

ZN WSH Zarządzanie 2020 (3), s. 27-39

Oryginalny artykuł naukowy

Original Article

Data wpływu/Received: 31.03.2020

Data recenzji/Accepted: 2.04.2020/20.04.2020

Data publikacji/Published: 30.09.2020

Źródła finansowania publikacji: Akademia Techniczno-Humanistyczna w Bielsku Białej, Wydział Zarządzania i Transportu

DOI: 10.5604/01.3001.0014.4506

Authors' Contribution:

(A) Study Design (projekt badania)

(B) Data Collection (zbieranie danych)

(C) Statistical Analysis (analiza statystyczna)

(D) Data Interpretation (interpretacja danych)

(E) Manuscript Preparation (redagowanie opracowania)

(F) Literature Search (badania literaturowe)

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THE INITIAL STAGE OF THE KAIZEN COSTING IN PRODUCTION COMPANY. CASE STUDY

WSTĘPNY ETAP KOSZTÓW KAIZEN W FIRMIE PRODUKCYJNEJ. STUDIUM PRZYPADKU

Abstract: The objective of the paper is to analyze the initial stage of the application of the kaizen costing techniques in the production company and to evaluate the results of kaizen costing implementation in FMCG company. The author's main aspiration is to present the benefits of using the kaizen and kaizen costing as low cost concepts to systematic reduction of the unnecessary costs in the company. In order to achieve these goals, author examined examples of kaizens in the enterprise and the way of settlement of their economic results.

Keywords: kaizen costing, management accounting, kaizen, cost management, decision making

Streszczenie: Celem artykułu jest analiza wstępnego etapu zastosowania technik kalkulacji kosztów kaizen w firmie produkcyjnej oraz analiza kalkulacji kosztów kaizen w firmie FMCG. Głównym dążeniem autora jest przedstawienie korzyści wynikających z zastosowania rachunku kosztów jako koncepcji o niskim koszcie do systematycznej redukcji niepotrzebnych kosztów w firmie. Aby osiągnąć te cele, autor zbadał przykłady kaizenów w przedsiębiorstwie i sposób rozliczenia ich wyników ekonomicznych.

Keywords: rachunek kosztów costing, rachunkowość zarządcza, kaizen, podejmowanie decyzji, zarządzanie kosztami

Introduction

New, practical concepts of costs management are needed to achieve by companies' complex goals. Constantly growing requirements of global economy requires from present-day companies to be stimulated to creative thinking and an to innovative management approach. Hence measurable financial success of the enterprise needs effective cost management based on the methods and tools that look for the costs reduction. Kaizen costing shall be perceived as method of management accounting that supports the improvement of the economic results of companies. The growing awareness of entrepreneurs allows to take advantage of systematic and continuous improving all processes in the enterprise. It requires continuous measurement of costs charged to the organization's activities and consistent striving to create and implement improvements that lead to the systematic costs optimization. Kaizen costing, answering these expectations, shall create system that is concentrated on measurement of results of the implemented improvements. It supports consciously defining goals related to gradual cost reduction for each department, product and process. Cost management in kaizen assumes slow and continuous optimization of processes in the company through the improvement of processes and the employee work method.

1. Cost management supported by kaizen costing

Companies operate currently in very complex and risky environment that requires ensuring of being competitive in all aspects of operating activity. Continuous costs improvement should be one of the survival anchors in the very competitive market. Changes, based on innovations in the market, constantly eliminate existing advantages, what means that companies should be prepared to implement new solutions. It regards even current competitive advantages, because new ones permanently appear and new products become as the standard. It makes necessary to

develop new solutions being the answer to the potential change. The bankruptcy of Thomas Cook is an example of such situation. Innovations damage existing business models and ruin large cost inflexible corporations – a change in the market affects the effectiveness of some business models.

