

Kadhim, H., Al-Ghezi, R. (2021). Using Attribute-Based Costing To Conduct Efficient Customer Profitability Analysis In Small And Medium-Sized Manufacturing Businesses. *Akkad Journal of Contemporary Management Studies*, 1(2), 66-79.

USING ATTRIBUTE-BASED COSTING TO CONDUCT EFFICIENT CUSTOMER PROFITABILITY ANALYSIS IN SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES

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Received: February 2021

1st Revision: April 2021

Accepted: May 2021

ABSTRACT. The research aims to show both cost technology based on ABC II specifications and customer profitability analysis (CPA as contemporary accounting techniques and money from a significant role in developing the performance of the economic unit compared to traditional cost technologies). Highlighting the role of cost technology based on specifications in providing appropriate information to manage the monetary team helps it analyze the customer's profitability and maintain its customers for the men's clothing factory in Najaf. The study's objective is to use cost technology to data from the Men's Clothing Factory in Najaf 2019 via field trips and interviews with department managers and personnel to analyze the customer's profitability for the economic unit research sample. The findings show that customers whose total losses increased according to the traditional cost system under ABC11 technology due to the optimal exploitation of resources and reduced costs while meeting the specifications and desires of customers. The customer who was making a loss according to the company's traditional system is (y) by (16145000) dinars has turned into a profitable customer (5535,000) dinars, which means that ABC11 has a vital role to play in providing appropriate information to analyze the profitability of customers fairly and correctly.

JEL Classification: D02,
O17, P31

Keywords: specification-based costing; analysis of customer profitability; customer value; specifications; reducing costs; customers

Introduction

Due to fast technological advancements and variances in client tastes and wishes, changes in the business environment have increased local and worldwide rivalry. Other elements that have had a significant role in supplying economic units with competitively priced items and excellent quality suit their requirements and desires while also garnering their

pleasure and loyalty at the lowest possible cost. Modern accounting methods and techniques must be used to provide helpful information to the management of the economic unit to help them make decisions. It will meet the needs and desires of customers on the one hand and achieve their strategic objectives on the other in line with changes and developments in the business environment. Because the customer is a crucial focus of the success of the economic units, the accountants in these units should pay close attention to the customer's profitability process by analyzing this profitability and knowing the extent to which the costs and revenues of each customer contribute to the profits of the economic unit. Cost-based technology is characterized by its ability to provide appropriate information that traditional cost techniques cannot provide. It contributes to providing helpful information that helps management rationalize costs and assist in customer profit analysis, enabling economic units to compete and satisfy customers. Despite research efforts to activate cost management inputs, most economical units adopt traditional cost entries in customer profit analysis.

1. Literature review

According to several non-economic metrics, these three nations are small and This technique is based on the analysis of product characteristics and the link between internal and external variables. Customer expectations and needs, competition factors, and the capabilities and capabilities of the economic unit available to assist management in making appropriate decisions to improve the unit's performance and maximize its value. In addition, providing the correct information to analyze the customer's profitability and symbolizes the cost technology based on specifications with the symbol (ABCII). It is an abbreviation for the words (Attributes (Based Costing), and the sign (II) means the number two in Latin to distinguish this term from the costs based on activities (ABC). The early beginnings go back. The interest in cost-based technology (ABCII) went back to the nineties of the twentieth century when Bromwich developed strategic management accounting in 1990, considering the benefits provided by the product to the customer and their contribution to achieving competitive advantage. The specification of the product with what the customer pays for it, and he concluded that management accountants could play an essential role in measuring the cost of the specifications supplied to the customer and preparing regular reports in this regard. Competitive cost level (Drury, 2008).

Walker (1992) submitted a proposal, which is based on the process of linking the activity-based costing technology (ABC) and the cost-based technology (ABCII) by determining the cost of implementing each specification based on the activities necessary for its implementation.

