

## VIABILITY OF SOME APPLIED COST SYSTEMS IN MANUFACTURING FIRMS: EGYPT'S CASE

**Karim Mamdouh ABBAS**

Modern University for Technology and Information (MTI), Cairo, Egypt, Email:  
karim\_mamduh2000@yahoo.com

**Corresponding author:** karim\_mamduh2000@yahoo.com

### *Abstract*

*The present study aims to analyze viability of some applied cost systems. The population of the study is some Egyptian manufacturing firms. The number of received questionnaires was 385. The results indicated that , according to the application extent indicator, the currently cost systems in Egyptian manufacturing firms may be descendingly arranged as follows: Activity Based Costing (ABC) system, Target Costing (TC) system , Resource Consumption Accounting (RCA) system, Activity Based Management (ABM) ,Other systems, Theory of Constraints (TOC) and Value Chain (VC) analysis.*

**Key words:** ABC, cost systems, Egypt, RCA, TOC

### **INTRODUCTION**

The concepts of managerial accounting have not drastically changed since the 1920s. When Henry Ford introduced the assembly line for the Model T, there was a need for better cost control. He was reported to have detested cost accounting, but became a multimillionaire in spite of his continued antipathy toward cost control methods. The global environment has changed drastically since the Model T. Worldwide competition has forced U.S.A. manufacturing companies to examine their production systems. Some major U.S.A. industries will not survive unless they make pervasive changes in the utilization of both physical and human resources. Many business practitioners and some of their former professors have already joined forces to modify and adapt the managerial accounting practices to the needs of production system changes in response to worldwide competition. The U.S.A. dominated the industrial world for three decades after World War II. It also aided the war-devastated countries, particularly its enemies, to rebuild their industries for a world of peaceful trading partners. Not until the late 1970s U.S.A. recognize that West Germany and Japan were producing high - quality products more efficiently (Lewis,1993). [26]

There is an urgent need to use a financial accounting module for analyzing the financial firms position in order to determine their performance efficiency (Mates, 2004, Petrescu, 2008, Stefea,2008). [27, 31, 35]

There is a great need to illustrate the recent debate around empirical positivistic research in management accounting, the sound definition of management accounting constructs, the closure of the gap between surveys and case studies in management accounting research, the appropriate use of statistical methods for testing hypotheses in management accounting and the use of graphics to map theory-consistent empirical research (Kholeif,2011). [22]

### **Review of Literature**

#### **The Activity-Based Costing (ABC):**

The Activity - Based Costing (ABC) system was largely advocated by the academic and practitioners. Mohamed (1991), Atkinson et al. (1997), Balakrishnan et al. (2013) , Stefea et al. (2013), Abbas (2014a) and Kutac et al. (2014) told that this system was developed from view point of the methods of allocating the indirect costs and will be developed through determining the costs drivers and the activities performed by the various managerial departments in the company which eventually lead to returning each costing to the activity which used it and fixing the followed

consequences in determining the products costing on the basis of consumed activities. [2, 9,11, 24, 29,36]

Adamu (2010) indicated that the key idea of ABC is that activities drive costs of any organization by consuming its resources. [4]

Raiborn and Kinney(2010) stated that, in an ABC system, the costs are accumulated into activity centre cost pools, which are cost pools of which a separate reporting of costs is needed. These kinds of pools are gathered by pooling up the costs that have the same cost driver. After this the costs are further allocated out of the activity centre by using an activity driver, which measures the demand placed on activities. [32]

The Activity Based Costing (ABC) system for cost accounting is based mainly on considering that all products which a company needs to perform a set of activities and these activities result in cost that should be borne by the facility. So, the design of Activity Based Costing (ABC) system is based on the costs that are difficult to link to the recent products which are directly loaded to the activities that cause these products, then followed by the need to allocate the cost of those activities on the products according to the degree that they benefit from those activities (Al-Refa'ee, 2012). [8]

The ABC system is used as a method for allocating the indirect costs of the products in light of technological development which led to increase the percentage of indirect industrial costs (Abbas,2013). [1]

Abbas (2014b) also defined ABC system as a methodology that measures the cost and performance of cost objects, activities and resources. [3]

Căpuşneanu et al. (2011) and Abbas (2013) mentioned that, in the last decade, many entities have tried to implement the ABC system, not only in Romania and Egypt but also in many other countries. [1, 14]

