

## The effect of technical quality in improving the performance of the Iraqi universities

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### ABSTRACT

The objective of this study is to study the effect of technical quality in improving the performance of the university and to know the relationship between them. To achieve this goal, a questionnaire was designed and distributed among 213 academic scientific department heads who were working for five Iraqi universities and the results were analyzed using SPSS version 23. The results showed the effect of technical quality in improving performance in Iraqi universities. There was also a positive correlation between technical quality and performance while the results indicated a weak academic program. From the results of the research, we suggest some treatments.

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## 1. Introduction

Quality of service is an important concept for different organizations since high-quality services add more customer satisfaction and maintenance as they lead to increased profits and lower costs (Shaheen et al., 2009), and technical quality is one of the types of quality of service that researchers pointed out. The technical quality specializes for providing products according to previously specified specifications derived from the requirements and customers' needs. As organizations rely on technical quality to measure the level of their services in order to improve their performance and operations to be able to meet the customers' needs and desires and turn them into characteristics and specifications of products, which demonstrated the need for technical quality (Lim et al., 2016). The service has several characteristics that are intangible, contrast and patriotism and cannot be stored. This makes it difficult to establish a comprehensive definition of quality of service, so quality of service can be defined from the perspective of the service provider (matching the service to the criteria previously set for it) and from the customer's perspective from this service (matching this service to its uses and uses) (Lim et al., 2016), since service quality can be seen from the perspective of Technical Quality, Functional Quality and from Image Quality. As the technical quality represents the outcome of the exchange client, that is, what is received by the customer. As for job quality, it represents how the service is provided, including interactions between the organization and the customer. As for mental quality, it represents the general perception of the customer, and if the image of the organization is good in the mind of the customer, this means that mental quality is high, which is affected by technical and functional quality (Aldlaigan & Buttle, 2002; Salleh et al., 2019; Abdel-Latif, 2016). In order to achieve quality in the services provided, the organizations are concerned with technical quality to improve the customers' general perception about the services to achieve their satisfaction and earn customer retention. Technical quality is the determining factor for quality assessment in exchange for service provision. Previous studies have

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examined the effect of technical quality on customer satisfaction (Kong & Muthusamy, 2011; Rahhal, 2015; Ali et al., 2017; Hirose et al., 2018), while the current study examined the effect of technical quality on performance improvement. Organizations, including universities, can, through technical quality, understand what the customer desires, enabling them to succeed and continue in the global market. The technical quality in higher education institutions has been represented in the quality of the academic program, as it relates to the quality of graduates, which should be paid attention to so that universities can recruit graduates with high knowledge and skills according to specialized quality standards in the global market. Fulfilling the requirements set as technical specifications for services requires high performance by universities and in all its dimensions from individuals and organizational units represented by the scientific department as well as senior management. Based on the foregoing, the need to prepare the study was launched as it is the first of its kind in the field of Iraqi higher education, since previous studies did not address the technical quality in the Iraqi higher education environment.

## **2. Literature review**

### *2.1. Technical quality*

Technical quality refers to the relatively measurable aspects of service that customers receive in their interaction with the service organization (Shaheen et al., 2009). The quality of what is delivered represents, for example, the quality and effectiveness of diagnostics and medical procedures in the hospital, the effectiveness of car repair, room cleanliness in a hotel, and so on. Technical quality also works to achieve customer satisfaction and create and maintain their loyalty. Technical quality depends on good equipment, information system and infrastructure as well as the skills of service providers (Mittal & Lassar, 1998). Sharma and Patterson (1999) indicated that technical quality is one of the fundamental dimensions of quality of service, which represents the basic service or “what is delivered”. It relates to actual results and basic service as seen by the customer. It is the cornerstone of organizations' success which indicates increased customer confidence and communication with them, which is the first and most important criterion for creating a positive image about the service provided as it is evaluated by the customer. Technical quality (TQ) has been called physical quality and it is a component of perceived quality of services (Fiala et al., 2012). It refers to what is delivered to the customer, such as a meal served in the restaurant, or a solution provided by the consultant, or the house that the real estate agent has specified (Caruana, 2002).