The ABCII technology is based on the most critical components

- 1- The use of ABCII technology as a basis for cost management is consistent with the modern vision of the marketing philosophy (customer orientation). This technology depends on defining tangible and intangible specifications and characteristics that value the customer's perspective (Gering, 1999: 27).
- 2- The (ABCII) technique depends on scientific methods in determining product specifications, such as joint analysis, value engineering, and then use the value chain. It is through the practical reality of the market for selling products and in light of each level of achievement of each specification, the costs necessary to achieve it are determined, and thus the cost and benefit of each unit of the product can be determined and measured (Raiborn, Kinney, & Barfield, 2020).
- 3- ABCII technique focuses on analyzing the relationship between cost and benefit, as the cost-benefit relationship is analyzed for each product unit. Thus, it is possible to identify several levels of the price and use of the product unit by aggregating the costs and benefits related to

the levels of achievement of each of the specifications that must be met in the product (Hogue, 2001).

4- The ABCII technique is concerned with allocating resource costs, considering the dependence of costs and their relationship to each level of achievement of each specification of each product and product unit. It makes it possible to plan cost-based specifications using a hierarchical model that shows costs and benefits based on each level of achievement, each specification, and each product unit (Huynh, Gong, & Huynh, 2013).

Among the most critical technological objectives of (ABCII) are the following: - 1- This game adds to the structure of a model by utilizing various models of various models (Jiao, Du, & Jiao, 2006).

2- This is a value chain analysis approach (Hansen & Mowen, 2014).

3- The (ABCII) approach is more robust and effective for profitability analysis and total cost expenses (Walker, 1991).

4- ABCII technology, with its intelligence, design, and production, is compatible with contemporary production methods, resulting in continuous improvement of product parameters (Bromwich, 1990).

5- Develop an ABCII technology using a product life cycle costing approach in which the presence or absence of a good specification affects the product life cycle costs (Zarandi, Mansour, Hosseinijou, & Avazbeigi, 2011).

6- ABCII technology embodies the market orientation concept, emphasizing the production of products that can be sold, not items that cannot be sold, and goods sold above items that fall on the customer scale (Walker, 1998).

ABCII technology is based on the basic idea that the product is a set of characteristics and specifications, and adding these characteristics and specifications requires conducting a set of activities. When implementing these activities, costs arise. The (ABCII) technique depends on the use of scientific methods in determining product specifications (such as joint analysis, value engineering, and the use of the value chain) to determine the level of achievement of each specification and the benefit of each class. And that is through the practical reality of the market for selling products and in light of each level of achievement of each specification, the costs necessary to achieve it are determined, and thus the cost and benefit of each unit of the product can be determined and measured (Raiborn et al., 2020).

Cost reporting based on specifications

In 1990 Bromwich referred to the use of specifications costs. He emphasized the role of accountants in estimating the various costs of product specifications and controlling these costs over time. He added that accountants should pay attention to strategic information as well as price information, and this helps in planning, control, and decision-making regarding Product specification costs, and follow up and report on these costs regularly (Nasieku & Githinji, 2016)

In 1994, Partridge and Perren (1994) presented a model that shows how to report product costs according to the cost technology based on specifications by analyzing the costs associated with the specification in question into four categories of expenses:

1. Costs associated with the volume of production: this category includes costs that are directly related to the importance of output, such as materials and wages, as well as variable indirect industrial costs in which the percentage of change occurs now with the difference in the volume of production (Inglis, 2005).

USING ATTRIBUTE-BASED COSTING TO CONDUCT EFFICIENT CUSTOMER PROFITABILITY ANALYSIS IN SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES

2. Costs associated with activities: This category includes costs that are not directly related to the production volume but are related to specific activities such as handling, control, and maintenance related to product specifications.

3. Capacity-related costs: This category includes costs related to equipment and machinery that can be traced to a particular product through experience and repeated experiences despite their difficulty.

4. Decision-related costs: This category includes costs related to economic unit policy decisions, which are spent to enhance product specifications such as promotional activities.