The digitalization of the global markets makes very probable that butterfly effect can affect any company. The expansion of Google, Apple, Amazon and many other global BigTech companies make such effect much more probable than before. It requires from the top management to be prepared to keep the systematic process of ensuring the costs optimization in order to survive the probable turbulences. It is obvious that companies operational activity is inseparable from bearing costs. According to the principles of rational management, they should be at an optimal level. The cost optimization becomes one of the most important challenges that the production companies face when operate in the complex and very turbulence business environment. It should give some security buffer when risk materializes. Market dynamics forces production companies to implement activities aiming to secure the enhancement the market and economic position of the enterprise, or at least maintaining it at the same level. Otherwise, they will not be able to operate profitable in the long run. Hence production companies are under pressure to improve the production processes. Kaizen costing is one of the tool supporting this purpose. Conscious cost rationalization supports the financial situation of the company. What's more, it allows to strive for a certain level of profit from sales, not by increasing prices or increasing sales, but by controlling the target value of cost reduction.

Kaizen costing shall be perceived as cost management method based on the number of cost reduction steps, steering the elimination of waste in the production, assembly and distribution process as well as the elimination of useless work. It signifies management by continuous small costs improvements, regarding the relative small activities comparing to major improvements done thanks investments. Kaizen costing can be defined as the modern method of management accounting, creating mechanism for reducing and managing costs, which is now more and more often used in the pursuit of improving financial results by manufacturing companies. Kaizen costing (called as *costs reduction accounting* or *constant improvement costing*) shall create the system that aims to undertake actions striving to reduce the amount of costs incurred to the desired cost centers¹. It utilizes methods that practical application contributes to the improvement of production processes, what shall shorten production cycles, use resources more efficiently, or improve product quality. Kaizen costing involves continuous measurement of costs charged to the organization's activities and consistent striving to create and implement improvements. Kaizen costing focuses on measuring the nominal effects of implemented

¹ E. Nowak, R. Piechota, M. Wierzbński, *Rachunek kosztów w zarządzaniu przedsiębiorstwem*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2004, p. 142-144.

improvements. Hence it shall be perceived as costs management tool for existing products, although main focus is put on the costs drivers not product². This modern approach to cost management in an enterprise assumes a slow and continuous process of rationalizing mainly the operational area of companies. Important condition is constant improvement of processes and the style of work of employees. It relies on the profitability of the final production.

The cost reduction shall be planned in order to influence the change of the production process. Objective of kaizen costing is to reduce both the actual product production costs and the general overheads costs. It shall generate the reduction of operational costs of the company, what will be analysed on the real examples from kaizens done in the FMCG company. The characteristic feature of Kaizen, directly corresponding to kaizen costing, is the improvement of efficiency with relatively low financial investments. Kaizen shall create wide organization culture dependent from commitment of employees³. Small and systematic steps towards improving current processes provide high and measurable benefits in the long term. The improvement process shall last in the long run, even endless, because there can be assumed that always is space to execute production and administration tasks more efficient. Hence, each employee has important role to make independent improvement decisions, being motivated and empowered by management. General idea is that a single improvement shall be done on daily basis. Its careful estimation shall be the first step of each optimization activity⁴. On the other hand, kaizen is also a low risk approach, because company can always go back to old methods without incurring huge costs⁵. That is why kaizen costing do not relay on investments. An important element of kaizen costing is the fact that it is not a uniform concept consisting of a fixed set of rules and tools. For the purposes of process improvement, it can reach for many different instruments. Hence kaizen costing does not require the creation of dedicated organizational units in the company. The simplicity of this method allows to implemented it in all kinds of the companies. In the case of large entities, it gives the opportunity to generate savings in the number of organizational units. Kaizen costing is characterized by process orientation and supporting employees in daily reporting of improvements and analyzing ideas of improvement⁶.

The necessary condition of kaizen costing is to bring in the forefront the employees of entity and to motivate them support the achievement the company's ob-

² Kaizen costing focuses mostly on operational character and its development in the most efficient manner, occurring mainly during manufacturing of the existing products.

