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Activity-Based Costing in the Hospitality Industry: A Case Study in a Hotel

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Abstract**—**The purpose of this study is to provide some empirical evidence about implementing Activity-Based Costing (ABC) in the hospitality industry in Iran. For this purpose, we consider the Tabriz International Hotel as our sample hotel and then gather the relevant data from its cost accounting system in 2012. Then, we use ABC as our costing method and compare the cost of each service unit with that cost which had been extracted for the traditional costing method. The results show a different cost per unit for two methods. Also, because of its more precise and detailed provided information, an ABC system facilitates the decision-making process for managers on decisions related to profitability analysis, budgeting, pricing, and so on.

Keywords**—**Activity-based costing, activity, cost driver, hospitality industry.

I. Introduction

ALTHOUGH evidence about the use of cost accounting in tourism enterprises, and especially in hotels is limited [1], there is an active interest in hospitality management and particularly in cost accounting practices of hotels and the tourism industry [2]. According to [3], little innovation has occurred in hospitality cost accounting practices; however, there are many issues that deserve research attention.

ABC is considered to be one of the most important innovations in the cost and management accounting area [4]. ABC is an accounting technique that classifies the activities that a firm performs and then assigns indirect costs to products. ABC systems use sophisticated methods to allocate indirect costs to cost objects. ABC systems seek to use only cause-and-effect cost drivers whereas traditional systems often rely on arbitrary allocation bases. Also, ABC systems tend to establish separate cost driver rates for support departments whereas traditional systems merge support and production center costs [5].

According to [5], designing ABC systems needs four steps: (1) identify the major activities that take place in an organization; (2) assign costs to cost pools /cost center for each activity; (3) determine the cost driver for each major activity; and (4) assign the cost of activities to products.

Both traditional and ABC systems vary in their level of sophistication, however, traditional systems generally tend to be simplistic, as they are inexpensive to operate, make extensive use of arbitrary cost allocations, have a low level of accuracy, high cost of errors, and so on. On the other hand, ABC systems tend to be more sophisticated, as they are expensive to operate, make extensive use of cost and affect cost allocations, have a high level of accuracy, low cost of errors, and so on [5].

According to [6], these benefits are perceived for implementing ABC: more accurate cost information for product costing; improved cost control; cost reduction; more accurate allocation of indirect costs; improved insight into cost causation; identification of activity costs; and improvement of operational efficiency. According to [7], the need for doing more accurate analysis of customer profitability or cost-plus pricing, as well as preparing more relevant budgets results in the decision to implement ABC. Also, many companies proceed to the implementation of ABC because they want to improve their cost accounting system in order to better depict costs or to expand their business processes.

Taking the above into consideration, a research was conducted aiming at providing some empirical evidence of current general trends in the practical consideration, the level of adoption, and the use of ABC in the Greek hospitality industry. The findings of this study are compared with prior cost accounting knowledge, and earlier cost accounting practices in the lodging industry.

In this research, we provide some empirical evidence about implementing the ABC in the hospitality industry in Iran. For doing this, we employ the cost data related to the Tabriz International Hotel as our sample hotel for doing costing via ABC. Comparing the cost per service unit extracted from the traditional costing system and ABC is the other purpose in this study.

The remainder of this paper is structured as follows. Section two reviews the relevant literature. Section three describes the research methodology. Section four offers the result of implementing the ABC system for our data and traditional costing system as well. The summary and conclusions are offered in section five.

II. Literature Review

Cost accounting is about measuring and reporting financial and nonfinancial information related to the organization's acquisition or consumption of its resources. It offers information for both financial and management accounting [8]. According to [9], it is designed to facilitate the accumulation, analysis, and utilization of historical and projected per unit cost for use in management decision making; and this is applicable in the hospitality service industries.

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According to [10], service companies are ideal candidates for ABC even more than manufacturing companies. Their explanation for this statement is that most of the costs in services organizations are fixed and direct, while manufacturing companies can trace important components (such as direct materials and direct labor) of cost to individual products. So, indirect costs are likely to be a much smaller proportion of total costs. Service companies also supply most of their resources in advance, and fluctuations in the usage of activity resources by individual services and customers do not influence short-term spending to supply the resources. These costs are treated by traditional costing systems as fixed; therefore, they are irrelevant for most decisions.

Some researchers showed the possible use of traditional costing systems (job-order costing and process costing) in the hospitality services industry [9]. One study proposes that ABC is the most effective and accurate costing method for customer profitability analysis in hotels. This study supports using ABC as a basis that identifies the type of task rather than the product—for instance, sales activities rather than sales salaries, telephone costs, and so on. It also suggests that overhead costs should be identified and then allocated to the respective market segment [11].

