

ADOPTION OF TARGET COSTING PRACTICES BY INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SERVICE COMPANIES

Recebido em: 20/04/2022

Aprovado em: 29/06/2022

Eliane Cortes Braga

Universidade Federal Rural do Rio de Janeiro

Brasil

ORCID: 0000-0003-2253-7645

Email: eliane_cortes@yahoo.com.br

ABSTRACT

This research aims to investigate the adoption of practices of the target costing process by companies in the ICT services sector – Information and Communication Technology. For this, a literature review was carried out on target costing – concept, objective, principles and stages of its process. A survey was carried out, using a standardized and structured online questionnaire, with companies associated with ASSESPRO (Associations of Brazilian Information Technology Companies). Data were analyzed using descriptive statistics. The results found show that the participating companies are small and medium-sized companies with low organizational complexity. Overall, the findings show that the investigated companies make use of practices of the target costing process, especially practices of the initial stages of the process: stage of defining the characteristics of products/services and the stage of defining the profit margin and estimating the cost target of products/services. Although the practices of the following stages of the target costing process (cost management activities and continuous improvement activities) also show high frequency numbers, the results suggest that the investigated companies need to improve in this aspect.

Keywords: Target costing; Service companies; ICT companies.

1. INTRODUCTION

Management accounting showed considerable evolution in the 1990s in response to the change in the business environment (Bonzemba & Okano, 1998). In order to restore the relevance of cost control and management practices (Yazdifar & Askarany, 2012) and overcome the shortcomings of traditional methods of dealing with the rapidly changing production environment (Hamood et al., 2011), several new approaches and practices (also called modern or advanced), including Activity Based Costing (ABC), Activity Based Management (ABM), Total Quality Management (TQM), Target Costing (TC) and Balanced Scorecard (BSC), were presented (Bonzemba & Okano, 1998; Hamood; et al., 2011; Yazdifar & Askarany, 2012).



Potkány and Škultétyová (2019) highlight that, gradually, costs begin to be seen from a strategic perspective and that varied perceptions of costs and their behavior require that adequate tools be developed for their strategic management, for example, target costing.

Target costing developed in the Japanese automobile industry and migrated to other Japanese assembly industries and even to some process industries (Ansari; Bell & Okano, 2007). Therefore, most of the research carried out involving target costing is in the manufacturing environment.

Many researches were carried out seeking to investigate the rate of adoption and the use of target costing by manufacturing companies in several countries, such as; Japan (TANI et al., 1994); Holland (Dekker & Smidt, 2003); New Zealand (Rattray; Lord & Shanahan, 2007); Turkey (Kocsoy; Gurdal & Karabayir, 2008); Nigeria (Imeokparia & Adebisi, 2014); Jordan (Atieh, 2014; Joudeh; Al-Attar & Alsoboa, 2016); and, Japan, Thailand and Malaysia (Omar; Sulaiman; Hui; Rahman & Hamood, 2015).

In addition, several studies have been carried out in specific industrial sectors such as: the automotive industry (Monden & Hamada, 1991; Langfield-Smith & Luckett, 1999; Ibusuki & Kaminski, 2007; Brito; Garcia & Morgan, 2008; Hamood; Omar & Sulaiman, 2008; 2013; Baharudin & Jusoh, 2015); brewing industry (Okpala, 2016); construction industry (Nicolini; Tomkins; Holt; Oldman & Smalley, 2000; Melo & Granja, 2017); dairy industry (Alexandra, 2017); home appliance industry (Briciu & Căpușeanu, 2013); electronics industry (Woods; Taylor & Fang, 2012); clothing industry (Biazebete; Borinelli & Camacho, 2009); plastics industry (Faria; Freitas & Marion, 2009; Gomes; Colauto & Moreira, 2009); wineries (Nascimento; Sousa; Pinheiro; Castro & Bernardes, 2013); and, cosmetics industry (Reckziegel; Piva; Angelocci & Moreno, 2015).

This research follows a different approach from the works listed above and chose to investigate service companies. Yazdifar and Askarany (2012) criticize that on many occasions service companies were not investigated in relation to the adoption of target costing. The authors sought to fill this gap and carried out a survey of manufacturing and service companies in the United Kingdom, Australia and New Zealand regarding the adoption and implementation of target costing.

Some other studies on target costing carried out in service companies were: the study by Lima et al. (2012) in Brazilian public hospital services. The works of Wienhage, Rocha and Scarpin (2010); Lemos and Colauto (2013) and Souza et al. (2016) in educational institutions in Brazil; and, Al-Awawdeh and Al-Sharairi's (2012) research in Jordanian private universities. And finally, the study by Aladwan, Alsinglawi and Alhawtmeh (2018) in the hotel sector in Jordan.

Thus, it appears that the literature needs more quantitative analysis on the adoption of target costing in service companies (Yazdifar & Askarany, 2012). Potkány and Škultétyová (2019) found that, although service companies still tend to be more cost-oriented, target costing can be used by this type of company.

Thus, the objective of this research is to investigate the adoption of practices of the target costing process by companies in the ICT services sector – Information and Communication Technology.

The service sector has stood out in the current Brazilian economy; and, such a highlight can be observed in the sector's contribution to the drop in the informality rate, to the increase in the number of occupations and to the growth of employees' salaries (Silva; Menezes & Komatsu, 2016).

The jobs generated by the service sector impact the country's economy and the social life of families (Della Rosa, 2020). Some data from the OECD – Organization for Economic Cooperation and Development (2016) report on the sector show that: services are the main contributor to Brazil's GDP; exports of services increased by an average of 11% per year

between 2005 and 2014, while imports of services grew at an annual average of almost 16%; and, in 2014, the service sector represented 74.3% of the total number of formal workers.

In addition, the service sector is the main destination for foreign direct investment in Brazil, the sector receives more than 60% of these investments and is also the sector to which the five business segments with the highest occurrence of mergers and acquisitions in the country belong, namely: in order, information technology, auxiliary services, financial services, retail and public services (electricity, gas, highways, etc.) – together, they account for more than 50% of operations in Brazil (Santos, 2016).

