	.81	5	Moderate
Maintaining	3.47	.69	3	Moderate
Customer focus	3.59	.74	1	Moderate
Total	3.44	.64	–	Moderate

It is indicated from the table (3) that the level intellectual capital in commercial and Islamic banks operating in the southern province level was moderate with a mean of (3.44) and a standard deviation of (0.64), the dimension of Customer focus came in the first place with a moderate level and a mean of (3.59) and a standard deviation of (0.74), while the dimension of Revitalizing came in the last place with a moderate level and a mean of (3.24) and a standard deviation of (0.81).

Results related to the second question: What is the level of knowledge management in commercial and Islamic banks working in southern governorates of Jordan? To answer this question, the arithmetic means and standard deviations of the level of knowledge management in commercial and Islamic banks operating in the southern province was calculated as shown in the table (4):

Table (4) Results of question two of the study

Dimension	Arithmetic mean	Standard deviation	Rank	Level
Knowledge diagnosis	3.69	.89	1	Moderate
Knowledge generation	3.62	.93	3	Moderate
Knowledge storage	3.53	.81	5	Moderate
Knowledge distribution	3.66	.94	2	Moderate
Knowledge application	3.54	.88	4	Moderate
Total	3.60	.57	–	Moderate

It is indicated from the table (4) that the level knowledge management in commercial and Islamic banks operating in the southern province level was moderate with a mean of (3.60) and a standard deviation of (0.57), the dimension of Knowledge diagnosis came in the first place with a moderate level and a mean of (3.69) and a standard deviation of (0.89), while the dimension of Knowledge distribution came in the last place with a moderate level and a mean of (3.53) and a standard deviation of (0.81).

Hypothesis testing:

First Main Hypothesis (H01): there is no statistically significant positive relationship at $\alpha = 0.05$ between the dimensions of intellectual capital (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital) and the dimensions of knowledge management (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution, and knowledge application).

In order to test this hypothesis, the researcher has used correlations coefficients between each dimension of intellectual capital investment and the dimensions of knowledge management. The results revealed table (5) that there is a relationship between intellectual capital investment and the dimensions of knowledge management. All of which are statistically significant at level of $\alpha = 0.05$

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Table (5) The correlation matrix between the dimensions of intellectual capital investment and the dimensions of knowledge management

Dimensions of intellectual capital investment	Dimensions of knowledge management					
	Knowledge diagnosis	Knowledge generation	Knowledge storage	Knowledge distribution	Knowledge application	Total
Recruiting	.424**	.483**	.336**	.123	.292**	.509**
Sig. (2-tailed)	.000	.000	.000	.189	.002	.000
Industry	.291**	.337**	.400**	.245**	.310**	.483**
Sig. (2-tailed)	.002	.000	.000	.008	.001	.000
Revitalizing	.290**	.365**	.214*	.337**	.387**	.501**
Sig. (2-tailed)	.002	.000	.021	.000	.000	.000
Maintaining	.443**	.322**	.164	.285**	.552**	.556**
Sig. (2-tailed)	.000	.000	.081	.002	.000	.000
Customer focus	.342**	.335**	.327**	.147	.384**	.476**
Sig. (2-tailed)	.000	.000	.000	.117	.000	.000
Total	.421**	.427**	.327**	.252**	.440**	.584**
Sig. (2-tailed)	.000	.000	.000	.007	.000	.000

* Statistically significant at ($\alpha \leq 0.01$)

Second Main Hypothesis (H02): there is no statistical significant impact at $\alpha = 0.05$ of intellectual capital and knowledge management processes on total quality management among workers in commercial and Islamic banks working in southern governorates of Jordan.

In order to test the hypothesis multiple regression analysis has been demonstrated. The results of the analysis are presented in (Table 6):

Table (6) Results of the multiple regression analysis to test the impact of intellectual capital and knowledge management processes on TQM

Independent Variable	Correlation coefficient	R ²	B	Standard error	Beta	Calculate d t	Sig.
Constant	0.879	0.773	.277	.180		1.540	.126
Intellectual capital			.462	.052	.496	8.938	.000
Knowledge management processes			.511	.058	.492	8.882	.000

* Statistically significant at ($\alpha \leq 0.01$)

Based on the values of t-test, intellectual capital investment and knowledge management processes have an impact on total quality management in commercial and Islamic banks working in Jordan. This is indicated by the values of standardized β of these variables. Furthermore, the values of the calculated t are higher than the tabulated t at $\alpha = 0.05$ which equals to (8.882; 8.938) respectively. The two variables have interpreted together 77.3% of the total variance in total quality management.

