



World Scientific News

An International Scientific Journal

WSN 133 (2019) 171-190

EISSN 2392-2192

Cost management with budgeting and Kaizen Costing

Kinga Olszewska

Faculty of Management, Czestochowa University of Technology,
19B Armii Krajowej Str., 42-200 Czestochowa, Poland

E-mail address: kinga.olszewska@onet.com.pl

ABSTRACT

Business units must constantly adapt to changing market conditions and consumer expectations. Introducing changes aimed at increasing the adaptability of an enterprise is often associated with high costs or radical changes in the structure of the company and the way it operates. This article discusses the budgeting and Kaizen philosophy and their impact on the management of the enterprise's cost area. Based on the case study, it was presented how the use of the budgeting procedure and Kaizen Costing can affect the unit's cost management process. The use of Kaizen in the area of enterprise cost management was also discussed. The aim of the article is to show how the decision to use budgeting and Kaizen in the area of costs can translate into the company's financial results and its overall functioning.

Keywords: budgeting, Kaizen philosophy, Kaizen Costing, cost reduction

1. INTRODUCTION

The goal of any business is to survive or maximize profit. This goal is implemented using various methods, in particular by increasing the scale of production, improving efficiency, introducing information systems to improve management, etc. In addition to constantly striving to achieve profit by focusing on production, enterprises must adapt their operation accordingly

to the conditions of high competition, constant changes in consumer expectations and market changes. Adjusting the strategy to these conditions requires the company to introduce changes within the organization. These changes must be based on rational premises and assume an implementation process that is feasible without excessive risk. There are more and more methods and models of management that are designed to help enterprises in this process (Theodosiou, Leonidou 2003, p. 141).

One of the methods that assume constant improvement based on small changes is the method based on the Kaizen philosophy. Kaizen covers the activity of the company as a whole, however, it is possible to apply it only to selected areas or workplaces. In relation to the company's goals, one of Kaizen's most important applications is Kaizen Costing. It is the application of the Kaizen philosophy in the area of cost management. Undertaking management decisions based on this method allows the company to optimize its operations and opens up additional opportunities, which it did not have access to earlier due to too high costs or too much rigidity in operation.

Applying the Kaizen philosophy in the area of costs is particularly effective when it is accompanied by the process of conscious creation of the sales budget. The combination of the possibilities offered by the budgeting process and the principles of Kaizen Costing creates a tool enabling the examination of various cost options and the selection of the most optimal option for the entity in a given period.

Based on the case study, this paper will also present how the budgeting and Kaizen help to introduce optimization in the area of the unit's cost management.

2. THEORY OF BUDGETING

Budgeting is a process that involves planning, creating, approving a budget, and then controlling it. This allows to monitor the performance of individual tasks and to exercise control over all levels of the company's operations.

Budgeting is used to increase the efficiency of undertaken activities and the use of resources, as well as to support management. It makes it possible to isolate the most important goals of the company, to indicate the tasks necessary for their implementation, while at the same time embedding these processes in a strictly defined time. The result of this process is the creation of a budget.

The budget is a plan of action that presents the method of resource allocation expressed in monetary or natural units. Most often it is prepared for a calendar year, divided into smaller sections of time, e.g. quarters or months, or for a period necessary to carry out a specific task (Horngren et al. 2002, p. 487). In practice, partial budgets are created and combined into a single company budget.

The budgeting functions include:

- informative function - providing managers with information on the degree of task implementation in the form of periodic budgets. They form the basis for the assessment of the activities of particular areas of activity. This allows to create an information base necessary to manage the company;
- coordination function - linking activities carried out in various areas of activity and including them in one coherent budget. This ensures compatibility of the objectives of individual areas with the objectives of the entire company;

- motivational function - it exerts an influence on the managers and employees responsible for a given budget so that the activities implemented by them are appropriate in relation to the company's goals. It is important to create a budget whose goals are ambitious but at the same time feasible;
- control function - allows assessing the degree of completed tasks. Three types of analysis are carried out: initial (during budgeting), current (during budget implementation) and resultant (after budget implementation). It gives the opportunity to determine the differences between the completed and assumed plan.

There are many different divisions for the budgeting stages. The most comprehensive division consists of five phases (Ehie, Madsen 2005):

- the development of budget guidelines
- preparation of the budget,
- approval of the budget,
- implementation and control of budget implementation,
- reaction to control results

Therefore, it can be stated that budgeting consists not only of preparatory activities leading to the creation and acceptance of the budget (that is, defining the objectives, tasks, and means necessary to achieve them) but also making assumptions and checking their feasibility by controlling and taking corrective actions.

A study carried out in 2010 shows that a budget is a quite popular tool used in American and Canadian companies. The results of the study are presented in Table 1.

Table 1. Use of budgets in the US and Canada.

