

The Effect of Unlimited Improvement on Service Quality (Servqual) – A Case Study of The Higher Education Institutions In Libya

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Abstract

Many assessment scales were developed by specialists in order to evaluate the different aspects of quality. Unlimited Improvement (UI) is a developed scale that allows professionals to diminish obstacles in improving all aspects of the organizations and encouraging quality practices to be used amongst all of its parts. In this study, the concept (UI) is tested for effect with another quality assessment concepts; (ServQual). The effect is tested on the Libyan higher education institutions through a questionnaire methodology with 382 participants.

Scale used is a 6-point agreement Likert scale and the analysis was performed on SPSS 23 program. Data were analyzed by using different statistical techniques including a correlation analysis, and regression analysis.

The regression analysis shows a positive effect of unlimited improvement on ServQual dimensions and indicators with an R square value of 0.735, which proves the influence of unlimited improvement on increasing the efficiency of the ServQual model.

Keywords: Unlimited Improvement (UI), Service Quality (ServQual), Higher education, Libya

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Sınırsız İyileşmenin Hizmet Kalitesine Etkisi: Libya Yükseköğretim Kurumlarında Bir Çalışma

Özet

Kalitenin farklı yönlerini değerlendirmek için uzmanlar tarafından birçok değerlendirme ölçeği geliştirilmiştir. Sınırsız İyileştirme (UI), profesyonellerin kuruluşların tüm yönlerini iyileştirme ve kalite uygulamalarının tüm parçaları arasında kullanılmasını teşvik etmedeki engelleri azaltmalarını sağlayan gelişmiş bir ölçektir. Bu çalışmada, kavram (UI) başka bir kalite değerlendirme kavramıyla (SERVQUAL) etki bakımından incelenmiştir. Etki, 382 katılımcıyla bir anket metodolojisi yoluyla Libya yükseköğretim kurumları üzerinde test edilmiştir.

Kullanılan ölçek 6 puanlık Likert ölçeğidir ve analiz SPSS 23 programında yapılmıştır. Veriler, korelasyon analizi ve regresyon analizi gibi farklı istatistiksel teknikler kullanılarak analiz edilmiştir.

Regresyon analizi, sınırsız iyileştirmenin ServQual boyutları ve 0.735 R kare değerine sahip göstergeler üzerinde olumlu bir etkisi olduğunu gösterir, bu da sınırsız iyileştirmenin ServQual modelinin verimliliğini artırma üzerindeki etkisini kanıtlar.

Anahtar Kelimeler: Sınırsız İyileştirme (UI), Hizmet Kalitesi (ServQual), Yükseköğretim, Libya

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1. Introduction

"The quality of services is important for firms in competing with other rivals (Dilek, 2017).

In quality assessment, there are a few frameworks that addresses different aspects of quality within the organization. The service quality (ServQual) scale has been widely used in the literature to assess the quality of the services provided by companies in different sectors. Through its five dimensions, the SevQual scale has been enhanced over the years to ensure the best measurement for service quality in different business contexts. The scale has been used in several organizations' types with its wide set of indicators. Nonetheless, there has been no scale that allows management to ensure that their developed quality practices and procedures are implemented throughout the organization and extended to all stakeholders and supply chain.



The Unlimited Improvement (UI) scale is developed for this purpose, which allows researchers and management professionals to assess the extent of quality practices' implementation within organizations. In this research, the scales of the two concepts are applied to the Libyan higher education institutions in order to understand the effect of the Unlimited Improvement scale on the scale of service quality. The significance of the research emerges from the ability of the concept of unlimited improvement to increase the effectiveness of a proven quality concepts like the ServQual. Moreover, applying the two concepts together allows better improvements, especially the case study of the Libyan higher education institutions.

2. Theoretical Framework

Service quality gains the attention of many management professionals, especially if the core business model depends on providing services (Rakesh, Srinath, & Karki, 2016). In order to have a measuring tool for the level of quality in services provided by the company, The ServQual model was developed by Parasuraman, Zeithaml and Berry in 1985, which included five main dimensions; reliability, responsiveness, assurance, empathy and tangibles (Parasuraman, Berry, & Zeithaml, 1991).