Tobor (2013) proposed to bring a significant contribution to the wine sector in Romania by approaching a modern calculation method (ABC) and with favorable influences on the administration of costs but also a monitoring and performance measuring instrument such as Balanced Scorecard. [38]

### **Activity Based Management (ABM):**

Activity Based Management (ABM) system is defined as a discipline focusing on the management of activities within business processes as the route to continuously improve both the value received by customers and the profit earned in providing that value. ABM uses activity-based cost information and performance measurements to influence management action (Cokins and Căpuşneanu, 2011). [15, 16]

Segovia1 and Khataie (2011) indicated that the ultimate reason for firms to adopt Activity-Based Costing and Management (ABC/M) is to improve their financial performance by managing their cost in such a manner that they control them and thus can reduce them. [33] There is a significant difference between cost control and cost reduction. Companies can reduce their costs without necessarily controlling them. Cost control generally leads to intelligent cost reductions, e.g. lean companies. He states that in today's global and competitive business environment, cost control has become a decisive variable in the firm's financial success. The main objective is to shed some light as to whether, how, when, and where telecommunication companies can adopt ABC/M as a means for an effective cost management. It provides evidence as to whether or not ABC/M does have a positive effect on the firm's financial performance.

### **Target Costing (TC):**

Target costing can be defined as a suitable tool for the reduction in new product costs (Afonso et al., 2008). [5]

The TC concept is characterized by starting with identifying the price consumers are willing to pay for the products, considering their quality and functionality (Albright and Lam, 2006). [7]

Target costing (TC) may be considered a profit management technique that ensures new products earn sufficient profits to justify their production (Kee and Matherly, 2013). [21]

Căpuşneanu and Briciu (2013) stated that after analyzing the critical factors of implementation or non-implementation of target costing method, the results obtained through practical case study demonstrates the

possibility of adapting and implementing target costing method in the household appliances manufacturing entities in Romania. [14]

Mendes and Machado (2012) showed that none of the analyzed companies reports using TC with the six characteristics attributed to it by the theory: price leads to cost; consumer focus; product design focus; multidisciplinary teams; focus on the costs incurred during the product's life cycle; involvement of the entire value chain. [28]

#### **Value Chain (VC) analysis:**

Value Chains (VC) focus on value creation typically via innovation in products or processes, as well as marketing- and also on the allocation of the incremental value. They include all of vertically linked, interdependent processes that generate value for the consumer, as well as horizontal linkages to other value chains that provide intermediate goods and services (Webber and Labaste, 2010). [39]

The Value Chain (VC) is a business model that enables the organizing of operations around the value adding activities that result in a better service or product (Sopadang et al., 2012). [34]

Webber and Labaste (2010) stated that there are many ways to analyze or evaluate a value chain. [39] Analysis can stem from research of secondary information, such as government or industry data, to interviews with industry participants. It can also be derived from participatory market assessments and market observations. Once the information is gathered, numerous tools and processes help interpret and inform the resulting analysis.

Sopadang et al. (2012) indicated that efficiency according to value chain model has been evaluated. Improvement options to increase efficiency of longan supply chain management have been proposed and discussed. [34]

#### **Value Engineering (VE):**

Value Engineering (VE) is a set of techniques whose aim is to omit unnecessary costs and these costs don't perform any role in enhancing the value and function of the product (Taghizadeh et al., 2012). [37]

Value Engineering (VE) is primarily a

function-oriented approach which is used to enhance the value provided by the product, measured by the relationship between the product's functions and the costs incurred (Blocher et al., 2010). [12]

Value Engineering begins with performing functional analysis, and ends with generating cost reduction. Engineers analyze the functions of the components and the cost of each major function, and attempt to improve the products design to reduce the overall cost without reductions in the required quality and performance (Atkinson, et al., 2012). [10]

Taghizadeh et al. (2012) pointed out that for the successful implementation of value engineering in the organization, the organizational factors affecting its execution should be identified. [37] Without understanding the rate of effect of each organizational factor on the successful implementation of value engineering, there cannot be a positive view of the successful execution of these value engineering projects in the organizations.