According to [11] there are four steps for designing an ABC system in hotels. These steps are: (1) identifying activities, (2) assigning costs to cost pools, (3) selecting appropriate cost drivers for assessing the cost of activities to cost objects, and (4) assigning the cost of the activities to services and to customers. They present the cost drivers and cost pools that could be used by hotels that want to apply the ABC system.

Reference [12], however, highlights that the use of ABC in the hotel industry is limited, as no hotels in Europe have adopted this approach. The results of this study showed a significant theoretical knowledge of ABC among research participants; however, there was a low understanding about its application in hotels [7].

III. The Case Study and Research Design

In this research, we use ABC for costing purposes; that is, for calculating service cost per unit in the hospitality industry in Iran. To do this, we selected a decent Iranian international hotel- Tabriz International hotel- and use its accounting data in 2012 for costing purpose via ABC and traditional systems.

One of the co-authors of this study is the executive manager of the hotel, and therefore, has direct access to all needed information. The case hotel is currently using a traditional system to conduct its costing. The physical and environmental information about the hotel is as follows: it is a four-star hotel operating in Tabriz in Iran, located in one of the best areas in the center of the city, and is privately owned. It has 132 rooms including single, double and triple rooms. Tabriz International Hotel was built in 1971 and fully renovated in 2005. In addition to a banqueting hall, coffee shop, meeting room, and business center facilities, various other services which are suitable for four-star hotel standards are also offered at the hotel. Tabriz International hotel employs 75 personnel (Table I). The data presented in this case study represent real figures gathered throughout the one-year period, 2012. All the data presented in this study are expressed in US$.

TABLE I
HOTEL STAFF INFORMATION IN 2012

Department	Numbers
Management	3
Administrative and Accounting	5
Supplies and storage	2
Front desk	9
Security guard	5
Restaurant	20
Technical and engineering	5
Coffee shop	5
Conference (meeting) room	3
Housekeeping	18
Total	75

IV. Results

For costing in hotels as with other enterprises, it is necessary to understand the cost structure. The cost structure at Tabriz International Hotel has been presented in Table II.

TABLE II
COST STRUCTURE AT TABRIZ INTERNATIONAL HOTEL

1- Direct material
2- Direct labor
3- Overhead and Administrative cost:
a) Property Operations and Maintenance
b) Transportation
c) Utility
d) Property insurance
e) Depreciation and Amortization
f) Other

Tabriz International Hotel uses the traditional system for costing. In this system, floor space occupied is the overhead allocation base. Therefore, the predetermined overhead allocation rate equals the overhead cost divided by floor space occupied. Table III presents the predetermined overhead allocation rate for the years 2011 and 2012.

TABLE III
PREDETERMINED OVERHEAD ALLOCATION RATE AT TABRIZ INTERNATIONAL HOTEL

Year	Overhead cost (Dollars)	Floor space occupied (m^2)	Predetermined overhead allocation rate (Dollars per m^2)
2011	188,856	7,300	25.870
2012	234,731	7.300	32.155

TABLE IV
RECOGNIZED SERVICE CENTERS AT TABRIZ INTERNATIONAL HOTEL

	Service center
1	House keeping
2	Restaurant
3	Coffee shop
4	Conference room
5	Souvenir shop

For costing purposes, four different service centers have been recognized at Tabriz International Hotel, which have

been presented in Table IV. Table V shows the allocated overhead to different service centers at Tabriz International Hotel in 2012. In Table VI, total cost allocated to all service centers under traditional costing has been shown separately.

In the next stage, we calculate cost per service unit for each service center. Table VII shows the cost of each service center per its activity unit. For example, the activity unit for housekeeping and restaurant are the number of rooms and number of guests, respectively. As the souvenir store function has been outsourced, its activity unit is number of renting, similar to the conference room.

