



## Integrated framework for strategic cost management based on target costing, ABC and product life cycle in PDP: Empirical experience

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### Abstract

This study aims to contribute to the planning process on product management. Therefore, it presents an integrated framework based on strategic cost management, using the methods target costing and activity-based cost (ABC) based on the product life cycle. This proposal is structured as follows: Phase 1 determines the target cost and Phase 2 determines the ABC defrayal because of the defrayal based on the product's life cycle. This research study is elaborated in light of specialised literature, from which we extracted the variables to formulate the methodology. Subsequently, to show the feasibility and plausibility of the method, we applied a hypothetical case study based on the development process of a product in light of an MBA in business management course in the Institution of Higher Education in Brazil. The results are satisfactory and validate the suggested proposal. The survey findings indicate that the integrated method between ABC, target costing and product life cycle applied in MBA in business management is quite satisfactory.

Keywords: Activity-based cost (ABC), costing based on product life cycle, framework, product development process (PDP), target costing.

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## 1. Introduction

The current globalisation is causing the world economy a profound process of change. One of the differences in the companies is the early launch of products and the ability to develop them, with the objectives to meet the growing needs and expectations of the customers. The product's life cycle is getting shorter, which encourages the continuous flow of new product development projects in the industry (Santos, Loures, Piechnicki & Canciglieri, 2017; Colak & Cetin, 2019). In fact, the business environment in which today's companies are positioned has undergone enormous changes over the last decades because of deregulation, increased global competitiveness, reduced costs associated with information and demand for greater diversity of products, among others. Thus, the development of innovative products requires a lot of effort by the companies. In this dichotomy, technical efficiency is a parameter for the developing the capacity of innovative products, which translates into one of the most remarkable logical arguments to potentialise and encourage a competitive advantage (Brown & Eisenhardt, 1995; Clark & Wheelwright, 1992). In fact, the efficiency of developing new products has become essential. Managers have started to prioritise factors related to product quality, product life cycle and process efficiency, and are focused on controlling and reducing costs in order to achieve a competitive advantage (Hansen & Mowen, 2001). As a response to these challenges, new methods and techniques oriented towards cost-cutting have emerged as efficient tools for organisational planning, aiming towards a competitive advantage. These changes have forced these organisations to implement ever more sophisticated costing systems (Almeida & Cunha, 2017; Drury & Tayles, 1994).

There is strong pressure in the organisations to increase productivity at reduced prices, so that obtaining a method of estimating the costs of the various products produced in the same company in a rigorous and accurate way becomes a strategic objective (Cooper & Kaplan, 1998), (Almeida & Cunha, 2017). However, mere knowledge of the costs of a particular product may not be sufficient for a company to remain competitive. There is a need to constantly improve their processes by detailing how various activities within the company are developed in order to increase efficiency and effectiveness, which will lead to more competitive and higher quality products and services (Almeida & Cunha, 2017; Quesado & Rodrigues, 2007). On the other hand, the selection of the costing method more appropriate to the reality of each organisation can be a complex task (Almeida & Cunha, 2017; Fisher & Krumwiede, 2012), and the misallocation of indirect fixed costs, as it occurs in some traditional costing systems, leads to obtaining incorrect industrial costs and may also lead to misallocated management decisions (Almeida & Cunha, 2017; Hughes & Gjerde, 2003; Surikhan et al., 2019).

From this perspective, this study aims to contribute to the planning process on product management. Therefore, it presents an integrated framework based on strategic cost management, using the methods target cost and activity-based cost (ABC), and costing based on the product's life cycle in an MBA in business management course in the Institution of Higher Education in Brazil.

This proposal is structured as follows: Phase 1 determines the target costing and Phase 2 determines the ABC costing in light of life cycle-based costing.

Target Cost and ABC are methodologies which work as support tools to provide managers with precise, opportune and complete data, which may provide subsidies in the planning process, as well as in controlling and decision-making during product development. ABC is a tool which provides more precise cost data because it reduces arbitrariness of indirect cost apportionment and enables cost analysis from the perspective of process improvement. Target costing, on the other hand, allows planning product costs, considering the price defined by the market. Target costing is one of the most effective methods in cost management. As a useful and efficient management tool, it has a comprehensive approach for managing costs, reducing prime cost of products in the initial stage of product planning and design, and achieving long-term profits (Sharafoddin, 2016). Target costing is a cost management system designed to develop products with a level of profitability deemed adequate

to justify their production (Kee, 2010). Target costing method demands to monitor market price and competitive price. The price of a product consists of costly items that we must reduce (Kadarova, Durkacova, Teplicka & Kadar, 2015; Hasnain, 2019). This study is structured as follows: methodology: steps and application; application to a case study and underlying analysis; and conclusion and recommendations.

