



A Proposed Model for Applying Customer Profitability Analysis (CPA) in the Pharmaceutical Sector: Evidence from Egypt

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Abstract: Adopting customer profitability analysis (CPA) helps companies shed light on the profitability of customers or the profitability of customer divisions. The core purpose of this study has been to point out the possibility of adopting and applying CPA model by using activity-based costing (ABC) approach, and attempt to introduce such model to the Egyptian pharmaceutical industry. To accomplish this purpose, this study initiates with a brief idea regarding the CPA, ABC, and numerous previous studies that tried to apply CPA depending on ABC. The phenomenology is the dominant philosophy of this study and it will depend on a case study method which will be applied in the Egyptian pharmaceutical sector along with relying on the exploratory studies. The study proposed a model for applying CPA by using ABC which includes four pillars; establishing a database of customers, identifying the main activities of customers, designing the CPA model by using ABC approach, and finally what are the main cofactors that have a great influence on the success or failure of the CPA implementation. The most crucial results of this study are; adopting ABC approach helps identify the major activities in the firm including the customers' activities, determining the costs associated with such activities, and applying CPA particularly by using ABC approach assists firms in classifying their customers / customer segments into profitable and unprofitable which has a great influence on the entire firm's profitability. Furthermore, one of the most indispensable results of this study is that firms should not ignore a number of factors that have a great impact on the CPA application such as organizational behaviors and beliefs, information technology, firm's strategy, accounting system, customers' visits procedures, and spreading the philosophy of Customer Relationship Management (CRM) among all the employees in the company..

Keywords: Customer Profitability Analysis, Pharmaceutical Sector, Egypt.

Introduction

In the era of a dynamic business environment and up-to-date manufacturing practices, additional consideration should be directed to the customer and market activities with the aim of developing market strategies, maximizing profits, and augmenting the overall firm's performance. Subsequently, numerous recent studies have attempted to study CPA and its influence on improving the firm's profitability and developing the forthcoming market strategies (Cardos and Cardos, 2014; Lueg and Malmlose, 2012; Doligalski and Tomczyk, 2014). Although CPA appears to be an essential marketing topic, it is considered one of the most vital issues in managerial accounting. Cardos and Cardos (2014) explained that several professional accounting bodies (for instance:

CIMA and IMA) argued that the upper 20% of the customers could create greater than 120% of the profitability of the company whereas the lowest 20% create damages that could reach to one hundred percent of profits. This leads to emergence of an imperative need to identify the profitable and unprofitable customers in order to maintain customers, who achieved high profits, avoid the unprofitable customers, reduce numerous cost items, raise prices, and focus on examining the customer profitability. Additionally, all responsible people in the firm (such as chief financial officers, chief executive officers, and sales managers should be ready to response to numerous inquiries such as: Who will achieve high profits from our customers? Who are the losing customers? What percentage of customers is profitable? (Spita

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and Smeureanu, 2008). Consequently, CPA is very indispensable to categorize customers into profitable or non-profitable which will supply beneficial information regarding the business's clients.

Van Raaij (2005, p.373) point out that "Most firms nowadays are using customer relationship management (CRM) systems, which will calculate the customer profitability figures on the basis of sales and service data available to the system". Moreover, Stefan and Reka (2010) stated that CRM can aid firms to determine the essential products and services to the firm's customers along with identifying the degree of communication with the customers. Thus, CRM and CPA are very imperative areas which could support companies to analyze all activities associated with their customers. In the same context, ABC method can accurately reveal the true customer costs which will supply companies to scrutinize the profitability of customer market fragments (Krakhmal, 2008). Besides, ABC can augment the degree of management's recognition of all activities so that classify such activities into valuable and invaluable that help managers to enhance the first and decline or neglect the later ones together with manipulating all types of costs in the firm. ABC is considered a vital tool to accomplish the customer profitability analysis; Epstein (2000) argued that by using ABC, firms can analyze the profitability data of customers and draw attention to the degree of satisfaction for customers and customers' fragments. The remainder of this study is designed in the following manner: the succeeding section reviews the literature related to CPA, ABC, and quite a few aforementioned studies of applying CPA by using ABC, section three gives a brief overview about the pharmaceutical sector in Egypt, section four outlines the research limitations, section five indicates the research methodology, section six familiarizes the proposed research model which includes four sub-sections, section seven provides the research summary, conclusions, and several recommendations for future research.