Stepwise multiple regression analysis was performed to identify the importance of each independent variable alone in the mathematical model as shown in Table (7).

Table (7) Stepwise multiple regression analysis to predict the level of total quality management through intellectual capital and knowledge management processes as independent variables

Predictors entry in regression equation	R²	B	Calculated t	Sig.
Constant		.277*	1.540	.126
Intellectual capital	0.614	.462*	8.938	.000
Knowledge management processes	0.159	.511*	8.882	.000

* Statistically significant at ($\alpha \leq 0.01$)

It is evident from table (7) that intellectual capital is the first to interpret alone about 61.4% of the variance in total quality management then knowledge management processes interpret alone 15.9%. The values show that the two independent variables together interpret 77.3% of the total variance in total quality management.

First sub-hypothesis (H02:1): there is no statistical significant impact at $\alpha = 0.05$ of intellectual capital by its dimensions (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital) on total quality management in commercial and Islamic banks working in southern governorates of Jordan.

In order to test the first sub-hypothesis, multiple regression analysis has been used as shown in Table (8):

Table (8) Results of the multiple regression analysis to test the impact of intellectual capital dimensions on TQM

Independent Variable	Correlation coefficient	R ²	B	Standard error	Beta	Calculated t	Sig.
	.805	.648	1.154	.196		5.893	.000
Recruiting			.135	.062	.193	2.161	.033
Industry			.151	.070	.192	2.152	.034
Revitalizing			.146	.067	.198	2.183	.031
Maintaining			.140	.068	.162	2.055	.042
Customer focus			.171	.070	.211	2.440	.016

* Statistically significant at ($\alpha \leq 0.05$)

It is evident from the results shown in Table (8) based on the values of t-test of the dimensions of intellectual capital investment (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital) have influence on total quality management in commercial and Islamic banks working in southern governorates of Jordan. As indicated, the calculated t values of these dimensions are higher than the tabulated (t) at $\alpha \leq 0.05$ where calculated t values (2.440, 2.055, 2.183, 2.152 and 2.161) respectively and significant at $\alpha = 0.05$. Stepwise multiple regression analysis was performed to identify the importance of each independent variable alone in the mathematical model as shown in Table (9).

Table (9) Stepwise multiple regression analysis to predict the level of total TQM through the dimensions of intellectual capital

Predictors entry in regression equation	R ²	B	Calculated t	Sig.
		1.154	5.893	.000
Recruiting	0.483	.146*	2.183	.031
Industry	0.097	.135*	2.161	.033
Revitalizing	0.038	.171*	2.440	.016
Maintaining	0.016	.151*	2.152	.034
Customer focus	0.014	.140*	2.055	.042

* Statistically significant at ($\alpha \leq 0.05$)

As shown in table (9), recruiting dimension is the first to enter and interpreted alone about 48.3% of the variance in TQM, then industry dimension interpret about 9.7% and revitalizing explained about 3.8 % of the total variance in. furthermore, the values show that maintaining and customer focus have explained about about 3.8% and 61.8% respectively. From the above discussion, the null hypothesis should be rejected which indicates that there is a statistically significant impact at $\alpha = 0.05$ of intellectual capital dimensions (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus on TQM in commercial and Islamic banks working in southern governorates of Jordan.

Second sub-hypothesis (H02:2): there is no statistical significant impact at $\alpha = 0.05$ of knowledge management processes dimensions (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) on total quality

management in commercial and Islamic banks working in southern governorates of Jordan.