## 2. Methodology: steps and application

In this section, we present the steps to elaborate the integrated framework (Figure 1).

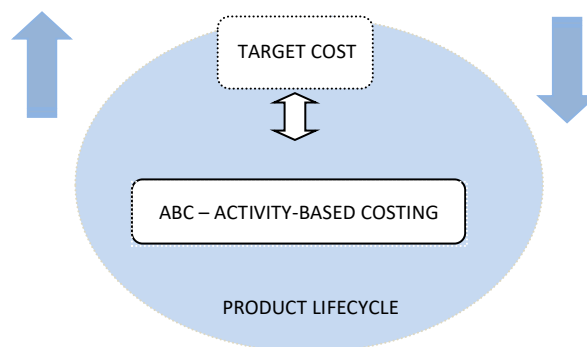


Figure 1. Integrated framework—target cost, ABC and product life cycle

First, we elaborate on the procedures for target costing. Then, the steps to elaborate ABC method are systematised and finally we elaborate on the steps to defrayal based on the product's life cycle. It is important to highlight that the first step of this method is planning the product development or, in other words, how much the consumer is willing to pay for the product. In this step, we present the planning-oriented target costing. The second step is related to the production phase in which the ABC costing system of a product's life cycle is applied. This phase is elaborated in light of the target costing market-driven by calculating target costing. This process is elaborated in light of the specialised literature confirmed by experts on the research objective. Subsequently, to show the feasibility and plausibility of the method, we realise a hypothetical case study in an MBA in business management course in the Institution of Higher Education in Brazil. It is believed that these tools, when considered in a complementary way, are plausible and feasible for managing costs in a product development process to achieve high performance in the final results. These procedures will be detailed next.

### **Phase 1: target cost model**

In this phase, we present the procedures for calculating the target cost. According to Ludicibus (2009), target cost is a modern vision for observing costs, which is now calculated taking into consideration the price defined by the market. From a possible sale price, the desirable profit is calculated and the result of this difference is the maximum cost that the enterprise will have to pursue, eliminating possible wastes and activities which do not aggregate value. To the authors' knowledge, the condition for remaining competitive or staying in the market is not to overcome the maximum cost established. According to Hansen and Monwen (2003), target cost is the result of the subtraction of the sale price, which is indispensable for obtaining a pre-established part of the market and the intended profit by unit. The authors state that the sale price shows the product specifications which are appreciated by the clients. According to Padro (2001, p. 18), 'Target Costing (target cost to be achieved or intended cost) is a cost management tool to reduce the cost during a product life cycle, which can also be used to reduce investments with design, production and distribution of the

product'. According to the analogy of Hansen and Monwen (2003) and Camacho (2004), these are the procedures detailed on the application of target cost:

**STEP 1. Market Research:** Initially, the enterprise conducted a market research, keeping in mind the course about work safety which will be launched. In this market research, the following elements are considered: quality of similar products made by competitors, i.e., courses produced by other institutions in the region; and purchasing power of consumers to whom the enterprise wants to offer its products. Furthermore, the enterprise analysed the course's demand history, which showed that a number of students registered for the course in previous periods, amongst other factors.

**STEP 2. Production Targets:** Right after realising the market research, the enterprise calculated the maximum product price supported by the market. This step determined the number of vacancies for the business management course offered by the enterprise to the market.

**STEP 3. Determining the Intended Profit:** At this point, the profit intended by the enterprise managers was calculated. The intended profit was calculated taking into consideration the percentage of return on assets (ROA), percentage of return on equity (ROE) and ROA.

**STEP 4. Calculating Target Cost:** After establishing the price sale and calculating the profit, the target cost for the work safety course was obtained by reducing the price sale from the intended profit. This formula was based on the following expression:  $C = P - L$ , where  $C$  is related to the target cost,  $P$  is related to the competitive price and  $L$  is related to the intended profit.