2. Literature Review

2.1 Customer Profitability Analysis (CPA)

There are several criticisms that have been directed to the traditional costing systems, Epstein (2000) pointed out that conventional cost and managerial accounting system has plentiful

obstacles in establishing the costs of products, services, delivery, and distribution costs for various customers or customers' fragments. Moreover, Pickering (1998) stated that the majority of conventional cost and management systems can provide only valuable and useful information concerning the manufacturing costs but not focus on emphasizing the customers' costs which have an enormous influence on the enterprise's profitability. Furthermore, the conventional cost and management system ignore various costs which are related to the customer activities. Thus, studying CPA is very crucial to overcome the traditional cost accounting difficulties. Therefore, over the past two decades there has been increasing importance placed on CPA in theory and practice (McManus, 2007; Van Raaij, 2005; Epstein, 2000; Veen-Dirks and Molenaar, 2009; Jackman and Shanahan, 2002; Van Raaij et al, 2003; Cardoso and Cardoso, 2014). According to the study of (Van Raaij, 2005), Customer Profitability Analysis can accurately compute the profitability of customers and customers' fragments by portraying the costs and revenues of them. Likewise, Cardoso and Cardoso (2014) mentioned that CPA can be described as the divergence between the costs and revenues of a particular customer over a definite interval of time.

CPA has become a substantial new management accounting tool and there are various issues should be considered when scrutinizing CPA: these issues might include; developing dependable information about the costs and revenues of customers, how to recognize future downstream costs of customers, recognizing different drivers of customer costs. Van Raaij et al (2003, p.574) explained that "CPA uncovers opportunities for targeted cost management and profit improvement programs, published figures show examples where 20% of customers create 225% of profits, where more than half of the customers is unprofitable. Besides, CPA presents indispensable information about the decision-making process of pricing policies and discounts' plans of customers. Additionally, CPA has numerous unique features (Veen-Dirks and Molenaar, 2009), these features may include: shortening the costs of all parts of the



value stream, focusing on various operations of an individual customer instead of only separate operations, and it handles the costs of a customer rather than the costs of products, services, departments, or geographical regions. In trying to carry out CPA in the industrial firms, Van Raaij et al (2003) used an empirical case of a company that manufactures and puts on sale cleaning goods through six stages; choosing active customers, designing CPA paradigm, computing the customer's profitability, shedding light on the consequences, standardizing programs and strategies, and lastly setting up the infrastructure. This study concluded that CPA will provide innovative data to the company that manipulates it in a primary stage. Hence, there is a slight prove of its extensive usage and real application in the manufacturing businesses.

Additionally, numerous aforementioned studies have been conducted to examine the applicability of CPA and its influence on the entire firm's performance. Doligalski and Tomczyk (2014) discussed the impact of customer analysis on the firm's performance. The resulting regression equation showed that conducting customer analysis increases the firm's performance by the factor of 0.158; it is more than the degree to which the change from selling low high margin insurance products affects the firm performance (0.126). In another study, Tanima and Bates (2011) studied the occurrence and perceived managerial value of customer accounting in New Zealand through conducting an empirical investigation in the New Zealand market, they found out that average usage of customer accounting tools and techniques in New Zealand in 2009 are almost identical to those located in Australia in 2002, and much greater than those attained in New Zealand in 2007. Also, this study observed a progressive relationship between the application of customer concept of marketing management and the practice of CPA at a discrete customer level. Alternatively, Van Raaij (2005) addressed the strategic value of CPA; this study stated that customer profitability analysis can augment the strategic marketing plans. Additionally, visions

into the profitability of particular customers, along with allocating the profitability across the customer base can heighten the decision making process of handling costs and revenues of customers and customers' fragments.

2.2 Activity-Based Costing (ABC)

Numerous current readings discussed the nature of ABC system and its applicability in several types of sectors (Wegmann, 2011; Wegmann, 2008; Roztocki and Weistroffer, 2005; Kumar and Mahto, 2013; Lin and Yahalom, 2009). Wegmann (2008) stated that ABC method was designed in USA for the period of the 80's, ABC is a sophisticated costing technique which recognizes the majority of costs as direct costs and expands the number of indirect-cost pools named activities. So, the costs of such activities are the foundation for allotting costs to products and services (as they are cost objects) through using cost drivers. Furthermore, Roztocki and Weistroffer (2005) addressed that implementing ABC system can help trace indirect manufacturing costs to activities. Afterwards, investigation various cost drivers, such as a quantity of orders handled or shipping distance, costs are assigned from activities to products and services (cost objects). Further, numerous studies have argued the potential implementation of ABC approach (Fadzil and Rababah, 2012; Duh et al, 2009; Roztocki, 2001; Moisello, 2012; Charaf and Bescos, 2013; Cokins et al, 2011; Banker et al, 2008; Askarany et al, 2010). Duh et al (2009) found out that the recently constructed ABC approach integrates both volume-based and non-volume based drivers that take into account the influence of rework on manufacturing costs. To simplify ABC application, Fadzil and Rababah (2012) have concluded that there are several factors that can facilitate and motivate ABC implementation; these factors may include (for instance) top management support, education, allocation problems, non-accounting ownership, increased competition, and growing costs. Alternatively, Moisello (2012) introduced a worthy contribution to describe the stages of ABC evolution through different stages, table 1 displays these stages.