TABLE V
OVERHEAD COST ALLOCATION IN 2012

Service centers	Floor space occupied (m^2)	Predetermined overhead allocation rate (Dollars per m^2)	Allocated Overhead (Dollars)
House keeping	5700	32.155	183,283
Restaurant	500		16,078
Coffee shop	200		6,431
Conference room	700		22,508
Souvenir shop	200		6,431
total	7,300		234,731

TABLE VI
COST ALLOCATION TO SERVICE CENTERS USING TRADITIONAL COSTING IN 2012 (IN '000 DOLLARS)

Cost Item	House keeping	Restaurant	Coffee shop	Conference room	Souvenir shop	total
Direct Material	33	66	24	3	0.5	126.5
Direct Labor	44.5	63	29	6	0.5	143
Overhead and Administrative cost	183	16	6	22	6	233
Total	260.5	145	59	31	7	502.6

TABLE VII
COST PER SERVICE UNIT USING TRADITIONAL COSTING IN 2012 (IN DOLLARS)

Service centers	Activity unit (Allocation base)	Total costs	Number of activity unit	Cost per each activity unit
House keeping	No. of rooms	263,162	32,028	8.22
Restaurant	No. of guests	145,000	116,000	1.25
Coffee shop	No. of guests	59,162	85,880	0.69
Conference room	No. of renting	31,000	349	88.83
Souvenir shop	No. of renting	5,595	10	560

If we suppose that each guest stays one night at the hotel and uses the restaurant and coffee shop only one time, the cost of one guest in 2012 has been calculated and presented in Table VIII.

TABLE VIII
COST PER GUEST USING TRADITIONAL COSTING IN 2012 (IN DOLLARS)

Service centers	Cost per each activity unit
House keeping	8.22
Restaurant	1.25
Coffee shop	0.69
Total	10.16

In the next stage, we do costing for Tabriz International Hotel using ABC system. In applying the ABC method for costing in Tabriz International Hotel, we have to recognize the main activities and then identify the allocation base for each activity. For this reason, we review the main processes in this hotel and try to distinguish between operational and non-operational activities for further analysis.

According to our study, there are five main cost centers in Tabriz International Hotel as follow: (1) Housekeeping, (2) Restaurant, (3) Administrative and Accounting, (4) Technical and engineering, and (5) Marketing. Among these cost centers, housekeeping and restaurant are operational; and administrative and accounting, technical and engineering, and marketing are non-operational costs. The operational costs are directly related to services provided for guests, and non-operational costs cannot be directly traced to those services.

There are five different types of costs which occur regarding to all activities, as follows:

1. Payroll costs
2. Raw material costs
3. Employee benefit costs
4. Utility costs
5. Repair and maintenance costs
6. Other costs

Table IX shows relevant data about cost centers, main activities, and allocation bases which we need to know for applying the ABC system.

Now we allocate non-operational costs, including administrative and accounting, technical and engineering, and marketing costs to the operational cost centers (housekeeping and restaurant) based on floor space occupied by these activities. Overhead allocation rates for each non-operating cost in 2012 have been presented in Table X.

In this stage, we can sum up the allocated costs from non-operating activities to housekeeping and restaurants and their own costs. Tables XII and XIII show these calculations for housekeeping and restaurant, respectively.

Now it is time to calculate cost per service unit for each main activity center. The service unit for housekeeping and restaurant are the number of rooms sold and the number of served meals during the year, respectively. Table XIII shows the cost per one sold room.

In Table VIII, we suppose guests who occupy 32,028 rooms, have used the restaurant service (including coffee shop) 201,880 times. In Table XIV, we compare cost per unit under the traditional costing and ABC systems.

As is shown in Table XIV, cost per unit in different costing systems is not same. In this case, ABC shows housekeeping activity more cost consuming than the restaurant. Therefore, if the prices are determined based on actual costs (i.e., cost- plus pricing), the prices for restaurant are not fair and the restaurant can lose customers to probably less expensive competitors. On the other hand, the cost-plus prices in this situation for rooms (housekeeping) is not high enough to cover all of relevant

costs. In this condition, the case hotel in this study may encounter more problems related to profitability in the future.

TABLE IX
RELEVANT DATA FOR APPLYING ABS

Cost Center	Floor Space Occupied	No. of Employees	Cost Type	Amount (Dollars)
Housekeeping	5900	35	Payroll	63,520
			Raw material	35,828
			Employee benefit	26,447
			Utility	49,427
			Repair and maintenance	44,126
			Other costs	33,881
			Total	253,230
Restaurant	1400	25	Payroll	49,625
			Raw material	65,753
			Employee benefit	18,283
			Utility	53,69
			Repair and maintenance	6,875
			Other costs	5,988
			Total	151,893
Administrative and Accounting	1050	8	Payroll	15,880
			Raw material	4,471
			Employee benefit	6,729
			Utility	8,237
			Repair and maintenance	6,132
			Other costs	6,289
			Total	47,737
Technical and Engineering	400	5	Payroll	9,925
			Raw material	12,881
			Employee benefit	4,075
			Utility	1,799
			Repair and maintenance	3,396
			Other costs	1,162
			Total	33,239
Marketing	250	2	Payroll	3,970
			Raw material	7,342
			Employee benefit	1,899
			Utility	558
			Repair and maintenance	1,366
			Other costs	2,698
			Total	17,833