#### **Theory of Constraints (TOC):**

The theory of constraints (TOC) is an approach to managing costs and improving quality and delivery performance, by focusing on identifying and removing bottlenecks. While TOC is a short-run approach of improving performance by exploiting the constraints, in the long run, organization can develop strategies to avoid these constraints (Kuma, 2013). [23]

Theory of Constraints (TOC) recognizes that any system's performance, or operationally a firm's output, is limited by at least one constraint. TOC develops a specific approach to manage such constraints to support the objective of continuous improvement (Hansen et al., 2009). [18]

Theory of Constraints (TOC) is a short-term measure to manage constraints and improve performance. However, critics of TOC argue that performance cannot be entirely measured in the short term. Hence, in order for a firm to improve and sustain its performance in the future, it has to identify critical success factors which are strategic in nature and its related performance measures. Such strategic perspective is lacking in TOC, although it has

enabled firms to identify and eliminate constraints (Langfield-Smith et al., 2009). [25]

### **Resource Consumption Accounting (RCA):**

Resources Consumption Accounting (RCA) is a management accounting approach focusing on creating reliable information to minimize costs and maximize revenues to enhance the productive capability of the business, aiming greater success in a highly competitive market. RCA combines German management accounting methods known as "Grenzplankostenrechnung" or GPK which means "flexible cost planning and control " and strict form of Activity-Based Costing (ABC) for detailed process insights (Ahmed and Moosa, 2011). [6]

Resources Consumption Accounting (RCA) emphasizes the fact that cost is caused and can be effectively controlled at the resource level, and recognizes that each resource has ability to create value. Since the capacity resides in resources, managing the capacity and usage of resources is the basis for effectively managing costs (El-Helbawy and El-Nashar, 2013). [17]

Resources Consumption Accounting (RCA) is a quantity-based model, costs in RCA are modeled based on resource flow. Resource costs are classified as fixed or proportional based on the correlation between the input quantities to a resource pool and that pool's output quantities (Perkins and Stoval, 2011). [30]

### **Time Driven - Activity Based Costing (TD-ABC):**

Time Driven - Activity Based Costing (TD-ABC) is a method which identifies the capacity of each department or process and allocates the cost of this capacity of resource groups over the cost object based on the time required to perform an activity. If the demand for work in these departments or processes declines, TD ABC can estimate the quantity of resources released (Kaplan, 2006). [19]

TD-ABC captures the different characteristic of an activity by time equations in which the time consumed by an activity is a function of different characteristics. This equation assigns the time and the cost of the activity to the cost object based on characteristics of each object.

The unit cost of used resources and time required to perform an activity are two parameters for this method. The time-driven approach consists of six steps (Bruggeman and Everaert, 2007): 1. Identifying resource groups and the activities for which they are used, 2. Defining the costs of each group, 3. Estimating the practical capacity of each group, 4. Calculating cost per time unit, 5. Determining the required time units for each activity, 6. Calculating cost per transaction. [13]

Kaplan and Anderson (2011) described a Time Driven- Activity Based Costing (TD-ABC) approach to overhead allocation. [20]

This is in integration with a Lean environment in order to help provide accurate product unit costs. Actually, the TD-ABC requires less accounting transactions than the common ABC allocation method and still turns out an accurate computation of product unit costs, which suggests that it can coincide more with the lean accounting approach to waste elimination.

The present study aims to analyze viability of some applied cost systems in Egyptian manufacturing firms.

### **The study hypotheses**

The present study aims to test the following hypotheses:

H0: There is no significant difference among application extent of ABC and other modern cost systems in some Egyptian manufacturing firms.

H1: There is a significant difference among application extent of ABC and other modern cost systems in Egyptian manufacturing firms.

## **MATERIALS AND METHODS**

### **Data.**

The researcher used the questionnaire instrument in addition to the test approach to confirm the correctness of collected views. The number of sent questionnaire instruments was 443 (For 26 manufacturing firms in the first half of 2014) and the number of the received questionnaires was 385 with a response percentage of 86.91%.

### **Methods of data analysis.**

A Statistical Package for the Social Sciences

(SPSS) was used for applying reliability, descriptive and inferential statistics.

## RESULTS AND DISCUSSIONS

### Statistical analysis

#### 1. Reliability statistics:

##### a) Internal consistency reliability:

Internal consistency reliability indicator was used to assess the consistency of results across items within the test.

The results of the present study indicated that there is a correlation coefficient among the dimensions (Type of systems) of questionnaire which is significant at levels of 1 and 5%.

##### b) The Cronbach-Alpha Coefficient:

Cronbach's Alpha Coefficient was used as a statistical indicator.

It is generally used as a measure of internal consistency or reliability of a psychometric instrument.

The results of study revealed that Cronbach's Alpha Coefficient of questionnaire was 81.07.