The concept has different perspectives depending on the gap model that contributed into the development of the ServQual model (Parasuraman, Zeithaml, & Berry, 1985). Each of the five dimensions are assigned to different weights depending on the importance of the specific dimension to the business model. For instance, if the service provided by the company involves direct and personal interaction between the customer and the employees, the tangibles dimension is assigned to an additional weight. However, through the development of the model, it was recommended for the reliability dimension to have the highest weight as the most important scale of the model (Berry, Parasuraman, & Zeithaml, 1994). Understanding the gaps between the perceptions and expectations of the management, employees and customers is essential in comprehending the ServQual model, as those gaps are constantly subject to change by different factors, such as technology (Bitner, Zeithaml, & Gremler, 2010).

The Unlimited Improvement (UI) model was developed by Küçük in 2016 as a supportive model for quality management. The main idea of the model is ensuring that quality improvements and the adopted quality practices and processes are spread throughout the organization. The scale involves eight



aspects; employees, personal rights, machinery and equipment, educational budget, social infrastructure, suppliers, managers and organizational structure. In Küçük (2016), the author presented a case study that included three main dimensions of the concepts; participation, improvement and performance. The three dimensions contained twenty-one indicators that aims to ensure the reach of quality and service quality practices.

3. Aims of Study

The main aim of the study is to study the effect of unlimited improvement on another quality enhancement scale; service quality, in order to understand their impact on each other and the correlational factors between the different dimensions.

4. Scope and Methodology

The questionnaire is conducted in operational higher education institutions in Libya and the sampling methods used are non-random and random. The non-random sampling is based on the researcher's judgement to select the most appropriate participants for this study. Nonetheless, academic staff from the Libyan higher education institutions were chosen randomly to reach the required sample size. It is important to note that the researcher's knowledge about the research application and domain is an important factor in shaping the research methodology.

It is necessary to disclose the means by which the data is collected. The data collection tool may be a pre-prepared and tested one, as the researcher might have developed (Küçük, 2016). The tools used for the measurement of the two concepts are developed from the literature as shown in Table 1 as mentioned in the scope section, the scales are altered to suite the purpose of the research, while preserving the measured dimensions that are included in each concept.



Table 1. Measurement Scale Development For The Two Concepts Used In The Research.

Concept	Literature Reference
ServQual	Parasuraman, Berry (1991) Parasuraman, Zeithaml, & Berry, (1985) Parasuraman, Zeithaml, & Berry, (1994)
UI	Küçük (2011), Küçük (2012)

The evaluation scale used is a 6-point agreement Likert scale, where;

- (1) Totally disagree
- (2) Disagree
- (3) Slightly disagree/ agree
- (4) Agree
- (5) Totally Agree

The sampling is performed in a random manner from the main population, which is the students and the staff of the higher education institutions in Libya. Therefore, a filtering question is added to the questionnaire at the welcoming page, where participants are asked whether they currently belong to a higher education institution in Libya. If the participant answers by “no”, then he / she is disqualified from participating in the study. Moreover, the sample size mainly depends on the size of the population. The number of people currently belonging to Libyan higher education institutions is more than 100,000 and less than 1,000,000. Thus, the sample size to achieve a reliability of 95% ($p < 0.05$) is 382 questionnaires (Küçük, 2016: 95).

The sample quota for this research is determined to be between 350 and 450 participants through random sampling within a certain type of participants. The questionnaires are conducted through an actual physical questionnaire form distributed on the participants.

In studying the influence between the two concepts; Service Quality (ServQual) and Unlimited improvement (UI), 670 participants were interviewed and asked to fill the questionnaire forms, of which 390 were completed, the rest of the questionnaires were received incomplete in a manner that required their disqualification.



5. Research Model

The global scope of the research includes the measurement of the two concepts as shown in Figure 1. The measurement tool is altered to suite the purpose of this research. The hypotheses are structured to measure the relationship between the concepts of Unlimited Improvement (UI) and Service Quality.

Research model has been shown Figure 1.

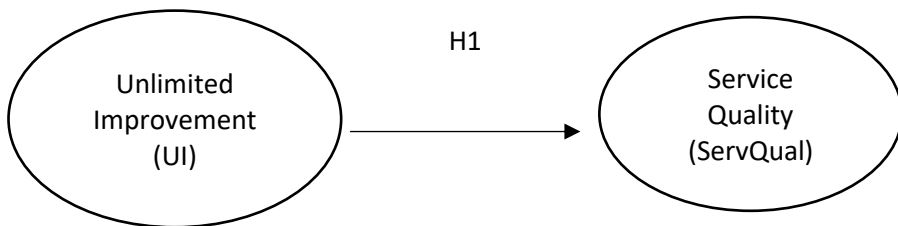


Figure 1. Research Model

The service quality scale has covered the five dimensions and 22 indicators that measure them. Under the reliability dimension, the scale tested if the university provides the promised service on time, show sincere interest in students' problems, deliver services right at the first time, provides the necessary support for the students, and insist on an error-free record. The responsiveness dimension measures the ability of the university staff to communicate the time designated for the provided services, speeding up processes when needed, having the will to help students, and never being busy to help students. The assurance dimension assesses the employees' confidence level when dealing with students and performing transactions, being courteous with students, and having the adequate knowledge to answer the student's inquiries.