TABLE X
ALLOCATION OF NON-OPERATING COSTS TO OPERATING COST CENTERS (IN DOLLARS)

Cost Type		Payroll	Raw material	Employee benefit	Utility	Repair and maintenance	Other
Non-operating costs	A&A	15,880	4,471	6,729	8,237	6,132	6,289
	T&E	9,925	12,881	4,075	1,799	3,396	1,162
	M	3,970	7,342	1,899	558	1,366	2,698
Floor space occupied	H	5,900	5,900	5,900	5,900	5,900	5,900
	R	1,400	1,400	1,400	1,400	1,400	1,400
	Sum	7,300	7,300	7,300	7,300	7,300	7,300
Allocation rate	A&A	2.18	0.61	0.92	1.13	0.84	0.86
	T&E	1.36	1.76	0.56	0.25	0.47	0.16
	M	0.54	1.01	0.26	0.08	0.19	0.37
Allocated cost to H	A&A	12,835	3,614	5,439	6,657	4,956	5,083
	T&E	8,022	10,411	3,293	1,454	2,745	939
	M	3,209	5,934	1,535	451	1,104	2,181
Allocated cost to R	A&A	3,045	857	1,290	1,580	1,176	1,206
	T&E	1,903	2,470	782	345	651	223
	M	761	1,408	364	107	262	517

Note: In this table A&A is for administrative and accounting, T&E for technical and engineering, M for marketing, H for housekeeping, and R for restaurant.

TABLE XI
HOUSEKEEPING ACTIVITY TOTAL COSTS IN 2012 (IN DOLLARS)

Cost Type		Payroll costs	Raw material costs	Employee benefit costs	Utility costs	Repair and maintenance costs	Other costs
Direct Costs		87,585	55,309	36,714	57,989	52,931	42,083
Allocated costs from:	A&A	12,835	3,614	5,439	6,657	4,956	5,083
	T&E	8,022	10,411	3,293	1,454	2,745	939
	M	3,209	5,934	1,535	451	1,104	2,181
Total activity cost		108,442	69,334	45,446	66,100	60,632	48,105

TABLE XII
RESTAURANT ACTIVITY TOTAL COSTS IN 2012 (IN DOLLARS)

Cost Type		Payroll costs	Raw material costs	Employee benefit costs	Utility costs	Repair and maintenance costs	Other costs
Direct Costs		49,625	65,753	18,283	5,369	6,875	5,988
Allocated costs from:	A&A	3,045	857	1,290	1,580	1,176	1,206
	T&E	1,903	2,470	782	345	651	223
	M	761	1,408	364	107	262	517
Total activity cost		55,334	70,488	20,719	7,401	8,964	7,934

TABLE XIII
COST PER GUEST USING ABC IN 2012 (IN DOLLARS)

Cost type	Total costs		No. of sold rooms	No. of served meals	Housekeeping cost per room	Restaurant cost per served meals	Total cost per guest
	Housekeeping	Restaurant					
Payroll costs	87,585	55,336			2.73	0.27	3.01
Raw material costs	55,309	70,489			1.73	0.35	2.08
Employee benefit costs	36,714	20,719			1.15	0.10	1.25
Utility costs	57,989	7,401	32,028	201,880	1.81	0.04	1.85
Repair and maintenance costs	52,931	8,964			1.65	0.04	1.70
Other costs	42,083	7,934			1.31	0.04	1.35
Total costs	332,611	170,843			10.39	0.85	11.23

TABLE XIV
COST PER GUEST USING TRADITIONAL COSTING AND ABC IN 2012 (IN DOLLARS)

Service centers	Traditional Costing	ABC
House keeping	8.22	10.39
Restaurant	1.94	0.85
Total	10.16	11.23

Note: Restaurant costs include coffee shop costs.

Similar to the literature related to ABC systems, in this research we find ABC suitable for more reliable costing and fairer pricing. Moreover, ABC provides not only more detailed, but also more precise information, which can help managers to make more accurate and reliable decisions. These decisions include customer profitability analysis, pricing, and budgeting; as well as strategic investment decisions. Therefore, we suggest implementing ABC in service industries, especially in the hospitality industry. However, considering the cost of this implementation is strongly recommended.

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