**Table 1: ABC Evolution Stages**

Stages	First			Second	Third	Fourth
	First phase non-formal	second phase	Third phase			
Relation	Indirect cost-various basis	Product-activities	Product-activities	Activities-process	Processes-business unit	AB information performance management
Approach	Micro	Micro	Micro	Micro	Macro	Macro
Focus	Accurate product cost		Product cost for decision making	Tactical costs	Strategic costs	Performance indicators
Outcome	Accurate costing system		ABM	Process analysis	Sustainable enterprise systems	Integrated performance management solutions

Source (Moisello, 2012)

Moreover, numerous studies have been carried out to establish the possibility of applying the ABC technique in various industries. Oseifuah (2013) and Oseifuah (2014) tried to adopt and implement ABC approach in the public sector; Oseifuah (2013) addressed that ABC provides more accurate and helpful data than conventional cost system. It also concluded a number of results namely; the management agrees that ABC usage can improve visions of the causes of costs, provide improved cost control procedures, and develop decision making process. In another industry, Ebimobwei and Binaebi (2013) and Adamu and Olotu (2009) discussed the applicability of ABC in the hospitality industry, they indicated that there is a progressive association between the factors affecting ABC application and the hospitality industry. Alternatively, several readings examined the impact of technological innovations on ABC application (Askarany et al, 2007; Askarany et al, 2012; Maelah and Ibrahim, 2007). Besides, Askarany et al (2007) pointed out that the dispersion of ABC is linked to the application of technological changes in industrial firms. Nevertheless, this study did not provide an actual prove to confirm that ABC adopters are satisfied. In Egypt, There are several studies discussed the possibility of ABC implementation in the Egyptian firms and

the hindrances of such application (Stefea et al, 2013; Abbas and Wagdi, 2014). As stated by (Abbas and Wagdi, 2014), the Egyptian manufacturing businesses are the population of the study, 406 questionnaires have been received from 23 Egyptian manufacturing companies in the second half of 2013. The consequences of this study revealed that Egyptian manufacturing firms are adopting ABC system more than the other cost systems, where 56.7% of Egyptian manufacturing firms apply ABC system, 5.3% of them apply Resource Consumption Accounting (RCA) system, and 38% of them apply other cost systems. Perkins and Stovall (2011) clarified that resource consumption accounting merges the activity analysis of ABC with comprehensive data of resources which allow the scrutinizing of cost behaviors at the resource level. An exceptional characteristic of RCA is that the denominator volume used for cost assignment relies on the manner in which resources are utilized. As well, Stefea et al (2013) stated several essential features of hindrances for carrying out ABC technique in the Egyptian manufacturing businesses; These hindrances may include; less support from the top management, confrontation to change, the costs of design and application system, the drawbacks of the procedures and policies of accounting system, the shortage of human



proficiency, and the arbitrary behavior of indirect manufacturing costs.

2.3 Applying CPA using ABC

There is an extraordinary significance among academics and specialists on joining with the cotemporary management accounting innovations. So, numerous studies have discussed the combination between CPA, ABC, and Balanced Scorecard (BSC) (Cardoş and Cardoş, 2014; Guerreiro et al, 2008; Hajiha and Alishah, 2011). According to the first study, they found out that CPA is mostly positioned with ABC and it is frequently joined with BSC, so linking the philosophy of customer relationship management approach with the principles of ABC can enable companies to evaluate specifically the profitability of each particular customer, obtain indispensable and helpful data that permit companies to convert unprofitable customers to profitable and successful customers. Furthermore, ABC permits management accountants and managers classify their consumers into profitable and unprofitable; it helps recognize consumers' reports based on their loyalty and profitability. Hence, managers can classify four types of clients; partners, stars, passengers, and faithful. Firms should analyze permanently the costs associated with all categories mentioned above. A study by (Guerreiro et al, 2008), most academics have supported the ABC system as the greatest proper costing approach for evaluating the services' costs of customers with complicated product, customer, and service requirements. Nevertheless, ABC has conventionally been employed to the cost measurements for manufacturing activities, and only few practical studies have carried out such approach to the activities of customer-service. Besides, Hajiha and Alishah (2011) examined the relationship between time-driven ABC (TDABC) and CPA in the hospitality industry, they indicated that using TDABC model, in comparison with existing traditional system in Parsian Hotel, provides more precise data and profitability of customers. Also, the proposed model in this study classifies the activities that add value to the firm and the activities that do not add value, so it can demonstrate the real capacity of each part of the hotel.