#### 2. Descriptive statistics:

Table 1 shows types of currently applied cost system in some manufacturing firms in Egypt and their application weights.

Table 1. Types of currently applied cost system in some manufacturing firms in Egypt

| No. | Dimension<br>(Type of cost system)          | Repetition | Weight,<br>% |
|-----|---|------------|--------------|
| 1   | Activity-Based Costing (ABC)                | 223        | 57.92        |
| 2   | Activity-Based Management (ABM)             | 17         | 4.416        |
| 3   | Target Costing (TC)                         | 103        | 26.75        |
| 4   | Value Chain (VC) analysis                   | 1          | 0.260        |
| 5   | Value Engineering (VE)                      | 0          | 0            |
| 6   | Theory of Constraints (TOC)                 | 6          | 1.558        |
| 7   | Resource Consumption Accounting (RCA)       | 27         | 7.013        |
| 8   | Time Driven Activity-Based Costing (TD-ABC) | 0          | 0            |
| 9   | Others                                      | 8          | 2.078        |

Source: SPSS output.

The field questionnaire determined the most important modern cost accounting systems which are currently applied in the majority of

Egyptian manufacturing firms.

The descriptive statistics analysis of dimensions (Type of system) stated the weight of each system from view point of its application extent inside some Egyptian manufacturing firms.

The results analysis showed that Activity Based Costing (ABC) system has the highest weight (57.922%) and Value Chain (VC) analysis approach has the lowest value (0.260%).

While Theory of Constraints (TOC) and Time-Driven Activity Based Costing (TD-ABC) have no success (0%) as shown in Fig.1.

According to the descriptive statistics analysis and application extent indicator, the currently cost systems in Egyptian manufacturing firms may be descendingly arranged as follows:

- a) Activity Based Costing (ABC) system [57.922%],
- b) Target Costing (TC) system [26.753%],
- c) Resource Consumption Accounting (RCA) system [7.013%],
- d) Activity-Based Management (ABM) [4.416 %],
- e) Other systems [2.078%],
- f) Theory of Constraints (TOC) [1.558%] and
- g) Value Chain (VC) analysis [0.260%].

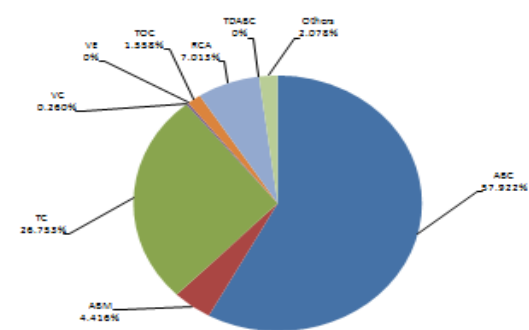


Fig.1. Weight of currently applied cost systems in some manufacturing firms in Egypt  
 Source: SPSS output.

#### 3. Inferential statistics:

The researcher used Friedman Test as Inferential statistics analysis to detect differences in treatments across multiple parameters (types of cost system).

Table 2 (A and B) shows there is a significant difference among application extent of ABC and other modern cost systems inside some

manufacturing firms in Egypt (At significance level of 1%).

Friedman Test stated that mean rank values of various cost systems were 7.11, 5.70, 4.82, 4.70, 4.59, 4.57, 4.51, 4.50 and 4.50 for ABC, TC, RCA, ABM, OTHER, TOC, VC, TDABC and VE systems, respectively.

Table 2. Output of Friedman Test (Ranks and statistics).

A. Ranks

| Parameter | Mean rank |
|-----------|-----------|
| ABC       | 7.11      |
| ABM       | 4.70      |
| OTHERS    | 4.59      |
| RCA       | 4.82      |
| TC        | 5.70      |
| TDABC     | 4.50      |
| TOC       | 4.57      |
| VC        | 4.51      |
| VE        | 4.50      |

B. Test statistics<sup>a</sup>

|             |          |
|-------------|----------|
| N           | 385      |
| Chi-Square  | 1051.657 |
| Df          | 8        |
| Asymp. Sig. | .000     |

<sup>a</sup>Friedman Test

Source: SPSS output.

## CONCLUSIONS

A field questionnaire determined the most important modern cost accounting system which are currently applied in some Egyptian manufacturing firms.

There is a significant difference among application extent of ABC and other modern cost systems inside some manufacturing firms in Egypt at significance level of 1%.