According to the Institute of Applied Economic Research (IPEA, 2020), in 2019, the service sector grew by 1.3%, this performance represented the 12th consecutive positive change in the sector. The segments that stood out to achieve this result were information and communication services and transport and storage, which advanced 1.9% and 1.2% at the margin, respectively (IPEA, 2020).

“The ICT sector can be considered as a combination of industrial, commercial and service activities, which electronically capture, transmit and disseminate data and information and sell equipment and products intrinsically linked to this process” (IBGE, 2009, p. 12).

Negri and Kubota (2006, p. 1090) state that “many service activities are considered to generate little value, employ low-skilled labor, are weak in technological terms and are little or not at all integrated into innovation processes.” However, there are activities that, on the contrary, are closely linked to the aspect of innovation: they are the so-called Knowledge-Intensive Business Services (Kibs).

In the literature, SICs or Kibs can be found classified into two groups: technological Kibs (T-Kibs) are services intensively focused on technology. Some examples are telecommunications and information technology services – networks, software and systems development and consultancy, data processing. P-Kibs or professional Kibs, on the other hand, are related to administrative, regulatory and social affairs knowledge, some examples are: advertising, training, design, architecture and construction, accounting, law, engineering, Research and Development (R&D) in natural sciences and engineering, R&D in social and human sciences, management consulting, market and opinion research (Negri & Kubota, 2006).

Therefore, some ICT services belong to the Knowledge-Intensive Services (SIC) or Knowledge-Intensive Business Service (Kibs) group (Freire, 2006). According to Freire (2006, p. 109), the SIC are characterized by:

- a) Have a significant share in added value;
- b) Use highly qualified human resources compared to other sectors of the economy;
- c) Act as primary sources of information and knowledge, provide information technologies and assist in innovation processes;
- d) Provide high producer-user interaction, that is, the possibility of developing learning strategies via relationship with other companies and sectors.

Based on the National Classification of Economic Activity (CNAE) and the Annual Survey of Services (PAS), the following activities are considered as SIC: telecommunications and information technology activities, which include: consulting in computer systems, data processing, databases and maintenance and repair of office and computer machines (Freire, 2006).

Thus, since services are essential inputs for any modern economy (Silva; Negri & Kubota, 2006) and “an integral part of a dynamic economic system” (Freire, 2006, p. 126), it becomes relevant to deepen knowledge of the use of managerial artifacts, such as target costing, by companies in this sector.

Therefore, this research is justified in terms of the investigated sector, the service sector, specifically ICT services. In addition, there was a lack of research in the main

scientific bases (Web of Science, Scopus, Scielo, Spell) dealing with the adoption and use of target costing in the context of ICT companies. Furthermore, an absence of previous studies was identified that investigated target costing practices in this field of activity.

2. LITERATURE REVIEW

2.1 Target Costing

For Ansari, Bell, Klammer and Lawrence (1997), the most comprehensive definition for target costing comes from the Consortium for Advanced Manufacturing International (CAM-I), which defines it as a system of profit planning and cost management, guided by prices, customer-focused, project-centric and cross-functional. This system initiates cost management in the early stages of product development and applies it throughout the product lifecycle, actively involving the entire value chain (Ansari et al., 1997).

Thus, the objective of target costing is cost management along the value chain, in order to obtain the desired return by the organization and ensuring quality, reliability and other relevant customer requirements.

According to Ansari et al. (2007), the first comprehensive establishment of limits for target costing was carried out by CAM-I (Consortium for Advanced Manufacturing-International). The CAM-I established six key principles for target costing in order to establish a boundary and also distinguish target costing from traditional cost management methods such as budget and cost plus price. The principles are as follows: cost determined by price; customer focus; attention to the project; cross-functional teams; life cycle guidance and value chain involvement (Ansari et al., 1997; Ansari et al., 2007).

Ansari et al. (1997), Swenson, Ansari, Bell and Kin (2003), Cengiz and Ersoy (2010); Mendes and Machado (2012), Khan (2014); Sharafoddin (2016) and Blanco (2017) agree with the six principles established by CAM-I.

Regarding the principle of cost guided by price, Scarpin (2000) states that this is the fundamental principle of target costing and that in its absence the process does not exist. Establishing the target selling price is the first step so that the target cost can be defined (Everaert; Loosveld; Acker; Schollier & Sarens, 2006).

The second principle, customer focus, forces the company to adopt a market orientation. However, without neglecting the quality and functionality of the product or service. Target costing seeks to maximize the result rather than minimizing the cost (Caldeira, 2013). Potkány and Škultétyová (2019) consider the proper determination of customer preferences as a central factor in the target costing process.

Another outstanding feature of target costing is the focus on product design, the third principle. According to Everaert et al. (2006) the best known characteristic of target costing is that the target cost is defined at the beginning of the product development process. Target costing focuses on the search for cost reduction opportunities in the product planning stage (Langfield-Smith & Lockett, 1999). That is, the definition of the costs of a product or service must be carried out before its occurrence. This is because 70% to 80% of a product's costs are immutable once they leave the design phase (Cooper & Chew, 1996).

The use of cross-functional teams, which requires the involvement of the company as a whole, is the fourth principle of target costing. According to Monden and Hamada (1991), cooperation between different departments is mandatory for the success of target costing. Bomfim, Callado and Callado (2018) argue that because target costing is a dynamic process, it requires the participation of members from all sectors of the company, such as administration, marketing, production engineering, cost accounting and shop floor.

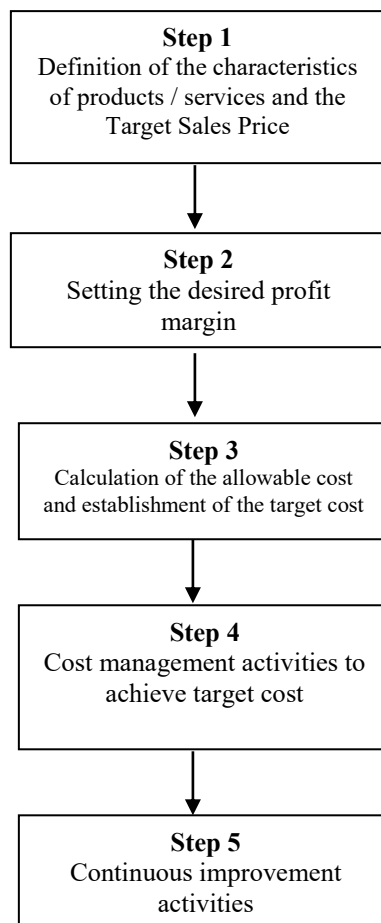
The fifth principle of target costing is about controlling the total lifecycle costs of the product over its lifetime. These costs include the purchase price of components and operating

costs for maintenance, distribution and product placement. Target costing seeks to influence the costs arising from the product's life cycle, intervening preventively during the design phase (Caldeira, 2013).