Hence, managers can calculate necessary time for activities by time equations in TDABC in order to decrease this time and improve hotels' profitability. On the other hand, Cardoş and Cardoş (2014) revealed that customer cost information is energetic for managerial decision making. Understating the true costs of serving specific customers is important for every firm. Those firms that understand which customers are more profitable and which are not are "armed with valuable information needed to make successful managerial decisions to improve overall firm's profitability". Consequently, Stefan and Reka (2010) stated that companies realized that traditional cost accounting systems do not provide accurate cost information for the decision making process. Hence, ABC was designed and gained popularity, because it focuses on the activities related to the costs and assigns activity costs to products, services or customers that consume resources. Therefore, ABC becomes an indispensable tool for determining true costs of bots sales, marketing activities and customers, and it will help companies make better decisions based on accurate costing information. Thus, understanding ABC system is very essential for applying CPA, so Cardoş and Cardoş (2014) addressed that CPA has become one of the most essential aspects of strategic planning for managers, it is considered to be a milestone towards firm's profitability and that customer cost information are essential in the decision making press. Accordingly, CPA is typically included as a part of ABC and it is usually combined with the use of a balance scorecard (BSC) where customer profitability is one of the scopes linked to firm's profitability so as to enhancing its strategic vision and business performance management. To conclude, CPA must be carried out in an atmosphere where the Activity Based Costing approach is suitably established.

3. The Egyptian Pharmaceutical Sector

According to (American Chamber of Commerce in Egypt, "AmCham", 2015), The Egyptian pharmaceutical industry represents one of the oldest strategic industries in the country. It was started in 1939 with the establishment of Misr Company for Pharmaceutical Industries.



The industry is gradually developed between the 1960s and 1980s, following nationalization schemes which brought the industry under full government control. After the launching of reform programs in 1991, pharmaceutical firms obtained greater autonomy and increasing number of private sector entered the market. Presently, there are 30 pharmaceutical-producing firms of which eight are public and 22 private. Besides, Egypt's ranks 7th exports of pharmaceutical in the Middle East and has a better balance than most of its regional counterparts. Egypt's pharmaceutical exports are growing steadily, while the composition of Egypt's exports is shifting from raw materials to finished medicaments. Additionally, the pharmaceutical industry is facing several challenges internally and externally in the last two decades, these challenges include; the regulatory framework, quality assurance tests, research & development, market fragmentation, limited health-insurance coverage, the presence of production contracts, the implementation of GATT (General Agreement on Tariffs and Trade) and TRIPS (Agreement on Trade-Related Aspects of Intellectual Property Rights), and the worldwide competition. There are numerous features of the Egyptian pharmaceutical industry, these features include; the private sector governs over three-quarters of the local market, Egypt is the largest producer and consumer of pharmaceuticals in the MENA region (Middle East and North Africa), with one-third of the MENA market, the United States plays an active role in the industry through its contribution to investment and imports, Europe supplies the lion's share of Egypt's pharmaceutical imports, and finally local production covers approximately 94% of the domestic market (AmCham, 2015).

4. Research Limitations

CPA is a broad topic that encompasses marketing and managerial accounting dimensions. Therefore, this study will not greatly discuss the marketing issues related to CPA except to the extent that serves the research objectives. To simplify the success of CPA implementation, there are several behavioral, organizational, ethical, and regulatory aspects that should be thoroughly

studied with the purpose of creating an appropriate environment to effectively apply CPA in the firm. So, the study will not address such aspects in depth. Besides, this study sheds light on the accounting dimensions of CPA as a result of time and resources boundaries. Hence, this study focuses on how to design a CPA model in the pharmaceutical industry for a number of reasons; CPA – to some extent – is contemporary in the Egyptian business environment, pharmaceutical sector represents one of the most significant sectors in Egypt, CPA is related to the performance measurement which is very crucial in the Egyptian industries, and finally CPA is a comprehensive technique that achieve different goals simultaneously.

5. Research Methodology

The current research explores how to implement CPA by using ABC approach and the role of this implementation in enhancing the firm's profitability. The research philosophy is related to phenomenology which is designed to understand people's meanings and help create innovative thoughts; this philosophy participates to the improvement of advanced schemes. Likewise, the research tries to obtain sufficient information through formal and informal interviews concerning the obstacles that might face managers and management accountants that impede them from scrutinizing the customer profitability by using ABC approach and providing valuable and reliable information about the profitable and unprofitable customers. This might be achieved through discovering skills, attitudes and values of the management accounting staff and numerous managers at various stages in the firm. The current research scheme is designed to advance a general approach to carry out CPA in the manufacturing companies by collecting quantitative and qualitative data concerning the basic research variables and other research cofactors. With respect to the research approach, this current research theme is portrayed as an inductive nature (Hussey and Hussey, 1997; Saunders et al, 2000; Ryan et al, 2002). This study depends on the case study method that will be applied in the Egyptian pharmaceutical sector along with relying on the exploratory studies. Sauders et al (2000) addressed the advantages of using

different- approaches in the one study as they could be employed for various objectives.

The majority of collected data are related to qualitative, the research project depends on qualitative analysis. Concisely, Saunders et al (2000) indicated several features of the qualitative data which conformed with the current research data. These features may include: (1) data are based on meanings expressed through words, (2) collection results in non-standardized data requiring classification into categories (see figure 2), and (3) analysis conducted through the use of conceptualization.