**STEP 5. Comparing Costs:** The target cost is compared to the estimated cost after calculation. The estimated cost for the work safety course was determined in reference to the activity-based costing. An estimate basic cost (floatation cost) was calculated in the product project. The costs taken into consideration were: direct costs—educational materials, staff and charges; and indirect cost—electricity, water, phone bill, everyday materials and staff.

**STEP 6. Procedures for Cost-Cutting:** This phase is where the value engineering starts to work to reduce the target cost until reaching the maximum product price. The process of cost-cutting through value engineering involved many areas in the enterprise in a process among planning, engineering, marketing, production, financial, purchasing and supply professionals. The offer of the business management course can only be made when the value of estimated cost is equal or under the target costing.

## **Phase 2: ABC model**

In this phase, we present the procedures used for calculating ABC costing. In light of specialised literature (Kaplan & Cooper, 1998; Martins, 2003; Nakagawa, 2001; Mavlutova & Mavlutov, 2019), this integrated framework for implementing ABC costing is systematised in the following steps:

**STEP 1. Identifying Available Activities and Resources:** In this section, we identify the activities of each stage on the product development process indicating the main resources used.

**STEP 2. Determining Costs per Activity:** In this stage, considering the activities identified, we determine the cost per activity in each stage of the product development process.

**STEP 3. Detailing Activities:** At this point, there is detailing of the activities for supporting areas and data found raising with complete data.

**STEP 4. Cost Drivers:** At this moment, we tried to establish the first-degree cost drivers to adapt the resources to the activities, and the second-degree cost drives to adapt the activities to the cost objective. In this phase, we can define the cause which generates the activities and the criteria for calculating cost drivers.

**STEP 5. Cost Tracking:** Here, we determine the costs for each activity.

**STEP 6. Costs Allocation:** In this stage, we determine the product cost after calculating the activity cost.

**STEP7. Cost Adjustment:** Here, we can determine the levels of activity development measurement. We define operational and financial data used to adjust the product development process.

*Applying the proposal: results and underlying analysis*

In this section, we present the methodological procedures of costing applied to an MBA in business management course launched by the Brazilian institution of Higher Education. The application of the methodologies ABC and target cost, costing by product life cycle in the product development process presented in this work aims to show the implementation procedures. The realisation of this integrated framework is a hypothetical situation based on literature. The case chosen for applying the integrated framework of strategic cost management is an MBA in business management course offered by an institution. The institution studied offers many courses in MBAs (Finances, Accounting, Logistics, etc.).

For the case in point, the implementation of this course is based on a demand study. Through the demand history we could observe, initially, the number of students projected the number of vacancies for the next class. In the budget department, an analysis of incomes and expenses related to the business management course was made. The main risks involved on realising this course are defaults and evasion. Therefore, considering that, based on information about the price, the consumer would be willing to pay for the course before it was launched; we elaborated a cost and price study. The course must generate incomes to cover the costs involved and also produce profit. In this regard, here is the detailing of target cost applied for the course.

*Procedures for applying target cost on the product predevelopment*

According to the analogy of Hansen and Monwen (2003) and Camacho (2004), these are the detailed procedures for the application of target cost.

**STEP 1. Market Research:** Initially, the enterprises conducts a market research, having in mind the 'MBA course in Business Management' which would be launched. In this market research, we considered the following elements: quality of similar products made by competitors, i.e., courses produced by other institutions in the region and purchasing power of the consumer to whom the enterprise wants to offer its product. Furthermore, the enterprise analysed the course's demand history, which showed that the number of students registered for the course in the previous periods, among other factors

**STEP 2. Production Targets:** After market research, the enterprise calculates the maximum product price the market accepts to pay for the course and determines the number of vacancies for the MBA in business management course the enterprise would offer to the market. Therefore, the enterprise established a target price per student which corresponds to R\$ 21.072,00 divided in 15 instalments of R\$ 1.404,80. It was based on the demand (Market).

**STEP 3. Determining the Intended Profit:** In this stage, the enterprise calculated the intended profit by the managers. The intended profit was calculated taking into consideration the percentage of return on assets (ROA), percentage of return on equity (ROE) and return on assets (ROA).

**Step 4. Determining the Target Profit:** In this stage, the institution calculated the Expected Profit by managers of institution.