According the application extent indicator, the currently cost systems in Egyptian manufacturing firms may be descendingly arranged as follows: a) Activity Based Costing (ABC) system, b) Target Costing (TC) system, c) Resource Consumption Accounting (RCA) system, d) Activity Based Management (ABM), e) Other systems, f) Theory of Constraints (TOC) and g) Value Chain (VC) analysis.

## REFERENCES

- [1]Abbas, K. M., 2013,Integration between Theory of Constraints (TOC) and Resource Consumption Accounting (RCA) system for the purpose of improving profitability: Field study. Unpublished M.Sc. Thesis. Accounting Department, Fac. of Managerial Science, Sadat Academy for Management Science, Cairo, Egypt:1-223
- [2]Abbas, K. M., 2014a, Some important factors affecting evolution of Activity Based Costing (ABC) system in Egyptian manufacturing firms. Scientific Papers Series Management, Economic Engineering in Agricultural and Rural Development,14(1):187-191
- [3]Abbas, K. M., 2014b, Concept of Activity Based Costing (ABC) system and its application importance in order to increase the efficiency of the business environment in Egypt. Unpublished Scientific Report (No.2), The West University of Timisoara, Fac. of Economics and Business Administration, Department of Accountancy and Auditing, Timisoara, Romania:1-141.
- [4]Adamu, A., 2010, The practicability of Activity Based Costing (ABC) system in hospitality industry. Journal of Accounting, Nasarawa State University, 20(14): 36- 49
- [5]Afonso, P., Nunes, M., Paisana, A., Braga, A., 2008, The influence of time-to market and target costing in the new product development success. International Journal of Production Economics, 2: 559–568
- [6]Ahmed, S. A., Moos, M., 2011, Application of Resource Consumption Accounting (RCA) in an educational institute. Pakistan Business Review, January:755-775
- [7]Albright, T., Lam, M., 2006, Managerial accounting and continuous improvement initiatives: A retrospective and framework. Journal of Managerial Issues,18: 157-174
- [8]Al-Refa'ee, K. M., 2012, The extent of applying the Activity Based Costing (ABC) system in the field of iron and steel industry in Jordan. Interdisciplinary Journal of Contemporary Research in Business , 4 (1):676.
- [9]Atkinson, A. A., Banker, R. D., Kaplan, R. S., Young, S. M., 1997, Management Accounting. Textbook. 2<sup>nd</sup> Edition . Prentice-Hall International Inc., New Jersey, USA: 44-98
- [10]Atkinson, A. A., Kaplan, R. S., Matsumura, E. M., Young, S. M., 2012, Management accounting: Information for decision- making and strategy execution. Pearson Education Inc., Boston:307
- [11]Balakrishnan, R., Sivaramakrishnan, K, Sprinkle, G.B., 2013, Managerial accounting. Textbook. 2<sup>nd</sup> Edition, John Wiley and Sons Inc.:12-446
- [12]Blocher, E. J., Stout, D. E., Cokins, G., Chen, K. H., 2010, Cost management: Strategic emphasis. McGraw-Hill Irwin, New York:548
- [13]Bruggeman, W., Everaert, P., 2007, Time-Driven Activity-Based Costing: exploring the Underlying Model. Cost Management, 21(2): 16-20

