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EXAMINING THE PERFORMANCE OF THE APPLIED COST ACCOUNTING SYSTEM IN THE LEBANESE PRIVATE HOSPITALS: SURVEY

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In the recent years a lot of research has been done on the most appropriate cost accounting system for healthcare institutions indicating that the traditional cost accounting systems may have lost their relevance to management and other information users.

The article aims to analyze how users of cost accounting information view the relevancy of the current cost accounting systems in the Lebanese private hospitals in achieving the objective of modern managerial accounting according to Berliner and Brimson. Moreover, the paper examines the satisfaction level of the users from the indirect cost allocation to the provided services in these hospitals. Finally the author examines the relation between the two mentioned issues and the satisfaction level for the users of cost accounting information in the Lebanese private hospitals.

The article includes a survey that used the descriptive methods of statistical analysis and techniques to analyze the collected data.

Keywords: healthcare institutions, ABC, cost accounting information system, cost management system, traditional cost accounting systems, performance indicators.

Background

Since cooper (Cooper, 1988a) highlighted the limitations of traditional cost accounting systems in overheads cost allocation in a situation of product diversity in terms of volume and complexity, and introduced ABC costing system as recommended solution. There has been substantial degree of research interest in the changing function of management accounting, the role of management accounting in organizations, the required innovation in cost accounting systems for such organizations.

Consistent with research, Cooper (Cooper, 1988b) found that the firms facing high level of competition and having diverse product mix are more likely to benefit from precise costing formation and the introduction no factivity-based cost systems. Brian (Brian, 1996) discussed that in order to improve quality and cost control, managers require information suitable for their decision making needs. Berliner and Brimson (Berliner, et al., 1988) discussed that the cost management system is a management planning and control system with many objectives basically:

- Measuring the cost of the resources consumed in performing the organization's significant activities.
- Identifying and eliminating non-value-added costs, which are costs of activities that can be eliminated with no deterioration of product quality, performance, or perceived value.
- Determining the efficiency and effectiveness of all major activities performed in the organization.
- Identifying and evaluating new activities that can improve the future performance of the organization.

Hospitals and other healthcare organizations increasingly are confronted by a challenging and competitive environment. Greater focus on the quality of patient care, the high cost of new technology and increased competition are among the factors forcing these organizations to re-examine the manner in which they provide service to their patients, as well as the cost of these services.

This paper takes a more exploratory approach with the intention of establishing how management accounting information users in Lebanese private hospitals, view the relevancy of the current applied cost accounting systems in achieving the modern management accounting objectives. The objectives of this paper are:

- To examine the satisfaction level of managerial accounting information users at the Lebanese private hospitals, from the applied cost accounting systems role in achieving modern management accounting objectives according to Berliner and Brimson.

- To examine the accuracy level of indirect cost allocation between provided services in the Lebanese private hospitals.

- To examine the effect of achieving cost accounting objectives and indirect cost allocation on the overall satisfaction level for the applied cost accounting systems.

For the aim of this paper, a questionnaire was conducted on random sample of management accounting information users in Lebanese private hospitals. The collected data was analyzed using descriptive statistics techniques.

Finally, this paper includes a conclusion driven from the results of data analysis.

Literature review

The healthcare sector has been a subject to profound transformation in the recent decades, both in organizational and financial terms. The reduction of public funding and the emphasis on performance measurement in public services have influenced the management and accounting practices of healthcare systems, as a result healthcare; internationally; face pressures to deliver cost efficient care in the face of escalating demands. These pressures have led to many initiatives to improve the management and efficiency of healthcare delivery (Michela, et al., 2005).

Regarding weaknesses in tariff method in the late 1980s, most hospitals made their tariffs calculating method based on Diagnosis Related Groups (DRG). In this method, instead of fixed tariffs, cost price of hospital services was calculated based on opinion of experts (West, et al., 1998). In the recent decade, by increasing activities and the importance of cost price in hospitals for managers and governments, understanding these changes and evaluating their effects on cost price is very important, traditional costing methods cannot practically meet these expectations (Rajabi, 2005).

Gering (Gering, 1999) saw that traditional accounting has a tendency to provide information which though accurate is often late, irrelevant, and misleading; also it is complex to the uninitiated with its double entries, accruals and provisions. Wang and others (Wang, et al., 2010) argue that traditional cost accounting, which mainly uses one single cost driver such as direct labor or output volume to allocate the overhead costs, systemically distorts product costs in modern manufacturing and service environments in which overhead costs are a significant portion of product costs.