	Canada		US		Total	
	Freq	%	Freq	%	Freq	%
Are budgets used for control?						
Yes	277	80%	163	77%	440	79%
No	69	20%	49	23%	118	21%
Total	346	100%	212	100	558	100%
If use budgets for control:						
Do you plan to abandon the use of budgets for control?						
Yes	2	1%	2	1%	4	1%
Possibly	18	6%	4	2%	22	5%
No	257	93%	157	97%	414	94%
Total	277	100%	163	100	440	100%

Source: (Libby, Lindsay 2010, p. 60)

The same study also found that the budget's value is generally good or more helpful than harmful, as presented in Figure 1.

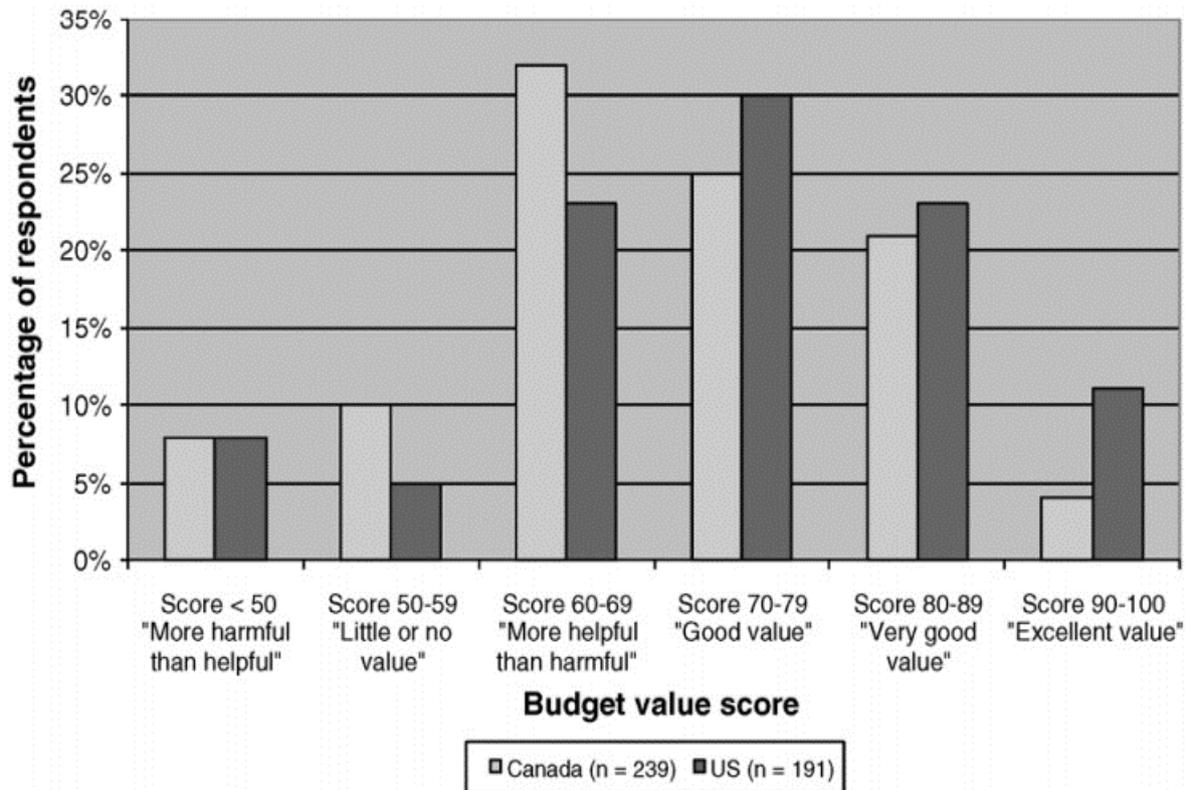


Figure 1. Budget value score
Source: (Libby, Lindsay 2010, p. 61)

A study carried out by Sandahl and Sjogren shows that the most popular methods of budgeting include payback, NPV, expense calculation and costing. Full list of the methods included in the study is presented in Table 2.

Table 2. The utilization of different budgeting methods.

Capital budgeting methods	Percentage using the method N = 128	Number using the method
Payback	78.1	100
NPV	52.3	67
Expense calculation	30.5	39
Costing	27.3	35

IRR	22.7	29
Accounting ratio	21.1	27
Annuity	10.2	13
VBM	8.6	11
Other	6.3	8
Relative CF	1.6	2
Real options	0	0
All DCF	64.8	83

Source: (Sandahl, Sjögren 2003., p. 56)

3. BASICS OF THE KAIZEN PHILOSOPHY

Kaizen can be described as a philosophy of continuous improvement. It was created in Japan, and its name literally means "change for the better." In business operations, it primarily refers to the improvement of processes occurring in various areas of the company's operations. Changes take place gradually by precisely eliminating detected irregularities. All employees are involved in this process.