To accurately draw an appropriate environment for the implementation of CPA using ABC, a number of factors should be taken into consideration (and we cannot ignore them) in order to draw up a comprehensive overview of the research idea. These factors have an excessive impact on the CPA implementation; these factors may include organizational factors (such as firm’s strategy, management support, CRM adoption) and technological factors (such as firm’s IT and dedicated CPA software). Figure 1 exhibits the research methodology structure.

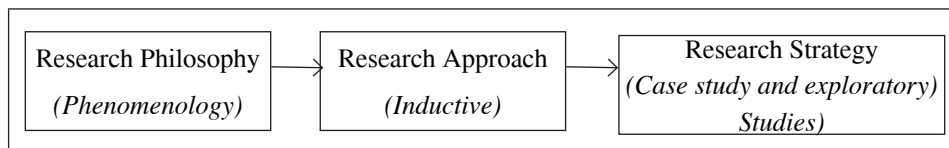


Figure 1: Research Methodology Structure

This figure is designed by the researcher

6. A Proposed Model for CPA Implementation

Traditional accounting methods cannot provide reliable and valuable information concerning calculating the profitability of customers or customer segments. Thus, CPA has become an indispensable instrument in serving firms to identify their <profitable> and <unprofitable> customers and understand the consequences of that. In addition, Van Raaij et al (2003) pointed out that firms can attain several goals through applying CPA, these goals may include; determining the sources in the company that can participate in achieving the profitability, grasping the different links between costs and clients, and improving the decision making process through appropriate distribution of resources among market segments and clients. Accordingly, this section is designed to articulate a general structure for CPA approach together with identifying how this model can be carried out in the pharmaceutical industry (Van Raaij et al, 2003).

6.1 Establishing a Database of Customers

The customer is becoming the central focus when designing the firm’s strategy not only in the marketing field but also in the management

accounting field (Tanima and Bates, 2011), this study pointed out that there are demands on the management accounting discipline for the “production of a quantified knowledge that transforms the customer into a novel, highly flexible calculable space inside the firm”. Thus, such demands have given rise to the use of technical terminologies under the umbrella heading of “customer accounting” that has been mentioned by (Tanima and Bates, 2011) as it incorporates all accounting approaches targeted regarding evaluating profit, sales, or present value of earnings linking to a customers or customers’ divisions. Further, Epstein (2000) indicated that accountants have traditionally focused on cost reduction but CPA tries analyzing, managing, and developing customer profitability through combining the accounting and marketing expertise. Hence, firms should set up a database of their customers to differentiate between profitable and unprofitable customers which lead to setting a basis for customer profitability. Various changes is taking place which have an excessive impact on a pharmaceutical firm’s downstream (or customer facing) relationships. Innovations in R&D and Customer Relationship Management (CRM) are seen as the main areas of actions for pharmaceutical firms (Alt, 2003). Additionally, as stated previously,



the pharmaceutical exports in Egypt have been augmented progressively, whereas the configuration of Egypt's exports is transferring from raw materials to finished pharmaceuticals. So, there is a need for scrutinizing customers using the philosophy of customer portfolio. Customer portfolio management is not only a marketing tool, but also connects to other areas such as sales and accounting and it is considered one of the critical scopes of CRM (Tien, 2014). Additionally, Tien (2014) argued that the initial purpose of customer portfolio is the limited of resources, so firms have to treat their customers differently by allocating different levels of resources so as to develop a balance customer structure, this step enables firms to allocate resources to right customer in order to accomplish its goals by understanding the structure of customer portfolio first. As a result, this analysis assists firms articulate a database which classifies customers into profitable and unprofitable. Due to the Egyptian pharmaceutical firms are dealing with a massive number of customers internally and externally, these firms should start with distinguishing their customers depending on "4-Box" model which can help provide a simple and structured approach to segmenting customers and the preparation of customer database. Figure 2 is introduced to the Egyptian pharmaceutical industry that classifies customers into four groups depending on the relationship between profitability and firm's strategy.

Strategy	Profitability	
	Profitable	Loss-Making
	Target	Retain
Non- Target	Monitor	Replace

Figure 2: 4-Box Model

Source: (Brown, n.d).

Using 4 - Box model helps firms identify the different categories of customer or customer segments and determine which customers should be included in the customer database and which will be ignored. Besides, deciding the place of each customer in the 4-Box model assist firms in revising and developing their overall strategies in order to be adapted with the profitability. Moreover, scrutinizing 4-Box model is very

indispensable in the pharmaceutical industry mainly in the retain and monitor boxes as Alt (2003) stated that advancing and marketing extraordinary volume products to hospitals and physicians is not satisfactory in the competitive market environment. In addition, intensifying and customizing the services presented to customers becomes a strategic priority through augmenting the customer retention. As well, adopting 4-Box model (one of the essential steps in CRM approach) can enhance the communication with customers across one or more touch points and to set up an identical vision of customer data. This helps adopt new customers, to diminish the costs of customer service, and to strengthen the customer retaining by supplying fitted contributions to current and potential customers (Alt, 2003). To end with, studying a 4-Box model enables firms to regularly update the database of customers by determining the different efforts that should be carried out to replace or transform the customers.