The empathy dimension measures providing the individual and personal attention to each student, understanding their needs, having their best interest at heart, and providing the service during hours that are convenient for them. Finally, the tangibles dimension evaluates if the university has modern looking equipment, university's physical facilities are excellent and



visually appealing, employees of the university have neat appearance, educational products (books, desks, boards, notes, etc.) are visually appealing. The unlimited improvement scale that is included in the research contains eight indicators that measures the participation of all management in trainings and quality improvements and the inclusion of all the organizational structure, positions, tools, processes, applications and suppliers in the improvements.

5. Hypothesis

Küçük (2016) developed a scale for measuring the improvement in Total Quality Management leading to a model named Unlimited Improvement model. The model measures the improvement in terms of management participation, organizational structure, improvement tools, operation applications, and suppliers. The relationship between the two concepts have not been explored exhaustively for correlations in the literature. Therefore, the purpose of this research is to establish correlations and influence between the dimensions within the two quality measurement models. Nonetheless, the relationship between both service quality and unlimited improvement and organizational performance are established through few studies (Ay & Nurov, 2017; Nair, 2016). Thus, through the results of this research the hypothesis can be tested and establish the direct relationship between the two concepts.

H1: There is a statistical influence from Unlimited Improvement (UI) on Service Quality (ServQual) or their sub-dimensions in the higher education in Libya.

7. Data Analysis

The available sample was inputted into SPSS Statistics to check its reliability through Cronbach's Alpha. Table 2 shows the demographics of the sample. As shown in Table 3, the factors for each concept are 0.953 and 0.955 for Service Quality (ServQual) and Unlimited Improvement (UI), respectively.

The overall Cronbach's Alpha is 0.95, which is in line with targeted reliability of 95%. Therefore, questionnaire distribution and collection, which were performed between the months of March and October 2018, were stopped.



Table 2 has been shown demographic datas.

Table 2. Demographics (n=390)

Information	Choices	Count	Percent (%)
Gender	Male	203	52.1
	Female	187	47.9
Relation to university	Management	22	5.6
	Staff	42	10.8
	Instructor/ Professor	245	62.8
	Student	81	20.8
Age Category	17 to 25	50	12.8
	26 to 35	119	30.5
	36 to 46	152	39.0
	46 and above	69	17.7

Table 3 has been shown reliability analysis by cronbach's alpha

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Table 3. Reliability Analysis by Cronbach's Alpha (n=390)

Concept	Concept Alpha	Overall Alpha
Service Quality (ServQual)	0.953	0.965
Unlimited Improvement (UI)	0.955	

A one-way ANOVA analysis was performed to study the impact of gender, relationship to university and age category on the results of the correlational analysis performed in the research. As shown in Tables 4 and 5, gender and age had no influence on the results based on a significance level of $p < 0.05$. Table 6 shows that relationship with the university had a significance level less than 0.05 for the two concepts. However, a post-hoc analysis shows minimal differences between staff and professors in the ServQual concept, and professors and management in the UI concept.



Table 4 and Table 5 has been shown ANOVA testing.

Table 4. One-way ANOVA Testing for Gender Impact on Analysis Results

		Sum of Squares	df	Mean Square	F	Sig.
ServQual	Between Groups	,011	1	,011	,013	,909
	Within Groups	336,263	388	,867		
	Total	336,274	389			
UI	Between Groups	,024	1	,024	,018	,894
	Within Groups	523,033	388	1,348		
	Total	523,057	389			

Table 5. One-way ANOVA Testing for Age Impact on Analysis Results

		Sum of Squares	df	Mean Square	F	Sig.
ServQual	Between Groups	4,905	3	1,635	1,904	,128
	Within Groups	331,369	386	,858		
	Total	336,274	389			
UI	Between Groups	6,553	3	2,184	1,632	,181
	Within Groups	516,504	386	1,338		
	Total	523,057	389			