The Kaizen philosophy is not only focused on improving performance. First of all, it has to teach employees and the whole organization how to be aware of their work and its components and how to eliminate waste. Applying this philosophy on a daily basis reduces the overwhelming work of employees. In other words, it eliminates too hard work, which is the result of the accumulation of errors, problems, and unfinished tasks. The basis for the proper implementation of this philosophy is the involvement of all employees - from the lowest level employees to the top management - in the process of change (Singh, Singh 2009, p. 58).

There are two main types of Kaizen. They include (Hamel 2009, p. 32):

- Process Kaizen,
- Flow Kaizen.

Process Kaizen is focused on introducing minor improvements. This model encourages employees to look for small ideas that relate to small areas and can be implemented in a very short time. Such a model is the opposite of traditional models introducing improvements in the workplace because they usually require a long time of implementation, large-scale changes or radical changes in which the employee is not considered. Flow Kaizen concerns a wider area than Process Kaizen. This model is to improve the flow of information and materials, which may involve the reorganization of the entire company's department or even the entire unit. In this case, improvements are made at all workstations and the way in which employees do their work. Kaizen forms an umbrella that covers many techniques including Kanban, six sigma, total productive maintenance, just-in-time, automation, suggestion system, and productivity improvement, etc. as shown in Figure 2.

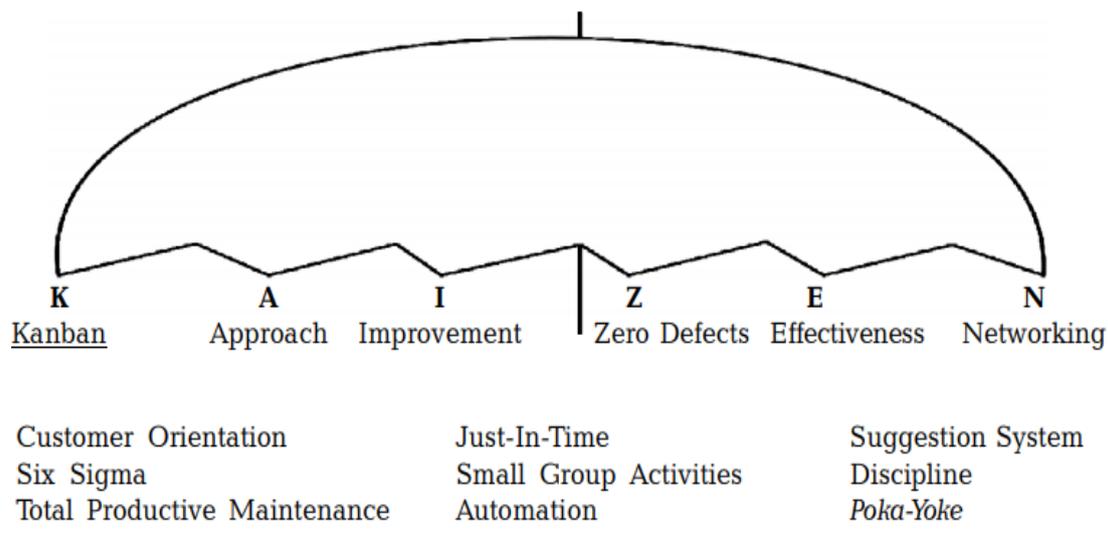


Figure 2. Kaizen umbrella
Source: (Singh, Singh 2009, p. 52)

From the first description of the Kaizen philosophy by Masaaki Imai in 1986, several key principles have been developed that apply when Kaizen is introduced in an enterprise. These include (Jacobson et al. 2009, p. 1344):

- concentration on the client,
- quality orientation,
- introducing constant changes,
- process orientation,
- open recognition of the problem,
- creation of work teams,
- accepting criticism,
- horizontal development of the organization,
- self-improvement,
- self-discipline,
- sharing information with all employees,
- standardization,
- any change should lead to added value or improvement,
- continuous analysis,
- encouragement to share ideas,
- improvement never ends.

The implementation of the Kaizen philosophy in the enterprise is based on the Deming cycle. This method of operation has been developed in Japan as well. It consists of four pillars on which the Kaizen philosophy is based. These include (Dysko 2010):

- plan - create an action plan to improve the chosen process,

- do - implement the plan,
- check - each phase of the process after the implementation of the plan should be controlled in order to identify problems and wastes,
- act - corrective actions should be taken immediately if any irregularities are detected.

The introduction of the Kaizen philosophy into the company imposes an additional obligation on managers, which is to encourage other employees to constantly introduce minor improvements at their workplace or in the way they perform their work. An important aspect of the efficient functioning of the company based on the principles of Kaizen is the commitment of the management. If the management does not comply with the Kaizen rules and does not set an example to employees, then Kaizen should not be implemented at all. All employees should be involved in the implementation process, and the optimization proposals should be implemented as soon as possible to increase the motivation of employees. The number of ideas, which has been approved as well as the number of the ideas being implemented in the chosen factory of General Motors Manufacturing Poland are presented in Figure 3.

