

Study of the satisfaction of medical and nursing staff from the services provided by Biomedical Technology Department of the General Hospital of Chania

Spanoudaki Triantafyllia¹, Matalliotakis Georgios² and Vlassis Ioannis²

¹Spanoudaki Triantafyllia, spanlitsa@yahoo.gr

²Matalliotakis, Georgiosmatalliotakis@hotmail.com, matalliotakis.georgios@ac.eap.gr

³Vlassis Ioannis, invlassis@yahoo.gr, vlassis.ioannis@ac.eap.gr

Purpose: The aim is to highlight the contribution of Biomedical Department to the upgrading of services provided by the General Hospital of Chania, through the satisfaction level of medical and nursing staff from Biomedical department.

Material and Method: The quantitative method was chosen to carry out this original research. We used the ServQual questionnaire. The answers were scored on a five-point Likert scale. The research was conducted on a random sample of medical and nursing staff and was conducted in February 2020. Data were coded using excel 365 and analyzed by SPSS 24.0 statistical package.

Results: In a sample of 106 participants, expectation-perception distances, although negative in all dimensions of ServQual, recorded a slight deviation from zero. In the total sample, the gap was measured as: Tangible dimension: - 0.8. Reliability: -0.6. Responsiveness: -0,7 Assurance: -0,5. Empathy / Understanding: -0.5. Demographic characteristics did not significantly affect the results of the survey, although men reported higher satisfaction than women (Empathy / Understanding: -0.27, Assurance: - 0.32) as well as age group participants (30-39) with more positive dimensions results (Response - 0.2, Understanding: -0.4). The Department of Labor influenced the results, with Pathologists reporting more satisfied than those with Surgery.

Conclusions: Using best administrative practices and proper planning in organization of Biomedical Department it can be possible to reduce negative expectations / perceptions and make the department more efficient to safeguard the public interest.

Keywords: Department of Biomedical Technology, expectations, perceptions, satisfaction, improvement of the provided services

1 Introduction

Introduction

International experience has demonstrated the need to provide quality and reliable services in all areas and especially in the field of health. The satisfaction of both external and internal users is of paramount importance in the evaluation of services. It is generally accepted that the quality of health services is measured beyond the satisfaction of external customers - users, i.e. patients and the degree of satisfaction of internal users who are none other than the health workers

Received: 8 June 2020 / Accepted: 27 July 2020

© 2020 CMSIM



ISSN 2241-0503

themselves (Niakas, 1993).

According to Johnston and his associates, outsourced customers are those who accept the service offered for a fee and do not belong to the business or hospital when it comes to healthcare. Respectively, internal clients are those workgroups that offer or receive services from other groups within the same organization, business or hospital (Johnston, Clark & Shulver, 2012). The satisfaction or dissatisfaction of the individual working groups of the service in question contributes decisively to the quality of the final product produced or service offered (Chytiris and Anninos, 2015).

Internal Quality of Biomedicine

This article attempts to capture the internal quality of the Department of Biomedical Technology of the General Hospital of Chania, as perceived by the employees and especially the medical and nursing staff of the institution, which are the main pillars of professionals in health services (Bogiatzidis, 2016). The purpose of the research is to record the difference between the perceptions in relation to the expectations of the respondents in the five dimensions of the ServQual questionnaire (Parasuraman et al, 1985): The tangible dimension which refers to the completeness of the equipment, the tools, the space of the department biomedicine as well as in the appearance of engineers. Reliability, which explores the show of interest in solving problems in the department under service and the correctness of their actions from the first visit. It is also examined whether there is reliability in terms of the predetermined time following the needs of the respondents but also whether the absence of mistakes is sought in the cooperation with the rest of the staff.

The responsiveness, where the ability of the BIT department to respond to critical situations but also to specialized requirements is approached. The possibility for immediate provision of services as well as the keeping of a schedule for the time of arrival of the engineer and for the period of time that will be needed until the repair of the fault is achieved is also being investigated. Assurance, where it is investigated whether the engineers of the department inspire confidence, in addition an effort is made to capture the courtesy, knowledge and scientific approach of the BIT engineers. Finally, empathy or understanding, with the latter subsection to investigate whether the engineers of the BIT department show personal interest, if they manage effectively, focusing on the interest of the staff and at the same time if they understand the specifics of each department they are called to work with.

