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The role of integration between enterprise resource planning and attribute based costing for supporting economic cost management in tourism companies

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Abstract

The purpose of this research is to identify the role of the enterprise resource planning applications in supporting economic cost management within an attribute based costing technique. The process is to analyze the integration providing quantitative information to support the organizations on how to manage its costs. Enterprise resource planning (ERPs) give strategic and operational benefits to tourism companies, including small and large scale businesses. This allows for good financial controls and diminishes the chance of inefficiencies creeping in. The study followed an analytical method using a statistical questionnaire based on a sample of individuals of accounting, administrative, technical, and engineering departments' staff. The research sample consisted of 50 participants and the researcher used a statistical program (SPSS) for the hypothesis test. The hypothesis was tested and accepted after calculating a set of statistical measures such as arithmetic mean, standard deviation, coefficient of variance, and percentage weight. Significantly, the most important results argued that the enterprise resource planning system provides all the detailed data for implementing an attribute based costing technique, and this facility supports the activities of the tourism company functions. This serves to provide comprehensive information for each business level about all the product attributes and thus contributes to cost control and the optimal utilization of resources..as primary processes are integrated and this improves efficiency

Keywords: Enterprise resource planning, attribute based costing, economic cost management, tourism companies.

Introduction

In the modern business environment, electronic information systems have become very important in providing information in tourism companies as a result of dealing with the different needs of customers. These include the ERP system that integrates the activities and functions of the tourism entity within the database to help provide detailed information that contributes to the implementation of strategic cost management techniques, including attribute based costing which requires detailed information about the determining of product attributes desired by customers and information about the activities, resources, cost drivers, cost pools and other information required by the application of attribute based costing, and increasing the need for an ERP system under the economic cost management techniques. The attribute based costing notion dates back to the 1990s, when Bromwich attempted to develop strategic management accounting by identifying the benefits of the product to customers and their role in achieving competitive advantage and comparing the costs of attributes and benefits which customers' needs and wants. Thus, the role of managerial accountants can be determined in the measurement of the attributes cost for each product provided to the

customer in addition to determining the cost of any attribute of the product attributes that is put on the market and helps to reach the competitive cost level (Drury, 2008).

The attribute based costing technique is a development in the activity based costing technique, and the aim of the attribute based costing technique is to provide the appropriate information to support decision-making, improve the efficiency of performance and optimize the utilization of resources for the purpose of improving the product value. It also aims to support the economic cost management and cost analysis of product attributes in order to gain a competitive advantage. This analysis is linked to the desires and requirements of customers and trying to find a balance between the objectives of the tourism companies and their customers by maximizing the value of their products (Abdulrahman, 2003). The attributes that give the value to the product are the attributes that meet the customers wishes and requirements of the tourism company and that by understanding these attributes can lead to improving the product value and this requires the tourism company to conduct a series of studies and research and direct inquiries to customers about the attributes that give value to them and determining the weight of those attributes (McNair & Polutnik, 2001).

Attribute based costing is an upgrade of Activity Based Costing by providing appropriate information for management decisions to improve performance (Walker, 1998). ABC11 is based on the main idea of analyzing all cost aspects based on product attributes to meet the increasing demand for appropriate information to the contemporary business environment, rather than relying on traditional cost systems that failed to cope with changes in the contemporary business environment. These attributes have been classified by tangible and intangible attributes that characterize products, meet customer preferences and lead to increased demand for the products of the economic entity (Hansen & Mowen, 2008).The using of attribute based costing techniques leads to a balance between the tourism company activities and the choice of the preferred attributes for the customers in order to choose the effective cost level, and through this information generated by attribute based costing it is then oriented towards activities that maximize the value of products required by customers and tries to eliminate non value added activities to customers (Cokins, 2001). The enterprise resources planning system has been developed over the past 50 years. In the early 1990s, the system began to integrate all levels of an economic entity. Traditional information systems are often adhered to by the internal integration of the economic entity and are no longer sufficient to meet the whole economic process requirements (Qian, 2016). Due to the technological development of information systems applications, ERP has evolved as a development of the Materials Requirements Planning and Manufacturing Resources Planning system (Krajewisk et al., 2007).

The enterprise resources planning system is one of the most important systems provided that the information technology is in order to access an integrated information system that includes all activities within the tourism company and focuses on the use of applications, computer software and the participation of departments in a unified database and the provision of appropriate and immediate information. This is not the only importance of this system as a new strategy applied in an economic entity, but is a useful tool to meet the needs and requirements of this entity and reflect the processes of continuous and comprehensive development and improvement in order to maintain the competitiveness of the said economic entity (Huang & Palvia, 2001). This system works on the flow of information within the economic entity, allowing managers to make decisions based on information that reflects the current state of the business and this system works to automate economic processes and thus reduces costs (Davenport, 2004). The integration of accounting information and sustainability reporting is important, given that it helps process economic data and supports features

of decision-making in the context of organizational activities coordination and control (Al-Wattar et al., 2019).

