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Application of Kaizen and Kaizen Costing in SMEs

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Abstract

The research problem revolves around an attempt to answer the questions: “Are enterprises from the SME sector interested in implementing strategic management accounting instruments, including Kaizen Costing? Is Kaizen Costing more widely used in SMEs operating in Poland?” The aim of the article is therefore to highlight the importance of Kaizen and Kaizen Costing and to draw attention to how much support these solutions can be for SMEs in the current social, economic, and environmental conditions. The article presents the results of surveys conducted in this regard.

The accomplishment of the established objective of the work required conducting a review of the literature on the subject and presenting conclusions from previous own research in the above respect. The method of participant observation, critical analysis and synthesis was used in the study.

According to the research results, there is little interest in these instruments in large enterprises, however, in medium-sized enterprises, the interest and degree of application of Kaizen and Kaizen Costing is negligible. The research results indicate the need for further development and broadening the dialogue on the usability and benefits which enterprises, in particular SMEs, may derive from the introduction of such innovative solutions.

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1. Introduction

“Kaizen is the essence of continuous improvement. It is a way of thinking which encourages and empowers everyone to identify where and how even small changes can be made to benefit the business, their team or their individual performance.”
(Toyota Global Site, 2017).

Conducting a business activity in the modern world is a great challenge. This is related to numerous interactions with the environment, which may be a source of uncertainty and risk when making decisions, but may also create opportunities for rapid development and increasing profits. Taking advantage of these opportunities depends on whether the company's management will respond accurately to changes in the environment. And there are more and more changes, and they are becoming increasingly violent. They concern both economic and technological conditions. Additionally, there are climate changes, environmental degradation, the outbreak of the Covid-19 pandemic and the outbreak of the war in Ukraine as well as the change in the geopolitical situation. These events perfectly illustrate how globalized the contemporary world is, one of the more important features of which, closely

linked to technological development, is its “shrinking”. A much easier flow of goods, services, people, capital, or ideas is undoubtedly an advantage for the development of entrepreneurship. As a result, economic entities have a greater opportunity to internationalize their production on a global scale – both in terms of sourcing raw materials and access to new markets. This leads to the creation of a number of interdependencies – among others, economic ones, translating into the need to maintain and institutionalize cooperation to ensure economic safety. However, these interdependencies in the event of any crisis, cause a variety of threats, both economic and social.

The uncertainty of the continuity of supplies and turbulence in prices of both energy fuels and most raw materials cause that enterprises, in order to stay in the market, have to make difficult decisions and look for savings in every aspect of their operations.

When striving for the optimal use of limited resources, at the same time they attempt to accomplish the overarching objectives which is to achieve maximum customer satisfaction and high profitability both in the short and long term (see: e.g.,



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Kumar et al., 2022; Ulewicz et al., 2021; Krynke et al., 2021; Karcz and Ślusarczyk, 2021; Singh et al., 2021; Choudhary et al., 2019; Ulewicz and Blaskova, 2018). This requires internal changes in implemented processes to stay ahead of competitors and consumer desires, searching for management methods that support and improve the efficiency of a socially and environmentally responsible organization and effective cost management.

In the present dynamic business environment, entities need to constantly strive for self-improvement, thus becoming better and more efficient. Kaizen, a comprehensive concept and one of the best Japanese management philosophies, is of fundamental importance for the continuous improvement of the organization (Berhe, 2022; Kong and Muthuveloo, 2022; Jaca et al., 2018; Folejewska, 2013) as well as its derivative Kaizen Costing, which is one of the varieties of modern cost accounting used in cost management.

Cost management is an extremely vital issue in every organization, irrespective of its business profile, size, or the number of employees. All companies strive to achieve cost optimization (see more: Krynke, 2021; Klimecka-Tatar et al., 2021; Mazur and Momeni, 2019; Setamanit, 2019). The proper cost management system, adjusted to the size of the company, is a relevant factor which determines its long-term effectiveness (Gianetti et al., 2021; Pelz, 2019; Oboh and Ajibolade, 2017; Aaltola, 2019), as the generated cost information constitutes the foundation for making key business decisions, planning and control processes, identifying inefficiencies and deviations from specific standards, as well as taking corrective actions. Nowadays, when companies are facing growing challenges related to the need to digitize their processes while moving towards sustainable development, (Pedroso and Gomes, 2023; Denicolai et al., 2021) the use of managerial varieties of cost accounting is not only a great support but even a necessity. Due to the application of appropriately selected varieties of management cost accounting, managers have much faster access to detailed information which is necessary in decision-making processes (compare: Ojra et al., 2021; Alamri, 2019; CIMA, 2014; Cinquini and Tennuci, 2010; Langfield-Smith, 2008).