³ M. Imai, *Gemba Kaizen. Zdroworozsądkowe, niskokosztowe podejście do zarządzania*, MT Biznes we współpracy z KAIZEN Institute Polska, Warszawa 2006, p. 39-40.

⁴ E. Nowak, *Rachunkowość. Kurs podstawowy*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2016, s. 189-190.

⁵ M. Imai, *Gemba Kaizen...*, s. 41.

⁶ E. Nowak, R. Piechota, M. Wierzbński, *Rachunek...*, p. 151.

jectives⁷ (see for more in [1]). The continuous reduction of the costs requires integration in the management following dimensions⁸:

- 1) business environment – market and the competition;
- 2) integration of the skills of the various functions in the company;
- 3) contribution of the costs decision to the company competitiveness;
- 4) measurement of the costs improvement.

As was mentioned above, the main goal in kaizen costing is to eliminate losses and reduce costs mainly in production area: Costs are generated at every stage of production, from order placement, product design, through manufacture, maintenance, customer pickup and end of warranty period. It requires the cyclical analysis of the effectiveness of conducted activities in order to confirm that the taken action is appropriate to reach assumed results. There shall be eliminated all costs (understood as waste) that are not corresponding to the added value creation. Important is to understand of the demanding features of the optimization process.

Kaizen costing monitors the small costs savings that supports protection of the profit margins generated in the all areas of operating activity, especially in conditions of decreasing prices. Kaizen costing shall be characterized by focus on following issues concerning the production area:

- systematic cost reduction due to improvement of production processes and operational efficiency;
- achievement the intended goal, defined as the reduction of costs, broken down into individual departments of the enterprise and manufactured products;
- monitoring of the assumed cost reduction to the value of actually achieved reductions as part of the deviation analysis;

Kaizen costing regards mainly to overhead costs. Hence, analyzing possibility of usage kaizen costing in cost management, it cannot be applied in all stages of value-added calculation.

The advantage of kaizen costing is the undeniable fact that small and systematic steps towards improving process efficiency can bring high and measurable benefits in the long term. As was mentioned previously, the improvement process should be calculated constantly, because there is always something that can be done better, faster or with less work. The role of each employee is important, as he stands at the center of initiating any changes and is motivated to take further improvement actions. There is required an open dialogue between management and employees in order to develop the new techniques of continuous improvement. One of the first steps faced by kaizen costing is proper diagnosis of areas that need to be improved.

⁷ More in: D. Budogan, I. Georgescu, *Cost reduction by using budgeting via the kaizen method*, „Analele Științifice ale Universității Alexandru Ioan Cuza din Iași” 2009, No. LVI.

⁸ Ibidem.

2. Analysis of Kaizen projects implemented in the production area of FMCG company

Analysed FMCG company, striving to optimize costs, established program of continuous improvement done by small steps. Employees of the studied enterprise are encouraged to propose improvement actions under the Employee Ideas Program. This program creates a system motivating employees to make suggestions regarding improvements in the production process, safety and management process, in order to ensure continuous cost optimization mainly in the area of the production process. It should be executed by introducing a large number of small improvements thanks to the involvement of as many employees as possible in improvement activities, which resulted in more ideas, shorter implementation time and immediate effects.

The general idea is to reduce the costs involved in the value-added creation that is offered to customer. It shall allow both to increase profitability and to secure flexibility of pricing. When improvement idea is approved to be implemented, the employees have freedom in frames of approved budget to execute the cost reduction following the presented idea. Economic results are measured quarterly in order to evaluate the cost reduction progress. Sum of costs reduction shall be compared to companies' kaizen costs reduction plan.