As a result of the criticisms for traditional cost systems, a number of strategic cost management techniques, including ABC11, have emerged to overcome these criticisms of traditional systems by improving the measurement accuracy of costs and optimal utilization of capacity. The application of attribute based costing requires detailed and comprehensive information which are difficult to provide under the manual information systems. The latter requires recourse to electronic information systems, including the enterprise resources planning system to avoid the complexities associated with the application of attribute based costing by providing detailed information and thus contributing to economic cost management in the tourism company. The research problem can be posed by the following question: *Can the integration of the enterprise resources planning and attribute based costing and its contribution to economic cost management?*

This study highlights the integration between the enterprise resources planning system and attribute based costing by their role on economic cost management, especially after the success of the tourism company depends on its ability to satisfy the wishes of customers and achieve satisfaction in the contemporary business environment provided by this integration. Understanding the role of the enterprise resources planning for supporting economic cost management within attribute based costing and demonstrating the role of this integration between the enterprise resources planning system providing quantitative information helps to manage the products cost.

Literature Review

This section presents some important studies which are related to the above ideas. Bromwich, (1990) studied the case for strategic management accounting, and the role of accounting information for strategy in competitive markets. This study aims to analyze two issues the first related to the attributes that make up the value of products, and the second is related to management policies, product cost structure and its impact on the company's position and ability to face competitors. Walker (1999), investigated an Attributed Costing for Decision Making. This study aims to present all the factors that affect the application of ABC and suggest a new cost measurement method that provides more accurate data and makes use of it in management decision making . Shang and Seddon (2002) examined assessing and managing the benefits of enterprise systems, and the business manager's perspective. The main objective of the study was to conduct an analytical study to identify the ERP system and effect in increasing the competitiveness of companies and strategic benefits. Wieder and Booth (2006) studied the impact of ERP systems on firm and business process performance. The aim of this study is to provide a view on the company's adoption of the enterprise resource planning system and to increase the performance efficiency of the company with the challenges and achieve the benefits through a supply chain initiative.

Therefore, there are several definitions of attribute based costing ABC11 technique as "…development of the activity based costing technique of by employing cost-benefit analysis related to information on customer requirements and product performance attributes such as reliability, responsiveness, durability, Flexibility and other improvements costs necessary to obtain these attributes" (Barfield et al., 2001: 146). "A method of measuring costs depends on the use of product attributes through the direct link between costs and attributes" (Lawson, 1996: 31). Moreover, "…an approach to measure costs by allocating activities based cost depended on the characteristics and specifications of the product" (Brimson, 1998: 9). While Jones et al., defined it as: "It is one technique of strategic managerial accounting that control product costs as considering the product is a series of attributes that represent

customer value such as design, quality, post sales services, etc." (Jones et al., 2012: 267). Table (1) shows the most important differences between activity based costing ABC and attribute based costing ABC11.

Table 1. Differences between activity based costing and attribute based costing

Activity Based Costing	Attribute Based Costing
1. Focuses on the internal environment.	1. Focuses on the external environment.
2. Products consume activities, activities consume resources and cost arises.	2. Product attributes consume activities, activities consume resources and cost arises.
3. The cost object is activity.	3. The cost object is the product attributes.
4. The product as an entity.	4. Product is a set of attributes.
5. The cost driver is the activities.	5. The cost driver is the customer's preferences.
6. The cost of the product is calculated by combining the costs of activities.	6. The cost of the product shall be calculated by aggregating the cost of the attributes.
7. Do not depend on the idea of producing what is being sold.	7. Depends on the idea of producing what is being sold.
8. Does not provide direct measures of quality.	8. Provides direct measures of quality.
9. Part of ABC11	9. It is broader than ABC

Source: (Walker, 1998: 2-3), (Alshami, 1999: 445).

The describing of enterprise resources planning ERP is an important aspect to explain and its necessary characteristics: it is a system integrated overall tourism company information and main operations for making improvements in quality, reducing inventory levels, lowering cost, improving customer service levels and increasing flexibility levels for manufacturing processes" (Laudon & Laudon, 2010: 631). It also manages the resources of the tourism company internally and externally, and areas such as human resources, financial resources and tangible assets. This system works on economic operations automation through an integrated computer program aimed at facilitating the flow of information between the different functions and activities of the economic entity" (Bidgoli, 2004: 707). Lastly, by prior formulating it is system that includes a set of software and computer applications that link all functions and activities of the economic entity to each other within an integrated framework and link them to a database that improves the flow of information, thus improving the tourism company value and reducing costs (Alkhafaji et al, 2020: 11).