The author of this study, driven by the belief in the increasing importance of cost management in modern enterprises, has been carrying out the research in this area since 2019.

Nowadays, in most European countries, about 80-90% of enterprises are SMEs. Small and medium-sized enterprises are companies with distinctive characteristics, with certain professional and financial constraints, and having a specific culture, interests, and entrepreneurial spirit (Zighan and Dwaikat, 2021). These units often have access to much less information supporting the decision-making process and limited knowledge of the costs incurred. Knowledge of modern cost management tools is not common in this sector. Therefore, there is a need to diagnose the current state of SMEs regarding the use of managerial varieties of cost accounting and to promote their usefulness. Therefore, enterprises from this sector, specifically enterprises considered medium-sized (employing 50-250 people), were subjected to the empirical research.

In this study, it is attempted to answer the question "Are enterprises from the SME sector interested in implementing strategic management accounting instruments, including Kaizen Costing? Is Kaizen Costing more widely used in SMEs operating in Poland?"

The study of the literature on the subject allows for the conclusion that although Kaizen and Kaizen Costing are not new solutions, few studies refer to their wider application in SMEs operating in Poland. This is confirmed by the research results obtained by the author, which show that these solutions are relatively poorly known and used to a small extent by these enterprises. Therefore, the article contributes to the literature relating to cost management in SMEs in the current conditions. The objective of the article is to highlight the relevance of Kaizen and Kaizen Costing and to draw attention to how much support these solutions may constitute for SMEs in the present social, economic, and environmental conditions.

The accomplishment of the established objective of the work required conducting a review of the literature on the subject and presenting conclusions from previous own research in the above respect. The method of participant observation, critical analysis and synthesis was used in the study.

The research carried out by the author gives a view on the Polish practice representatives' interest in Kaizen and Kaizen Costing as tools which support enterprise management. According to the research results, there is little interest in these instruments in large enterprises, however, in medium-sized enterprises, the interest and degree of application of Kaizen and Kaizen Costing is negligible. These studies indicate the need to continue and expand the discussion on the usability and benefits which enterprises (particularly SMEs) may achieve when using these solutions.

2. Literature review

Kaizen

The origins of the *Kaizen* philosophy, and thus its meaning and essence, should be sought in Japanese culture, oriented to the philosophy of disciplined and continuous self-improvement, which is likely to stem from the Bushido samurai code in medieval Japan (Krasiński, 2014).

It is a philosophy that aims to introduce simple changes in the enterprise with small steps by using available resources to reduce waste (Krasiński, 2017). The teachings of different authors, such as, Feigenbaum, Deming, Ishikawa, Ohno, Imai, Juran, or Crosby and TWI training methods, Japanese idiosyncrasy, and Zen philosophy, have contributed to the creation of this new management philosophy. (Mendez and Vila-Alonso, 2018). Some authors attribute the beginning of *Kaizen* to the works of by William Deming (Krasiński, 2017; Miller et al., 2014; Maurer, 2012), concerning quality management and TWI (*training within industry*) programs initiated by the United States Department of War during World War II. Others, however, believe that *Kaizen* is related to the streamlining of processes in Toyota Motor Corporation in the 1950s and 1960s, like other significant management concepts, such as Total Quality Management (TQM), just in time (JIT) and Lean

Production (Batwara et al., 2023; Vanichchinchai, 2022; Álvarez-García, J., et al., 2018; Sanchez and Blanco, 2014; see more: Chiarini et al., 2018), the primary objective of which was to create low-cost improvements based on reduction in muda (waste). Kaizen was also considered as an important part of “Toyota Way” (Vanichchinchai, 2022; Saito and Saito, 2012).

The key elements in both cases are the aforementioned teaching of self-development, discipline and pride in one’s own work in Japanese culture (Suárez-Barraza et al., 2011b). Such an approach to management is recognized as an improvement strategy capable of ensuring operational excellence and innovation (Brunet and New, 2003).

On the other hand, the *Kaizen* term itself was first introduced and used by M. Imai in 1986 in his book *Kaizen – The Key to Japan’s Competitive Success* (Imai, 1986) to improve the performance, productivity, and competitiveness just of Toyota Motor Corporation, as a result of the increasing competition and the pressures of globalization. Since then, it has become a part of the Japanese production system and considerably contributed to its success, arousing a great interest among researchers, managers, and employees. However, it is not a particular tool or a specific technique, but an umbrella concept, including most “exclusively Japanese” practices which have gained worldwide fame, such as, Kanban, JIT, zero defect or TQM (Álvarez-García et al., 2018; Chiarini et al., 2018; Suárez-Barraza et al., 2011a; Singh and Singh, 2009).