- [14]Căpușeanu, S., Briciu, S., 2013, Pros and cons for the implementation of target costing method in Romanian economic entities. *Accounting and Management Information Systems*, 12(3):455-470
- [15]Căpușeanu, S., Cokins, G., Barbu, C.M., 2011, The importance of Activity-Based Costing Method (ABC) in Romania's business environment changes. *Proceedings of "The Annual International Conference in Economics, Informatics and Communications Field"*, the 20th-21st of May, The Centre of Applied Economics Researches, Câmpulung Muscel, Romania, available at: <http://mpr.ub.uni-muenchen.de/33152/>:142-147
- [16]Cokins, G., Căpușeanu, S., 2011, Sustaining an effective ABC/ABM system. *Theoretical and Applied Economics*, 2(555):47-58
- [17]El-Helbawy, S. M., El-Nashar, T.M., 2013, *Advanced Management Accounting: Cost Management Approach*; Ghobashy Press, Tanta, Egypt.
- [18]Hansen, D. R., Mowen, M.M., Guan, L., 2009, *Cost management: Accounting and control*. South-Western – Cengage Learning, Toronto:776
- [19]Kaplan, R. S., 2006, The competitive advantage of management accounting. *Journal of management accounting research*,18:127-135
- [20]Kaplan, R. S., Anderson, S.R., 2011, *Time-Driven Activity-Based Costing: A simpler and more powerful path to higher profits*. Boston: Harvard Business School Press
- [21]Kee, R., Matherly, M., 2013, Target Costing in the presence of product and production interdependencies. *Advances in Management Accounting*, 22:135-158
- [22]Kholeif, A., 2011, The positivistic approach to management accounting: Recent developments and futures directions. *Review of management accounting research: Methodological issues in management accounting research*. Part V. Chapter 20. 1<sup>st</sup> Edition. Magdy G. Abdel-Kader Editor and Palgrave Macmillan, UK:523-541
- [23]Kuma, C., 2013, Integrating Activity- Based Costing (ABC) and Theory of Constraint (TOC) for improved and sustained cost management. *Journal of Modern Accounting and Auditing*, ISSN 1548-6583, 9 (8):1046-1058
- [24]Kutac, J., Janovska, K., Samolejova, A., Besta, P., 2014, Innovation of costing system in metallurgical companies. *METABK*,53(2):283-285.
- [25]Langfield-Smith, K, Thorne, H., Hilton, R., 2009, *Management accounting: Information for creating and managing value*, 5<sup>th</sup> Edition, McGraw-Hill, Sydney.
- [26]Lewis, R. J., 1993, *Activity-Based Costing for marketing and manufacturing*. Textbook. 1<sup>st</sup> Edition. Quorum Books, Westport, Connecticut:85-122.
- [27]Mates, D., 2004, *Financial accounting of companies*. Textbook (In Romanian Language).Vol.1 and 2. Mirton Publishing House, Timisoara, Romania.
- [28]Mendes, H. R., Machado, M.J., 2012, Target costing: Review of empirical studies in the automotive sector. *Book of Proceedings – Tourism and Management Studies*, International Conference Algarve, ESGHT-University of the Algarve, Portugal, 3:792-801
- [29]Mohamed, M. A., 1991, Evaluation of allocation model of indirect costs on the basis of activity by using a model of electronic work paper. *Journal of Faculty of Commerce for Scientific Researches*, Faculty of Commerce, Alexandria University, Egypt,28(2):63-107.
- [30]Perkins, D., Stovall, O.S., 2011, Resource Consumption Accounting - Where Does It Fit?. *The Journal of Applied Business Research*, September/October, 27(5):41-51.
- [31]Petrescu, S., 2008, *Financial-accounting analysis and Diagnosis: Theoretical and applicative guide*. Textbook (In Romanian Language). 2<sup>nd</sup> Edition, CECCAR Publishing House, Bucharest, Romania.
- [32]Raiborn, C., Kinney, M., 2010, *Cost accounting principles*. 8th Edition. Hampshire: Cengage Learning:125.
- [33]Segovia1, J. J., Khataie, A.H., 2011, The financial performance effects of activity-based costing/management in the telecommunications industry. *Society of Interdisciplinary Business Research (SIBR) , Conference on Interdisciplinary Business Research*.
- [34]Sopadang, A., Tippayawong,K.Y., Chaowaru, T, W., 2012, Application of value chain management to Longan industry. *American Journal of Agricultural and Biological Sciences*,7(3): 301-311.
- [35]Stefea, P., 2008, *Module analysis of financial position and performance for economic entities*. Lecture notes (In Romanian Language), doctoral studies program, Fac. of Economics and Business Administration (FEAA), West University of Timisoara(UVT),Timisoara, Romania
- [36]Stefea, P., Abbas, K.M., Wadi, O.W., 2013, Aspects of obstacles for applying Activity Based Costing (ABC) system in Egyptian firms. *Scientific Papers Series Management, Economic Engineering in Agricultural and Rural Development*, 13 (3) :287-290.
- [37]Taghizadeh, H., Taheri, H., Shokri, A., 2012, The Study of the effective organizational factors in the execution of value engineering. *International Journal of Innovation, Management and Technology*,3(3):202-205
- [38]Tobor, I. D., 2013, *New dimensions of cost type information for decision-making in the wine industry*. Unpublished Ph.D. Thesis. University 1 Decembrie 1918, Alba Iulia, Romania:1-214
- [39]Webber, C. M., Labaste, P., 2010, *Building Competitiveness in Africa's Agriculture: A guide to value chain concepts and applications*. Section2:Concepts and definitions of value chains and supply chains. The International Bank for Reconstruction and Development / The World Bank Washington DC:9-13