Integration between enterprise resources planning ERP and attribute based costing ABC11 supports economic cost management and provide information that helps managers identify opportunities. It helps manage and reduce costs, such as determining the size of payments in inventory demand and determining the cost of maintaining inventory by choosing the best methods and lowest cost, and that this system provides sufficient information to address the cost information as follows according to Balakrishnan et al, (2010: 7):

- Use cost drivers that do not depend on volume in allocating costs.
- Constructing Cost Pools for the activities of the different economic entity.
- Expanding in activities and resources by including marketing, administrative and general costs which is located outside the production process.
- Using practical capacity instead of planned or theoretical capacity to determine applied rates.

The enterprise resources planning system has provided efficiency in improving economic processes to implement strategic cost management techniques (Booth et al., 2000: 4-5). The advantages of integration between enterprise resources planning ERP and strategic cost management techniques, including attribute based costing ABC11 are the establishment of an automated system and the construction of operational and financial relational data within a comprehensive, integrated system,

cost drivers, cost objects, activity pools, resources and interrelationships that are continuously updated and automatic at work (Ahmed & Moose, 2011: 759). Using of the integration ERP system contributes to the success of the ABC11 application by providing software and computer applications that provide competitive advantage in today's business environment. The application of ABC11 requires detailed information on for example cost pools, cost drivers, activities, and resources. This is difficult without relying on a system (ERP), especially in large tourism companies, thus contributing to the development and improvement of advanced managerial accounting practices. Based on above, the research formulated the main hypothesis "the integrating between enterprise resources planning and attribute based costing positively affected economic cost management". Figure 1 shows the research model as follows:

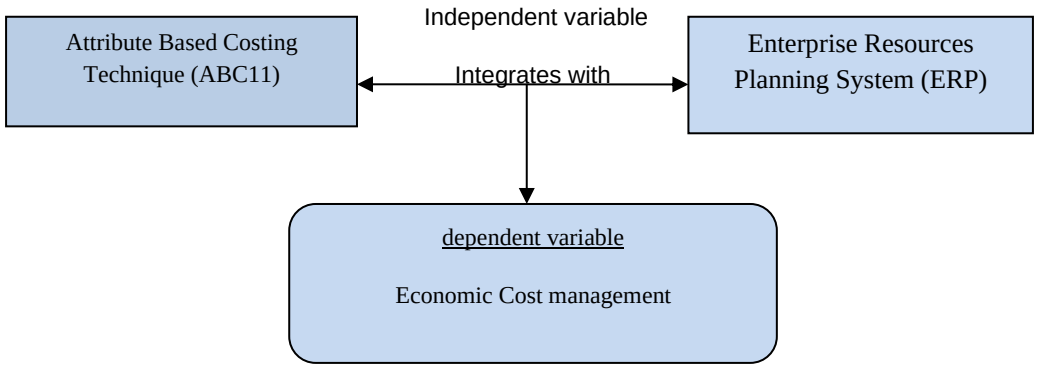

Figure 1. Research model

Research methodology

Sampling

The general company for Tourism in Baghdad is one of the companies affiliated to the Ministry of Tourism and Civilization .The study used a survey questionnaire to test the main hypothesis from November 2018 to January 2019. The research sample contained (50) forms distributed among the company staff including accountants, administrators, technicians, services guidelines and others in the company. It is one of the largest companies affiliated to the Ministry of Tourism and Civilization, followed by several large companies principal investments and represent the assets of different bodies. The company provides many services such as flights, tourism programs, religious programs, hotels, reception courses, worker training, cultural programs, historical and culture initiatives etc.

Materials and Method

Based on the results presented by the questionnaire forms and after analyzing the data obtained by analyzing the responses of the individuals from the study sample (accountants, administrators, technicians, services guidelines, etc.) one could describe and determine the most important research questions of the hypothesis in order to identify the different opinions of the individuals. The researchers used the five point scale Likert method to conduct statistical analysis of questions and to test the hypothesis of research, which states: *There is a possibility to integrate ERP and ABC11 to support economic cost management.*