Finally, the sixth principle refers to the involvement of the value chain. Target costing requires that all members of the value chain (such as suppliers, service providers, distributors and consumers) be included in the process (Scarpin, 2000; Mendes & Machado, 2012), focusing the entire chain on the global objective of reducing costs (Scarpin, 2000; Helms; Etkins; Baxter & Gordon, 2005; Mendes & Machado, 2012) and developing a partnership relationship with all chain members (Scarpin, 2000).

The target costing process can be summarized and visualized in Figure 1, each step is commented on in sequence.

Figure 1. Stages of the target costing process



Source: Adapted from “The implementation of target costing in the United States: theory versus practice” de L. M. Ellram, *Journal of Supply Chain Management*, 2006, 15.

The initial step in the target costing process consists of identifying the characteristics of the product or service that the customer wants so that the sale price he is willing to pay can be reached (Ellram, 2000). For a target cost to be established, it is first necessary for the company to establish a specific target selling price (Cooper & Slagmulder, 1999; Clifton; Bird; Albano & Townsend, 2004).

The target sales price is established during the product design stage using market research that considers the requirements demanded by customers (Bomfim et al., 2018) and also competing products (Gonçalves; Gaio & Silva, 2018).

Once the target selling price has been defined, the next step is to establish the desired profit margin. This stage has the general objective of ensuring that the organization's profitability and return on investment goals are met by the new product or service (IMA, 1998). The target margin is based on the organization's short- and long-term strategic objectives and goals (Bomfim et al., 2018).

After defining the target sales price and the target profit margin, you can calculate the allowable cost (or maximum allowable cost) by subtracting the desired profit margin from the target sales price:

Target selling price – desired profit margin = allowable cost

Cooper and Slagmulder (1999) clarify two critical problems. First, allowable cost reflects the company's relative competitive position because it is based on its realistic, long-term profit objectives. Second, the allowable cost does not take into account the cost-saving capabilities of the company's product designers or suppliers. Therefore, there is no guarantee that the company can obtain the allowable cost (Cooper & Slagmulder, 1999).

Ideally, the allowable cost becomes the target cost for the product. However, in many cases, the agreed target cost will exceed the allowable cost, given the realities associated with existing capabilities (Langfield-Smith & Luckett, 1999). The allowable cost is derived from external conditions and does not take into account the design and production capabilities of the company and its suppliers. Therefore, there is a risk that the allowable cost is not achievable (Cooper & Slagmulder, 1999).

Once the target cost has been established, the objective is to develop a new product concept that achieves the target cost and meets all customer requirements (IMA, 1998). This is the step in the target costing process where the very detailed work really begins (Ellram, 2006).

Having reached consensus on the target cost at the product level, a series of intensive activities (value engineering and value analysis) begin to convert the cost challenge into a reality. Typically, the total goal is broken down into its various components, each component is studied, and cost reduction opportunities are identified (Langfield-Smith & Luckett, 1999).

With the start of production, the cost maintenance stage also begins, which highlights the stabilization or continuous improvement of costs at the product and component level. The objective at this stage is to seek cost reductions incessantly at all stages of manufacturing to close the remaining gaps between predicted and actual profits (IMA, 1998).

With kaizen costing, the focus on value and profitability continues into the manufacturing phase for both new and existing products and, together with target costing, provides the basis for a total cost management system, managing costs throughout life of a product (Williamson, 1997).

3. METHODOLOGY

Regarding its objective, this research is classified as exploratory. An exploratory study is carried out when you want to explore areas about which there is little or no knowledge (Kumar, 2010).

The present study is also characterized as a survey research. According to Fowler (2011), the survey method is a way of asking a sample of a population a set of questions and using the answers to describe this population. This method has as its main characteristic the collection of data through questions to individuals, and the answers are the data that will be analyzed and will become information that will be the results of the research (Fowler, 2011).

Therefore, this study, through a survey in ICT service companies, investigates the use of target costing by these companies.

The population is all individuals of interest to the researcher (Marczyk; DeMatteo & Festinger, 2005); it is also called the universe (Fachin, 2017; Lozada & Nunes, 2018; Matias-Pereira, 2019).

The universe of this study is composed of the ICT service companies associated with the Federation of Associations of Brazilian Information Technology Companies – Federation ASSESPRO. According to information available on the website (ASSESPRO-PR, 2021), the ASSESPRO Federation has more than 2,000 software and technology services companies linked to it through 15 regional offices, each with its own management. Regional associates are all companies headquartered in states served by an ASSESPRO Regional.

Also according to information on the website, the importance of the ASSESPRO Federation is recognized at all levels of government, being an active member of several councils and committees, such as the Information Technology Area Committee and the Internet Management Committee of the Ministry of Science and Technology. (ASSESPRO-PR, 2021).

The data collection technique used in this study is the survey, through a standardized and structured questionnaire. The survey is a method in which data from a representative sample of a specific population is collected, which are described and analytically explained, and it is hoped that the results can be generalized to the universe of this population, avoiding carrying out the census, that is, listening to all individuals (Babbie, 2005).

The use of questionnaires is recommended in cases where the audience to be surveyed is relatively large and it is necessary to use standardized questions (Lozada & Nunes, 2018). In this research, the Google Forms tool was used to prepare, send the questionnaire and to answer it.