6.2 Identifying the Activities of Customers

The analysis of customer cost is aimed to recognize the activities and cost drivers that serve customers. Conventionally such costs are concealed in the customer sales, support, and marketing functions. Besides, different activities have different cost drivers, customer costs can be categorized into the following sorts; customer unit-level cost, customer batch-level cost, customer-sustaining cost, distribution-channel cost, and sales-sustaining cost (Hansen and Mowen, 2006). Moreover, Guerreiro et al (2008; p.400) pointed out that "the central activities required to serve customers were first identified, and the most relevant costs of these activities were measured, the avoidable costs of the activities were then allocated to customers group through the defined cost drivers. The costs accumulated in terms of customers were then identified with the products, based on sales volumes by customer". After revising numerous aforementioned readings (Guerreiro et al, 2008; Smith and Dikolli, 1995; Stefan and Reka, 2010; Hansen and Mowen, 2006; Van Raaij, 2003), there are several activities related to servicing customers and these activities can be classified into four patters; purchasing, accounting



procedures, sales, and service and all of these activities are existing in the pharmaceutical industry. Figure 3 presents different activities and cost drivers associated to such activities. (The activities are listed for example).

Activity	Cost Drivers
Purchasing:	
Purchasing materials	Number of purchasing orders
Logistics	Costs charged by logistics partner
Purchasing discounts	Volume of discounts
Order processing	Number of orders placed by customer
Accounting procedures:	
Sales credits	Volume of sales credits
Debtor collection support	Payment period
Collecting	Quantity of bills collected
Billing	Quantity of bills issued
Sales:	
Sales	Time and type of salesman visit
Distribution	Quantity and Weight of SKU transported
Sales promotion	Time and type of promoter visit
Shipping	Delivery distance
Service:	
After sales service	Time and type of service rendered
Technical service	Time spent in customer service

Figure 3: Activities and Cost Drivers

This figure is designed by the researcher

The pharmaceutical industry is a huge alteration method. The growing costs and increased complexity of the pharmaceutical network along with the occurrence of new business models on the internet are putting the healthcare sector under pressure (Puschmann and Alt, 2001). In addition to the activities mentioned above, the pharmaceutical firms may have also some further activities such as: telephone answers, travelling to long distances, mailing, photocopying, and checking stock. Also, pharmaceutical firms have unique characteristics as they are dealing with different categories of customers in different and far areas. Puschmann and Alt (2001) argued that CRM means increasing revenues and profitability by coordinating, consolidating, and integrating all points of contact that firms have with their customers, which is what in effect integrates sales, marketing, and service. So, these firms should give exceptional consideration to the sales, marketing, and service activities which reflect the core target of CRM. In Egypt, The

pharmaceutical firms are buying, marketing, and distributing of its products to all districts of Egypt. So those firms should give more concentration in scrutinizing and describing the procurement, marketing, selling, and distributing activities so as to assist accountants and executives classify the profitable clients and unprofitable ones which lead to increase the firm's profitability. Additionally, the service activities represent high percentage from the firm's activities in the pharmaceutical firms, because these firms are trying to keep the customer's loyalty by following up his desires and inquires. Furthermore, the pharmaceutical firms are purchasing their products from within the country and from abroad as well. Therefore, the procurement activities (such as purchasing products, purchasing discounts, and logistics) should be carefully determined and analyzed, and then the costs of those activities should be scientifically allocated to costumers. Finally, pharmaceutical firms are regularly developing R&D activities to meet the market competition and to achieve a competitive advantage. So, the accounting system should study, analyze, and classify the costs of such activities and attempt to allocate them to costumers in a manner way.

6.3 Designing the CPA Model using ABC

According to (Kumar and Mahto, 2013; Fadzil and Rababah, 2012), ABC is intended to allocate costs to activities which support more precise cost data, several reasons can urge manufacturing businesses to implement ABC, these reasons may include the speedy development of various marketplaces particularly in the industrial area, the progressively increasing indirect costs under the use of automatic techniques, and the need for more precise cost data to run the business appropriately and achieve competitive value and advantage. Moreover, various readings have been performed in order to adopt and apply ABC (Wegmann, 2011; Duh et al, 2009; Kumar and Mahto, 2013; Moisello, 2012; Wegmann, 2008), these studies pointed out that ABC is a developed cost system which allows classifying more costs as direct, to expand the number of indirect-cost pools and to identify cost drivers.. In the same context, Stefan and Reka (2010; p.537) said that "the approach of ABC involves



going through numerous steps. First, ABC assumes that products, services or customers generate activities and activities consume resources. Second, product costing involves a two-step allocation process in which costs are first allocated to activities and then the activity costs are allocated to products or customers based on each product or customers demand for, or consumption of the activities”.