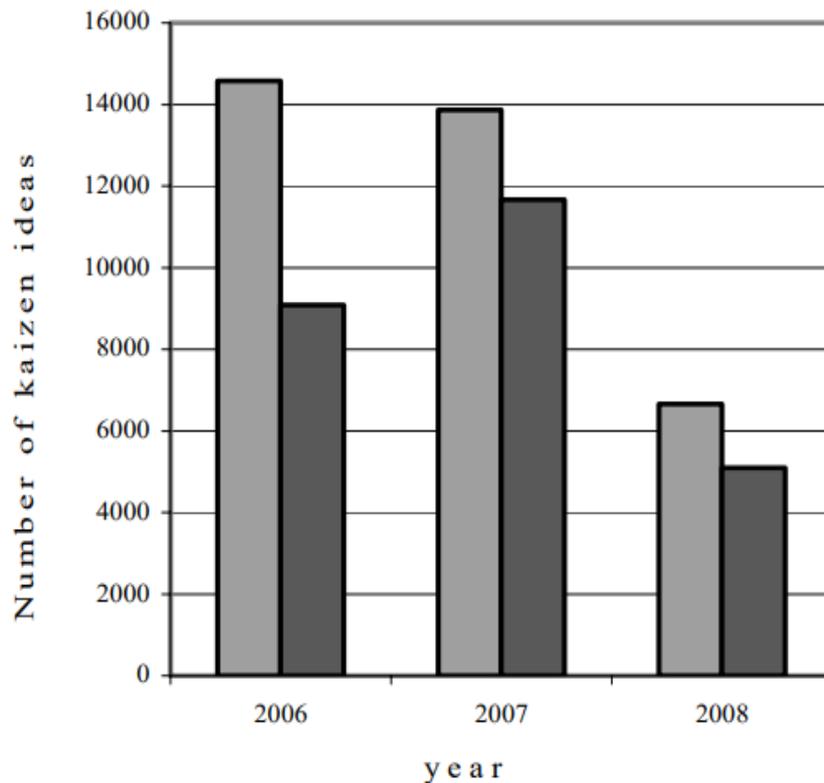


Figure 3. The amount of approved and implemented Kaizen ideas
Source: (Karkoszka, Honorowicz 2009, p. 203)

Masaaki Imai listed several tasks that can be implemented by employees at every level of management. This is to facilitate the implementation of the Kaizen philosophy and to indicate the appropriate course of action.

The tasks carried out at the level of top management are presented in Figure 4.

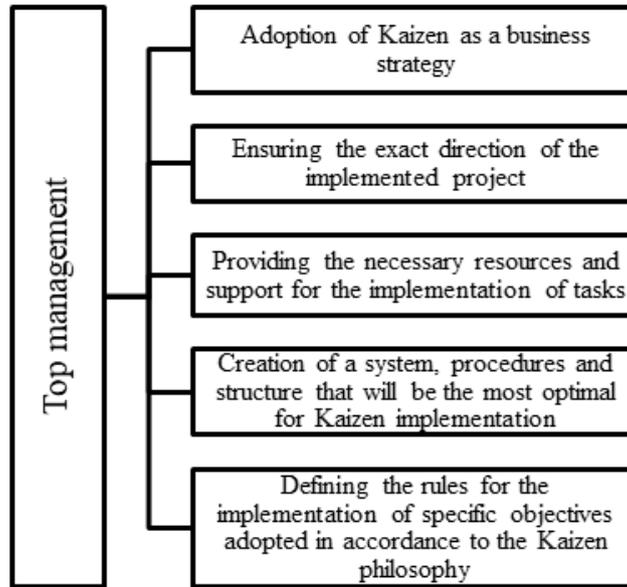


Figure 4. Tasks implemented by top management
Source: (Suárez-Barraza, Ramis-Pujol, Kerbache 2011, p. 230)

Tasks implemented by the medium-level managers in a company are presented in Figure 5.