As it was mentioned above any costs improvement proposals can be submitted in frames of the Employee Ideas Program – each employee can present a problem on the indicated form (*card before/after*) and propose, how it can be solved, while increasing the efficiency of a given area at the production plant. The effective instrument, used to execute targets of the Program, is card before/after that in the studied enterprise was defined as the fastest and at the same time the simplest method of implementing improvement. Prior to the implementation of the cards, the Employee Ideas Program required an approval process by the Department Manager and in many cases the involvement of additional staff in the improvement design process, such as a process optimization employees or production engineers. This was usually due to the fact that the proposed change required some small financial spending or support from outside the team at the design stage. The biggest advantage of the before / after cards is the fact that the source of waste can be identified directly by the operator working on the post, and thus by the employee who directly carries out the improved activity in the process. What's more, the implementation of small improvements can be made by the operator himself and does not require the intervention of the supervisor, but only information: In practice, this means that the operator himself identifies the problem or source of waste and documents it, then informs the department leader and independently introduces improvement in a given area. The idea itself is placed on a form established for this purpose, which compares the initial stage with the situation after the implementation of the improvement. The

form is usually based on photographic documentation to illustrate the change in the simplest way possible.

Improvement proposals, covered by Program, shall be divided into following groups:

1) **Production area** – area directly related to the production of finished products, concerns the operation of machines and the organization of production;

2) **Production and logistic administration area** – production administration, in particular regarding recording the materials, raw materials and packaging of the orders in the IT system;

3) **Rest of the enterprise** – departments of the company not directly related to production.

Examples of improvement proposals and analysis of their effectiveness will be presented below.

There is assumed in the yearly budget that new employees' proposals shall secure minimum accumulated value of 0,5 million PLN a year. The management of the company allows to be part of the program small investments that improve the operations of production assets – set prerequisite is secured period of return on investment in less than 1 year. The target of costs reduction is allocated into particular organization unit as target set for costs reduction after analysis of present costs reduction (implemented element of kaizen budgeting). Employees have access to related costs data, when they prepare cost reduction proposal. Such approach makes that kaizen costing process is consistent and repeatable. There shall be ensured that the set target for each organizational unit shall be both achievable and supporting the meeting of company's objectives⁹.

Chosen examples of improvements ideas in analyzed FMCG company are presented below:

- **Reduction of costs of water used by employees for social purposes (showers)** – the idea of improvement is to install aerators in showers, which should lead to a reduction in water consumption at the end of the shift. Planned cost reduction during the year is about 21,600 PLN for an investment of approx. 500 PLN. This generally means high benefits compared to investment. The use of an aerator avoids about 60% of the water consumed. The planned benefits consist of two components:

- 1) saved water – both water purchased and savage; approx. 720 cubic meters;
- 2) water heating – there can be assumed that water heating can cost 10 PLN/m³, because of being the part of production steam supply. This proposal regards production and logistics overheads.

This idea of improvement supplies not only the economic profits, but the environmental benefits, showing the company in positive way (also as part of CSR).

⁹ B. Modarress, A. Ansari, D.L. Lockwood, *Kaizen costing for lean manufacturing: a case study*, „International Journal of Production Research” 2007, No. 2.

- **Purchase of hair dryers** – the idea implemented, with a small investment – approx. 260 PLN, employee satisfaction was improved and disease prevention increased in the autumn and winter. The benefit consists of avoided need to replace an average of 4 people in winter time with persons from a temporary employment agency. It was assumed that the avoided monthly cost is 10,000 PLN (based on reduction of absence of 2 employee during the month) during 6 months. This proposal regards production and logistics overheads.

- **Replacement of packaging employees closing jars on the production line by a dedicated machine** – the proposed solution allows to reduce employment in the production line by 6 employees (2 persons per shift). This proposal belongs to the group of investments with a payback period of less than 1 year. The value of the investment is around 300,000 PLN. The costs that are saved are around PLN 360,000. The investment pay-back time is in period less than a year, which allows it to be implemented as proposed. The saving of 6 full-time jobs employees not only reduces fixed costs in the production department, but also allows to plan production employment more flexibly, which is especially important in the period of problems with recruiting employees. This proposal regards production overheads.