The interdisciplinary collaboration relationships of different working groups in a hospital are approached and the following questions are explored:

□ How the hospital staff (medical / nursing) perceives the quality of the services provided within the Hospital by the biomedicine department and in particular:

- What are the expectations from the BIT department related to the dimensions of ServQual.
- What are the perceptions in relation to the way the BIT department works, imprinted in relation to the five dimensions of the ServQual research tool.
- Is there a correlation between gender, age, specialty and the department or more generally the sector in which the participants work with the degree of satisfaction with the services provided by the biomedicine department of the General Hospital of Chania.

Research results

The sample consists of 106 people, medical and nursing staff of the General Hospital of Chania as well as the scientific staff of the Radiology Department, mostly Radiographers, which belongs to the laboratory sector. Most of the sample consisted of women (n = 75, 70.8%), most of them was over the age of 40 (n = 83, 77.3%) with 40-49 (n = 41, 38.7%) to be the most numerous age group. Respondents from the age groups 24-29 (n = 11, 10.4%) as well as those over 60+ with 9 people (8.5%) showed a small participation.

In terms of education, approximately 1/4 of the participants (n = 25, 23.6%) have a Master's or Doctoral degree (Master or PhD), while the number of Technological Institutes and University graduated is approximately at the same level as n = 36 (34.0%) and n = 33 (31.1%) respectively. Regarding the professional status, 43.4% (n = 46) were doctors and 40.6% (n = 43) belong to the nursing staff as evidenced by the data of Table 1

Table 1. Demographic and professional characteristics of participants

	n	%		
Sex	Female	75	70,8	
	Male	31	29,2	
Age Group	24-29	11	10,4	
	30-39	12	11,3	
	40-49	41	38,7	
	50-59	33	31,1	
	60+9	9	8,5	
Education	HighSchool	12	11,3	
	University -Technological Institute	36	34,0	
	University	33	31,1	
	Master/PhD	25	23,6	
Specialty	Doctor	46	43,4	
	Nurse	43	40,6	
	Laboratory Staff	6	5,7	
	Other	11	10,4	

The distribution of participants by sector is presented in Chart 1. Most of the people who completed a questionnaire from the sector of Units, were in the ICU (n = 5, 58.8% in the Group, 4.7% in total), while the department with the largest number of participants in the Laboratory Sector was in the laboratory Radiology / Axis / Magn (n = 12, 70.6% in the Group, 11.3% in the whole sample). In the Pathological Sector the department with the largest participation was the Cardiology (C/D) (n = 14, 32.6% in the Group, 13.2% in total), while in the Surgical Section the department was the O/G with (n = 12, 30.8% in the Group, 11.3% in the total).

Fig. 1. Distribution of respondents by sector

In the overall sample, on the unweighted scales, Table 2, there was a greater distance between the "Perceptions" and the "Expectations" with the former having lower values than the latter. The above means that all scales showed negative average values with higher mean value (distance) in "Equipment Completeness/Tangibles" (-0.8 ± 0.8), with 2nd highest mean value in "Response" 0.7 ± 0.9 . Closer distances were presented in "Assurance" and "Empathy" with a mean value of 0.5 and a standard deviation of 0.8 and 0.7 respectively. For the overall unweighted scale the mean value was -0.6 ± 0.7 .

On the weighted SERVQUAL scales, the following were observed as recorded in Table 2. Distances are still negative and the mean weighted SERVQUAL was 11.8 ± 14.0 with a median of -11.1 (-20.8 to - 3.0). The weighted scales "Assurance" and "Empathy" still have the shortest average distance with mean values -9.9 ± 17.5 and $-7.0. 12.5$ respectively. Different results were derived from the weighted variables concerning the "Reliability" scale. "Reliability" presented max mean value (-15.3 ± 23.1) instead of the "Completeness of equipment" shown by the unbalanced.