Since the moment of the introduction of the *Kaizen* concept by Masaaki Imai, this term has gained popularity and is perceived as a key element of the competitiveness of enterprises.

Very extensive literature on the *Kaizen* philosophy is available now, which provides a global view of both practices and research carried out in this field (see more: Berhe et al., 2023; Berhe, 2022; Álvarez-García et al., 2018; Chen et al., 2018; Chung, 2018; Sanchez and Blanco, 2014; Singh and Singh, 2009).

The word itself is defined in a number of ways, from a philosophy, a concept of enterprise management, through a method of managing a team of employees to the name of a tool to collect employee ideas (after Krasiński, 2017; Suárez-Barraza et al., 2011a).

Therefore, *Kaizen* is particularly a managerial approach which aims at achieving a competitive advantage through continuous learning (Samadhiya, et al., 2023) and small and gradual improvement of the processes of any organization (Khan et al., 2019; Sordan et al., 2022; Goni et al., 2018). S. Sugimoto (2018) adds that *Kaizen* encompasses activities that bridge the gap between the current state and the ideal state by addressing the issues. *Kaizen* is therefore oriented towards processes, improvement and maintenance of standards and staff. Many authors rightly suggest that the key to achieving the continuous improvement (CI) process through *Kaizen* is to encourage employee cooperation and participation (Mendez and Vila-Alonso, 2018; Brunet and New, 2003; Dahlggaard-Park, 2011; Suárez-Barraza et al., 2010). The daily efforts of employees and managers promote the culture of continuous improvement in which learning and innovation make *Kaizen*

success profitable (Jaca et al., 2018; Alvarado-Ramírez et al., 2018; Iwao 2017; Walentynowicz, 2016). This is also the basis for lean thinking.

In the research carried out by Brunet and New (2003) on Japanese organizations, a wide range of the ways of understanding and use of the *Kaizen* philosophy was observed, indicating that its methodology may, in time, adapt to the characteristics of each organization and reflect the changing conditions.

Therefore, to really appreciate the power and potential of *Kaizen*, it is necessary to take a deeper look at the “philosophical grounds” of *Kaizen*. Such an exploration of the philosophical grounds is essential not only for „*Kaizen* as a management philosophy”, but also for considering *Kaizen* as a TQM component, an event, technique, method, or any other “versions” (Chung, 2018).

It should be noted that, in Western culture, *Kaizen* is increasingly interpreted as continuous improvement (CI) and it is a new requirement for increasing competitiveness in the era of sustainable development (see: Klein et al., 2022; Singh and Aggarwal, 2022; Hailu et al., 2018; Kumar et al., 2018). This is consistent with previous research conducted by Suárez-Barraza, Ramis-Pujol and Kerbache (2011a), who, in their research, identified two versions of *Kaizen*: a Japanese version of *Kaizen*, defined by Imai (2012) and a western interpretation of *Kaizen* precisely referred to as “continuous improvement (CI)”. It should be noted that the definition of *Kaizen* suggested by Imai also consists of “CI”. However, as pinpointed by the author (Imai 2013), *Kaizen* is not only CI, but rather large-scale improvement, in the entire company, daily improvement, improvement of everyone and improvement everywhere, therefore, it is gradual, orderly, and systematic improvement. And the improvement in the enterprise is an endless search for ways to improve the quality of products and to increase the productivity of manufacturing processes in the company to better meet customer requirements. On the basis of the conducted research, Carnerud, Jaca and Bäckström (2018) prove that many authors, including the guru, such as Masaki Imai, Taiichi Ohno, Shigeo Shingo, Hiroyuki Hirano and Edward Deming, indicate that one of the common aspects of *Kaizen* and CI is that they are both keys to productivity in every organization since they concern the improvement in both business processes and employee development.

Kaizen interpreted as continuous improvement (CI), improves the efficiency of many operating systems. The improvement and adaptation of production methods has benefited numerous manufacturing companies (Silvestre and Fonseca, 2020). It is based on the implementation and integration of five essential tools, i.e. Lean Management (LM), Total Quality Management (TQM), Supply Chain Management (SCM), Innovation Management (IM) and Lean Six Sigma (LSS) (Zhou, 2016; Cherrafiet al., 2017, 2018; Duarte and Cruz-Machado, 2019; Dametew et al., 2020; Daniyan et al., 2022; Singh and Aggarwal, 2022; Hwihanus et al., 2022; Lepistö et al., 2022; Klein et al., 2022). The synthesis of these concepts into an integrated framework results in combining the best of the five programs as the latest generation improve-

ment technique that integrates human and strategic (or technical) elements into a program that sequences Kaizen improvement into an overall approach to industrial performance and business development. The integration of this philosophy is known as the Integrated Kaizen Philosophy or Continuous Improvement Framework (IKPF or ICIF) (Berhe et al., 2023).