Table 2. The analysis of individuals' responses

Ref.	Paragraphs	Statistical Indicators			
		weighted arithmetic mean	Standard Deviation	Coefficient of Variance	Weight Percent
.1	The ERP system contributes to the integration of the functions and activities of the tourism company at all stages.	4.460	0.676	15.166%	89.200%
.2	The ERP system helps to prepare financial reports as soon as possible.	4.200	0.881	20.967%	84.000%
.3	It identifies value added activities and non-value added activities that are more opportunities to reduce costs.	3.720	1.126	30.258%	74.400%
.4	This system provides information that helps increase the accuracy of product cost allocation.	3.900	1.055	27.042%	78.000%
.5	This system is characterized by rapid implementation of customer requests and to respond to their wishes and requirements.	4.300	0.839	19.514%	86.000%
.6	This system facilitates the flow of detailed information within the tourism company.	4.600	0.606	13.176%	92.000%
.7	Helps to improve the efficiency of planning and cost control.	4.520	0.646	14.303%	90.400%
.8	Provides detailed and comprehensive information required by ABC11 on cost drivers, cost structures, activities, resources, attributes…. etc.	4.380	0.697	15.905%	87.600%
.9	Provides information on product attributes that are desired and preferred by customers.	4.640	0.525	11.321%	92.800%
.10	Identify desired attributes by other competitors.	3.700	1.129	30.524%	74.000%
.11	Contributes to value chain analysis in light of the product attributes to be delivered to the customer.	4.480	0.735	16.409%	89.600%
.12	This system makes it easy to analyze the cost , the attributes drivers and to know the level of profits acceptable at each attribute.	3.820	1.119	29.299%	76.400%
.13	It supports the policy of market orientation by attention of customers and working to satisfy their needs and desires to a distinct degree from competitors.	4.380	0.855	19.510%	87.600%
.14	Helps to provide information on the causes of idle capacity and how to address it in order to reduce and manage costs.	4.180	0.941	22.510%	83.600%
.15	It provides information on the levels of achievement that are important and influential in the performance of each attribute and thus contributes to achieve effective cost control.	4.580	0.538	11.746%	91.600%
.16	This system helps to develop the attribute based costing approach (ABC11) in order to reduce costs and optimize utilization of resources.	4.620	0.530	11.478%	92.400%
General average		4.280	0.806	19.320%	85.600%

Output SPSS software, N=50

Findings

The results in Table (2), which includes (16) questions, indicate that the general response rate of the sample was 85.6% with a weighted average 4.280 and a standard deviation 0.806 and a coefficient of variance 19.320%. The most important paragraphs that contributed to this variable are the ninth paragraph: (Provides information on product attributes that are desired and preferred by customers), If the severity of response 92.8% with a weighted average 4.640 and a standard deviation 0.525 against a coefficient of variance 11.321%. The next element is the sixteenth paragraph: (This system helps to develop the attribute based costing approach (ABC11) in order to reduce costs and optimize utilization of resources) If the severity of response 92.4%

with a weighted average 4.620 and a standard deviation 0.530 against a coefficient of variance 11.478%, while the lowest percentage in this variable is for paragraph Tenth: - (Identify desired attributes by other competitors), The severity of response 74% with a weighted mean 3.7 and A standard deviation 1.129 against a coefficient of variance 30.524%. It is noted that the percentage weights of all paragraphs exceeded (70%) and that the weighted arithmetic mean exceeded the mean of the measurement performance amounted to (3). The following table shows the test (t) for a single sample of the research hypothesis variables at level (5%) and degree of freedom (49). It is clear from the table above that the calculated value of t (12.795) is greater than the tabled value of t (1.676), the degree of freedom (49) and the level of significance (5%) for the hypothesis variables. This leads to the acceptance of the research hypothesis that: There is a possibility to integrate ERP and ABC11 to support cost management.

Table 3. T test results for the research hypothesis

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	General Average
Calculated (t)	15.262	9.635	4.523	6.034	10.955	18.667	16.625	14.007	22.077	4.383	14.236	5.181	11.419	8.868	20.768	21.601	12.765
Tabled (t)	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676	1.676

(df. 49 , Significance level 5%)

Conclusions

From the point of view of the enterprise planning, the attributes costing offers many opportunities in the realms of economic management growth. However, as this paper has shown, there are many opportunities of integration that can be found in order to overcome such cost reducing, or at least enhance the prospects of cooperation under an effectiveness relationship that can mitigate them. Firstly, enterprise resources planning provides all the detailed data for the implementation of the attributes based costing that can help to overcome the reducing of some of activity costs, which greatly facilitates all functions in the tourism company and therefore achieves a common positive stance in areas such as in the maintenance, and complementing the design skills. Secondly, it provides comprehensive information on each level of achievement and all product attributes for enhancing economic cost management.Finally, the increased degree of t test significantly supported the research hypothesis that integration between enterprise resource planning and attribute based costing supports economic cost management.

Basically, the organizations have challenges on the modern techniques where the organization is formulated with supporting practice ERP which may achieve the optimal utilization of resources. Workers need more training courses in the tourism company to develop their skills and benefit from ERP in the application of strategic cost

management techniques. The cost-benefit criterion should be considered when adoption ERP and ABC11 .

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