Regarding the implementation of ABC in CPA, Pickering (1998) mentioned that costs are assigned to the activities carried out in the firm. In his study, he classified the firm’s activities into three categories. First, customer related activities (such as sales customer service and deliveries) are then allocated to customers supported by these activities based on cost drivers. Second, product related activities (such as engineering, manufacturing, and product specific marketing) are allocated to the

products/services provided and then allocated to customers based on the level of sales of each product/service. Third, organization sustaining (overhead) costs, i.e. those that do not relate to either products or customers (such as organization management costs) can be allocated to customers through an overhead allocation to products or services. Finally, Pickering (1998) concluded that where an organization has already implemented ABC to fully cost products, substantial portions of this prior work can be used for customer focused ABC. In the Egyptian pharmaceutical firms, they are putting more interest in comparing costs with the revenues generated from the customers in order to evaluate the firm’s performance based on the total profitability. But they did not put efforts in analyzing the profitability of each customer or customer group. Figure 4 can be carefully studied which shows the customer profitability by using ABC.

High ↑ Revenue ↓ Low	2 .Price sensitivity Few special orders	1. Expensive by pays on time Order custom products Customized delivery
	4 .Order standard products Standard delivery	3. Low prices Special orders
	Low ←———— Service costs —————→ High	

Figure 4: Customer Profitability by using ABC

Source: (Stefan and Reka, 2010)

As displayed in Figure 4, according to (Stefan and Reka, 2010), there are several ways in which firms can make a clear distinction between profitable and unprofitable customers. Category 4 represents customers who can simply be assisted but at low cost and low prices. Pharmaceutical firms can retain this kind of customers but increase the sales visits, promotion, and discounts to grow their revenues. Category 1 makes up customers who generate high revenues but at high service costs. Pharmaceutical firms should find ways by which can decrease the service costs such as decrease shipping costs, reduce discounts, reduce salesmen visits, and decrease the samples of medicines. Category 2 represents customers who create great returns but at minimal costs, this kind is the most vulnerable customers because the pharmaceutical

companies should increase their efforts in servicing those customers to keep their revenues and loyalty. The fourth category (category 3) represents the customers who generate low revenues and involves high customer costs. In the fourth category, pharmaceutical companies must rethink their internal processes, improve manufacturing processes, review delivery terms, revise special orders, and modify credit terms. Even though figure 4 helps classify customers into profitable and unprofitable, Guerreiro et al (2008) introduced three types of possibly non-profitable customers who should be retained. These customers include; new and growing customers who promise more profitable business in the future, those who provide qualitative learning benefits, and those who are acknowledged as leaders in their market or specialty area. Moreover, analyzing



the customer profitability can be implemented by using Customer Profit Statement (CPS) which begins with the net sales to the consumer, this statement is – to some extent - similar to the traditional income statement that is prepared for the external purposes but CPS is designed

for internal purposes to analyze and evaluate the customer profitability. Figure 5 portrays a model for CPS. The idea of figure 5 is taken from (Spita and Smeureanu, 2008; Hansen and Mowen, 2006).

Net sales	\$ 1000	The costs listed in the customer profit statement are given for illustration only. Otherwise, there are too many types of costs that are related to the customers.
Deduct: cost of goods sold (COGS)	400	
= Gross profit	600	
Deduct: direct operating expenses		
Handling	18	
Storage	13	
Order processing	12	
Restocking	37	
Sales visits	20	
Customer service	25	
Delivery	40	
Billing	35	
= Contribution	400	
Deduct: business management expenses	130	
= customer profit	270	

Figure 5: Customer Profit Statement (CPS) (Virtual Numbers)

As shown in figure 5, direct operating expenses are created by ABC system which follows such expenses from the general ledger to products and /or to customers. (Spita and Smeureanu, 2008; p. 52) addressed that “ABC was designed and developed to execute product and process costing in manufacturing operations and it has more lately been applied to “cost-to-serve” modeling in wholesale distribution”. So, ABC is used to determine the direct operating expenses attached to a particular client. For instance applying ABC to the handling process is computed by determining the cost of salespersons per hour, and then this cost will be multiplied by the time spent for handling the sales to the customer. Another example, ABC can be used to clarify the cost of sales visits by first identify how many visits implemented to the customer, and then this number of visits will be multiplied in the cost occurred in each visit including the salesman wages, samples of medicine rendered, and any gift introduced to the customer. So, ABC can be used to determine all direct operating expenses.

The direct operating expenses are deducted from the gross margin to compute the contribution. As stated in the study of (Spita and Smeureanu, 2008), the term contribution means the customer’s contributions to the company’s overhead expenses, a positive contribution means that the customer is participating to overhead expenses and profitability. Besides, ABC tries to allocate all expenses particularly in the general and administrative category to customers. So, contribution is mostly a suitable indicator of customer profitability. Besides, all other expenses that are not directly to the specific customer are collected in a cost pool called business management expenses which will be allocated to customers based on an general driver of costs in the company, the basis for allocating business management expenses depends on the type of business and on the extent to which activity measure tends to increase (and decrease) overhead expenses in the company. For example, in the service merchandising, we might use the number of stores served. In the pharmaceutical industry, we might use the number of products introduced



to the customer. After calculating the business management expenses, it will be subtracted from the contribution to arrive at customer profit. When Customer's contribution and customer's profit are positive, this means that it is a profitable customer.