Table 2. Descriptive statistics of unweighted and weighted SERVQUAL scales

	Min	Mean	Standard Deviation	Quarters			
				1st	2nd	3rd	
	Max						
Tangibles	-2,8	-0,8	0,8	-1,3	-0,8	-0,3	2,5
Reliability	-3,2	-0,6	0,8	-1,0	-0,4	0,0	2,2
Responsiveness	-3,3	-0,7	0,9	-1,3	-0,8	0,0	3,5

Assurance	-3,4	-0,5	0,8	-1,0	-0,4	0,0	2,8
Empathy	-2,0	-0,5	0,7	-1,0	-0,3	0,0	2,3
Unweighted							
Servqual-2,6	-0,6	0,7	-1,0	-0,6	-0,2	2,7	
Weighted SERVQUAL scales							
w Tangibles	-110,0	-12,1	17,6	-17,5	-9,4	-1,3	50,0
w Reliability	-110,0	-15,3	23,1	-24,0	-10,0	0,0	44,0
w Responsiveness		-125,0	-14,7	21,8	-22,5	-11,9	0,0
	70,0						
w Assurance	-66,0	-9,9	17,5	-20,0	-7,0	0,0	56,0
w Empathy	-45,0	-7,0	12,5	-10,0	-5,0	0,0	45,0
Weighted SERVQUAL	-52,0	-11,8	14,0	-20,8	-11,1	-3,0	
	53,0						

Regarding gender correlation, there was a systematic lower satisfaction of female than male, in all SERVQUAL scales, but this difference is not statistically significant as recorded in Table 3. Non-differentiation may be the result large variation of scales or small sample size.

Table 3. Differences of unweighted and weighted SERVQUAL scales by gender

	Sex		Median	Mean	SD	Median	MW (p)
	Female	Male					
	Mean	SD					
Tangibles	-0,89	0,75	-1,00	-0,63	0,91	-0,75	0,236
Reliability	-0,62	0,76	-0,40	-0,41	0,88	-0,20	0,211
Responsiveness	-0,75	0,75	-0,75	-0,45	1,08	-0,75	0,291
Assurance	-0,50	0,72	-0,40	-0,32	0,84	-0,40	0,610
Empathy	-0,55	0,67	-0,50	-0,27	0,80	-0,25	0,218
Servqual-0,66	0,61	-0,61	-0,42	0,83	-0,56	0,243	
Weighted							
Tangibles	-12,78	16,84	-10,00	-10,43	19,53	-7,50	0,663
Reliability	-17,25	24,02	-12,00	-10,62	20,25	-8,00	0,279
Responsiveness	-16,00	21,05	-12,50	-11,63	23,60	-11,25	0,754
Assurance	-10,75	16,23	-8,00	-7,87	20,43	-6,00	0,820
Empathy	-8,31	12,21	-5,00	-3,79	12,87	-2,50	0,311
Servqual-13,02	12,72	-12,10	-8,87	16,65	-10,60	0,167	

The age of the respondents did not appear to affect satisfaction, as can be seen from the analysis of the results in Table 4. Despite the non-statistical difference between the age groups, the younger ones aged 24-29 had less satisfaction on almost all SERVQUAL scales. In addition, on the unbalanced scales, greater

satisfaction was reflected in the dimension of Responsiveness from the age group 30-39 but also of Understanding/Empathy from 60 and over, with an mean value equal to -0.2.

Table 4. Differences of unweighted and weighted SERVQUAL scales by age group

	Age Group					SD	Mean	SD
	24-29	30-39	40-49	50-59	60-69			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	Mean	SD	P					
Tangibles		-1,0	1,1	-0,8	1,2	-0,7	0,7	-0,9
	0,7	-0,9	0,8	0,559				
	-1,3	-1,0	-0,5	-1,0	-0,8			
Reliability		-0,8	1,0	-0,6	1,1	-0,5	0,7	-0,5
	0,7	-0,5	1,1	0,817				
	-0,8	-0,7	-0,2	-0,4	-0,2			
Responsiveness		-0,9	1,1	-0,2	1,3	-0,7	0,7	-0,7
	0,7	-0,9	1,1	0,878				
	-1,0	-0,8	-0,8	-0,5	-0,8			
Assurance		-0,7	1,1	-0,5	1,2	-0,4	0,7	-0,5
	0,6	-0,4	0,8	0,690				
	-0,8	-0,8	-0,2	-0,4	-0,2			
Empathy		-0,9	0,9	-0,4	1,1	-0,4	0,6	-0,5
	0,5	-0,2	0,8	0,099				
	-1,0	-0,6	-0,3	-0,3	0,0			
SERVQUAL		-0,8	0,9	-0,5	1,1	-0,5	0,6	-0,6
	0,5	-0,6	0,8	0,688				
	-0,9	-0,6	-0,5	-0,6	-0,4			
Weighted								
Tangibles		-25,4	36,3	-9,1	21,8	-10,1	11,7	-10,7
	11,6	-13,8	16,0	0,883				
	-5,0	-9,4	-7,5	-10,0	-10,0			
Reliability		-23,4	35,7	-18,5	29,4	-13,8	19,3	-14,3
	20,3	-11,9	23,7	0,893				
	-16,0	-14,0	-6,0	-12,0	-10,0			
Responsiveness		-14,9	17,5	-6,0	27,2	-14,8	17,6	-16,4
	25,4	-19,7	23,5	0,920				
	-11,3	-10,0	-15,0	-10,0	-18,8			
Assurance		-13,5	17,4	-11,9	25,2	-8,3	17,2	-10,8
	15,0	-6,9	18,6	0,555				
	-10,0	-21,0	-4,0	-8,0	-1,0			
Empathy		-10,5	14,9	-6,7	22,2	-6,2	10,4	-7,7