The following table 1 shows the product specification cost matrix according to the model provided by Perren, Berry, and Partridge (1998):

Table 1. Product specification cost matrix

Cost categories	Costs associated with production volume	Costs associated with activity	Capacity-related costs	Fees related to the decision	The total cost of the specification
specifications					
A. Specification					
B. specification					
C . specification					
Total cost per category					

Customer Profitability Analysis

Customers receive a lot of attention from economic units due to the increasing global competition, which was reflected in the increased interest in customer profitability and its factors. Several recent studies have emphasized the importance of focusing on customers to ensure match by meeting their needs and gaining their loyalty (Union, Kadhim, & Ali, 2020). Among these methods (customer profitability analysis, customer relationship management, customer value) to study the needs and requirements of customers. As well as collecting their data and benefiting from it in studying the behavior of customers with whom the unit deals and working to meet all their requests for high-quality products or services at lower costs. Therefore, the financial company does not know who its profitable customers are and who are not. However, it knows who the most beneficial customer or the most significant customer is, but it does not know the profitability of all customers (Kadhim, Najm, & Kadhim, 2020). many managers of economic units do not realize that improving profitability consists of managing and measuring the customer's profitability at the individual level or for a group of customers. Therefore, economic units that apply the concept of customer profitability can identify customers who contribute to profits and those who do not contribute. Thus, it can develop strategies that add value to the most profitable customers as well as make the least profitable customers more profitable, and reduce the decline in profits. Focusing on long-term customer profitability (Kbelah, Amusawi, & Almagtome, 2019). Measuring and managing customer profitability is essential to improve the profitability of an economic unit. It increases the need to apply better management accounting techniques concerned with the information most relevant to customers to collect data, study customer requirements, and meet their specific needs (Amusawi, Almagtome, & Shaker, 2019).

Customer Value (CV)

After clarifying the concept of customer profitability, the researcher believes that it is necessary to explain the concept of customer value. The economic units should achieve value for the customer by presenting new products or developing existing products and providing accompanying services because customers evaluate new products based on the distinguished services offered to them, the optimal method, and the appropriate time. The value of the customer changes with the change of time according to the customer's needs, desires, and expectations.

Customer value is a significant and relatively new notion in the literature of cost and management accounting since the economic unit attempts to develop its connection with the customer by satisfying his wants and wishes through the provision of valued products (Al-Fatlawi, Al Farttoosi, & Almagtome, 2021). This concept is a basis for the success of the current and future economic unit, as it represents the essential foundation of the competitive strategy pursued by that monetary unit (Jääskeläinen & Heikkilä, 2019).

The unit can achieve a competitive advantage (Almagtome, Khaghaany, & Önce, 2020). Therefore, the economic team seeks to establish its presence and strength in the market by meeting and achieving the needs and desires of customers better than what other competitors offer) 1036 (Wang & Chiu, 2019). Among the steps of analyzing customer profitability in light of the ABC11 technique:-

- 1- Determining the model adopted in analyzing the profitability of the customer (individuals or groups).
- 2- Choosing customers to analyze their profitability according to a specific basis, such as orders and transactions with them.
- 3- The process of calculating the net sales revenue for each customer.
- 4- The process of calculating the industrial costs of goods sold according to (ABCII) technology for each customer.
- 5- The process of calculating the gross profit for each customer.
- 6- The process of allocating or allocating indirect costs according to (ABCII) technology for each customer
- 7- The process of calculating the operating income for each customer under (ABCII) technology.