6.4 Cofactors for the Success of the Application Process

The implementation of CPA could not be accomplished without considering the information technology innovations (Spita and Smeureanu, 2008). According to the previous study, the data and computational requirements of ABC and CPA rapidly overdo what is usually available with most accounting and management information systems. Moreover, applying CPA requires a good understanding of ABC approach, Fadzil and Rababah (2012; p.5) said that "success to be strongly connected to behavioral and organizational variables such as top management support, adequate internal resources and training, but not to technical variables such as the type of software or the nature of the system". In addition, Van Raaij et al (2003) indicated the factors that are fundamental for applying CPA by using ABC. This study argued that the pillar of standard CPA will be the good application of CRM approach, it is very essential for the firms to have precise statistics for the entire level of the activities and the utilization of resources. Therefore, a first application of CPA scheme focused on the company's activities instead of the specific customers. If the accounting system assures to produce precise cost and activity data, the focus can shift to the purchase and progress of CRM implementation. Finally, the last study also pointed out the importance of procedures for improving the truthfulness of forthcoming CPA facts, the sales managers and other managers are demanded to commence recording their customer official appointments in order to compute the exact time spent with the customers that have a great impact on the success of CPA. In addition, there is an indispensable role of top management in supporting the application of CPA and ABC, this support can be accomplished through several activities; preparing different training courses

for the workforce so as to inform them about the benefits and returns that will be gained from adopting and applying CPA by using ABC, encouraging a new culture among the staff that highlights the imperative influence of CPA on the entire firm's profitability, and finally the firm should launch supplementary efforts to involve the workforce in planning and adopting CPA figure. Moreover, business strategy also has a great effect on the adoption and applying the CPA model. Fulfilling differentiation strategy can facilitate the application of CPA model as it generates customer value by presenting high quality products reinforced by good service; this strategy also relies on the harmonizing between product benefits and product costs for the customer. Besides, this strategy requires full understanding of the customer desires and competitors. The final factor that has a vital role in simplifying the application of CPA is the organizational values and beliefs because there is generally a resistance from the employees towards the advanced developments in the firm. Thus, firms should give focus on the required changes in the organizational values and beliefs which make up an enormous factor in emerging and applying CPA model using ABC approach.

7. Summary, Conclusions, and Future Research

This study discussed the possibility of applying customer profitability analysis (CPA) using ABC approach in the Egyptian pharmaceutical sector. The study addressed an appropriate background concerning the previous recent studies in CPA, ABC, and numerous studies related to the application of CPA by using ABC in different industries with the purpose of introducing a brief introduction for the basic research idea. The study shifts attention to a brief overview about the pharmaceutical sector in Egypt which makes up one of the most imperative sectors in Egypt, the study also presents several challenges that face the pharmaceutical sector internally and externally in the last two decades, these challenges include; quality reassurance assessments, R&D, market division, restricted health-insurance coverage, and the existence of manufacturing agreements. As a result of



the increased number of dimensions that can be handled in the subject of CPA and ABC, the present study set a number of limitations by not focusing on the organizational, behavioral, ethical, and regulatory sides behind CPA / ABC and the study also addressed the accounting dimensions of CPA due to time and resources restrictions. The phenomenology is the dominant philosophy of this study. The current research paper is designed to create a general approach for implementing CPA in the industrial firms by collecting quantitative and qualitative data concerning the basic research variables and other control variables that have an effect on the study. This study depends on the case study method that will be applied in the Egyptian pharmaceutical sector along with relying on the exploratory studies. Section six introduced a proposed model for applying CPA by using ABC approach and this section is designed to articulate a general structure for CPA approach using ABC philosophy together with identifying how this model can be carried out in the pharmaceutical industry. The proposed model introduced in this study includes four pillars; establishing a database of customers, identifying the activities of customers, designing the CPA model by using ABC approach, and finally what are the cofactors that have a great influence on the success or failure of the CPA application. The outcomes of the study found out that the CPA model using ABC cannot be simply adopted unless the firms established the infrastructure of such application including: understating the fundamental meaning of ABC, adopting high information technology, increasing the degree of awareness among the employees about the importance of change, adopting a strategy that focuses on the customers rather than products, and finally spreading the philosophy of customer relationship management in the company. Finally, there are numerous recommendations for future research that can be proposed at the end of this study; the study suggests more research on the marketing dimensions of CPA, the study suggests studying the possibility of CPA implementation using ABC approach through depending on another research strategy like a survey, there is a crucial need for future research on the impact of structural

and administrative values & beliefs on the CPA application, finally there is a need for future research on fundamental changes on the accounting systems to adapt with ABC approach in order to simplify the CPA implementation.

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