The above considerations allow for the conclusion that what we call *kaizen* now has matured within the framework of the practical improvement of a single system - the Toyota production system in Toyota Motor Company in Japan. Although this system may serve as an excellent pattern of the *Kaizen* culture, developed, and maintained over years, it must be remembered that the Toyota production system is only a visible manifestation of values and beliefs underlying this culture (Miller et al., 2014).

The studies based on the Kaizen philosophy conducted in the countries other than Japan, suggest that the concept of *Kaizen* has been accepted and assimilated in many countries (Kong and Muthuveloo, 2022; Carneiro et al., 2022; Hailu et al., 2020; Carnerud et al., 2018; Alvarado-Ramírez et al., 2018; Fonseca, and Dominguez, 2018; Otsuka et al., 2018; Maarof, Mahmud, 2016; Addmasu, 2015; Arya and Jain, 2014; Suárez-Barraza and Smith, 2014; Glover et al., 2011, 2013). However, despite its worldwide spread, many researchers have shown the difficulties encountered by companies outside Japan concerning the introduction of the *Kaizen* tools in their own organizations (Carneiro et al., 2023; Berhe, 2022; Goshime et al., 2018; Lina and Ullah, 2019; Alvarado-Ramírez et al., 2018; Marin-Garcia et al., 2018; Ma et al., 2017).

The most frequently mentioned barriers to the use of Kaizen include lack of staff involvement; limited resources (time, money, and staff); lack of automated systems, excessive emphasis on linking Kaizen with key performance indicators (KPIs); lack of formal involvement and support from top management; low understanding of Kaizen and resistance to change (custom, fear, etc.) (Berhe, 2022; Ćwikła et al., 2017; Alvarado-Ramírez et al., 2018).

The Kaizen philosophy has proven its impact on the effectiveness and efficiency of the organization. Therefore, top management planning to implement the Kaizen philosophy should consider what factors should be taken into account to ensure successful implementation. Cultural or technological aspects may influence the success of the application of this concept. Kaizen may result in implementation failure if not properly adopted. Failure raises the question if the applied techniques are appropriate for different companies from various cultures and different regions. Although Kaizen has been adopted in several developed countries and has brought tangible benefits (Omotayo et al., 2018), it has created many problems in others (Janjic et al., 2020). These problems have been attributed to the view that Kaizen is the most challenging philosophy when translating beyond the original Japanese culture (Yokozawa and Steenhuis, 2013).

This is mainly due to the lack of understanding of the *Kaizen* philosophy due to cultural constraints and ambiguity of the concept. Many conducted studies prove that cultural differences make it difficult to adopt and implement and maintain Kaizen in the long run (Carneiro et al., 2023; Aoki, 2020;

Agndal and Nilsson, 2019; De Keyser et al., 2019; Huikku et al., 2017; Jurburg et al., 2017; Jurburg et al., 2016; Macpherson et al., 2015; García et al., 2014). The implementation of Kaizen requires a change in the organizational structure and such work takes years. The *Keizen* culture must fit itself in the organization's structures (Miller et al., 2014; Siew Mui et al., 2021; Kong and Muthuveloo, 2022; Omotayo et al., 2018). It is a culture in which there is great commitment and support from management for their employees. Employee commitment and creativity is supported by encouraging them to show greater initiative and willingness to perform activities beyond their mandatory scope (Aamer et al., 2021; Ferreira-da-Silva et al., 2020; Mui and Muthuveloo, 2019, Wiśniewska 2021; Krasinski 2014).

Previous research has proven that in the absence of an appropriate culture, especially a culture based on innovation (Kong and Muthuveloo, 2022), long-term changes do not occur in organizations (Siew Mui et al., 2021; Kong and Muthuveloo, 2022). Kaizen is a set of small and incremental innovations introduced by employees over a long period of time (Iwao, 2017), therefore an innovation-driven culture can play a large role in the success of Kaizen (Kong and Muthuveloo, 2022), and the integration of Kaizen with innovation initiatives helps in achieving satisfactory results (Lins et al., 2021). As Stankiewicz-Mróz (2016) rightly notes, the implementation of patterns derived from Japanese culture operating within European culture into the practice of organizational management poses a risk of some distortion of the Kaizen idea, reducing it only to the role of a tool in the lean manufacturing system. Kaizen comes from a collectivistic culture in which employment is long-term and where loyalty to the employer and good relationships with other employees are valuable.