	9,0	-3,9	14,3	0,254				
	-5,0	-6,3	-2,5	-5,0	0,0			
SERVQUAL	-17,5	17,7	-10,4	22,2	-10,6	11,9	-12,0	
	10,5	-11,2	17,6	0,698				
	-20,8	-14,7	-10,2	-11,3	-9,9			

The educational level of the respondents does not show statistically significant differences ($p > 0.05$) for any of the variables. Also, no systematic differentiation was observed between the educational levels. The weighted SERVQUAL scale showed a value of $p = 0.570$, and a minimum mean value of employees with a level of university education (-0.7 ± 0.7), while a weighted scale showed a value of $p = 0.778$ with a lower mean value in the same category (University: $-13, 4 \pm 13.6$) as presented in Table 5

Table 5. Differentiations of unweighted and weighted SERVQUAL scales by educational level

	Education		University (T.I)		University		Master/PhD	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Tangibles	1,0	0,978	0,9	-0,8	0,7	-0,8	0,8	-0,8
Reliability	-1,0	-0,8	-0,8	-1,0	0,6	-0,7	0,8	-0,6
Responsiveness	0,9	0,421	-0,6	-0,4	0,7	-0,8	0,8	-0,7
Assurance	-0,1	-0,3	0,8	-0,6	0,6	-0,5	0,8	-0,4
Empathy	1,1	0,126	-0,8	-0,8	0,6	-0,5	0,8	-0,4
ServQual	-0,3	-0,5	0,8	-0,5	0,6	-0,5	0,8	-0,4
	0,9	0,671	-0,6	-0,4	0,7	-0,5	0,8	-0,3
	0,0	-0,3	0,6	-0,6	0,7	-0,5	0,8	-0,3
	0,8	0,696	-0,5	-0,3	0,5	-0,7	0,7	-0,6
	-0,1	-0,5	0,7	-0,6	0,5	-0,7	0,7	-0,6
	0,9	0,570	-0,6	-0,6				
	-0,3	-0,5						
	Weighted							
w Tangibles	-14,0	16,8	-10,3	11,2	-14,4	23,0	-10,7	
	17,9	0,956						

	-8,1	-7,5	-7,5	-10,0				
w Reliability	-9,5	24,2	-13,3	20,0	-18,3	25,5	-17,0	
	23,9	0,567						
	-3,0	-7,5	-12,0	-12,0				
w Responsiveness	-5,8	16,0	-15,9	25,2	-16,5	18,4		
	-15,0	23,2	0,087					
	-2,5	-10,6	-12,5	-18,8				
w Assurance	-6,8	21,2	-10,0	13,9	-11,4	19,8	-9,4	
	17,9	0,514						
	0,0	-5,5	-8,0	-10,0				
w Empathy	-6,5	10,0	-8,8	12,2	-6,4	12,0	-5,4	
	14,9	0,799						
SERVQUAL	-1,3	-5,0	-2,5	-5,0				
	17,7	0,778						
	-3,5	-9,6	-11,4	-11,1				

Similarly, no statistically significant difference was observed in the weighted and weighted SERVQUAL scales between the specialties of the respondents. Also, no systematic variation was observed in the mean and median values of the scales for a specific specialty as shown in Table 6.