Research Method

This paper takes a more exploratory approach with the intention of establishing how management accounting information users in Lebanese private hospitals, view the relevancy of cost accounting systems with modern managerial accounting objectives.

Hypothesis

– H_{01} : The applied cost accounting systems in Lebanese private support effectively, the objectives of management accounting according to Berliner and Brimson.

– H_{02} : The applied cost accounting system provides accurate allocation of indirect cost allocation for the provided services in the Lebanese private hospitals.

– H_{03} : The decision makers in the Lebanese private hospitals are satisfied by the applied cost accounting system.

For the aim of this paper, a survey was conducted on random sample of Lebanese private hospitals. A questionnaire was distributed on the chief executive officer, chief financial officer, senior accountant, medical director, nursing director and quality director in each hospital.

The total number of general hospitals in Lebanon is 141 private hospitals and 25 public hospitals. Table 1 represents the distribution of hospitals in Lebanon according to area and type, considering the hospitals number and capacity which is represented by beds number. The population of the study is the general private hospitals in Lebanon which are classified by the ministry of public health over the levels A, B and C which are 54 hospitals. Table1 represents the distribution of population hospitals based on level and area.

Table 1 –Distribution of private hospitals in Lebanon based on accreditation level

Area	Level			Total	Rate of private hospitals in Area
	A	B	C		
BEIRUT	4	4	2	10	90.91%
BEQAA	0	2	4	6	26.09%
MOUNT LEBANON	1	6	7	14	24.56%
NORTH LEBANON	0	2	8	10	37.04%
SOUTH LEBANON	1	2	11	14	87.50%
Total	6	16	32	54	40.30%
Rate of private Hospitals in Lebanon	40.48%	11.94%	23.88%	40.30%	

The sample was randomly chosen from private hospitals in Lebanon; with a required confidence level 95%, and confidence interval of ± 5 the sample size is calculated as follows:

$$\text{Sample size} = 1 + \frac{z^2 * p * (1 - p)}{c^2} = 1 + \frac{1.96^2 * .5 * (1 - .5)}{.05^2} = 384 \text{ Hospitals}$$

$$\text{finite sample size} = \frac{s}{\left(\frac{n + (s - 1)}{n} \right)} = \frac{384.16}{\left(\frac{54 + (384.16 - 1)}{54} \right)} = 47 \text{ Hospitals}$$

Where:

- Z= 1.96 for 95% confidence interval
- P= 0.5 standard deviation which is the safest level.
- C= confidence interval which is ± 5
- N= 54 which is the population of the study
- S=Sample size for infinite population

Results

The sample size, which is the number of distributed questionnaires, was 47 hospitals, with 5 questionnaires for each hospital. The job title was the same for every hospital excluding one hospital where the medical director of one hospital in south Lebanon classified B didn't response. The answered and returned questionnaires were 199 with a response rate of 84.68% as follows:

Table 2 – Survey response details according to hospitals classification

Beds Number			Hospital Area					Total
			BEIRUT	BEQAA	MOUNT LEBANON	NORTH LEBANON	SOUTH LEBANON	
BEDS LESS	Hospital	B		5	0	0	0	5
OR EQUAL	Level	C		0	10	20	29	59
100	Total			5	10	20	29	64
BEDS	Hospital	B	5	5	10	0	0	20
GREATER	Level	C	0	0	15	5	20	40
HAN 100 LESS								
OR EQUAL TO	Total		5	5	25	5	20	60
200								
BEDS	Hospital	A	25	0	0	0	0	25
GREATER OR	Level	B	10	5	15	0	0	30
EQUAL TO	Level	C	0	0	0	10	10	20
200	Total		35	5	15	10	10	75
	<i>Hospital</i>	<i>A</i>	25	0	0	0	0	25
	<i>Level</i>	<i>B</i>	15	15	25	0	0	55
Total	<i>Level</i>	<i>C</i>	0	0	25	35	59	119
	Total		40	15	50	35	59	199