#### *2.1.1. The dimensions Technical quality*

Technical quality refers to what remains for customers after consuming the service or is the result of dealing with the service. As the technical quality is the level of the quality of the final service that the customer gets. Technical quality dimensions are those through which the level of art can be measured objectively (Ali et al., 2017; Keshavarz et al., 2017). It includes the dimensions of technical quality (the academic course, academic knowledge, and acquired skills). The academic course is the educational curriculum through which it determines the knowledge that is taught to provide students with information in the classroom and prepares it to pass exams (Rizco, 2015). As for academic knowledge, it is the amount of scientific knowledge of the subject matter that the learner has previously viewed and learned, and achievement is measured by special tests designed according to the educational goals of the educational subject (Mahmood, 2015). As for the acquired skills, it is a high ability that enables a person to perform a complex and accurate action (Al-Noami & Al-Khazraji, 2014).

#### *2.1.2. The importance of Technical quality*

Through technical quality, organizations can understand what customers want, which helps them achieve success and continue in the global market (Fiala, 2012). This achieves customer satisfaction, increases customer loyalty, and maintains them, since technical quality plays an important role in creating customer satisfaction, which leads to increased loyalty and retention (Mittal & Lassar, 1998; Sampet et al., 2019), and technical quality plays an essential role for the success of the organizations and for the customer awareness on quality of service. The findings of Kang and James (2004) indicated that technical quality has a significant impact on the extent of customer awareness of the quality of service, as customers should be able to distinguish service results easily as well as their impact on the overall quality of service. Smith and Ennew (2001) pointed out that technical quality is of increasing importance in service quality assessments as it indicates service results, which requires focus, awareness and attention to objective measures of results before they are presented, as well as when they are presented to obtain highly reliable services.

### *2.2. University performance*

Performance is the achievement of something with a specific intent, or the result of a procedure or action, or a comparison of the result with specific or imposed reference criteria, whether internal or external (Neely, 2004). International Organization for Standardization has defined performance as a measurable result, as it is related to quantitative or qualitative results, and may relate to the management of activities, processes, products, systems or organizations (ISO 21001: 2018). Robins and Wiersema (1995) indicated that performance is the ability of the organization to achieve its long-term goals. Despite the multiplicity and diversity of studies dealt with the concept of university performance, no specific concept has been given to it, and this is due to the diversity of goals, attitudes, and measures that managers and organizations depend on the study and

measurement of performance (Neumann, 2017). Therefore, the university performance is a reflection of the ability of the university or educational organization and its ability to achieve its goals.

### 2.2.1. The dimensions University performance

University performance is the result of the different educational processes of a university that occur during its daily operations. It is the result of the interaction of different components or organizational units, and performance is difficult to define as it is measured in different ways (Hussein et al., 2016), due to the fact that performance is multidimensional in nature and its evaluation and measurement require searching for indicators and appropriate methods for the same performance components (Cricelli et al., 2018). We find the diversity in the dimensions covered by the researchers. However, in our study, we will deliberate on the dimensions covered by Kamel (2018) who represented by the performance of individuals, the performance of organizational units (the performance of the scientific department), and the performance of the organization (college performance) being the most compatible and consistent with the independent variable that accomplishes the objectives of the study.

### 2.2.2. Performance improvement requirements

Universities face constant pressure to improve their performance at the level of individuals and organizational units, which is reflected in their overall performance, and in order to work successfully in a rapidly changing environment and competition requires adopting the process of improving performance (Neuman, 2017). University leaders should be aware of the need to understand how to improve performance and continuous excellence compared to other universities. Universities are required to use their resources efficiently and effectively to achieve development and improvement in performance (Ho & Peng, 2016). In order to achieve the process of developing university performance, there are a set of requirements that universities need in order to be able to face challenges and achieve effective performance development, represented by the following (Faraj Allah, 2012):

- a. Understand modern technologies and invest them in all operations by building advanced and flexible technical capabilities,
- b. Adopting creativity and innovation through developing human resources and investing their intellectual energies,
- c. Develop mechanisms for sharing social responsibility by working to improve the environment and raise the economic and social level of the surrounding environment,
- d. Investing research and development, establishing research bases in universities, and establishing integration between universities and technological development organizations in society.

## 3. Research method

### 3.1. Research sample

The Iraqi universities aim to make quantitative and qualitative changes in the scientific, technical and cultural movement in the country, and they direct scientific and research institutions to assume the process of creating a new generation equipped with science and knowledge, so that these institutions are an effective and influential force in Iraqi society. The Iraqi universities also aim to develop scientific and cultural relations and expand friendly relations in these areas with other countries and various scientific and academic organizations in all parts of the world in order to achieve harmony and complementarity in the fields of science and knowledge. In this study, there are 37 Iraqi public universities and Five Iraqi governmental universities were chosen, namely the University of Baghdad, the University of Technology, the University of Kufa, the University of Dhi Qar and the University of Kirkuk, and the geographical distribution of Iraqi universities for the proposed study of this paper. The individual sample was department heads since they had a clear view of the technical quality and performance in educational organizations, and the sample was calculated based on the Stephen Thompson equation taking into account the weight of the universities of the study sample in relationship with the sample size. The questionnaire was distributed to 216 sample members, and it was answered by 213, which means that the response rate reached (98.6%).