In order to identify the profile of the participating companies, three aspects related to the size of the companies were considered: annual gross revenue, number of employees and number of organizational levels, as shown in Table 1

Table 1. Variables related to the characteristics of the companies

Category	Aspects	References
Size	- Gross annual invoicing; - Number of employees; - Number of organizational levels.	Borinelli (2006); Oliveira (2017); Bomfim et al. (2018); Abbade (2012).

Source: Own elaboration

Table 2 shows the operational stages of the target costing process. With the objective of verifying the stages of the target costing process adopted by the participating companies, the respondents should indicate on the Likert scale, which ranged from 1 (never) to 7 (always) to what extent the statements corresponded to the company's practices.

Table 2. Practices related to the operational stages of the target costing process

Operational steps	Practices	References
Step 1 - Definition of the characteristics of products / services and the Target Sales Price	- Market research; - Product characteristics; - Involvement of internal departments and also external suppliers during the design; - Sales price based on the market; - Use of tools and techniques: the QFD;	Ellram (2000; 2006); Cooper e Slagmulder (1999); Clifton et al. (2004); Huang, Lai, Kao e Chen (2012); Helms et al. (2005); IMA (1998).

	the AHP; voice of the customer analysis.	
Step 2 - Setting the desired profit margin	- Target profit margin;	Ellram (2000); Cooper e Slagmulder (1999).
Step 3 - Calculation of the allowable cost and establishment of the target cost	- Calculation of the allowed cost; - Establish the target cost;	Cooper e Slagmulder (1999); Langfield-Smith e Lockett (1999).
Step 4 - Cost management activities to reach the target cost	- Breakdown of the target cost by cost centers and components; - Cross-functional teams; - Involvement of external suppliers; - Use of tools and techniques: VE; DFMA and value analysis.	Cooper e Slagmulder (1999-a); Langfield-Smith e Lockett (1999); Ellram (2000); Swenson et al. (2003); IMA (1998).
Step 5 - Continuous improvement activities	- Monitoring of target cost; - Continuous improvement; - Use of Kaizen costing.	Ellram (2000; 2006) IMA (1998); Zengin e Ada (2010); Williamson (1997).

Source: Own elaboration

The data collection period was 3 months, starting in May 2021 and ending in August 2021. 31 responses to the questionnaire were obtained in the mentioned period.

This study uses descriptive statistics, through frequency analysis, to summarize and describe the data referring to the characteristics of the investigated companies and the adoption of practices related to the target costing process.

4. RESULTS ANALYSIS

In this section, the results of the descriptive statistics are displayed and analyzed, making it possible to identify the characteristics of the participating companies, as well as the adoption of practices related to the target costing process by these companies. Were

First, the evidenced results describe the characteristics of the companies investigated in relation to size. Table 3 shows the frequency results in relation to the size of the participating companies, considering three aspects: revenue, number of employees and number of hierarchical levels.

Table 3. Descriptive statistics regarding the size of companies

Aspects	Frequency
Invoicing	
Up to BRL 360,000.00	7
Above BRL 360,000.00 up to BRL 4,800,000.00	11
Above BRL 4.800.000,00 up to BRL 78.000.000,00	11
Above BRL 78.000.000,00	2
Number of employees	
Up to 19 employees	13
Above 19 up to 99 employees	10
Above 99 employees up to 499 employees	5
Above 499 employees	3
Number of hierarchical levels	
Two hierarchical levels	16

Three hierarchical levels	10
Four hierarchical levels	5

Source: Research data (2021)

Regarding revenue, there was an equal representation of companies in the revenue range above BRL 360,000.00 to BRL 4,800,000.00 and above BRL 4,800,000.00 to BRL 78,000,000.00, both with eleven companies participants, then companies with revenues up to BRL 360,000.00, with seven participants and, finally, two participants with revenues above BRL 78,000,000.00.

As for the number of employees, companies with up to 19 employees were predominant, with thirteen participants. Second, ten participants with more than 19 and less than 99 employees; third, five companies with more than 99 and less than 499 employees; and three participants with more than 499 employees.

Table 3 also shows the classification of companies according to the number of hierarchical levels, as can be seen, most companies have two hierarchical levels, sixteen participants; ten companies have three hierarchical levels; and, five have four levels.

The frequency analyzes regarding the practical adoption of the target costing process within the scope of the investigated companies are shown below. Five steps were considered: 1) definition of product characteristics and target sales price; 2) definition of the desired profit margin; 3) calculation of the allowable cost and establishment of the target cost; 4) cost management activities; and, 5) continuous improvement activities.

Table 4 shows the descriptive statistics of the adoption of practices of the target costing process referring to the step of 'defining the characteristics of the products/services and the target sales price', considering five aspects: market research, identification of the desired product characteristics by the customer, involvement of cross-functional teams and external suppliers, establishment of the target sales price based on the market and, finally, the use of techniques and tools to understand the attributes required by the customer.

Table 4. Descriptive statistics of the adoption of practices of the target costing process referring to the definition of the characteristics of the products/services and the target sale price

Practices	Never	Almost Never	Sometimes	Regularly	Often	Almost Always	Always
Market research	0	1	1	2	10	13	4
Product characteristics	0	1	4	4	8	9	5
Internal and external involvement	1	5	2	2	6	11	4
Market based pricing	1	1	3	6	9	10	1
Use of tools and techniques	4	2	3	8	5	8	1

Source: Research data (2021)

Regarding the first aspect investigated, "market research", it was observed that it is a practice 'almost always' (thirteen respondents) and 'often used' (ten respondents). The frequency of the second aspect investigated, "identification of the characteristics of the product desired by the customer", showed that in nine cases it is 'almost always' adopted and in eight cases 'often'. The third aspect aimed to identify the "internal and external

involvement" during the design of the product or service, it was found that it is a practice 'almost always' used by eleven respondents and 'often' in six cases; and, still, five respondents reported that they 'almost never' use it.

As for the "market-based price" aspect, the frequency analysis pointed out that it is a practice 'almost always' adopted by ten participants and 'often' by nine participants. The result of the "use of techniques and tools" aspect was the practice that obtained the lowest degree of use: eight and five respondents make use of the practice 'almost always' and 'often', respectively, while four respondents 'never' use it. and two 'almost never'.