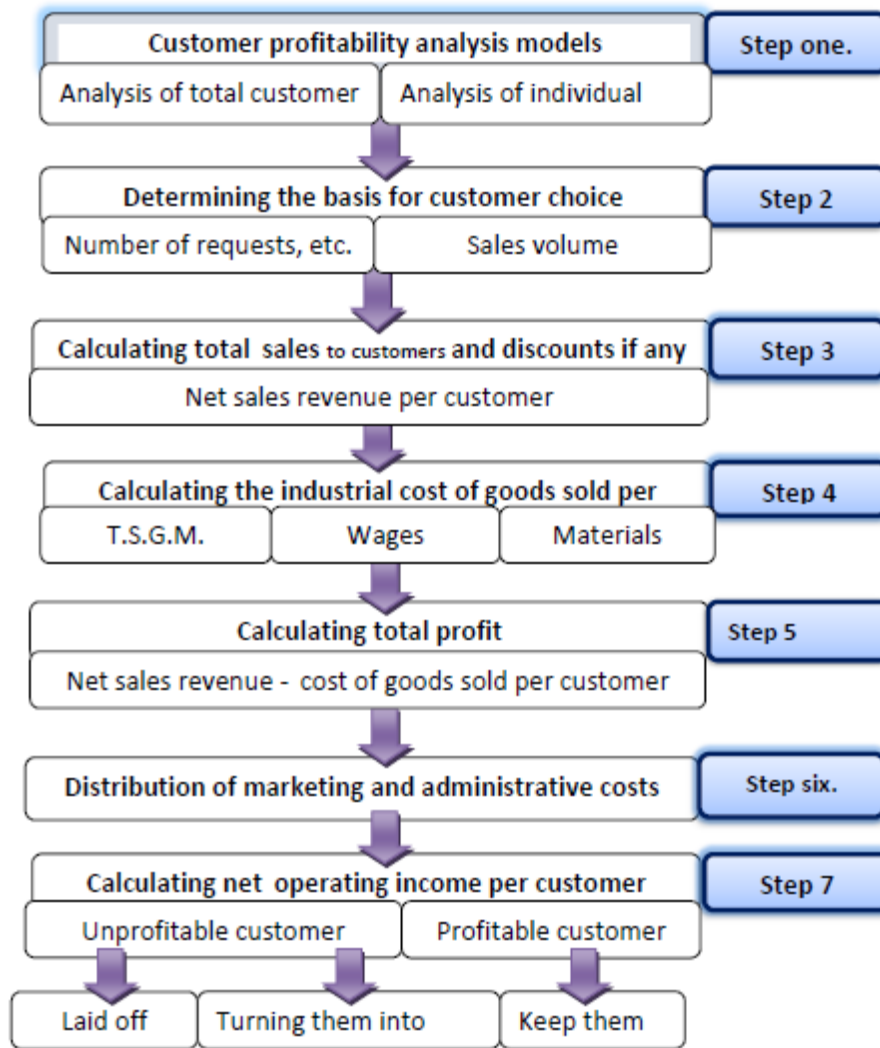


Figure 1. Customer profitability analysis steps

3. The Methodology

This study was based on a case study of the men's clothing factory / Najaf Al-Ashraf to analyze the customer's profitability using the cost-based technique. For this purpose, the method of a personal interview with the director, heads of departments, and people was used. The process of observing and examining the working mechanism and the accounting system followed by the laboratory.

4. The findings

The purpose of the case study is to test the applicability of (ABCII) technique to customer profitability analysis in the men's ready-to-wear factory in Najaf/Iraq. This plant adopts traditional methods of cost allocation. Based on the volume of production and knowledge of the company's advantages through the application of this system. Compared to the conventional system currently in place.

1- ABC11 Technology Application

Table 2. Volume-related costs of product specifications for raw materials

#	Product name	Product code	Measurements and reluctance	Aesthetic	Colors	Trust and security	Serviceability	Total
1	Medical ion	M1	3245347	649069	649069	1947208	0	6490694
2	sanitary sheet	m2	2434009	486802	486802	1460405	0	4868018
3	Pillow cover	M3	1622673	324535	324535	973604	0	3245345
4	Desert suit	M4	32453454	16226727	8113363	20283409	4056682	81133634
5	Military t-kiln	M5	25962763	12981381	6490691	16226727	3245345	64906907
6	Federal police t-kiln	M6	25161940	12580970	6290485	15726213	3145243	62904850
7	Oil company's work suit	M7	12981385	4868019	4868019	9736039	0	32453462
8	One-piece suit.	M8	25671863	5134373	5134373	15403118	0	51343725
9	Two-piece suit.	m9	35264697	7052939	7052939	21158818	0	70529394
10	Men's suit second class	M10	51925526	25962763	12981382	32453454	6490691	129813815
11	Men's First Class Suit	M11	35815837	17907919	8953959	22384898	4476980	89539593
12	Full suit.	M12	28991843	14495922	7247961	18119902	3623980	72479608
13	Trousers (trousers)	M13	3477255	695451	695451	2086353	0	6954510
14	jacket	M14	2178607	435721	435721	1307164	0	4357214
15	Men's shirt	M15	983557	196711	196711	590134	0	1967114
16	Men's shower	M16	1092415	218483	218483	655449	0	2184830
17	Safari	M17	2894234	1447117	723559	1808897	361779	7235586
18	Regular work suit	M18	2136384	801144	801144	1602288	0	5340959
Total			294293788	122466044	71664646	183924078	25400700	697749256

2- The costs associated with the activity:

USING ATTRIBUTE-BASED COSTING TO CONDUCT EFFICIENT CUSTOMER PROFITABILITY ANALYSIS IN SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES

It includes direct and indirect labor costs, electricity, and others, except for depreciation expenses. The prices of activities are calculated by determining the time needed to complete each specification, preparing the proposed workers to complete those activities, and choosing the times of activities that add value and do not add value.