The target profit was calculated based on: the percentage of return on assets (ROA) and the percentage of return on equity (ROE).

$$\text{Return on Assets (ROA)} = \frac{\text{Net Profit}}{\text{Total Assets}}$$

$$\text{ROA} = \frac{4052704.96}{20263524.80} = 20\%$$

$$\text{Return on Equity} = \frac{\text{Net Profit}}{\text{Equity}}$$

$$\text{ROE} = \frac{4,052,704.96}{19,964,063.84} = 20,3$$

Table 1. Profit margin

Components	Profit margin
ROE	20.0%
ROA	20.3%
Average of target profits %	20.15%

In Table 1, we see that the average of target profits established by the Institution of Higher Education in Brazil is 20,15% to each class of the course.

**STEP 5. Calculating Target Cost:** After establishing the price sale and calculating the profit, the target cost for the MBA course was obtained by reducing the price sale from the intended profit. This formula was based on the following expression:  $C = P - L$ , where  $C$  is related to the target cost,  $P$  is related to the competitive price and  $L$  is related to the intended profit.

Table 2. Calculating target cost

Description	Values
Target sales price (R\$21,072.00*25)	R\$551,800.00
(-) Target profit (R\$551,800.00*20%)	R\$110,360.00
Target Cost	R\$441,440.00

In Table 2, we see that the target cost the enterprise uses to guarantee the profit margin of R\$ 110,360.00.

**STEP 6. Comparing Costs:** The target cost is compared to the estimated cost after calculation. The estimated cost for the MBA course was determined in reference to the activity-based costing. An estimated basic cost (floatation cost) was calculated in the product project. The costs taken into consideration were: direct costs—educational materials, staff and charges; and indirect cost—electricity, water, phone bill, everyday materials and staff.

Table 3. Estimated costs

Components	Values %
Direct costs	
Educational materials	R\$ 18,403.88
Direct labour	R\$ 69,014.55
Indirect costs	R\$ 372,678.57
Total	R\$ 460,097.00

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In Table 3, we see that the calculation of estimated costs for the enterprise to realise the work safety course totals R\$ 460,097.00.

Table 4. Comparison between estimated cost and target cost

Description	Values
Estimated cost	R\$ 460,097.00
(-) Maximum cost supported	R\$441,440.00
Target cost	(R\$18,657.00)

After knowing the estimated cost, the maximum supported cost resulted in the target cost which, according to Table 4, is R\$ 18,657.00.

**STEP 7. Procedures for Cost-Cutting:** This phase is where the value engineering starts to work to reduce the target cost until reaching the maximum product price. The process of cost-cutting through value engineering involved many areas in the enterprise in a process among planning, engineering, marketing, production, financial, purchasing and supply professionals. The offer of the MBA course can only be made when the value of estimated cost is equal or under the target cost. After analysing the enterprise's process flow, highlighting its cost volumes, we realised that the administrative units concentrate high levels of costs with indirect labour and everyday materials. On the contrary, it would be necessary to reduce the number of workers by 5%. By means of calculation, we considered that the total estimated indirect costs with staff correspond to R\$ 331,269.84. Therefore, the total reduction of workers is equivalent to R\$ 16,563.49. It would also be necessary to reduce the quantity of everyday material by 10%. By means of calculation, we considered that R\$ 41,408.16 estimated indirect cost was related to everyday materials. Therefore, the total of reduction with everyday materials is equivalent to R\$ 4,140.82. This would guarantee that the enterprise reaches the maximum cost supported and the normality of the activities is related to the product development.

*Procedure for the application of ABC on the product development*

**STEP 1. Identifying Available Activities and Resources:** in this section, we present the activities and resources. The activities referring to the stage of this macro-phase are: (i) informational project; (ii) conceptual project; (iii) detailed project and (iv) preparation for production. The following resources were used in this phase: technical and administrative team, computers, software, instructional designer and others, like water, electricity and so on. The detailing of resources is presented in Table 5.

Table 5. Costs involved on the project

Resources	Values
Staff	400,284.39
Telephone	11,042.32
Water / Electricity	35,887.57
Everyday material	12,882.72
Total	460,097.00

**STEP 2. Determining Costs per Activity:** The activities considered here are: (i) informational project; (ii) conceptual project; (iii) detailed project and (iv) preparation for production. We assumed that the costs involved to each of them were equivalent to R\$ 400,284.39, R\$ 11,042.32, R\$ 35,887.57 and R\$ 12,882.72, respectively.