A possible explanation for the high degree of adoption for the practices of this phase 'definition of product characteristics and target sales price' is that it is a critical activity in ICT companies, as the success of the project depends on it. It is very important that the requirements demanded by the client are understood and, for that, the results suggest that market research practices are adopted, internal and external involvement (possibly suppliers, service providers and accounting are involved) and, to a lesser extent, , there is the use of techniques and tools to understand what was requested by the client, which was expected, since the techniques exemplified in the questionnaire are more used in more mature target costing processes.

The result of the descriptive statistics referring to the step "defining the desired profit margin" can be seen in Table 5.

Table 5. Descriptive statistics of the adoption of practices of the target costing process referring to the definition of the profit margin and estimation of the target cost of the products/services

Practices	Never	Almost Never	Sometimes	Regularly	Often	Almost Always	Always
Desired profit margin	0	2	1	1	12	9	6
Allowed cost calculation	1	3	1	7	7	8	4
Establishment of the target cost	0	5	0	5	9	9	3

Source: Research data (2021)

It was found that the practice of establishing a profit margin that guarantees the organization's profitability goals is 'often' adopted by twelve participants and 'almost always' used by nine participants.

Table 5 also shows the frequency analysis of the target costing process step that refers to the "calculation of the allowed cost and establishment of the target cost". The frequency of the aspect "calculation of the allowed cost" showed that it is a practice 'almost always' adopted by eight respondents and 'often' used by seven respondents. On the other hand, seven respondents use it 'regularly' and three 'almost never'.

As for the aspect "establishing a target cost", the results show that nine participants 'almost always' use it and, equally, nine participants 'often' adopt the aforementioned practice. While five participants declared that they 'almost never' use it.

The findings suggest that the practice of establishing a 'desired profit margin' is a practice frequently practiced in companies. The finding is not surprising, since the taking of profit is the guarantee of survival for companies, and in ICT companies it is no different, which justifies and explains the adherence to the practice.

On the other hand, the practices 'calculating the allowed cost' and 'establishing the target cost' showed a slightly lower adoption. A lower adoption of the 'permissible cost

calculation' practice was expected, as this practice is not present in all target costing processes, some chains consider the allowed cost as the target cost of the product or service.

The results seem to suggest that there are companies where the selling price is still based on cost and not on the market. But, an assumption is that in ICT companies the allowable cost is the cost calculated based on the price proposal made by the customer, which is not always achievable due to the existing capacity, so a target cost is calculated that is attainable and a price proposal is made to the customer.

The frequency analysis referring to the “cost management activities” step can be seen in Table 6. This step was investigated considering four practices: target cost decomposition, use of cross-functional teams, supplier involvement and use of reduction methods of costs.

Table 6. Descriptive statistics of the adoption of target costing process practices related to cost management activities

Practices	Never	Almost Never	Sometimes	Regularly	Often	Almost Always	Always
Target cost breakdown	1	1	1	9	12	4	3
Cross-functional teams	3	2	3	6	13	2	2
Supplier involvement	4	2	3	4	9	6	3
Use of cost reduction methods	3	2	3	7	7	6	3

Source: Research data (2021)

Regarding the “target cost breakdown” aspect, it was shown to be a practice 'often' adopted by twelve respondents, as shown in Table 10, and 'regularly' by nine. The practice "use of cross-functional teams" was declared to be used 'often' by thirteen participants and six use it 'regularly', while three participants use the practice 'sometimes' and three 'never' use it.

The frequency result of the “supplier involvement” aspect can be seen in Table 6. It was found that nine respondents adopt the practice 'many times'; six respondents, 'almost always'; and, four use it 'regularly'. Four respondents considered that they 'never' adopt the practice.

Regarding the aspect “use of cost reduction methods”, such as value engineering and design for manufacture and assembly (DFMA), the frequency analysis showed a lower level of adoption of the practice compared to the other aspects: seven participants a use 'often'; six 'almost always'; and, seven 'regularly'. Three respondents 'never' adopt the practice and one respondent 'almost never'.

The practices referring to the 'cost management activities' stage showed high adherence by the companies, but they already showed a slightly lower adherence when compared to the others. The practices 'target cost decomposition' and 'multifunctional teams' showed the highest frequencies of this stage, which makes sense, as some ICT companies use multifunctional teams in planning and controlling the costs of a project and for that, the findings suggest, make use of the practice of breaking down costs to better manage them.

The 'involvement of suppliers' practice was the one with the highest frequency of non-adopters of this stage, but even so, the result is surprising, since it presented a high frequency, since the involvement of suppliers is desirable and encouraged in the literature so that target costing reach its full potential, but it does not always occur in practice. However, the results suggest that the practice is adopted in the investigated companies.

Table 7 shows the results of the descriptive statistics of the practical adoption of aspects of the target costing process referring to the “continuous improvement activities” stage, from the perspective of three aspects: target cost monitoring, continuous improvement and use of kaizen costing.

Table 7. Descriptive statistics of the adoption of target costing process practices referring to continuous improvement activities

Practices	Never	Almost Never	Sometimes	Regularly	Often	Almost Always	Always
Target cost monitoring	1	3	1	7	9	6	4
Continuous improvement	0	0	1	5	9	10	6
Use of kaizen costing	1	4	0	8	8	4	6

Source: Research data (2021)

The frequency analysis of the first investigated practice, “target cost monitoring”, showed that it is a practice adopted 'many times' by nine participants; 'almost always' by six; and, seven participants use it 'regularly'. Only one participant 'never' uses it and three 'almost never'.

From the investigation of the second practice, “continuous improvement activities” to maintain profitability, through descriptive statistics it can be observed that it is a practice 'almost always' adopted by ten respondents; 'often', by nine; and, six use it 'always'. None of the respondents stated that they 'never' use it.

On the other hand, from the analysis of the frequency of the practice, “use of kaizen costing”, which is a technique used for continuous improvement, a lower degree of adoption by the respondents was found: eight respondents 'often' make use of the practice; six, 'always'; and, four 'almost always'. While four respondents 'almost never' use it and one 'never'.