(n=6)	Specialty		Nurse(n=43)		Laboratory Staff			
	Doctor (n=46)	Other (n=11)	p		Mean		SD	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Tangibles	-0,74	0,90	-0,93	0,74	-0,75	0,45	-0,66	
	0,77	0,723						
Reliability	-0,66	0,95	-0,48	0,68	-0,57	0,64	-0,44	
	0,59	0,806						
Responsiveness	-0,71	1,04	-0,66	0,77	-0,42	0,54	-0,61	
	0,54	0,713						
Assurance	-0,41	0,90	-0,42	0,64	-0,37	0,45	-0,78	
	0,67	0,472						
Empathy	-0,40	0,83	-0,55	0,58	-0,25	0,45	-0,57	
	0,84	0,707						
Unweighted ServQual	-0,58	0,83	-0,61	0,58	-0,47	0,47		
	-0,61	0,974						
w Tangibles	-12,54	22,83	-12,76	12,67	-7,42	9,00	-10,11	
	13,19	0,718						

w Reliability	-17,52 16,62	25,82 0,831	-13,58	22,30	-17,00	19,13	-11,91
w Responsiveness	-12,73	11,26 0,691	-14,41	21,37	-16,76	25,28	-6,21 10,94
w Assurance	-9,75 16,15	20,50 0,538	-8,21	14,83	-11,17	12,97	-16,55
w Empathy	-5,97 16,67	14,28 0,835	-7,53	9,54	-2,50	7,07	-11,59
Weighted ServQual	-12,58	11,07 0,914	-12,04	16,58	-11,77	12,45	-8,86 10,07

Table 6. Differences of weighted and unweighted SERVQUAL scales by specialty of the respondent

In contrast to the previous data demonstrated by the survey, it was found that the field of work seems to affect the satisfaction of the respondents as recorded in the SERVQUAL scales. The overall SERVQUAL score as well as the Assurance and Understanding scales seem to be influenced by the job sector. As shown in Table 7, people working in the Pathology Department seem to receive greater satisfaction from BIT services on the aforementioned scales. Especially in the Assurance scale, judging by the median value $\Delta = 0$, it is observed that their expectations are met

Table 7. Differences of unweighted and weighted SERVQUAL scales by Hospital Sector

	Sector		Surgical Laboratory		Intensive Care		Units	
	Pathological							
	MT	TA	MT	TA	MT	TA	MT	TA
Tangibles	-0,8 0,8	-0,8 0,585	0,9	-0,9	0,8	-0,7	0,4	-0,7
Reliability	-1,0 0,7	-1,0 0,08	-0,8	-0,8	0,9	-0,6	0,6	-0,5
Responsiveness	-0,2 0,8	-0,8 0,077	-0,4	-0,6	0,9	-0,6	0,6	-0,5
Assurance	-0,5 -0,2	-1,0 -0,2	-0,5	-0,5	0,8	-0,4	0,4	-0,4

	0,8	0,012						
	0,0	-1,0	-0,4	-0,2				
Empathy	-0,3	0,7	-0,8	0,7	-0,3	0,6	-0,3	
	0,7	0,006						
	-0,3	-1,0	-0,3	-0,3				
Servqual	-0,4	0,7	-0,9	0,7	-0,5	0,5	-0,5	0,7
	0,046							
	-0,5	-1,0	-0,4	-0,6				
	Weighted							
Tangibles		-14,0	23,2	-13,2	15,6	-7,3	6,2	-7,5
	7,5	0,564						
	-10,0	-10,0	-5,0	-8,8				
Reliability		-8,6	19,8	-21,7	26,9	-16,6	18,5	-15,3
	22,1	0,176						
	-4,0	-14,0	-12,0	-16,0				
Responsiveness		-9,5	18,8	-22,3	26,3	-12,3	14,0	-10,4
	18,1	0,214						
	-10,0	-15,0	-10,0	-10,0				
Assurance		-3,2	13,8	-16,5	19,5	-11,6	11,7	-8,7
	23,1	0,012						
	0,0	-18,0	-12,0	-5,0				
Empathy		-4,4	13,3	-11,8	12,9	-3,9	7,3	-4,2
	9,5	0,028						
	0,0	-10,0	-2,5	-2,5				
Servqual	-7,9	14,3	-17,1	14,3	-10,3	9,6	-9,2	13,6
	0,025							
	-7,9	-18,5	-10,1	-11,0				

Discussion of Results – Conclusions

The respondents had high expectations from the services of BIT, something that can be read from the initial data, before the calculations of distances and SERVQUAL scales, due to the fact that the respondents in percentages of 40-83% state that they completely agree with almost all the proposals / statements. Similarly, perceptions, as in almost all satisfaction studies, were lower than expected. From the early data, the respondents in percentages of 34.9 - 47.2% chose the statement “agree” as the most common choice.