1- Determining product specifications contributes to reducing the costs associated with the activity through the following:

2- Determining the time required to complete each specification and the number of workers proposed for it contributes to determining the value-added time and the time that is not adding value. Thus avoiding the lost time, which reduces labor costs and indirect industrial costs such as electricity, maintenance, and others.

3- Determining the number of workers for each specification determines the optimum use of time, leading to the reduction of lost times and the improvement of worker productivity, thus reducing the costs of labor wages.

4- Most indirect industrial costs are related to the time spent working for each specification, such as electricity, maintenance, and others.

The main problem in the high costs in the factory, the research sample, is the cost of salaries and wages. Political and economic conditions imposed on this company to appoint huge numbers of workers, w require All of these factors mentioned above are primary reasons for the high rate of idle capacity and consequently the high costs and low profits in the research sample factory.

Table 3. Activity-related costs for product specifications for the business and overhead costs

#	Product name	Product code	Measurements and reluctance	Aesthetic	Colors	Trust and security	Serviceability	Total
1	Medical ion	M1	2124226	424845	424845	1274536	0	4248452
2	sanitary sheet	m2	1593170	318634	318634	955902	0	3186339
3	Pillow cover	M3	1062113	212423	212423	637268	0	2124226
4	Desert suit	M4	21242260	10621130	5310565	13276413	2655283	53105651
5	Military t-kiln	M5	16993808	8496904	4248452	10621130	2124226	42484521
6	Federal police t-kiln	M6	16469634	8234817	4117408	10293521	2058704	41174084
7	Oil company's work suit	M7	8496906	3186340	3186340	6372680	0	21242266
8	One-piece suit.	M8	16803401	3360680	3360680	10082041	0	33606802
9	Two-piece suit.	m9	23082347	4616469	4616469	13849408	0	46164694
10	Men's suit second class	M10	33987617	16993809	8496904	21242261	4248452	84969043
11	Men's First Class Suit	M11	23443094	11721547	5860773	14651934	2930387	58607734
12	Full suit.	M12	18976479	9488240	4744120	11860300	2372060	47441198
13	Trousers (trousers)	M13	2276022	455204	455204	1365613	0	4552043

14	jacket	M14	1425997	285199	285199	855598	0	2851994
15	Men's shirt	M15	643783	128757	128757	386270	0	1287566
16	Men's shower	M16	715035	143007	143007	429021	0	1430071
17	Safari	M17	1894408	947204	473602	1184005	236801	4736020
18	Regular work suit	M18	1398360	524385	524385	1048770	0	3495900
Total			192628663	80159594	46907767	120386671	16625913	456708608

3- Capacity related costs

Capacity costs include a paragraph of the indirect industrial costs represented by the depreciation of the assets used to facilitate the production process, such as machines, machines, and others, which should be charged based on each specification of the product specifications.

Table 4. Capacity costs associated with depreciation product specification

#	Product name	Product code	Measurements and reluctance	Aesthetic	Colors	Trust and security	Serviceability	Total
1	Medical ion	M1	318634	63727	63727	191180	0	637268
2	sanitary sheet	m2	238976	47795	47795	143385	0	477951
3	Pillow cover	M3	159317	31863	31863	95590	0	318634
4	Desert suit	M4	3186339	1593170	796585	1991462	398292	7965848
5	Military t-kiln	M5	2549071	1274536	637268	1593170	318634	6372678
6	Federal police t-kiln	M6	2470445	1235223	617611	1544028	308806	6176113
7	Oil company's work suit	M7	1274536	477951	477951	955902	0	3186340
8	One-piece suit.	M8	2520510	504102	504102	1512306	0	5041020
9	Two-piece suit.	m9	3462352	692470	692470	2077411	0	6924704
10	Men's suit second class	M10	5098142	2549071	1274536	3186339	637268	12745356
11	Men's First Class Suit	M11	3516464	1758232	879116	2197790	439558	8791160
12	Full suit.	M12	2846472	1423236	711618	1779045	355809	7116180
13	Trousers (trousers)	M13	341404	68281	68281	204842	0	682807
14	jacket	M14	213900	42780	42780	128340	0	427799
15	Men's shirt	M15	96568	19314	19314	57941	0	193135
16	Men's shower	M16	107256	21451	21451	64353	0	214511
17	Safari	M17	284161	142081	71040	177601	35520	710403
18	Regular work suit	M18	209754	78658	78658	157316	0	524385
Total			28894300	12023940	7036164	18058000	2493887	68506291