**STEP 3. Detailing Activities:** This step was not realised considering the great quantity of activities and tasks which are part of the PDP.

**STEP 4. Costs Drivers:** Once we identified the resources involved, since the activities are determined, we tried to establish the first-degree cost drivers to adapt the resources to the activities, and the second-degree drivers to adapt the activities to the cost objective. The first-degree drivers are presented in Table 6.



Table 6. First-degree drivers

Resources	First-degree drivers
Indirect labour	Direct appropriation
Telephone	Direct appropriation
Water	$M^2$
Electricity	$M^2$
Everyday material	Direct appropriation

By means of calculating the activities cost, we established that  $M^2$  corresponds to 100. We also established that each activity (informational, conceptual and detailed project, as well as preparation for production) has a separated cost centre and  $M^2$  equivalent to 12, 18, 24 and 46  $m^2$ . The second-degree drivers established are presented in Table 7.

Table 7. Second-degree drivers

Activity	Second-degree drivers
Informational project	Hours/activities
Conceptual project	Hours/activities
Detailed project	Hours/activities
Preparation for production	Hours/activities

**STEP 5. Cost Tracking:** Table 8 shows the resources being allocated to the activities through the first-degree drivers previously determined. We considered that there is an accounting structure which makes the allocation of costs by cost centre.

Table 8. Resources allocation to the activities

Resources	Informational project	Conceptual project	Detailed project	Preparation for production
Staff	R\$48,034.13	R\$72,051.19	R\$96,068.25	R\$184,130.82
Telephone	R\$1,325.08	R\$1,987.62	R\$2,650.16	R\$5,079.47
Water / Electricity	R\$4,306.51	R\$6,459.76	R\$8,613.02	R\$16,508.28
Everyday material	R\$1,545.93	R\$2,318.89	R\$3,091.85	R\$5,926.05
Total	R\$55,211.64	R\$82,817.46	R\$110,423.28	R\$211,644.62

**STEP 5. Costs Allocation:** The activities costs were allocated to the cost objective through the second-degree drivers previously determined.

Table 9. Activities allocation to the cost objective

Activities	Second-degree drivers	Cost objective	Values
Informational project	R\$92,019.40	86 hours	
Conceptual project	R\$105,822.31	99 hours	
Detailed project	R\$119,625.22	112 hours	MBA/Executive manager Course
Preparation for production	R\$142,630.07	133 hours	
<b>Total</b>	<b>R\$460,097.00</b>	<b>430 hours</b>	<b>R\$460,097.00</b>

**STEP 7. Cost Adjustment:** In this phase, it is essential to establish the cost adjustment in accordance to the planned costs. From this perspective, the target cost is equivalent to R\$441,440.00 but the ABC methodology was R\$ 460,097.00. Therefore, based on this inconsistency among the two methodologies it is necessary to make some adjustments. Otherwise, the course is not worth to be

launched. In this specific case, the costs were not cut and the course was launched, considering that this is an institution, aside of being subsidized by contributions of enterprises. In any situation where the costs and incomes do not achieve equilibrium it is not worth to launch the course because someone will have to subsidize the difference. Usually, for institutions, this has been a rule.

Howsoever, the costs which compound the stages of a product life cycle go beyond the regular calendar in which the institution measures its profits, be it a monthly, semiannual or annual. They involve the whole product life cycle, varying from course to course. This way of seeing costs is very useful to the managers, especially on investment budget decisions or the ones about the production of quality courses at a lower total life cycle cost. The life cycle costing system analyses the total expenses comparing them to the total of incomes and also allows the comparison among the diversity of courses produced by the institution, because each of them have different life cycles and provide different returns in relation to investments.

*Procedure for application of ABC on project post-launch*

After realising the product development phases, we started the macro-phase of post-launch. In this phase, we identify the customer (student) satisfaction levels about the training course. The information collected referred to teachers, regarding to explanation of theoretical and practical aspects; educational materials and their adequacy to the activities; physical structure, if there are enough machines and others. Furthermore, we tried to do a cost balance, i.e., of the investments necessary to realise the course confronting to the costs which were initially planned and also proposing improvements in the process. The use of the ABC methodology was recommended in this macro-phase, following these steps:

**STEP 1. Identifying Activities and Resources:** In this section, we present the activities and resources. Therefore, these are the activities related to the stage of this macro-phase: (i) product and process monitoring; (ii) discontinue the product. In this phase we used the following resources: technical and administrative staff, computers, software and others, like water, electricity, etc. The detailing of costs is presented in Table 10.