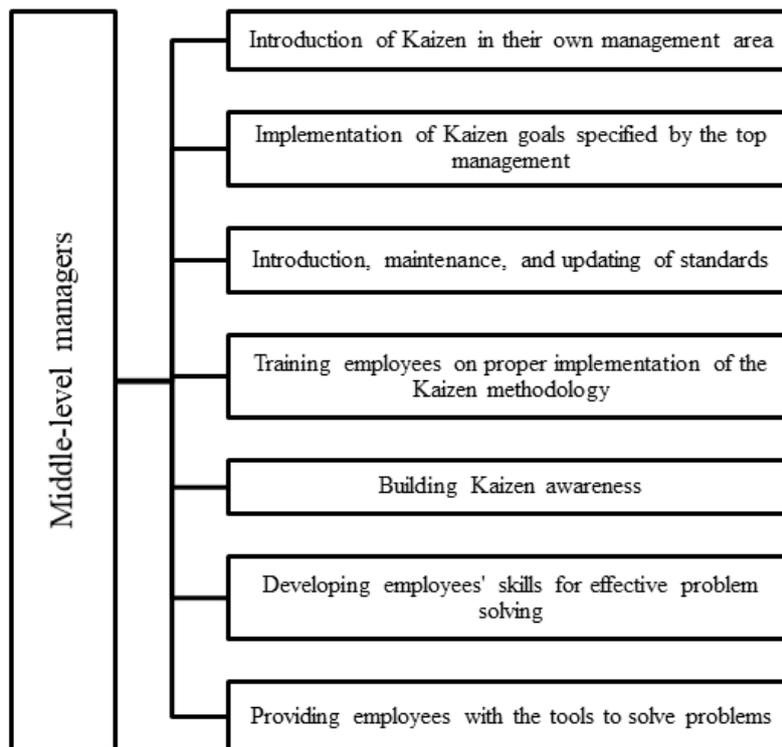


Figure 5. Tasks implemented by middle-level managers
Source: (Al Smadi 2009, p. 204)

Tasks implemented by the low-level managers in a company are presented in Figure 6.

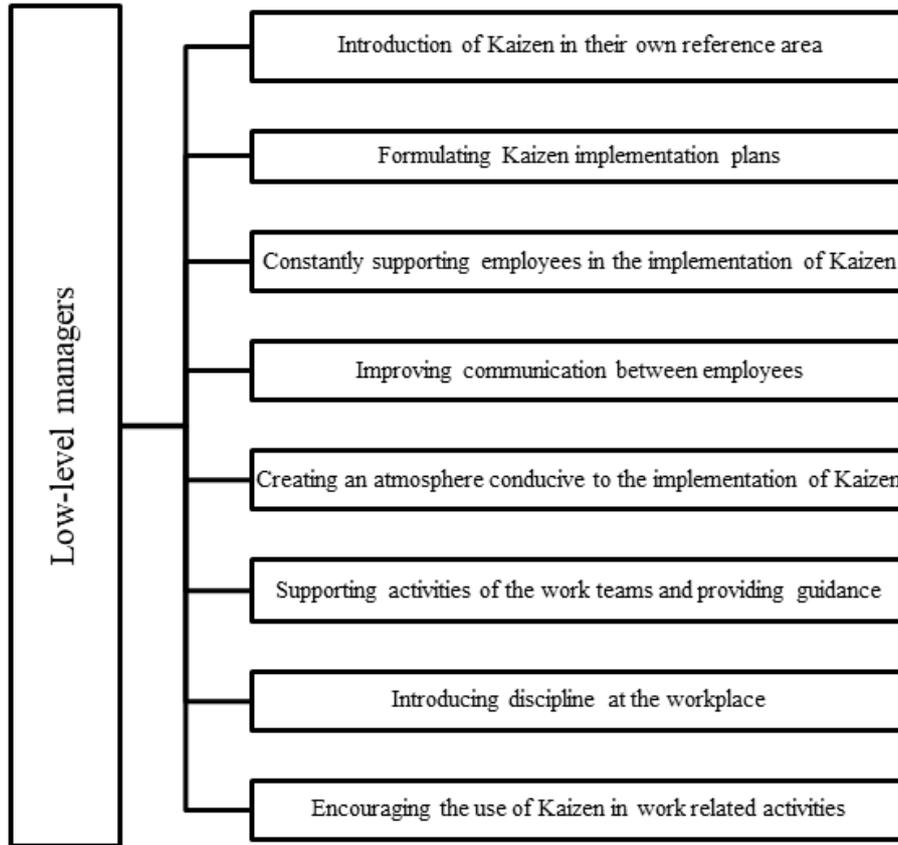


Figure 6. Tasks implemented by low-level managers
Source: (Suárez-Barraza, Ramis-Pujol, Kerbache 2011, p. 231)

The tasks performed by the employees of the company are presented in Figure 7.

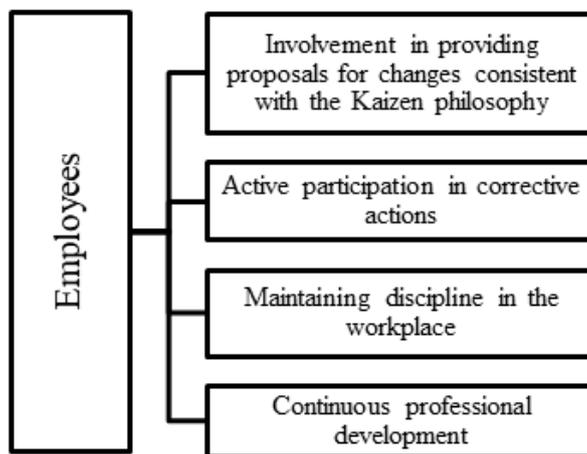


Figure 7. Tasks performed by the employees
Source: (Brunet, New 2003, p. 1430)

The tasks listed are only a fraction of the activities that can be carried out at any level of management. Due to its versatility, Kaizen can be used in all areas of the company's operations. It finds its application, among others, in:

- production processes,
- logistics,
- cost reduction,
- employee management,
- customer relationship management,
- health and safety management.