### 3.2. Research models

Fig. 1 shows the hypothetical model of the study and it shows a set of logical relationships in terms of correlation and influence among them, as well as clarifying the main and sub-study variables in order to be an embodiment of the study problem and the objectives expected to be achieved, as the scheme consists of two types of variables, one is independent and the other is dependent. As shown in Fig. 1. The study hypotheses are based on an attempt to answer the main problem and its sub-questions, based on the relationship of correlation and influence between the study variables, as the hypotheses were formulated as follows:

- H<sub>1</sub>: There is a significant correlation between technical quality and university performance.  
 H<sub>2</sub>: There is a significant correlation between the academic / academic course and university performance at the macro level.  
 H<sub>3</sub>: There is a significant correlation between academic knowledge and university performance at the macro level.  
 H<sub>4</sub>: There is a significant correlation between acquired skills and university performance at the macro level.

- H<sub>5</sub>: There is a significant effect of technical quality on university performance.
- H<sub>6</sub>: There is a significant effect of the academic / academic course on university performance at the macro level.
- H<sub>7</sub>: There is a significant effect of academic knowledge on university performance at the macro level.
- H<sub>8</sub>: There is a significant effect of the acquired skills on university performance at the macro level.

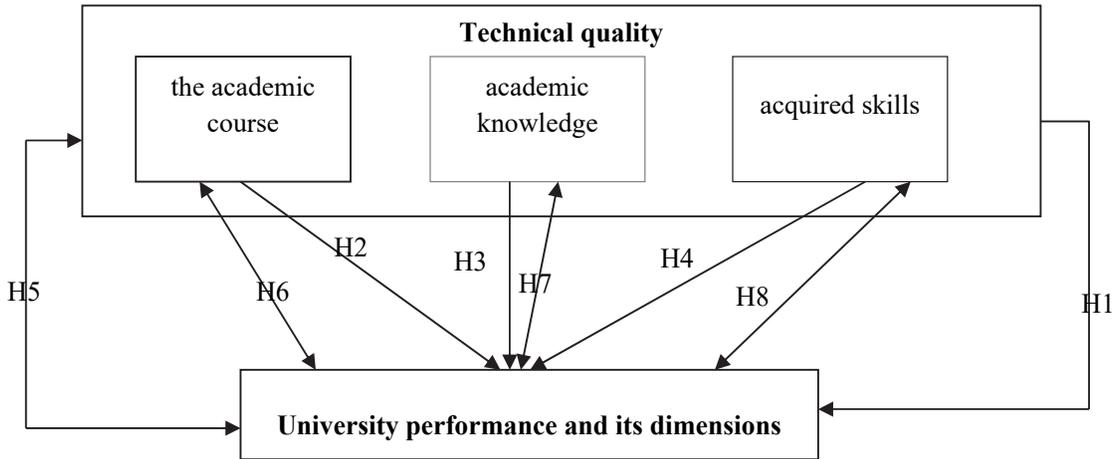


Fig. 1. Research Model

3.3 Analytical techniques

Data was collected electronically via the Internet through the distribution of the questionnaire to the study sample, which lasted three months. Then the data was transferred based on the excel program. SPSS version 23 was implemented to test hypotheses of the survey.

4. Results

30 questionnaires were distributed for the purpose of conducting an exploratory study and verifying the extent of the stability of the questionnaire and its reliability by calculating the Cronbach's Alpha coefficient rate as well as calculating the Cronbach's Alpha index in the event that each of the paragraphs of the study variables was deleted. The value of the stability factor - Cronbach's Alpha for the total questionnaire paragraphs was 0.974, which is a high value that suggests the possibility of passing the questionnaire definitively to the members of the study sample.