Table 10. Costs involved in the process

Resources	Values
Staff	R\$19,202.64
Telephone	R\$441.44
Water / Electricity	R\$1,765.76
Everyday material	R\$662.16
<b>Total</b>	<b>R\$22,072.00</b>

**STEP 2. Determining Costs per Activity:** Considering that the activities are (i) product and process monitoring; (ii) discontinue the product, the costs involved in each of these were equivalent to R\$ 11,477.44 and R\$ 10,594.56, respectively.

**STEP 3. Detailing the Activities:** This stage was not realised considering the great number of activities and steps which they involve.

**STEP 4. Costs Drivers:** Once we identified the resources involved and respective activities, we tried to establish the first-degree drivers to adapt the resources to the activities and the second-degree drivers to adapt the activities to the costs objects. The first-degree drivers are the ones presented on the table below:

Table 11. First-degree drivers

Resources	First-degree drivers
Staff	Direct appropriation

Telephone	Direct appropriation
Water	M <sup>2</sup>
Electricity	M <sup>2</sup>
Everyday material	Direct appropriation

By means of calculation of the activities costs, we assumed that M<sup>2</sup> is 100 and that each activity has a separated costs centre equivalent to 52 m<sup>2</sup> and 48 m<sup>2</sup>.

The second-degree drivers are the ones presented in Table 12.

Table 12. Second-degree drivers

Activity	Second-degree drivers
Product and process monitoring	Hours / Activities
Discontinue product	Hours / Activities

**STEP 5. Costs Tracking:** Table 13 shows the resources being allocated to the activities through the first-degree drivers previously established. We consider that there is an accounting structure which allocates the costs per costs centre.

Table 13. Resource allocation to activities

Resources	Product and process monitoring	Discontinue product
Staff	R\$9,985.37	R\$9,217.27
Telephone	R\$275.46	R\$254.27
Water/Electricity	R\$895.24	R\$826.38
Everyday material	R\$321.37	R\$296.65
Total	R\$11,477.44	R\$10,594.56

**STEP 6. Costs Allocation:** The activity costs were allocated to the cost objective through the second-degree drivers previously determined.

Table 14: Activity allocation to the cost objective

Activities	Second-degree drivers	Cost objective	Values
Product and process monitoring	R\$11,477.44	133 hours	R\$22,072.00
Discontinue product	R\$10,594.56	42 hours	
	R\$22,072.00	175 hours	MBA/Business Management

### 3. Conclusion and discussion

This study aims to contribute to the planning process on product management. Therefore, it presents an integrated framework based on strategic cost management, using the methods target costing and ABC based on the product's life cycle. The framework is applied to a hypothetical case, with some real data, whenever possible, due to the limited access, in an educational institution which offers MBA in Business Management courses.

We focus on the use of target costing for new product development, which concentrates on determining the costs for the MBA during the planning stage. On the other hand, the ABC system provides accurate cost information which is based on the production process and activities. The ABC methodology proposed establishes that resources are consumed by activities and these are consumed by the products and services. The integration between ABC, cost target and the product's life cycle of business MBA resulted in the reduction of costs. In this manner, the results of this study contribute to

improving decision-making in strategic cost management, especially in an MBA in business management course.

In this literature review, we identified the conventional costing methods, namely absorption, variable and standard costing, amongst others. The ones which present inconsistencies are arbitrary apportionment, lack of measurement criteria for indirect costs, underestimation of fix costs which could compromise the continuity of the enterprise, difficulties in determining the indirect costs and so on. Therefore, the information regarding costs produced by these systems is distorted. Thus, this work presents the tools that, according to specialised literature, are considered modern (ABC and target cost) and produce more accurate cost information than the conventional methods.

From this perspective, we achieved the objective of this study, once it was possible to present a contribution to a methodological proposal in light of target cost, activity-based cost based on the product's life cycle in an integrated and chained way, to plan and manage costs in the product development process. Initially, to develop the proposal, we used the target costing to support the first PDP macro-phase, product strategic planning, once it was a costing system oriented towards cost and product planning. Then, we used the ABC methodology to decrease the measurement of costs involved on the product development and post-development phases.