4. APPLICATION OF THE KAIZEN PHILOSOPHY IN THE COST ACCOUNTING

In the area of management accounting, the Kaizen philosophy takes the form of Kaizen Costing, an account of cost reduction or the cost of continuous improvement. This concept is used as a strategic tool for continuously lowering costs. It takes into account the entire value creation chain, and its application results in lower costs and improved work efficiency (Modarress, Ansari, Lockwood 2005, p. 1755). The area of cost management is an important area of the enterprise, which in practice determines the functioning of the entire business unit. Uncertain market conditions, globalization, and rising raw material prices make skillful cost management a key skill that allows the company to survive and develop (Drury 2013, p. 7).

As mentioned above, Kaizen Costing can be used in many different areas, however, it is the easiest to observe its presence in the product's life cycle. The placement of Kaizen Costing in this cycle is shown in Figure 8. The most important principle when using Kaizen cost accounting is to ensure that reducing costs does not entail a reduction of the final quality and value of the product for the customer. Three types of Kaizen Costing can be distinguished, which relate to different cost groups.

These include the cost account for (Horngren et al. 2002, p. 35):

- general production costs,
- individual product costs,
- period costs.

It can, therefore, be concluded that the essence of Kaizen Costing comes down to:

- determining the target level of costs in consultation with production employees,
- emphasis on cost reduction,
- constant improvement of operational efficiency,
- constant improvement of the production process,
- aiming to achieve the target level of costs,
- analysis of deviations arising after comparing target and realized costs.

The application of the above principles should be constantly accompanied by a systematic assessment of the effectiveness of the activities carried out. The appropriate use of Kaizen Costing is logically linked to the target cost accounting system and may complement the management accounting system that is used in the enterprise.