- **Replacement of packaging in heat-shrinkable film by cartons** – packing of ready-made products in bulk packaging was associated with the necessity to carry out many additional handling (manipulations and transportations): the need to manipulate the pallet in the production line, transporting the pallet to the neighboring hall, welding products in a special „oven”, stacking on the pallet, transporting the product to x-ray, passing through products by X-ray, pallet stacking, transport to the warehouse from a location other than the original production line. Additional costs associated with undesirable manipulation of the finished product generate annually about 215,000 PLN. The solution is to replace the packaging form with a carton. The annual cost of new way of packing is about PLN 130,000. This solution shall therefore save over PLN 80,000 a year and avoid employing 2 people. This proposal regards production variable costs.

- **Savings of film in the end of the roll by installing sensors in machines** - an optimization idea that allows to use film till end of the roll and reduce waste cost on selected production lines. Initial estimates assumed savings of 30,000 PLN a year. After installing and converting the sensor and analyzing the savings, it turned out that the improvement saved over 300,000 PLN. Investment costs totaled 7,000 PLN. This proposal regards production variable costs.

- **Spacers for stacker** – the investment, costing around 400 PLN, avoids damage of around 1,500 pallets, which saves approx. 40,000 PLN per year. This solution shall change safely the way, how pallets are stacked. Change of the pallet setting reduces observed damage due to easier access to the pallets. This proposal regards logistic overheads.

- **Reduction of the number of logistic documentation printouts** – the improvement idea that shall be identified as the allocated to the logistic administration area, concerns the reduction of printing copies of WZ documents (external delivery). After the idea was introduced, one copy of the previously printed WZ document was abandoned. Savings were analyzed as avoided use in the amount of paper and toner for the printer (7,000 sheets and 7 toners for the printer) and reduced space needed for storage of documents. The benefits obtained are about 1,500 PLN of saved office materials (every year) and 3,000 PLN of equipment for documents storage (one-off). This proposal regards logistic overheads.

- **Minimizing costs of car routes of sales representatives** – the optimization proposal that shall be allocated to the third group, related to the rest of company. The proposal of improvement concerns the installation of software that allows to minimize the daily routes of sales representatives, which is reflected in the reduction of kilometers traveled and improvement of the efficiency of store service. Estimated savings of fuel costs amounted to over 100,000 PLN per year. This proposal regards rest of company's overheads.

- **Installation of the button stopping the packaging machine** – improvement that saves annually ca. 20,000 PLN due to avoiding waste of film and unnecessary labor: Packing machine worker immediately turns off the machine, when it notices a discrepancy in production, instead to go to the switch, which takes about 30 seconds. It supports the cooperation with mechanics. This proposal regards production variable costs.

- **Reduction of the hand-wiping paper cost** – high costs of annual use of hand-wiping paper in toilets have been observed. The phenomenon occurs during each shift (8 hours). The solution is to install hand dryers with an air jet and to remove hangers for paper rolls. The gained savings are 10,000 PLN a year. This proposal regards production overheads.

Table 1 presents a summary of the results of initiatives concerning the operational activity improvements in the analyzed enterprise.

Table 1. Analysis of annual benefits obtained from the implemented improvement ideas
 Tabela 1. Analiza rocznych korzyści uzyskanych z wdrożonych pomysłów ulepszeń

Improvement proposal	Value of benefits (PLN/year)				
	material costs	logistic overheads	production overhead	production administration area costs	company overheads costs
Reduction of costs of water used by employees for social purposes			21,000		
Purchase of hair dryers			60,000		
Replacement of packaging employees closing jars on the production line by a dedicated machine			360,000		
Replacement of packaging in heat-shrinkable film by cartons	80,000				
Savings of film by installing sensors on machines	300,000				
Spacers for stacker		40,000			
Reduction of the number of logistic documentation printouts		4,500			
Minimizing costs of car routes of sales representatives					100,000
Installation of the button stopping the packaging machine	20,000				
Reduction of the hand-wiping paper cost					10,000

Source: own study.