From the calculated distances but also the finding of the mean values of the scales of the SERVQUAL unweighted ones, no great distance was observed between

expectations and perceptions. All gaps measured are close to zero, at the point where perceptions match participants' expectations. In addition, none of the mean distances exceeded 1.0 points. The general conclusion is that there was a good response (satisfaction) from the services provided by BIT. The calculated unweighted mean as well as medians of the SERVQUAL scales indicate that the satisfaction is greater in the issues of Assurance and Understanding/Empathy, while it is lower in issues related to the Tangibles. A review of the literature did not reveal that a similar study had been conducted in another BIT hospital department so that further comparisons could be made.

In view of the importance, it appears from the respondents that they place higher importance on Reliability (26.5%), Responsiveness (22.1%) and Assurance (22.7%) than Completeness of equipment/Tangibles (14.5%)) and Empathy (14.2%). So conclude that the sample focuses more on performing the tasks of the engineers with reliability and accuracy without being particularly interested in whether modern or neat equipment will be used or whether they will show empathy in their cooperation.

Taking into account the image of the weighted scales, the largest distances, and therefore the lowest satisfaction, are presented in the scales of Reliability (-15.3%) and Responsiveness (-14.7%) while greater satisfaction is recorded in the variables of empathy (-7.0), assurance (-9.9) and Tangibles (-12.1). Nevertheless, the quality of services provided by biomedicines, as perceived by the hospital staff, is considered satisfactory as it does not show long distances from the expectations that have been expressed.

Restrictions

The number of participants, which is equal to 16% of the total medical and nursing staff of the hospital and the fact that the external factors that affect the perceptions of the respondents in relation to the BIT department are not captured through this tool act as limitations of the research. Indicatively, it is mentioned that in the dimension of responsiveness, in which there was a long distance compared to the other variables (-0.7), other parts of the body have an active role, which follow multifaceted bureaucratic paths, such as that of procurement. As soon as the engineer appears in the department from which he was inclined, if the process for the supply of the required spare part is delayed, the completion of the repair will be delayed accordingly (Spyropoulos, 2015). In addition, the absence of a corresponding study using a ServQual questionnaire in public biomedical departments of a public hospital is a limitation of the present research work.

Suggestions for improvement

Initially, observing the general results, it is found that the satisfaction gaps are generally small in all dimensions, but this does not mean that they cannot be improved. A closer look identifies the dimensions that the ServQual tool has demonstrated as those with the least satisfaction, that is, those that have a longer distance of expectations-perceptions. It may be helpful for the head of biomedical department or the hospital administration to focus on this point, in order to make the department under their supervision better able to meet the challenge of integrated quality of service. In the general context, there seemed to be a greater distance, a gap of expectations - perceptions in the tangible dimension, i.e in the completeness of the equipment/Tangibles: - 0.8. The following are the dimensions of responsiveness: - 0.7, reliability: -0.6, understanding/empathy: - 0.5 and assurance: - 0.5. In order to improve the occupancy, actions are already being taken through the upgrade of the existing space. In addition, the renewal of the equipment used by the department is preferred.

Regarding the minimization of the responsiveness gap, it is possible to redesign the operation of the department in combination with the modernization and elimination of bureaucracy from the departments involved using flexible administrative tools, such as enhancing the use of integrated digital applications. As an example, the use of electronic protocol, digital signature as well as electronic circulation of documents are mentioned in order to speed up the procedures involved with the procurement (Spinelis, Vasilakis, Pouloudi & Tsouma, 2018).

In addition, the appointment of a responsible engineer by sector is a solution that can be attempted with the existing staff of the department at this time and which will bring immediate results. The competent engineer, knowing his area of responsibility, will focus on him, prioritizing the slopes for repair he receives from the specific area. At the same time, the employee who is in urgent need of help will know exactly which employee to turn to, without following time-consuming procedures until he finds someone available (<https://www.venizeleio.gr>).