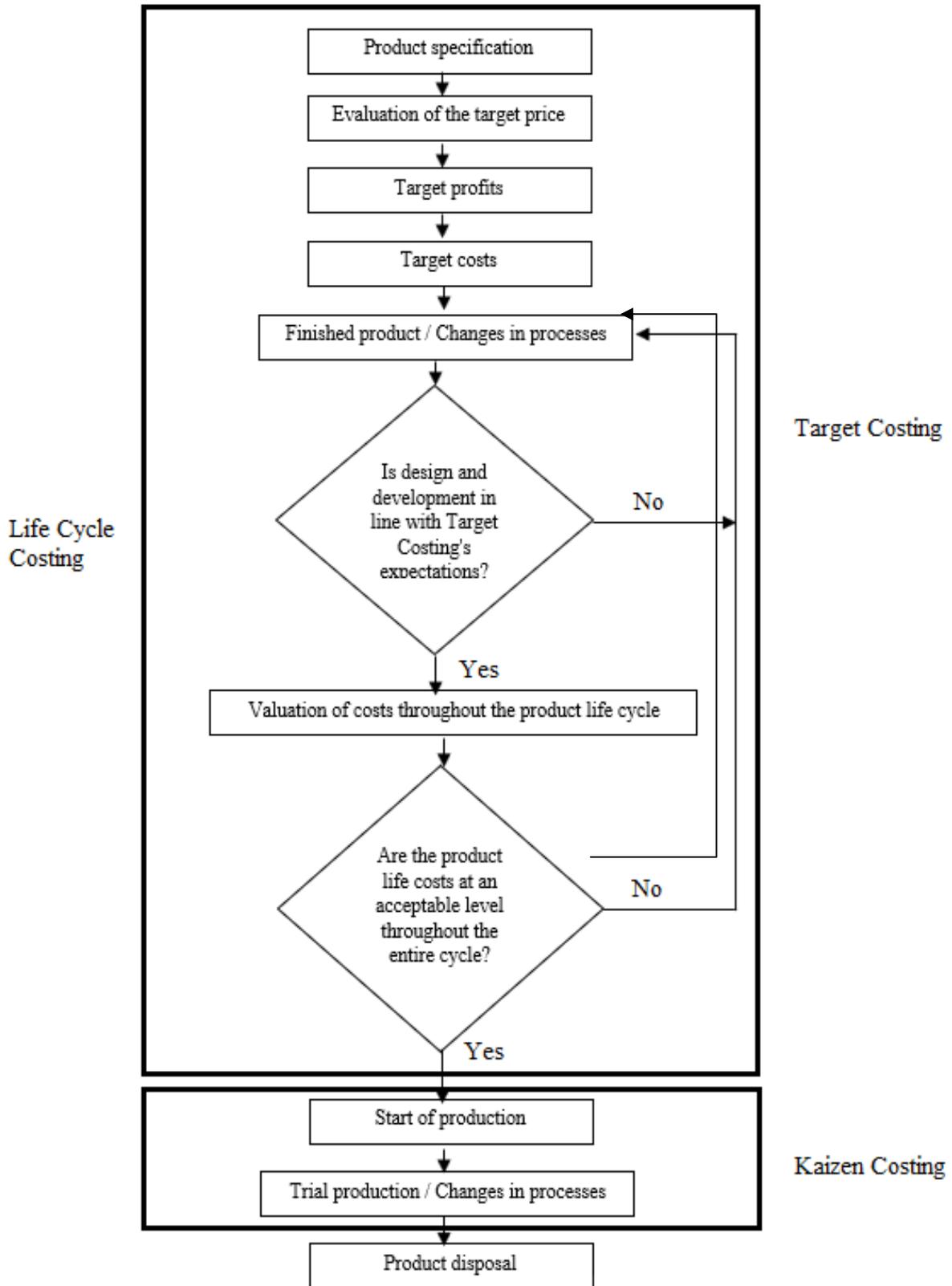


Figure 8. Kaizen Costing in the product's life cycle
Source: (Yang 2007, p. 3)

The strengths of Kaizen Costing include:

- possibility of continuous cost reduction
- employee involvement
- continuous process improvement
- low change costs
- small risk.

Among the weaknesses of the Kaizen Costing application, the following can be distinguished:

- no visible effects in the short term,
- difficulty in determining the effectiveness of implemented activities in areas other than costs.

5. PRACTICAL USE OF KAIZEN COSTING

The practical use of Kaizen Costing in an enterprise comes down to three stages. These include:

- stage I - determining the target amount of cost reduction,
- stage II - analysis of deviations at the level of target costs and profits,
- stage III - if there are deviations from the assumed target cost level, their causes, place of origin and responsible persons should be identified.

To present the practical use of budgeting and the cost reduction account, the case study method was used. It is a method that will best present the problems of the discussed issue. The KROSS company was used for the research. The company is involved in the production and sale of bicycles and has been operating on the market since 1990. Since 2010, it has been conducting international activities.

For the purpose of the research, a statement of revenues, costs and the financial result of the enterprise was made based on sample data. Based on the results obtained, the sales margin was calculated. The budget before applying the cost reduction account is presented in Table 3.

Table 3. Sales budget before cost reduction.

Budget of annual revenues and costs before reduction	
Specification	Traditional bike
Sales budget	
Sales (pcs.)	5 000,00
Unit price (PLN / pcs)	2 100,00

Sales revenues (PLN)	10 500 000,00
Production (pcs)	5 000,00
Direct materials (PLN / pcs)	1 200,00
Direct materials (PLN)	6 000 000,00
Direct wages (PLN / pcs)	370,00
Direct wages (PLN)	1 850 000,00
Other variable costs (PLN / pcs)	1,50
Other variable costs (PLN)	7 500,00
Unit variable cost (PLN / pcs)	1 571,50
Variable costs (PLN)	7 857 500,00

Source: author's own research

The budget of fixed department costs and management costs before cost reduction is presented in Table 4.

Table 4. The budget of fixed department costs and management costs before cost reduction.

Budget of fixed department costs	
Amortization (PLN)	300 000,00
Wages (PLN)	150 000,00
Supporting materials	20 000,00
Other costs	30 000,00
Fixed department costs in total (PLN)	500 000,00
Budget of management costs	
Management costs (PLN)	170 000,00

Source: author's own research

The pro forma income statement includes the gross and operating margin as well as the financial result achieved before the cost reduction. It allows calculation of the percentages of

the gross and operating margin and sales profitability, which will be used to determine the level of cost reduction. The statement is shown in Table 5.

Table 5. The pro forma income statement.

Pro forma income statement (before cost reduction)	
Specification	Traditional bike
Sales revenues	10 500 000,00
Variable costs (PLN)	7 857 500,00
Gross margin (PLN)	2 642 500,00
- Fixed department costs (PLN)	500 000,00
Operating margin (PLN)	2 142 500,00
- Fixed management costs	170 000,00
Financial result	1 972 500,00

Source: author's own research

The profitability of sales for the budget before cost reduction is presented in Table 6. Based on profitability resulting from the budget and the target profitability, a percentage and a value reduction of costs can be determined.

Table 6. Return on sales.

Return on sales (before cost reduction)	
Specification	Traditional bike
Gross margin ratio (%)	25,17%
Operating margin ratio (%)	20,40%
Return on sales (ROS %)	18,79%

Source: author's own research

The final profitability of sales before cost reduction was 18.79%. Based on this, the amount of cost reduction was decided. It was assumed that the desired return on sales is to amount to 35%. The target reduction of variable costs is presented in Table 7.

Table 7. Target reduction of variable costs.

Target reduction of variable costs	
The budget of sales revenues (PLN)	10 500 000,00
Target sales profitability (%)	35,00%
Target sales profit (PLN)	3 675 000,00
Budgeted sales profitability (%)	18,79%
Budgeted profit on sales (PLN)	1 972 500,00
The target amount of cost reduction (PLN)	1 702 500,00
Target rate of variable cost reduction (%)	21,67%

Source: author's own research

The target amounts of cost reduction per individual groups of variable costs are presented in Table 8.