The major contributions of this study are as follows:

- the integrated framework can help to more accurately understand how to allocate resources and funding for business management course in the objective of research activities through appropriate cost drivers; and
- the proposed integrated framework provides cost and benefit analysis information.

The main limitation of this research is related to cost planning and to the attribution of costs to activities and to the cost objectives, taking into consideration the complexity of the costing methodologies adopted and the subjectivity involved in this case. In addition, there was an obstacle on relating PDP to the training course because PDP is a very complex tool which includes many processes and tools and demands a vast spectrum of knowledge and abilities.

We recognise that one of the greatest limitations is related to the way the systems were applied – almost hypothetical case – considering a bias. The application of a totally real case is always more interesting due to the restrictions and uncertainties of the environment and of the product development project itself. We highlight that we do not intend to substitute systems or methodologies, but promoting pragmatism by presenting evidently that the techniques and methods already existent can be better applied when used complementarily, making results more efficient as we try to reduce subjectivity. Therefore, what we intended here is to present more improvement on the use of conventional methods and techniques to manage costs oriented towards product development projects. We reaffirm the importance of considering costs by product life cycle, as reinforced by Robles Junior apud Beuren and Shaeffer (1997, p.6): “The costs related to service and product life cycle are related to every expense incurred of services and products, since the idea of launching a new product, going to expenses with research, conception, project, development, prototype, line production, market tests, launching, distribution, customer services, guarantees, improvement, marketing campaign, ceasing production, maintenance parts for the period after the production ceases, and so on”.

Howsoever, the analysis and monitoring of these costs are essential, since the prices must recover all the costs and the intended profit, generating a more appropriate return on investments in the pre-operational phases. The product costs which incur during its life cycle must be accumulated with the intention of providing long-term profitability and support key decisions related to the product line and participation in the market and the price policy. Identifying and measuring these costs have assumed an important place on the managers' decision-making process. With that being said, new conceptions

have emerged, for example, life cycle management centred on pre-production activities, in order to guarantee lower possible cost to the product's life cycle. The product's life cycle, if analysed properly, could not only alert the problems that usually occur in each phase, but mainly could previously indicate the opportunities, stimulate marketing, plan new uses, characteristics and ways to conquer and maintain customers.

To collaborate new studies with strategic cost management, we recommend new practical applications for the methodological proposal based on real data, to make it valid and trustable. We hope to have contributed to increase the knowledge about the application of the costing tools target costing and ABC, acting on the perspective of product development process, contributing to a better performance on efficient cost management in many phases and stages which sustain PDP, allowing managers to decide about resource allocations in projects as complex as the situation presented in this article.