The above considerations indicate that applying Kaizen is not always easy. There are qualitative and quantitative benefits recognized in the literature. In qualitative terms, the benefits are linked to the human resources of the organization involved in the process of continuous improvement (Piasecka, Ludwiczak, Tutko, 2021; De Menezes, 2012; see more: Alvarado-Ramírez et al., 2018), where the presence of managers is crucial to achieve an improvement in the skills of employees, in addition to remarkable motivation, participation and training (Smadi, 2009).

In quantitative terms, the benefits are related to the economic component (Alvaro-Ramirez et al., 2018) and are linked to increased productivity, shortening the stages of production processes, an increase in inventory turnover, reduction in costs, reduction in defects. (Suárez-Barraza and Miguel-Dávila, 2011a, 2011b). In this way, the implementation of *Kaizen* is attractive to both numerous enterprises from various industries and public organizations, since it allows for using the maximum potential of human resources and thus enjoying countless economic benefits (Oropesa et al., 2016; Oropesa-Vento et al., 2015, Topuz and Arasan, 2013).

Kaizen Costing

The use of modern technologies characteristic of Japanese strategic management, along with new solutions in the field of cost measurement and its reduction, enabled the production of high-quality products, in line with customer expectations. On

the ground of management accounting form the *Kaizen* concept, *Kaizen Costing* has evolved, i.e., continuous improvement cost accounting (Suárez-Barraza and Miguel-Dávila, 2014; Omotayo and Kulatunga, 2015; Kumar et al., 2018). Like the *Kaizen* philosophy, it was first applied in the 1950s in Toyota Motor Corporation (Arya and Jain, 2014; Brunet and New, 2003).

Kaizen Costing is recognized as one of modern concepts which are based on gradual and continuous improvement in production, which helps to reduce costs, achieve competitive advantage, and rationalize strategic cost management (Alvarado-Ramírez et al., 2018; Gonzalez-Aleu et al., 2018; Baker Al-Barghuthia et al., 2020; Janjić et al., 2019).

Continuous improvement cost accounting, like the *Kaizen* concept itself, is not unequivocally characterized in the subject literature in relation to the principles, opportunities, and areas of its use. It is certainly an integral part of modern strategic management accounting systems, i.e., ABC or Lean Management Accounting (along with a quality cost account and Target Costing) (see, e.g., Suárez-Barraza et al., 2013; Sobańska, 2013; Suárez-Barraza and Miguel-Dávila, 2014; Pozesky and Stoner 2017; Fliedner, 2018; DeBusk, 2015).

Currently, it is considered as a strategic tool for continuous, systematic cost reduction. This account focuses on the continuous search and implementation of changes to the entire value chain and the improvement in the effectiveness of work in terms of cost and finance of the unit. The direct effect of the use of this concept is cost minimization, an increase in resource efficiency, process optimization, improvement in the quality of products offered and increased competitiveness of the unit (Iwao, 2017; Macpherson et al., 2015; Kaur and Kaur, 2013; Singh and Singh, 2012). After Rahmanianem and Rahmatinejadem (2013), Sugimoto (2018) or Omotayo et al. (2020), it can be stated briefly that *Kaizen Costing* is a continuous improvement in cost management.

To implement the system of „continuous improvement”, it is necessary to specify the area of improvements, then analyze and select major problems for the economic unit, establish the arguments for improvements, plan remedial measures, to subsequently implement, compare the results, and conduct standardization. A very important stage is standardization since it ensures the sustainability and continuity of improvements (Imai, 1997; Kikuchi and Suzuki, 2018). The importance of standardization comes to the essence of *Kaizen Costing*. Suárez-Barraza et al. (2011a), Suárez-Barraza and Miguel-Dávila (2014) and Omotayo and Kulatunga (2015) identified the utility of *Kaizen Costing* in cost minimization, value creation, achieving profitability, and customer satisfaction.

The concept of *Kaizen Costing* is characterized by applying small steps which do not require large financial outlays from the entity. Setting cost reduction objectives takes place using appropriate measures, both financial and non-financial (Omotayo, Kulatunga, 2015). Such an approach in cost management may constitute a source of savings for the entity resources and allow for the implementation of its primary objective which is to maximize efficiency and financial result.

However, all the activities related to cost reduction should take into account the product value clearly defined for the customer, aimed at the quality and functionality of the product. Therefore, the actions taken cannot reduce the final utility of the product (Al-Barghuthi et al., 2020; Vento et al., 2016).