Table 8. The target amounts of cost reduction per groups.

The target amounts of cost reduction	
Direct materials (PLN)	1 300 031,82
Direct wages (PLN)	400 843,14
Other variable costs (PLN)	1 625,04
Total (PLN)	1 702 500,00

Source: author's own research

Assuming a 35% return on sales results in a target cost reduction rate of 21.67%. For the purposes of this article, only variable costs have been reduced. The reduction rate is applied to individual groups of variable costs.

The next stage of the research was to prepare the budget of the revenues, costs and financial result of the company after the reduction of costs and to calculate the sales results. The budget after the cost reduction is presented in Table 9.

Table 9. Sales budget after cost reduction.

Budget of annual revenues and costs after reduction	
Specification	Traditional bike
Sales budget	
Sales (pcs.)	5 000,00
Unit price (PLN / pcs)	2 100,00
Sales revenues (PLN)	10 500 000,00
Production (pcs)	5 000,00
Direct materials (PLN / pcs)	939,99
Direct materials (PLN)	4 699 968,18
Direct wages (PLN / pcs)	289,83
Direct wages (PLN)	1 449 156,86
Other variable costs (PLN / pcs)	1,17
Other variable costs (PLN)	5 874,96
Unit variable cost (PLN / pcs)	1 231,00
Variable costs (PLN)	6 155 000,00

Source: author's own research

The budget of fixed department costs and management costs after cost reduction is presented in Table 10.

Table 10. The budget of fixed department costs and management costs after cost reduction.

Budget of fixed department costs	
Amortization (PLN)	300 000,00
Wages (PLN)	150 000,00
Supporting materials	20 000,00
Other costs	30 000,00

Fixed department costs in total (PLN)	500 000,00
Budget of management costs	
Management costs (PLN)	170 000,00

Source: author's own research

The pro forma income statement covering the gross and operating margin as well as the financial result achieved after the cost reduction made it possible to determine whether the targeted cost reduction was achieved. The statement is shown in Table 11.

Table 11. The pro forma income statement.

Pro forma income statement (after cost reduction)	
Specification	Traditional bike
Sales revenues	10 500 000,00
Variable costs (PLN)	6 155 000,00
Gross margin (PLN)	4 345 000,00
- Fixed department costs (PLN)	500 000,00
Operating margin (PLN)	3 845 000,00
- Fixed management costs	170 000,00
Financial result	3 675 000,00

Source: author's own research

Table 12. Return on sales.

Return on sales (after cost reduction)	
Specification	Traditional bike
Gross margin ratio (%)	41,38%
Operating margin ratio (%)	12,38%
Return on sales (ROS %)	35,00%

Source: author's own research

The profitability of sales for the company after cost reduction is presented in Table 12. The calculation of profitability achieved after applying the cost reduction account allowed to check whether the achieved profitability of sales was consistent with the assumed target profitability.

The final profitability after applying Kaizen Costing was 35%, which means that the assumed level of cost reduction was fully achieved. The list of selected financial values before and after the application of the cost reduction account is presented in Table 13.

Table 13. Comparison of the results before and after cost reduction.

Specification	Value before cost reduction	Value after cost reduction
Variable costs	7 857 500,00	6 155 000,00
Financial result	1 972 500,00	3 675 000,00
Return on sales	18,79%	35,00%

Source: author's own research

As can be seen, the application of the cost reduction account affected the amount of variable costs, financial result, and sales profitability. The value of variable costs was reduced by 1 700 000 PLN and the financial result increased by the same amount. It can, therefore, be concluded that the budgeting method and Kaizen Costing worked well in the case of the examined enterprise and allowed to achieve better financial results by introducing minor changes in the area of variable costs.

6. CONCLUSIONS

The purpose of the article was to show how the decision to use budgeting and Kaizen in the area of costs can translate into the company's financial results and its overall functioning. It was achieved by presenting the practical use of the Kaizen cost reduction account based on the example of the selected company in relation to the variable costs incurred in the production process.

The constant adherence to the Kaizen philosophy, the systematic introduction of minor corrections and improvements leads to noticeable results. When using Kaizen in the area of costs, it improves the company's financial results. With this in mind, if the management of the business unit wants to increase the productivity of the company and its various areas, it can introduce the principle of following the Kaizen philosophy. Having additional information about the extent to which costs can be reduced may contribute to other, more accurate management decisions. Budgeting, on the other hand, allows for a real look at the company's situation and what results it can achieve with the assumed production, sales, revenues, and costs. Based on the presented example of the use of the Kaizen cost reduction account, it can be stated that it is a useful tool that allows to effectively reduce costs. In the case of the KROSS company,

variable costs were reduced by 21.67%, while the profitability of sales was increased from 18.79% to 35%, which is a very good result.

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