4- The costs associated with the decision

They are costs whose amounts vary depending on the company's optional administrative decisions on the existence of a particular level of standards or specific elements in the product. This category comprises administrative and marketing expenses such as advertising, promotion, sales commission, and stationery.

USING ATTRIBUTE-BASED COSTING TO CONDUCT EFFICIENT CUSTOMER PROFITABILITY ANALYSIS IN SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES

Table 5. Costs associated with the decision to product specifications for marketing and administrative costs

The total cost of each type of specification can be calculated according to the following

#	Product name	Product code	Measurements and reluctance	Aesthetic	Colors	Trust and security	Serviceability	Total
1	Medical ion	M1	446075	89215	89215	267645	0	892149
2	sanitary sheet	m2	1037123	207425	207425	622274	0	2074246
3	Pillow cover	M3	512985	102597	102597	307791	0	1025971
4	Desert suit	M4	4282314	2141157	1070579	2676446	535289	10705785
5	Military t-kiln	M5	3631045	1815523	907761	2269403	453881	9077613
6	Federal police t-kiln	M6	4616870	2308435	1154217	2885544	577109	11542174
7	Oil company's work suit	M7	1170945	439104	439104	878209	0	2927363
8	One-piece suit.	M8	264857	52971	52971	158914	0	529713
9	Two-piece suit.	m9	4126188	825238	825238	2475713	0	8252376
10	Men's suit second class	M10	6245041	3122520	1561260	3903151	780630	15612602
11	Men's First Class Suit	M11	5219070	2609535	1304768	3261919	652384	13047675
12	Full suit.	M12	4014669	2007335	1003667	2509168	501834	10036673
13	Trousers (trousers)	M13	401467	80293	80293	240880	0	802934
14	jacket	M14	501834	100367	100367	301100	0	1003667
15	Men's shirt	M15	140513	28103	28103	84308	0	281027
16	Men's shower	M16	133822	26764	26764	80293	0	267644
17	Safari	M17	363997	181998	90999	227498	45500	909992
18	Regular work suit	M18	244895	91836	91836	183671	0	612237
Total			37353712	16230416	9137164	23333927	3546627	89601846

equation: -

Total specification cost = volume-related costs + activity-related costs + capacity-related costs + decision-related costs

Table 6. Cost based on the specification for factory products

Specification	Costs associated with production volume	Costs associated with activity	Capacity-related costs	Fees related to the decision	The total cost of the specification
Measurements and reluctance	294293788	192628660	28894300	37353709	553170457
Aesthetic	122466046	80159594	12023939	16230415	230879994
Colors	71664647	46907769	7036165	9137164	134745745
Trust and safety	183924078	120386668	18058001	23333926	345702673
Serviceability	25400700	16625913	2493887	3546626	48067126
Total	697749256	456708608	68506291	89601846	1312566001

The specification-based costing technique (ABC11) is distinguished from other allocation techniques such as activity-based costing (ABC), time-oriented activity-based costing (TDABC), and resource consumption accounting (RCA). It focuses on the needs and desires of

USING ATTRIBUTE-BASED COSTING TO CONDUCT EFFICIENT CUSTOMER PROFITABILITY ANALYSIS IN SMALL AND MEDIUM-SIZED MANUFACTURING BUSINESSES

customers primarily, which is an essential objective of The objectives of strategic cost management are customer focus. It makes the information provided by (ABC11) appropriate for customer profitability analysis, while other customization techniques such as (ABC) focus on activity, (TDABC) focus on time, and (RCA) focus on resources.