The most frequently indicated is the use of *Kaizen Costing* in supporting the target costing account and searching for activities enabling the achievement of the planned target cost already at the stage of the product manufacture. The second possibility of using it concerns the constant search for actions reducing costs in all aspects of the company's operation to achieve the planned level of profit. This is closely linked to the annual budgeting of the enterprise (Shim, 2011; Sani and Allahverdizadeh, 2012). The activities are systematically conducted, period by period. The relationship of *Kaizen Costing* with the overall planning and budgeting costs ensures that the economic entity may control its progress towards long-term objectives without limiting itself to the execution of standard costs and determining deviations in the traditional cost control system based on standard cost accounting. The emphasis is not on the standards themselves, but on the search for opportunities to improve processes. Therefore, *Kaizen Costing* assumes the continuous verification of the target cost by the actual cost reduction from the past period and re-determination of the target cost, which is the starting point for searching for improvements in subsequent periods (Ramezani and Razmeh, 2014; Omotayo et al., 2020).

Nowadays, more and more often in the literature, one may come across the term of *Kaizen budgeting*, which is related to the fact that the concepts of *Kaizen* budgeting are becoming increasingly common and are adopted by a growing number of companies. These concepts were examined, and it was indicated that they improve business activities and lead to an increase in competitiveness when correctly implemented (Oyadomari et al., 2018; Ihrig et al., 2017; Neelakantam, 2015; Pazarceviren, et al., 2015).

Despite the great interest in strategic cost management and the *Kaizen* philosophy, the studies so far indicate that relatively few companies have implemented these solutions (Alves et al., 2022; Omotayo et al. 2015, Singh and Singh 2012). However, few of these studies refer to enterprises operating in Poland, especially from the SME group. Therefore, this study aims to fill this research gap.

Based on the above arguments, the following hypotheses were formulated:

Hypothesis 1. There is a relationship between the degree of *Kaizen* and *Kaizen Costing* application and the size of enterprises.

Hypothesis 2. There is a positive relationship between commitment to pro-quality management and interest in *Kaizen* and *Kaizen Costing*.

3. Methodology

Since the author of this study initiated survey research in 2019, the main goal has been to obtain information about the use of modern forms of cost accounting by contemporary enterprises. (see more: Biadacz, 2021). A vital determinant is

also to recognize the degree of pro-quality cost accounting application depending on the company's size. The research was focused on enterprises from the SME sector, constituting approximately 99.8% of all businesses in Poland. Their special role in the economy of each country is increasingly emphasized. They are considered a stimulator of economic development, and their functioning is a sign of healthy competition and reflects the entrepreneurial spirit of the society. This sector is characterized by a dynamic approach to the environment, as it is able to quickly respond to emerging and changing consumer needs. Enterprises from the SME group are also able to create new value for potential buyers. Very often, they operate on the basis of production based not on economies of scale, but on the constant search for market niches in which they can actively operate and are not threatened by competition, i.e., large enterprises.

Before embarking on the survey research, pilot studies were conducted to identify the target research group. The pilot research was carried out in the form of personal interviews with management teams of selected manufacturing and service companies from the SME sector to determine the target research group.

The vast majority of SMEs are micro-enterprises (97% of all enterprises) and small enterprises (2.2%), encountering numerous threats and barriers. Frequently, the reason for their emergence are internal factors resulting from the very structure of the company (see more: e.g., Biadacz, 2021). Most of all entrepreneurs in the SME sector are natural persons conducting business activity (87.1%) using simplified forms of records only for tax purposes (Report, 2022).

Such units have access to a significantly smaller resource of information supporting the decision-making process and limited knowledge of the costs incurred. Small entities, even if they keep accounting books, very often apply simplified records of incurred costs, useful only for reporting purposes and do not use any tools supporting the decision-making process. Therefore, medium-sized enterprises, hiring from 50 to 250 employees, were chosen as the target research group. Subsequently, the same research was carried out on a randomly selected group of large enterprises.

Interviews with the management staff of SMEs carried out as part of the pilot study were a valuable source of information on cost accounting solutions used for both reporting and decision-making purposes. This information was utilized not only when choosing the target group but also when formulating the survey questions. After developing the initial form of the survey, the managers of selected companies were asked to complete it and provide their both substantive and technical comments, which were used to create the final form of the survey.

The survey consists of 3 parts: demographics and data characterizing the company; questions regarding cost accounting and questions regarding the application of quality cost accounting and pro-quality cost accounting (including Kaizen Costing). The survey was conducted in years 2019-2020 using the CATI/CAWI method by an external company. Since recently, due to the outbreak of the pandemic and the war in Ukraine, there have been rapid changes in the environment of enterprises, surveys are repeated in order to verify what impact

the current geopolitical situation and the occurring crisis phenomena have had on the functioning of enterprises (especially in the SME sector).