The results showed a high level of adherence to continuous improvement practices. One possible explanation is that ICT companies need to adopt such practices to achieve the cost and profit objectives initially outlined for the project. In addition, it is necessary not only to monitor planned costs, but to go further and apply techniques, such as kaizen costing, to find additional cost reduction opportunities during the execution phase of the services.

5. CONCLUSIONS

The general objective of this research was to investigate the adoption of practices of the target costing process by companies in the ICT services sector. For the development of this study, an online survey was used in organizations associated with ASSESPRO, an entity that represents Brazilian information technology companies.

Regarding the characteristics of the companies investigated, it can be inferred that they are small and medium-sized companies, since the respondents have revenues above BRL 360,000.00 to BRL 4,800,000.00 and above BRL 4,800,000.00 up to BRL 78,000,000.00, both with eleven participating companies. And, regarding the number of employees, most participants have up to 19 employees.

It was also identified that the participating companies have low organizational complexity, as most companies have up to two hierarchical levels.

The results of the descriptive statistics showed a high degree of agreement on the adoption of practices of the target costing process among the participating companies.

In general, from the findings it can be concluded that the investigated companies make use of practices of the target costing process, especially practices of the initial stages of the process: the stage of defining the characteristics of the products/services and the stage of defining the profit margin and estimation of the target cost of products/services. The practices of these stages received high levels of agreement.

The result can be explained due to the particularities of ICT companies of providing services to order and, therefore, dedicating efforts in the service design phase to offer a service that meets the client's requirements and, at the same time, within a cost. established target to achieve a desired profit margin.

The practice of defining the desired profit margin was one of the practices with the highest agreement by the participants, on the other hand, the use of tools to understand the client's requirements had the lowest degree of frequency. The finding suggests that companies need to improve in this sense, since understanding what the customer wants is of fundamental importance for the provision of the service.

It is also worth mentioning the level of agreement of the practice 'Internal and external involvement', which received high frequency and is a practice encouraged by the literature, but which is little identified in the practices adopted by companies.

Overall, the following steps (cost management activities and improvement activities) had a high frequency, but a little lower than the previous ones, which may suggest that companies need to improve in these aspects. After defining the service to be provided, the selling price and the target cost, the cost management and monitoring phase begins to achieve the defined objectives, however, the results suggest that some companies may be failing in this sense, as the practices of the 'cost management activities' stage received lower levels of agreement.

On the other hand, the practice of continuous improvement received a high degree of agreement, which seems to demonstrate the concern and interest of companies in continuous improvement.

Less adherence to cost management practices and continuous improvement activities may mean that some companies do not have qualified personnel in these areas who can apply cost management and improvement techniques.

In this aspect, future research can deepen the cost management and continuous improvement practices used by these companies in order to reach the target cost and the desired profit margin.

The results of this research contribute to the identification of the adoption of target costing in service companies, as well as to the expansion of the literature on the service sector, in particular, ICT services.

REFERENCES

- Abbade, E. B. (2012). O Efeito da orientação para a aprendizagem no desempenho organizacional das empresas da região central do Rio Grande do Sul. *REGE*, São Paulo, 19 (2), 241-262.
- Aladwan, M., Alsinglawi, O., & Allawatmeh, O. (2018). The applicability of target costing in Jordanian hotel industry. *Academy of Accounting and Financial Studies Journal*, 22 (3).
- Al-Awawdeh, W. M., & Al-Sharairi, J. A. (2012). The Relationship between Target Costing and Competitive Advantage of Jordanian Private Universities. *International Journal of Business and Management*, 7 (8).

- Alexandra, M. L. (2017). Considerations concerning the application of target costing method in the industry of dairy products. *Economic Sciences Series*, XVII (1).
- Ansari, S., Bell, J., Klammer, T., & Lawrence, C. (1997). *Management Accounting: Target Costing*. São Paulo: McGraw-Hill.
- Ansari, S., Bell, J., & Okano, H. (2007). Target Costing: uncharted research territory. In: Chapman, C. S., Hopwood, A. G., & Shields, M. D. (Ed.). *Handbook of Management Accounting Research*. Oxford: Elsevier, 2, 507-530.
- Associação das Empresas Brasileiras de Tecnologia da Informação – ASSESPRO. Disponível em: <<https://www.assespropr.org.br/federacao-assespro/>> Acesso em: 13/03/2021.
- Atieh, S. H. (2014). The adoption and implementation of target costing approach in manufacturing companies in Jordan. *International Journal of Business and Social Science*, 5 (6).
- Babbie, E. (1999). *Métodos de pesquisa de survey*; tradução: Guilherme Cezarino. Belo Horizonte: Ed. UFMG.
- Baharudin, N., & Jusoh, R. (2015). Target cost management (TCM): a case study of an automotive company. *Procedia - Social and Behavioral Sciences*, 172, 525–532.
- Biazebete, C. M., Borinelli, M. L., & Camacho, R. R. (2009). Análise da aplicação do custeio alvo e do custeio pleno em indústria de confecções: um estudo de caso. *RCO – Revista de Contabilidade e Organizações*, 3 (5), 44-61.
- Blanco, L. A. (2017). El costeo objetivo en el proceso de planeación. *Cofin Habana*. 12 (2), 192-205.
- Bomfim, E. T. do, Callado, A. A. C., & Callado, A. L. C. (2018). Aspectos do custeio alvo na gestão de custos: um estudo em micro e pequenas empresas do setor de informática e tecnologia de Campina Grande-PB. In: *Anais do XXV Congresso Brasileiro de Custos*, Vitória, ES.
- Bonzemba, E. L., & Okano, H. (1998). The effects of target costing implementation on an organizational culture in France. To be presented at the second Asian interdisciplinary Research in Accounting Conference Osaka City University, Japan, 4-6 August.
- Borinelli, M. L. (2006). *Estrutura conceitual básica de controladoria: sistematização à luz da teoria e da práxis* (Tese de Doutorado). Faculdade de Economia, Administração e Contabilidade, Universidade de São Paulo, São Paulo, SP, Brasil.
- Briciu, S., & Căpușeanu, 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.
- Brito, R. D. S., Garcia, S., & Morgan, B. F. (2008). Custeio alvo: utilização do sistema de gerencialmente de lucro pelos fabricantes de veículos automotores com indústria no Brasil. *RCO – Revista de Contabilidade e Organizações*, 2 (2), 71-86.
- Caldeira, I. D. M. C. (2013). *Aplicação do target costing por países e setores de atividades: revisão de estudos empíricos*. Lisboa (Dissertação de Mestrado). Instituto Universitário de Lisboa, Lisboa, Portugal.
- Cengiz, E., & Ersoy, A. (2010). A literature review of target costing in SSCI AND SCI&SCI-expanded indexes. *Journal of Yasar University*, 3131-3154.
- Clifton, M. B., Bird, H. M. B., Albano, R. E., & Townsend, W. P. (2004). *Target costing - market-driven product design*. New York: Marcel Dekker, Inc.