The survey basic analysis showed that 91% of the sample is not satisfied with the applied cost accounting system applied in the Lebanese private hospitals. Moreover, 91% of the sample considers that the allocation of the indirect costs in the Lebanese private hospitals is not satisfactory. In addition, 90.9% considered that the applied cost accounting in the Lebanese private hospitals needs to be modified. The mean of each of the dependent variables is shown in table 3 as follows:

Table 3 – Descriptive Statistics analysis for the dependent variables of the study

	N	Min	max	Mean	Std. Dev.
Are you satisfied with the applied cost accounting system?	199	1	4	1.78	0.822
The allocation of indirect cost between services is satisfactory	199	1	4	1.96	0.737
Applied cost accounting system needs to be modified?	199	2	5	4.04	0.748
Valid N (list wise)	199				

Moreover, the variables matched to the satisfaction level of indirect cost allocation in the Lebanese private hospitals explain the main reasons of the low satisfaction level for indirect cost allocation where. Table 4 present detailed descriptive analyses for examined factors:

Table 4 – Descriptive Statistics for variables describing the factors related to the satisfactory level of indirect cost allocation

Factor	N		Mean	Std. Dev.	Var.	Min	Max
	Valid	Missing					
Room and Bed service is a non-profitable service in the hospital?	199	0	3.64	1.163	1.35	2	5
Rate of occupancy effects the allocation of indirect costs between different departments?	199	0	2.85	0.936	0.88	2	4
Indirect cost allocation reflects the interrelation between diverse services?	199	0	2.39	0.875	0.77	1	4
Indirect costs are the major portion of services total cost?	199	0	4.48	0.61	0.37	3	5
Medical staff is involved in cost allocation decisions?	199	0	3.08	0.987	0.97	2	4
Nursing salaries in bed and room departments should be considered in direct cost?	199	0	3.83	0.746	0.56	2	5
Cost drivers used to allocate in direct costs could explain cause and effect relationship between revenues and costs?	199	0	3.59	0.995	0.99	2	5
Nursing salaries considered the major cost of Room and Bed service?	199	0	4.78	0.448	0.2	3	5

Moreover, the factors causing the high percentage of unsatisfactory level from the applied cost accounting in the Lebanese private hospitals, based on the modern management accounting objectives. Table 5 presents the descriptive analyzes of the variables related to the satisfactory level of users from the applied cost accounting system.

Table 5 – Descriptive Statistics for variables describing the satisfactory level relevant to modern cost accounting objectives

Variable	N	Min	Max	Mean	Std. Dev.
Computing accurate costs for services helps in optimizing profitability?	199	2	5	4.34	0.83
Cost of each service provided by the hospital is accurately computed?	199	1	4	1.9	1.06
Investment decisions are supported by cost accounting information?	199	1	5	3.26	1.27
Cost accounting information helps in cutting non-efficient activities?	199	1	4	2.21	0.79
The market competitively affects deeply the profitability of the hospital?	199	2	5	4.24	0.71
Profitability of each provider contract is accurately computed?	199	1	5	2.44	1.02
The applied cost accounting system helps in measuring The cost of the resources consumed by each activity.	199	1	4	1.93	0.7
The applied cost accounting system support the process of revision for the operations flowchart	199	1	4	2.03	0.75
Change in operational procedures effect the indirect cost allocation between diverse services?	199	1	4	2.67	1.03
Valid N (list wise)	199				

Hypotheses were tested using chi square analysis for the dependent variables in the survey and the following results were interpreted as follows:

H_{01} : The applied cost accounting systems in Lebanese private support effectively, the objectives of management accounting according to Berliner and Brimson.

Are you satisfied with the applied cost accounting system?

	Observed N	Expected N	Residual
Strongly Disagree	77	49.8	27.3
Somewhat disagree	104	49.8	54.3
Neither agree nor disagree	2	49.8	-47.8
SOMEWHAT AGREE	16	49.8	-33.8
Total	199		

Test Statistics

Test Statistics	Are you satisfied with the applied cost accounting system?
Chi-Square	142.809 ^a
df	3
Asymp. Sig.	0.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 49.8.

The Pearson Chi-Square test statistic basically expresses the total difference between the 199 observed cases. The P-value is less than 0.001 which is less than the significant rate $\alpha=0.05$, with an $\chi^2(3) = 142.809$, $P=.000$, H_{01} should be rejected.

H_{02} : The applied cost accounting system provides accurate allocation of indirect cost allocation for the provided services in the Lebanese private hospitals.