The survey was carried out on a representative group of enterprises from the sectors of production, service, and production and service companies. 400 companies hiring 50-250 employees (medium-sized companies) and 301 companies hiring more than 250 employees (large companies) participated in the survey. The scope of the research was nationwide. The ordinal and dichotomous scale was used in the study. For this reason, the formula for the structure index was considered as appropriate to determine the minimum sample size (compare: Biadacz, 2021; Biadacz, 2022).

Assuming a 5% error, the minimum sample size of 385 was set. The received sample $N=400$ satisfies this condition. For 14433 medium-sized companies (operating in 2020), it is 2.8%. The comparative sample is smaller (significant with an error of 6%), but it covers over 8% of the population, which is 3665 entities hiring over 250 people. The received samples (in both approaches) ought to be found correct as to the size, but when drawing conclusions on their basis (and generalizing the results) one should draw attention to the possible mismatch due to the sample structure. Its breakdown from the point of view of categories that are not subject to detailed research in this analysis may not be completely identical to the ones occurring in the population. The survey questions were verified as to the quality using Cronbach's alpha. The received value $\alpha = 0.822$ for aggregated data and each time exceeding 0.700 for individual issues shows that the scales applied, and the sequence of questions are appropriate. Due to the scale used in the study, Wilcoxon pair tests and Mann-Whitney U test were applied for comparing the scores of individual targets. To examine the correlation, Youl coefficient based on χ^2 statistics was used. In the study, 0.05 was utilized as a significance level for the tests applied. Similar assumptions were made for large entities (see also: Biadacz, 2022).

The material obtained as a result of the survey was subject to the analysis and statistical inference. This allowed, among others, for determining the relationships between the use of individual solutions and cost accounting instruments and the characteristics of enterprises from the target group, assessing the degree of application and interest in pro-quality cost accounting.

In order to verify the hypotheses, an excerpt from the research on the use and interest in *Kaizen Costing* in the target group of medium-sized enterprises and in the group of large enterprises is presented in the article.

4. Analysis of the results of the conducted research

Among SMEs, the questionnaire was primarily completed by national operators (manufacturing and selling products/ offering services in the domestic market) – 93.75%. The surveyed SME respondents mostly perform their business activities in the area of service provision - 82.75% of all the surveyed units, 24% - in production. It should be noted that the respondents could indicate more than one answer, as the target group also included service and production enterprises,

and the percentage reference applies to all surveyed enterprises.

In the group of the surveyed respondents of large entities, national operators amounted to 50.83%, international companies - 24.25%, and multinational companies - 21.93%. In this case, 78.4% of entities declared production profile and 46.51% - services.

Among the surveyed SME respondents, companies with 100% share of national capital amounted to 88.5%. In the case of 4.5% of enterprises, foreign capital amounts to at least 50%, and in 5.75% of all the respondents, only foreign capital is used for financing. Among large enterprises, companies with 100% share of national capital amounted to 81.06%, enterprises with a share of foreign capital of over 50% - 3.65%, and those financed exclusively with foreign capital - 13.95%. The vast majority of the surveyed enterprises have been operating in the market for more than 15 years, 87% of medium entities, and 78.95% of large enterprises. For more than 6 years: 10.75% of medium companies, and 11.63% of large enterprises. The analysis of the population of the surveyed entities from the perspective of the adopted strategy of conquering the market allows for the conclusion that over 73% of the surveyed entities apply the differentiation strategy providing special products (services) largely offering their products or services to a large number of customers. On the other hand, in the group of large enterprises, the dominant strategy is the cost strategy (60.14%). Of these, 47.18% of the respondents declare the provision of mass quantities of products or services.

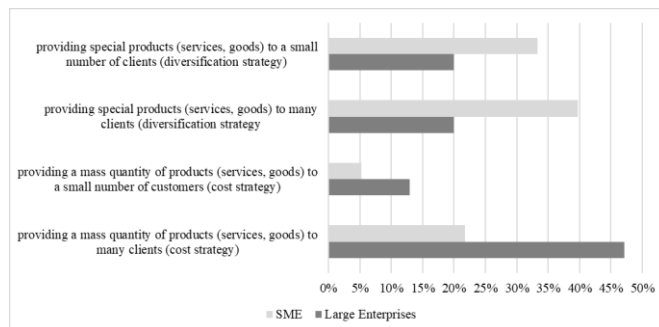


Fig.1 Basic areas of activity of the surveyed enterprises

One of vital areas of the conducted research was the cost accounting system applied by the respondents. The data presented in Fig. 2 show that, in the surveyed group of medium-sized entities, 53% keep simplified records of operating costs (including: 47% keep accounts of operating costs in the company only in the costs by type system, 6% - only in the costs by functions system. These results are not surprising as this is a normal trend which has been going on for years. Interestingly, also in the group of large enterprises, a relatively large percentage of companies indicated simplified accounts of operating costs only by type (35.22%), 9.63% keep accounts only by functions.