In order to test the hypothesis multiple regression analysis has been used as shown in Table (10):

Table (10) Results of the multiple regression analysis to test the impact of knowledge management dimensions on TQM

Independent Variable	Correlation coefficient	R ²	B	Standard error	Beta	Calculated t	Sig.
Knowledge diagnosis	.790	.624	.161	.043	.239	3.777	.000
Knowledge generation			.137	.042	.214	3.286	.001
Knowledge storage			.227	.049	.308	4.667	.000
Knowledge distribution			.134	.042	.211	3.210	.002
Knowledge application			.156	.047	.232	3.319	.001

* Statistically significant at ($\alpha \leq 0.05$)

Based on the values of t-test, it can be indicated that the dimensions of intellectual capital investment (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) have an impact on TQM in commercial and Islamic banks working in southern governorates of Jordan. The values of the calculated t were higher than the tabulated t at $\alpha = 0.05$ with (3.777, 3.286, 4.667, 3.210 and 3.210) respectively and significant at $\alpha = 0.05$. Stepwise multiple regression analysis was performed to identify the importance of each independent variable alone in the mathematical model as shown in Table (11).

Table (11) Stepwise multiple regression analysis to predict the level of TQM through the dimensions of knowledge management

Predictors entry in regression equation	R ²	B	Calculated t	Sig.
Constant		.772	3.444	.001
Knowledge diagnosis	0.329	.227	4.667	.000
Knowledge generation	0.151	.156	3.319	.001
Knowledge storage	0.056	.137	3.286	.001
Knowledge distribution	0.053	.161	3.777	.000
Knowledge application	0.035	.134	3.210	.002

* Statistically significant at ($\alpha \leq 0.05$)

It is evident from the results presented in Table (11) that knowledge diagnosis dimension is the first to enter and interpreted alone about 32.9% of the total variance in TQM then knowledge generation dimension entered interpreting alone 15.1% and 48% with the dimension of knowledge diagnosis of the total variance in total quality management. Knowledge storage dimension came third interpreting alone 5.6% and 53.6% with knowledge diagnosis and knowledge generation dimensions while knowledge distribution dimension came fourth interpreting alone 5.3% and 58.9% with the dimensions of (knowledge diagnosis, knowledge generation and knowledge storage) of the total variance in TQM. Finally the dimension of knowledge application came interpreting alone 3.5% and 62.4% with the four dimensions (knowledge diagnosis, knowledge generation, knowledge storage, and knowledge distribution). From the above discussion, the null hypothesis should be rejected which means there is statistically significant impact at $\alpha = 0.05$ of knowledge management processes by its dimensions (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) on TQM in commercial and Islamic banks working in southern governorates of Jordan.

Results and recommendations

Results:

In this study, the researchers aim to examine the impact of intellectual capital investment and knowledge management on achieving TQM among commercial and Islamic banks working in southern governorates of Jordan, the following conclusions were reached:

First, there is a positive impact of the intellectual capital investment dimensions and the dimensions of knowledge management in applying total quality management. This indicates that intellectual capital investment and knowledge management will lead to increase the ability of the bank to apply total quality management. Intellectual capital investment has the largest impact as it interprets alone about 61.4 of the total variance in total quality management.

Second, the results revealed that there is a significant relationship between the two independent variables, namely knowledge management and intellectual capital.

Third, there is appositive impact of the dimensions of the intellectual capital as a whole (knowledge diagnosis, knowledge generation, knowledge storage, knowledge distribution and knowledge application) in applying total quality management where revitalizing dimension has the largest impact but maintaining dimension has the least impact.

Finally, there is a positive impact of the dimensions of the knowledge management as a whole (recruiting intellectual capital, intellectual capital industry, revitalizing intellectual capital, maintaining intellectual capital, and customer focus (customer capital)) in applying total quality management where Knowledge diagnosis dimension has the largest impact but Knowledge application dimension has the least impact.

Recommendations:

The following recommendations were given:

First, top management should retain and maintain their intangible assets of and investing in them as they are considered the main source in supporting other operations in the banks. Second, the management needs to utilize technology in their knowledge management process especially in the process of storing, distributing and applying. Third, commercial and Islamic banks have to pay more attention to specialized training programs which

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enable employees to generate knowledge. Fourth, banks need to increase the financial, non-financial, and social incentives in order to maintain intellectual capital and knowledge storage away from their competitors. Finally, since customers are the main source for increasing market share, banks need to go through a continuous improvement for their knowledge process. This is done by getting feedback from their customers to develop new ways to maintain them.

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