The allocation of indirect cost between services is satisfactory

	Observed N	Expected N	Residual
Strongly Disagree	42	49.8	-7.8
Somewhat disagree	139	49.8	89.3
Neither agree nor disagree	2	49.8	-47.8
SOMEWHAT AGREE	16	49.8	-33.8
Total	199		

Test Statistics

	The allocation of indirect cost between services is satisfactory
Chi-Square	230.045 ^a
df	3
Asymp. Sig.	0.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 49.8.

The Pearson Chi-Square test statistic basically expresses the total difference between the 199 observed cases. The P-value is less than 0.001 which is less than the significant rate $\alpha=0.05$, with an $\chi^2(3) = 230.045$, $P=.000$, H_{02} should be rejected.

H_{03} : The decision makers in the Lebanese private hospitals are satisfied by the applied cost accounting system.

Applied cost accounting system needs to be modified?

	Observed N	Expected N	Residual
Somewhat disagree	17	49.8	-32.8
Neither agree nor disagree	1	49.8	-48.8
SOMEWHAT AGREE	139	49.8	89.3
STRONGLY AGREE	42	49.8	-7.8
Total	199		

Test Statistics

	Applied cost accounting system needs to be modified?
Chi-Square	230.648 ^a
df	3
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 49.8.

The Pearson Chi-Square test statistic basically expresses the total difference between the 199 observed cases. The P-value is less than 0.001 which is less than the significant rate $\alpha=0.05$, with an $\chi^2(3) = 230.648$, $P=.000$, H_{03} should be rejected.

Conclusion

This study illustrated the need to improve the applied cost accounting system in the Lebanese private hospitals due to its shortage in achieving the modern objectives of managerial accounting. The main shortage of the applied cost accounting systems was in its poor role in cutting non-efficient activities, shortage in measuring the cost of the resources consumed by each activity and lack in ability to compute the accurate cost of each services and profitability of each contract provided by the hospital.

Moreover, the methodological approach of applied cost accounting systems in allocating the indirect cost for the Lebanese private hospitals appeared to be not

satisfactory. The main reason for this non satisfactory was related to the low involvement of the medical staff in cost allocation process.

The two discussed points supported a trend of the cost accounting users to modify the applied cost accounting systems in the Lebanese private hospitals.

Based on the statistical analysis the null hypotheses of the study were rejected and the following statements were supported:

- The applied cost accounting systems in Lebanese private does not support effectively, the objectives of management accounting according to Berliner and Brimson.

- The applied cost accounting system does not provide an accurate allocation of indirect cost allocation in Lebanese private hospitals.

- The decision makers in Lebanese hospitals are not satisfied by the applied cost accounting system in Lebanese private hospitals.

Further studies should be considered to examine the drivers and barriers of ABC system implementation in the Lebanese private hospitals. Moreover, case studies about actual implementation of ABC should be done to examine its effect on the role of managerial accounting in Lebanese private hospitals.

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Фарадж Х. ИССЛЕДОВАНИЕ ПРИМЕНЕНИЯ СИСТЕМЫ УЧЕТА РАСХОДОВ В ЧАСТНЫХ КЛИНИКАХ ЛИВАНА: НАУЧНОЕ ОБОЗРЕНИЕ.

В последние годы появились различные исследования, касающиеся систем учета расходов применительно к учреждениям здравоохранения. Это свидетельствует о том, что традиционно применяемые системы учета затрат уже не удовлетворяют менеджмент и других пользователей информации. Многие исследователи предлагали внести изменения в системы учета, в основном с использованием рекомендуемой системы ABC в качестве решения этой актуальной проблемы.

Задачей данной статьи является анализ степени удовлетворенности пользователей бухгалтерской информацией о расходах в медицинских учреждениях Ливана с тем, чтобы установить, как эти пользователи видят существующие системы учета в соответствии с исследованиями Berliner и Brimson. Кроме того, в статье рассматривается степень удов-

ответственности пользователей порядком распределения косвенных затрат по предоставляемым услугам в этих клиниках.

Статья включает исследования, в которых использовались описательные методы статистического анализа и технику анализа собранных данных.

Ключевые слова: учреждения здравоохранения, АВС, информационные системы учета расходов, система управления затратами, традиционные системы учета расходов, показатели деятельности.