Table 6 has been shown ANOVA testing for impact

Table 6. One-way ANOVA Testing for Relationship To University Impact on Analysis Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14,312	3	4,771	5,719	,001
Within Groups	321,962	386	,834		
Total	336,274	389			
Between Groups	14,900	3	4,967	3,773	,011
Within Groups	508,157	386	1,316		
Total	523,057	389			

As shown in Table 7, factor analysis is performed for the indicators of Service Quality (ServQual), the KMO factor is 0.951, which shows the reliability of the factor analysis. All of the factor loadings are above 0.4, which indicates that all indicators are interrelated in a correct manner according to Küçük (2016). The total variance explained is 62.075% indicating the percentage of indicators considered in the factor analysis. Factors above 60% validate the factor analysis (Küçük, 2014). The overall mean score of Service Quality is 2.80, showing a moderate implementation of its dimensions in the higher education institutions in Libya.



Table 7. Service Quality (ServQual) Mean Scores and Factor Analysis (n=390)

Service Quality (ServQual)		Factor Loading	Eigen value	Total Variance (%) Explain	Cronbach's Alpha	Mean Score	KMO
1	University has modern looking equipment	0.616	1.036	62.075	0.953	2.80	0.951
2	University's physical facilities are excellent and visually appealing	0.623				2.49	
3	Employees of the university have neat appearance	0.618				3.54	
4	Educational products (books, desks, boards, notes, etc.) visually appealing	0.699				2.64	
5	The aims of the education are delivered as promised	0.763				2.63	
6	University attends to university and employees' problems with sincere interest	0.777				2.54	
7	University services are delivered right the first time	0.730				2.39	
8	University services are provided according to the set timeframes	0.760				2.47	
9	University insist on error free records	0.716				2.71	
10	Timeframes for university's services are clearly defined	0.727				2.75	
11	University attend to the needs of the students and employees promptly	0.785				2.38	



Table 7. Service Quality (ServQual) Mean Scores and Factor Analysis (n=390) (Cont.)

Service Quality (ServQual)		Factor Load	Eigen value	Total Variance (%) Explain	Cronbach's Alpha	Mean Score	KMO
12	University is always willing to help students and employees	0.776	1.036	62.075	0.953	2.93	0.951
13	University is never too busy to attend to students' requests	0.736				2.82	
14	University employee's behavior instill confidence in students	0.710				3.16	
15	Students feel safe that they are receiving the promised service at the promised quality	0.686				2.95	
16	University employees are courteous with students	0.700				3.50	
17	University employees have the required knowledge to answer students' questions	0.662				3.33	
18	University gives individual attention to every student	0.679				2.42	
19	University operating hours are convenient to all students	0.598				3.32	
20	University gives students personal attention	0.739				2.53	
21	University employees have students' best interest at heart	0.754				2.79	
22	University understand the specific needs of the students	0.754				2.61	



As shown in Table 8, factor analysis is performed for the indicators of Unlimited Improvement (UI). The KMO factor is 0.908, which shows the reliability of the factor analysis. All of the factor loadings are above 0.4, which indicates that all indicators are interrelated in a correct manner according to Küçük (2016).

The total variance explained is 76.348% indicating the percentage of indicators considered in the factor analysis. Factors above 60% validate the factor analysis (Küçük, 2014). The overall mean score of Unlimited Improvement is 2.75, showing a moderate implementation of its dimensions in the higher education institutions in Libya.



Table 8. Unlimited Improvement (UI) Mean Scores and Factor Analysis (n= 390)

Unlimited Improvement (UI)	Factor Loading	Self-value	Total Variance Explained (%)	Cronbach's Alpha	Mean Score	KMO
1 All university management participate in training	0.723	6.108	76.348	0.955	2.62	0.908
2 All university management participate in quality improvement	0.820				2.66	
3 All university organizational structure is involved in the overall improvement	0.845				2.78	
4 All positions are included in the improvement process	0.897				2.85	
5 All tools are used in the improvement process	0.913				2.78	
6 All processes are used for optimization	0.926				2.81	
7 All applications are included in the optimization	0.939				2.82	
8 All suppliers are included in the improvement	0.906				2.72	



Table 9. shows the regression analysis of Unlimited Improvement based on SevQual dimensions, where the R square value is 0.712 and the positive relationship is found between the two concepts with a significance level of $0.000 < 0.05$. Table 10 shows the regression analysis of Service Quality based on UI dimensions, where the R square value is 0.735, confirming the results of the first regression model.