- Cooper, R., & Chew, W. B. (1996). Control tomorrow's cost today's designs. *Harvard Business Review*, 74 (4), 88-97.
- Cooper, S., & Slagmulder, R. (1999). Develop profitable new products with target costing. *Magazine Research Feature Innovation*.
- Dekker, H., & Smidt, P. (2003). A survey of the adoption and use of target Costing in Dutch firms. *Int. J. Production Economics*, 84, 293–305.
- Della Rosa, F. (2020). O setor de serviços e a produtividade no Brasil. COFECON – Conselho Federal de Economia. 4 de fevereiro de 2020. Disponível em:<<https://www.cofecon.org.br/2020/02/04/artigo-o-setor-de-servicos-e-a-produtividade-nobrasil/>>. Acesso em 30/06/2020.
- Ellram, L. M. (2000). Purchasing and supply management's participation in the target costing process. *The Journal of Supply Chain Management*, Spring.
- Ellram, L. M. (2006). The Implementation of target costing in the United States: theory versus practice. *The Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, February.
- Everaert, P., Loosveld, S., Van Acker, T., Schollier, M., & Sarens, G. (2006). Characteristics of target costing: theoretical and field study perspectives. *Qualitative Research in Accounting & Management*, 3 (3), 236-263.
- Fachin, O. (2017). Fundamentos de metodologia. São Paulo: Saraiva.
- Faria, A. C., Freitas, L. H., & Marion, J. C. (2009). Empreendedor e a aplicação do sistema de custeio-alvo em pequena empresa do segmento de plástico: uma pesquisa-ação. *Revista de Negócios*, Blumenau, 14 (1), 63-81.
- Fowler, F. J., Jr., (2011). Pesquisa de Levantamento; tradução: Rafael Padilha Ferreira (4. ed.). Porto Alegre: Penso.
- Freire, C. T. (2006). Um estudo sobre os serviços intensivos em conhecimento no Brasil. In: Negri, J. A. de, & Kubota, L. C. (Orgs.). Estrutura e Dinâmica do Setor de Serviços no Brasil. Brasília: IPEA, 107-131.
- Gomes, A. M. C., Colauto, R. D., & Moreira, R. L. (2009). Target costing como instrumento estratégico para a formação do preço de venda na produção por encomenda: o caso de uma indústria de plásticos moldados. *Revista del Instituto Internacional de Costos*, 5.
- Hamood, H. H., Omar, N., & Sulaiman, S. (2013). Target costing implementation in Malaysian automotive industry: na exploratory study. *Asia-Pacific Management Accounting Journal*, 8 (1), 19-42.
- Hamood, H. H., Omar, N., & Sulaiman, S. (2011). Target costing practices: a review of literature. *Asia-Pacific Management Accounting Journal*, 6 (1), 25-46.
- Helms, M. M., Ettkin, L. P., Baxter, J. T., & Gordon, M. W. (2005). Managerial implications of target costing. *Competitiveness Review: An International Business Journal*, 15 (1), 49-56.
- Huang, H., Lai, M., Kao, M., & Chen, Y. (2012). Target Costing, Business Model Innovation, and Firm Performance: An Empirical Analysis of Chinese Firms. *Canadian Journal of Administrative Sciences. Revue canadienne des sciences de l'administration*, 29, 322–335.

- Ibusuki, U., & Kaminski, P. C. (2007). Product development process with focus on value engineering and target costing: A case study in an automotive company. *International Journal of Production Economics*, 105 (2), 459-474.
- Imeokparia, L., & Adebisi, S. (2014). Target Costing and Performance of Manufacturing Industry in South-Western Nigeria. *Global Journal of Management and Business Research: Accounting and Auditing*, 14 (4).
- Institute of Management Accountants – IMA (1998). Tools and Techniques for Implementing Target Costing. Statements on Management Accounting.
- Instituto Brasileiro de Geografia e Estatística – IBGE. O setor de tecnologia da informação e comunicação no Brasil 2003-2006. Estudos e Pesquisas Informação Econômica, n. 11, 2009.
- Instituto de Pesquisa Econômica Aplicada – IPEA. Carta de Conjuntura, n. 46, 1º trimestre de 2020. Disponível em: <https://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=35348&Itemid=3>. Acesso em 14/02/2022.
- Joudeh, A. H. M., Al-Attar, K. A., & Alsoboa, S. (2016). The extent of using the target costing technique by Jordanian industrial shareholding companies. *European Journal of Business and Management*, 8 (8).
- Khan, G. S. (2014). Target costing and competitive advantage – na Indian perspective. *The Management Accountant*, June.
- Kocsoy, M., Gurdal, K., & Karabayit, M. E. (2009). Target costing in Turkish manufacturing enterprises. *Problems and Perspectives in Management*, 7 (1).
- Kumar, R. (2011). *Research Methodology - a step-by-step guide for beginners* (3 rd). London: SAGE.
- Langfield-Smith, K., & Lockett, P. (1999). Target costing for effective cost management: product cost planning at Toyota Australia. IFAC - International Federation of Accountants. Financial and Management Accounting Committee, Study 10.
- Lemos, L. C., Jr., & Colauto, R. D. (2013). Target costing e custeio direto em instituição confessional de ensino: uma aplicação no curso de graduação em administração. *Revista Espacios*, 34 (1).
- Lozada, G., & Nunes, K. S. (2018). *Metodologia científica*. Porto Alegre: SAGAH.
- Marczyk, G., DeMatteo, D., & Festinger, D. (2005). *Festinger Essentials of Research Design and Methodology*. New Jersey: John Wiley & Sons, Inc., Hoboken.
- Matias-Pereira, J. (2019). *Manual de metodologia da pesquisa científica* (4. ed.). São Paulo: Atlas.
- 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, 3.
- Monden, Y., & Hamada, K. (1991). Target costing e kaizen costing in Japanese automobile companies. *JMAR*, 3, Fall.
- Nascimento, J. C. H. B., Sousa, W. D., Pinheiro, L. V. S., Castro, M. B. M., & Bernardes, J. R. (2013). Análise da progressão do conhecimento sobre Custeio Alvo: uma análise bibliométrica dos artigos apresentados nas 19 edições do Congresso Brasileiro de Custos. In: Anais do XX Congresso Brasileiro de Custos, Uberlândia, MG.