## References

- Almeida, A. & Cunha, J. (2017). *The implementation of an Activity-Based Costing (ABC) system in a manufacturing company*. Manufacturing Engineering Society International Conference 2017, MESIC 2017, 28–30 June 2017, Vigo (Pontevedra), Spain, <https://doi.org/10.1016/j.promfg.2017.09.162>
- Brown, S. L. & Eisenhardt, K. M. (1995). Product development: past research, present findings, and future directions. *Academy of Management Review*, 20(2), 343–378.
- Camacho, R. R. (2004). *Custeio alvo em serviços hospitalares: um estudo sob o enfoque da gestão estratégica de custos*. Sao Paulo, 2004. 166 f. Dissertacao (Mestrado em Controladoria e Contabilidade). Faculdade de Economia, Administração e Contabilidade da Universidade de Sao Paulo, Sao Paulo, <https://doi.org/10.1590/S1519-70772008000200003> .
- Clark, K. B. & Wheewright, S. C. (1992). Organizing and leading "heavyweight" development teams. *California Management Review*, Spring, 9–28.
- Colak, M., & Cetin, T. (2019). Activity situation analysis for production of furniture businesses. *Global Journal of Business, Economics and Management: Current Issues*, 9(1), 1-7. <https://doi.org/10.18844/gjbem.v9i1.1352>
- Cooper, R. & Kaplan, S. (1998). The promise -and peril of integrated cost system. *Harvard Business Review*, July-August.
- Fisher, J. G. & Krumwiede, K. (2012). Product costing systems: finding the right approach. *The Journal of Corporate Accounting & Finance*, 23(3), 53–51.
- Hansen, D. R. & Mowen, M. M. (2001). *Gestão de Custos*. Cincinnati, OH: South-Western CollegePublications.
- Hansen, J. E. (2002). *Aplicacao do custeio alvo em cursos de pos-graduacao lato sensu: um estudo sob o enfoque da gestao estrategica de custos*. Sao Paulo, 2002. Dissertacao (Mestrado em Controladoria e Contabilidade). Faculdade de Economia, Administração e Contabilidade da Universidade de Sao Paulo.
- Hasnain, S. (2019). Searching for panacea to management ills: Trust models revisited. *Global Journal of Business, Economics and Management: Current Issues*, 9(1), 22-28. <https://doi.org/10.18844/gjbem.v9i1.3669>
- Horngren, C. T., et al. (2004). *Contabilidade Gerencial; traduzido para o português por Elias Pereira* (12th ed.). Sao Paulo, Brazil: Prentice Hall.
- Hughes, S. B. & Gjerde, K. A. P. (2003). *Manag. Account. Q.* 5, 22–30.
- Iudicibus, S. (2009). *Contabilidade Gerencial* (6th ed.). Sao Paulo, Brazil: Atlas.
- Kadarova, J., Durkacova, M., Teplicka, K. & Kadar, G. (2015). The proposal of an innovative integrated BSC –DEA Model. 2nd Global Conference on Business Economics, Management and Tourism—Prague, Czech Republic. *Procedia Economics and Finance*, 23, 1503–1508, [https://doi.org/10.1016/S2212-5671\(15\)00375-5](https://doi.org/10.1016/S2212-5671(15)00375-5)

- Kaplan, R. S. & Cooper, R. (1998). *Custo e desempenho: administre seus custos para ser mais competitivo*. Sao Paulo, Brazil: Ed. Futura.
- Kee, R. & Matherly, M. (2006). Decision control of products developed using target costing. *Advances in Management Accounting*, (15), 267–292. [https://doi.org/10.1016/S1474-7871\(06\)15012-1](https://doi.org/10.1016/S1474-7871(06)15012-1)
- Martins, E. (2003). *Contabilidade de Custos* (9th ed.). Sao Paulo, Brazil: Atlas.
- Mavlutova, I., & Mavlutov, B. (2019). Business performance measurement for mechanical engineering and metalworking companies: case of Latvia. *Global Journal of Business, Economics and Management: Current Issues*, 9(3), 105-112. <https://doi.org/10.18844/gjbem.v9i3.4449>
- Nakagawa, M. (2001). *ABC: Custeio Baseado em Atividades* (2th ed.). Sao Paulo, Brazil: Atlas.
- Padro, L. J. (2001). *Guia de Custos* (2th ed.). Parana. Retrieved September 23, 2018, from <http://lauroprado.tripod.com/ezine/ebooks.html> (Accessed 23 Setember 2018).
- Quesado, P. R.; Rodrigues, L. L. (2007). A gestão estratégica de custos em grandes empresas portuguesas. *Revista Iberoamericana de Contabilidade de Gestion, Madri*, 5(2), 121–144.
- Santos, K., Loures, E., Piechnicki, F. & Canciglieri, O. (2017). *Opportunities assessment of product development process in industry 4.0*. 27th International Conference on Flexible Automation and Intelligent Manufacturing, FAIM2017, 27–30 June 2017, Modena, Italy, 2017. <https://doi.org/10.1016/j.promfg.2017.07.265>
- Sharafoddin, S. (2016). The utilization of target costing and its implementation method in Iran. *Procedia Economics and Finance*, 36(1), 123–127, [https://doi.org/10.1016/S2212-5671\(16\)30023-5](https://doi.org/10.1016/S2212-5671(16)30023-5)
- Surikhan, U., Panyapan, W., Kamkankaew, P., Thanitbenjasith, P., Limpiangkanan, P., & Kaewma, K. (2019). Enhancing purchase intention through marketing activities and brand equity: An exploration of local brand coffee bar in Thailand. *Global Journal of Business, Economics and Management: Current Issues*, 9(1), 8-15. <https://doi.org/10.18844/gjbem.v9i1.1363>