Based on these results, the research hypothesis stating “**H₁: There is a statistical influence from Unlimited Improvement (UI) on Service Quality (ServQual) or their sub-dimensions in the higher education in Libya**” is accepted.

Table 9. Unlimited Improvement Regression Model for ServQual

Model	R Square	F	Standardized Coefficient Beta	t	Sig.
Unlimited Improvement	,712	78,805	,328	2,363	,000

a. Predictors: (Constant), EMP, TAN, ASR, REL, RES

b. Dependent Variable: UI Mean

Table 10. Service Quality Regression Model for UI

Model	R Square	F	Standardized Coefficient Beta	t	Sig.
Service Quality	,735	90,143	,764	13,696	,000

a. Predictors: (Constant), SUP, MGT, EMPL, ORS, MT

b. Dependent Variable: ServQual Mean



8. Discussion

Organizational performance is one of the key measurements for the success in any institution, corporation or business. Therefore, establishing a correlation with performance could indicate further relationships and influences. As there were no previous studies that correlated the concept of Unlimited Improvement to service quality (ServQual), it is challenging to compare the current study's results directly with any reference in the literature. Nevertheless, there are several studies that established the correlations of the two concepts with organizational performance. Nair (Nair, 2016) studied the impact of service quality on performance in the hospitality sector through 15 hypotheses; correlating each of the ServQual five dimensions to three aspects of performance; financial, non-financial and operational. The correlational analysis showed strong correlation factors between the three aspects of performance and the five dimensions of service quality.

A similar study was conducted on the banking industry, where the regression analysis showed an R square value of 0.286 for the impact of service quality on performance (Akroush & Khatib, 2009). Cheng and Lin (2014) conducted another study on a food manufacturing company using the same variables. The regression analysis of the study shows high significant impact of service quality on performance, with R square values of 0.315, 0.238 and 0.502 for impacts on financial, operational and behavioral performance aspects, respectively. Liu and Wang (2017) correlated service quality with performance in financial institutions considering profitability, productivity and growth capacity. The regression analysis showed a general impact of service quality dimensions on each of the three aspects of performance included in the study with R square values between 0.167 and 0.309. The above studies confirm the correlation between service quality (ServQual) and performance.

Moreover, the relationship between the concept of Unlimited Improvement (UI) and performance has been established in a few studies. Ay and Nurov (2017) researched the effect of unlimited improvement on performance through a regression analysis, where the ANOVA analysis showed a significance level of 0.000. The regression analysis indicated a positive relationship with an



R value of 0.322.

Benshina (2018) studied the same relationship on the Libyan iron and steel sector. The correlational analysis showed a correlation coefficient of 0.77, which indicates a strong relationship. The current study adds to this research through studying the relationship between the concept of Unlimited Improvement (UI) and the concept of ServQual through the tested hypothesis. The established relations between each of the two concepts and performance suggest that there is a relationship between them. Therefore, the correlational analysis performed show medium to strong relationships between unlimited improvement and ServQual. Moreover, the regression analysis yielded an R square value of 0.735 for the effect of unlimited improvement on ServQual.

9. Results

The research showed the acceptance of the tested hypothesis based on the regression analysis performed between unlimited improvement and service quality. The model shows a positive relationship between UI and ServQual with an R square values of 0.712 and 0.735, which is considered an influential relationship on both sides. The results are discussed along with literature research on the subject that confirms the findings of the research.

10. Suggestions

Based on the results found through the case study performed in this research and the established effects of the concept of Unlimited Improvement (UI) on Service Quality (ServQual), the researcher provides the recommendations and suggestions to the Libyan higher education institutions to:

- Carry out a systematic implementation of service quality guidelines and dimensions shall be reviewed to enhance the overall quality. While some indicators showed a fair implementation of the concept, there are several areas that need further development to reach a good level.
- Service Quality shall be considered as one of the important concepts to enhance quality in higher education institutions in Libya. The solid concept provides a success recipe to different sectors and organizations of different activities.



- It is considered essential to implement the ServQual concept to compete with higher education institutions in developed countries.
- The unlimited improvement concept focuses on different aspects of quality, which are not fully covered by the ServQual concept. Thus, its implementation ensures a comprehensive coverage for the quality aspects in the Libyan higher education institutions.
- For future research, it is recommended for the studies to focus on the effect and relationship testing between unlimited improvement and the ServQual model through different application, e.g. healthcare, telecommunication, etc.



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