Table 7. customers order by net operating income under the application of (ABC11) in the factory

#	Customer code	Operating profit or loss per customer	Accumulated operating income	Accumulated operating income ratio
1	X	164664000	164664000	41.583%
2	d	125044500	289708500	73.160%
3	a	28391800	318100300	80.330%
4	by	16274350	334374650	84.440%
5	to	11595050	345969700	87.368%
6	C	10687950	356657650	90.067%
7	W	9572700	366230350	92.484%
8	Going to	8867200	375097550	94.724%
9	U	6532400	381629950	96.373%
10	on	5586135	387216085	97.784%
11	L	5535000	392751085	99.182%
12	AM	4814450	397565535	100.398%
13	D	4511650	402077185	101.537%
14	R	3895750	405972935	102.521%
15	Z	3824500	409797435	103.486%
16	I	2419075	412216510	104.097%
17	Q	-7362025	404854485	102.238%
18	G	-8863150	395991335	100.000%
Total		395991335	-	-

Table 8. Comparison between net operating income according to the traditional method and the (ABC11) technique for the year 2019

#	Customer code	Net operating income For every customer according to the method Traditional	Net operating income Per customer, according to ABC11 technology
1	a	22857350	28391800
2	by	13282950	16274350
3	to	9440275	11595050
4	W	3984200	9572700
5	C	4289000	10687950
6	Going to	3293600	8867200
7	X	61866500	164664000
8	d	82960500	125044500
9	L	-16145000	5535000
10	R	1484200	3895750
11	G	-13563550	-8863150
12	Q	-11301600	-7362025
13	U	2436255	6532400
14	AM	1791250	4814450
15	Z	1433275	3824500
16	I	965325	2419075
17	D	1631430	4511650
18	on	2032045	5586135
Total		172738005	395991335

Conclusions

Changes in the business environment have increased the level of domestic and international competition. There is currently a rapid technological development and different tastes of customers and other factors that were the main reason for the economic units to provide products at competitive prices that meet the needs and desires of customers. It earns their satisfaction and loyalty and strives to ensure costs are low and product quality is maintained at the highest level. Economic units tend to maintain their position in the market by adopting modern methods in management accounting, which will determine the factors of success and gain competitive advantages in line with developments and changes in the business environment. Customer profitability analysis is a source of information to help make strategic decisions and the future. It is because the customer is the focus of the success of the economic units. And one of the intangible assets of many of them. Accountants in these units must pay great attention to the increasing profitability of the customer by analyzing this profitability. Knowing how costs and revenues contribute to profit for customers. The traditional shortcomings of cost entry in cost measurement are significant. It relies on because it may be inaccurate or unfair. Nor does it consider the idle capacity costs that are charged to the costs of products or services. Which distorts the analysis and reduces its importance? This study sought to provide a comprehensive model for profitability analysis. Using a costing technique based on ABC11 specifications through a proposed approach that includes several steps. The study produced valuable information that supports customer profitability analysis. There are two types of customers: profitable customers and unprofitable customers. For profitable customers, they should be preserved, especially customer (X) who achieves the highest level of profits, and the other type of unprofitable customers should be excluded or converted into profitable customers. The customer who achieves the highest level of losses is a customer (g). The results showed that the customers whose total profits increased were (A). (B). (T). (w). (c). (h). (x). (Dr). (R). (u). (s). (z). (i). (z). (P). From (213748155) dinars according to the traditional system of costs to (406681510) dinars according to the ABC11 technology due to the optimal use of capacity and achieving the specifications and desires of customers. Therefore, the factory management should pay attention to these customers and maintain their loyalty by improving the relationship with them. The results of the analysis also showed that the customers whose total losses decreased. They are (g) (x) from (24865150) dinars according to the traditional costing system to (16225175) dinars according to the ABC11 technique due to the optimal exploitation of resources and cost reduction while meeting the specifications and desires of customers. The customer who was making a loss according to the traditional system in force in the company is (Y) in the amount of (16,145,000) dinars has turned into a profitable customer (5535000) dinars. This means that cost-based technology has an important role in providing the appropriate information to analyze customers' profitability fairly, and it is true. Based on the preceding, it can be said that the use of the costing technique based on specifications leads to the provision of appropriate information for the management of the economic unit of the research sample, which helps it in managing its relationship with customers when analyzing customer profitability.

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