- Negri, J. A. de, & Kubota, L. C. (2006). Estrutura e Dinâmica do Setor de Serviços no Brasil. In: Negri, J. A. de, & Kubota, L. C. (Orgs.). Estrutura e Dinâmica do Setor de Serviços no Brasil. Brasília: IPEA. Disponível em: <http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=5513> Acesso em 10/12/2018.
- Nicolini, D., Tomkins, C., Holttil, R., Ooldman, A., & Smalley, M. (2000). Can target costing and whole life costing be applied in the construction industry? – evidence from two case studies. *British Journal of Management*, 11 (4).
- Okpala, K. E. (2016). Target costing implementation and competition: a case study of breweries industry. *European Journal of Applied Business Management*, 2 (2), 18-35.
- Oliveira, A. S. (2017). *Contingência organizacional e mensuração de desempenho: um estudo em ONGs brasileiras* (Dissertação de Mestrado). Programa de pós-graduação em Ciências Contábeis, Universidade Federal da Paraíba, João Pessoa, PB, Brasil.
- Omar, N., Sulaiman S., Hui, W. S., Rahman, I. K. A., & Hamood, H. H. (2015). Target costing implementation and organizational capabilities: an empirical evidence of selected Asian countries. *Journal of Economics, Business and Management*, 3 (2).
- Organisation for Economic Co-operation and Development – OECD. Services and performance of the Brazilian economy: analysis and policy options. Report prepared for the Services Trade Restrictiveness, Brasilia, 1-3, March 2016. Disponível em: <<https://economiadeservicos.com/wp-content/uploads/2015/04/STRI-Brazil-policy-paper.pdf>> Acesso em: 12/03/2021.
- Potkány, M., & Škultétyová, M. (2019). Research into customer preferences of potential buyers of simple wood-based houses for the purpose of using the target costing. *Open Eng.* 9, 390-396.
- Rattary, C. J., Lord, B. R., & Shanahan, Y. P. (2007). Target costing in New Zealand manufacturing firms. *Pacific Accounting Review*, 19 (1), 68-83.
- Reckziegel, V., Piva, R. S., Angelocci, M. A., & Moreno, K. (2015). Análise de custos da produção no setor de cosméticos adotando o custeio por absorção e o custeio alvo na formação de preços. In: Anais do I CINGEN- Conferência Internacional em Gestão de Negócios, Cascavel, PR.
- Santos, W. dos. O avanço da Tecnologia da Informação como serviço. Disponível em: <<https://economiadeservicos.com/tag/estrutura-do-setor-de-servicos/>> Acesso em: 12/12/2018.
- Scarpin, J. E. (2000). *Target costing e sua utilização como mecanismo de formação de preço para novos produtos* (Dissertação de Mestrado). Programa de Pós-Graduação em Contabilidade e Controladoria, Universidade Norte do Paraná, Londrina, PR, Brasil.
- Sharafoddin, S. (2016). The Utilization of Target Costing and its Implementation Method in Iran. *Procedia Economics and Finance*, 36, 123–127.
- Silva, A. M., Negri, J. A. de, & Kubota, L. C. (2006). Estrutura e Dinâmica do Setor de Serviços no Brasil. In: Negri, J. A. de, & Kubota, L. C. (Orgs.). Estrutura e Dinâmica do Setor de Serviços no Brasil. Brasília: IPEA, 15-33. Disponível em: <http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=5513> Acesso em 10/12/2018.

- Silva, C. M., Menezes, N., Fº, & Komatsu, B. (2016). Uma abordagem sobre o setor de serviços na economia brasileira. *Centro de Políticas Públicas – Insper, Policy Paper*, 19, Agosto.
- Souza, L. G., Santos, L. N., Coelho, D. C., Pereira, D. J., Bomfim, T. F. S., & Santos, T. (2016). *Target Costing*: aplicação prática em uma instituição de educação básica na cidade de Senhor do Bonfim, BA. In: Anais do XXIII Congresso Brasileiro de Custos, Porto de Galinhas, PE.
- Swenson, D. W., Ansari, S., Bell, J. & Kin, I. (2003). Best practices in target costing. *Management Accounting Quarterly*, 4 (2), 12-17.
- Tani, T., Okano H., Shimizu, N., Iwabuchi, Y., Fukuda, J., & Cooray, S. (1999). Target cost management in Japanese companies: current state of the art. *Management Accounting Research*, 5, 67-81.
- Wienhage, P., Rocha, I.; & Scarpin, J. E. (2010). Aplicação do target costing e engenharia do valor na precificação de curso de pós-graduação. In: Anais do XVII Congresso Brasileiro de Custos, Belo Horizonte, MG.
- Williamson, A. (1997). Target and kaizen costing. *Manufacturing Engineer*, February.
- Woods, M., Taylor, L., & Fang, G. C. G. (2012). Electronics: A case study of economic value added in target costing. *Management Accounting Research*, 23, 261– 277.
- Yazdifar, H., & Askarany, D. (2012). A comparative study of the adoption and implementation of target costing in the UK, Australia and New Zealand. *Int. J. Production Economics*, 135, 382–392.
- Zengin, Y., & Ada, E. (2010). Cost management through product design: target costing approach. *International Journal of Production Research*, 48 (19), 5593–5611.