Supporting the proposed action with the use of good administrative practices such as the implementation of the Management tool through objectives as well as the motivation of employees through performance incentives, will ensure the quality of services provided by engineers (Grammatikopoulos, Koupidis, Moralis, Sadrazamis, Athinaou & Giouzepas, 2013). Consequently, it is proposed to expand the use of good practices such as continuing education, both within the hospital, something that is already being implemented, but also to participate in specialized seminars by the manufacturers of the machines, where small progress has already been achieved. Through the lifelong training of staff will be positively modified beyond the dimension of responsiveness and the dimension of reliability

(<https://www.ypakp.gr>).

In addition to recognizing the dimensions, the research made it known that the Surgical Department is the one with the least perceived satisfaction from BIT. That is where the BIT department and the administration should focus. The departments belonging to this field, Surgery, Obstetrics, Ophthalmology, etc., maintain medical equipment that has been acquired for more than a decade, as a result of which any damage is difficult to repair due to insufficient spare parts. The administration in collaboration with the biomedical department and the involved departments of the hospital are replacing some of them and continue announcing new tenders for the modernization of the equipment of the surgical sector. Consequently, workers in this field are particularly demanding due to the nature of their work. In a workplace such as a hospital unit and especially in the surgical environment, where the patient's life is immediately judged, there is no room for errors, machine failures or irrational time management (<https://www.venizeleio.gr>). The need for a responsible engineer who will be employed mainly in the field of surgeries becomes even more apparent.

A department of a public hospital, such as that of biomedical, comes daily in interdisciplinary collaboration with medical and nursing staff, is responsible for high-tech and cost-effective machines on which human life is based. It is involved in tender procedures and contracts of several thousand euro (<http://intercostos.org>). It would therefore be useful for the Ministry of Health and the state, the services it provides to be evaluated and evaluated with quality tools, so that there is continuous feedback in order to continuously improve and therefore ensure the public interest (Yousry et al, 2014).

References

1. Johnston, R., Clark, R. & Shulver, M. (2012). Service operations management. Essex: Pearson Education
2. Khoury, L. Maximizing the Biomedical Engineering Department performance by introducing seam <http://intercostos.org>
3. Parasurama, A., Zeithaml, V.A. & Berry, L. L.(1985). A Conceptual Model of Service Quality and its Implication for Future Research (SERVQUAL). Journal of Marketing (49) 41-50, DOI: 10.2307/1251430
4. Parasuraman, A., Zeithaml, V.A. & Berry, L. L.(1988).SERVQUAL : A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. Journal of Retailing 12-39 <https://www.researchgate.net>

5. Yousry, A. M., Ouda, B.K. & Eldeib, A. M. (2014). An Integrated Evaluation for the Performance of Clinical Engineering Department.36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2014. 2014. 3110-3. 10.1109/EMBC.2014.6944281.
6. Grammatikopoulos, H.A., Koupidis, S.A., Moralis, D., Sadrazamis, A., Athinaiou, D. & Giouzevas, I. (2013). Employee motivation factors and performance incentives as tools for effective management Study in mental health professionals. Archives of Greek medicine 30(1) : 46-58(in Greek).
7. Regulation of Operation of the General Surgery "Venizelio" (2018). <https://www.venizeleio.gr>, Accessed on 10/3/2020(in Greek).
8. Bogiatzidis, P. (2016). The internal quality of services as a Management tool. Hellenic Open University, Patras(in Greek).
9. Niakas, D. (1993). Management in health services and ensuring the quality of services provided. Society, Economy and Health 2 (4): 3-12(in Greek).
10. Spinelis, D., Vasilakis, N., Pouloudi, N. & Tsouma, N. (2018). E-Government in Greece Successes, Problems and the Road to Digital Transformation. Dianeosis, Research & Analysis Organization (in Greek).
11. Spyropoulos, V. (2015). Supplies, Specifications, Tenders at the Hospital. [Book Chapter]. In Spyropoulos, B. 2015. The modern hospital. [electric book] Athens: Association of Greek Academic Libraries. Chapter 17. Available at: <http://hdl.handle.net/11419/3052>(in Greek).
12. Cooperation for the development and promotion of tools and systems for certification of professional qualifications and skills. Good Practices Guide (2005). <https://www.ypakp.gr>, Accessed on 13/3/2020(in Greek).