Table 1  
Arrange the relative importance of the technical quality dimensions

The dimensions Technical quality	Weighted mean	Arrange the relative importance
academic knowledge	3.67	1
the academic course	3.59	2
acquired skills	3.57	3
Technical quality	3.60	

From Table 1 it is clear that after academic knowledge, he got the first rank in terms of importance. This indicates, according to the opinions of the heads of the scientific departments in the study sample, the importance of this dimension by the higher and more amount that contributes to enhancing the technical quality. While the academic course was ranked second. This indicates the awareness of the heads of the scientific departments in the study sample of the importance of the dimension and an average level in the course's contribution to improving technical quality. It gained after the acquired skills on the third rank. Which indicates the awareness of the heads of scientific departments in the study sample The importance of the dimension and an intermediate level in the contribution of acquired skills in upgrading technical quality. The results show that the study sample universities were suffering from a deficiency in the quality of the academic program and the reason for this is the failure of universities to evaluate the academic program and their weak application of the standards of the institutional accreditation body.

Table 2  
Arrange the relative importance of the University performance dimensions

The dimensions University performance	Weighted mean	Arrange the relative importance
College performance	3.89	1
The performance of individuals	3.73	2
The performance of the scientific department	3.48	3
University performance	3.7	

As we can observe form the results of Table 2, "Colleague performance" ranked one followed by "The performance of individuals" and "The performance of the scientific department".

**Table 3**

Correlation coefficient between the academic course dimension and university performance and its dimensions

	University perfor- mance	college perfor- mance	the performance of the scientific department	the performance of individuals
Correlation Coefficient (technical quality)	0.456**			
sig	0.000			
Correlation Coefficient (the academic course)	0.332**	0.255**	0.255**	0.316**
sig	0.000	0.000	0.000	0.000
Correlation Coefficient (academic knowledge)	0.424**	0.269**	0.319**	0.451**
sig	0.000	0.000	0.000	0.000
Correlation Coefficient (acquired skills)	0.397**	0.300**	0.278**	0.399**
sig	0.000	0.000	0.000	0.000

\*\* the Spearman correlation.

The results of Table 3 indicate that the value of the Spearman correlation coefficient correlates with the hypotheses H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub> and H<sub>4</sub>. The sig value is smaller than the significance level (0.05). An indication of the link between technical quality and university performance is positive expulsion.

**Table 4**

Analysis of the discrepancy between technical quality, dimensions and university performance

	sig	R <sup>2</sup>	t	F	β	a	
University per- formance	0.000	0.311	8.520 9.756	95.180	0.546	1.729	Technical quality
	0.000	0.192	11.220 7.08	50.120	0.397	2.273	the academic course
	0.000	0.243	13.675 8.225	67.642	0.376	2.317	academic knowledge
	0.000	0.214	14.550 7.573	57.353	0.352	2.440	acquired skills

The results of Table 4 show the effect of technical quality on university performance. The results have confirmed the study hypotheses H<sub>5</sub>, H<sub>6</sub>, H<sub>7</sub> and H<sub>8</sub>. The estimated value of the coefficient ( $\beta = 0.546$ ) indicates the amount of change in university performance when we change one unit in the independent variable technical quality. The estimated value ( $\beta = 0.397$ ) means the amount of change in university performance when there is one unit increase in the academic course. The estimated value ( $\beta = 0.376$ ) also means the amount of change in university performance when there is a one-unit change in academic knowledge. While the estimated value ( $\beta = 0.352$ ) means the amount of change in university performance when changing one unit in the acquired skills.

## 5. Conclusion

The results of this survey have indicated that there was a positive correlation between the technical quality in its dimensions (the academic course, academic knowledge, acquired skills) and university performance in its dimensions (Individual performance, scientific department performance, college performance). As the technical quality improves, we expect an improvement in university performance in all its dimensions. Universities presently suffer from a weakness to access some modern resources. There is also a weakness in the process of updating the academic program and study plan. The results of the study show a lack of interest in the criteria of the program accreditation body and the process of periodic evaluation of the academic program. Lack of interest by some teachers in describing the curricula and commitment to implementing them, as the results of the study showed their weak contribution in providing development proposals for the teaching and learning process, which indicates the presence of deficiencies and weaknesses in the programs approved in educational organizations that encourage the submission of proposals from faculty members and adoption. There are weaknesses and shortcomings in the mechanism adopted in the scientific departments to determine training and development programs for faculty members, which indicates a lack of communication between heads of scientific departments and organizational units related to continuing education. Universities should increase attention to the needs of the scientific departments from the references and resources specified by the curriculum teachers and include them in the annual plan of the General Library Division in the college. The curricula of all teachers must be described, and encouraged to contribute to the development proposals for the teaching and learning process. Increased attention must be given for updating the academic program in a manner consistent with the latest scientific developments and conducting a self-assessment to find out the extent to which the criteria for program accreditation are met. Training and development programs for faculty members must be identified within the annual plan of training programs for continuing education units in the college by activating communication with heads of scientific departments.

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