The annually amount of yearly benefits gained thanks described above benefits, based on improvement ideas, is 999,500 PLN. It means the yearly cost reduction target that has to be managed in order to maintain it. There is worth to mentioned that there is difficult to find any improvement idea in production administration area – there was no such proposals in studied company.

The settlement of kaizen costing results takes place every quarter. Each of the line managers has within its incentive program (MBO) a set quarterly and annual goal for actually executed savings thanks to employee optimization proposals. The best ideas are also appreciated by the company's management and awarded at the annual company meeting during Christmas. The company's management indicates that this program is not only a valuable tool for improving the company's productivity, but also creates valuable support for Employer Branding activities, presenting examples of the most interesting implementations both in company Facebook and LinkedIn fan pages.

3. Final remarks

The low cost of the kaizen method allows the implementation in all kinds of enterprises, because it does not require the introduction of expensive management tools, what has been confirmed by comparing savings in relation to the cost of their implementation. The legitimacy of the above statement is confirmed by the fact that in the studied company in relatively short time and spending relatively low costs, instruments were launched that let accumulate quite large savings through minor but systematic improvement actions. It makes the kaizen costing very useful cost management instrument, creating the low costs system of costs reduction that can support company's success in very competitive and turbulent environment of global economy, ensuring to sustain product competitiveness.

The kaizen costing concept, also called as continuous improvement costing, has evolved on the basis of management accounting instruments from the kaizen concept. The idea is defined in literature as the systematic undertaking of actions aimed to reduce the amount of costs incurred to the desired value¹⁰. The cost management model that is discussed in the article, is not limited to the use of one, specific method, but combines all techniques and tools whose practical application contributes to the improvement of operational costs. At the same time, it is focused on the process itself and the method of its improvement and the employee who initiates the changes. This article is devoted to the most important relationships between the cost of continuous improvement and the interrelationships between the process of continuous improvement and kaizen costing.

¹⁰ J. Nesterak, M. Kołodziej-Hajdo, M.J. Kowalski, *Rachunek kosztów w praktyce przedsiębiorstw działających w Polsce*, Krakowska Szkoła Controllingu, Kraków 2017.

Cost management in accordance with kaizen costing in the studied FMCG company is based on a slow but systematic processes optimization and the implementation of costs improvements. As it results from the analysis carried out in this paper, based on the collected information, the continuous improvement cost accounting is the tool that works positive in a production company, which, using small but systematic steps, seeks to improve and optimize processes. The discussed examples of improvements confirmed both that kaizen costing does not have a universal set of tools and it gives the conscious and competent managerial staff the opportunity to utilize many different instruments. The crucial condition is that each employee individually receives the support of superiors. This approach has been implemented in the analyzed enterprise since the start of all optimization activities, which contributed to the achievement of positive results for the vast majority of activities undertaken. That is why, kaizen costing gives the company the possibility of real management by cost reduction, secured that employees from all levels of the organization are involved in the improvement process. It creates the synergy between various departments of the company.

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Nota o Autorze:

Dr hab. Dariusz Michalski, prof. ATH – ekspert w zagadnieniach kontroli zarządzania ze szczególnym uwzględnieniem controllingu, business controllingu i controllingu strategicznego, re-engineeringu i optymalizacji procesów oraz wyników ekonomicznych funkcjonowania przedsiębiorstw oraz zarządzania ryzykiem i jego controllingu, popartych wieloletnim doświadczeniem biznesowym oraz szeroką wiedzą teoretyczną. Autor i współautor książek poświęconych kontroli zarządzania i zarządzaniu ryzykiem oraz wielu publikacji poświęconych zarządzaniu i jego kontroli w przedsiębiorstwie, w tym zarządzaniu ryzykiem i jego controllingowi.

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