Such results are somehow surprising, as large entities are more likely expected to have detailed knowledge of the costs incurred, and the simplified option cannot provide sufficient information needed for the decision-making process or for calculating the unit cost.

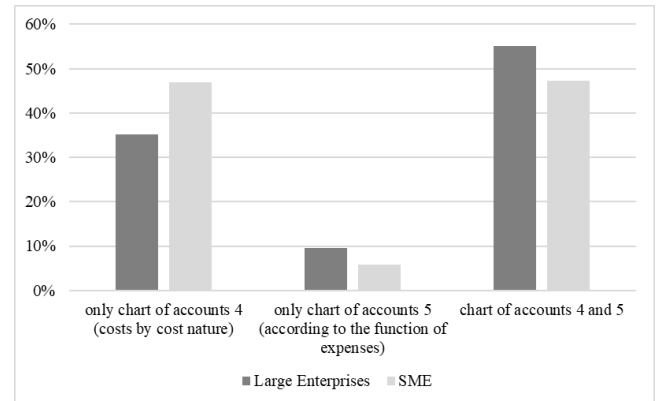


Fig. 2. Method of keeping accounts of operating costs in the surveyed enterprises

Subsequently, the question was asked about the role of the cost accounting applied. The opinions of the enterprises under study point out that the cost accounting used is a source of data primarily: for reporting purposes (69.75% of SMEs and 89.37% of large companies). Significantly, 41.5% of the SME respondents indicated that the applied cost accounting is a source of information vital for effective enterprise management. The percentage was much lower (35.88%) among large companies, which may indicate the awareness that traditional accounting solutions are not a sufficient source of information in the surrounding turbulent economic reality. Figure 3 illustrates a full range of responses to the above question of those surveyed.

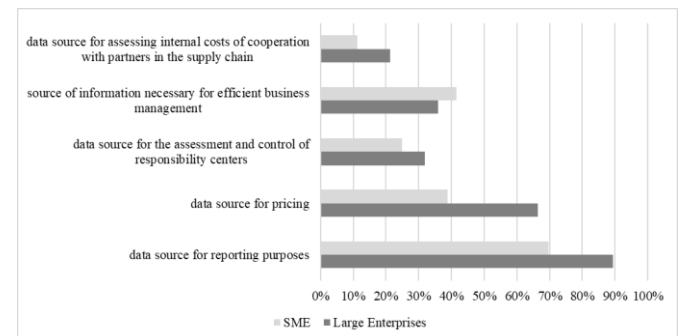


Fig. 3. The role of cost accounting in the enterprise

Note(s): Respondents could indicate more than one answer

When analyzing the extensive literature on the subject regarding the usefulness of cost accounting for management purposes in SMEs in Poland, it should be stated that the obtained results are consistent with previous studies (see more: e.g., Nesterak, Kołodziej-Hajdo, Kowalski, 2017; Świdarska, 2016). This is also confirmed by numerous case studies concerning specific enterprises. Due to the multitude of studies in this area in the literature on the subject it seems unjustified to cite only some of them.

One of subsequent questions, important from the point of view of this study, was the question about the use of modern varieties of cost accounting, including *Kaizen Costing*. The obtained results are presented in Fig. 4.

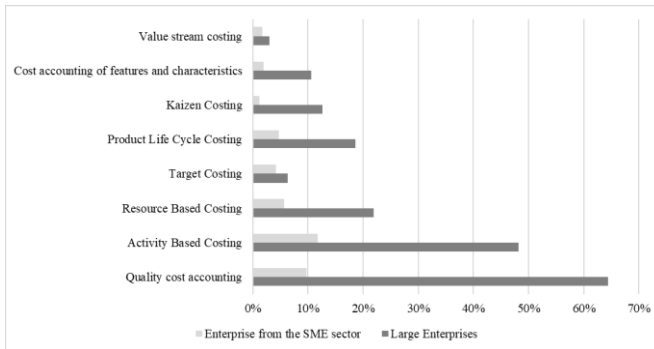


Fig. 4. The degree of application of modern varieties of cost accounting in relation to all the surveyed enterprises

Note(s): Respondents could indicate more than one answer

The respondents were enquired whether they applied, and if so, which of the modern types of cost accounting mentioned in the survey. The obtained responses show that 69.75% of SMEs and 28.24% of large enterprises did not apply any modern varieties of cost accounting. Medium-sized enterprises which use managerial varieties of cost accounting most often apply activity-based costing (11.75% of all the surveyed entities) and quality cost accounting (9.25%). Resource Based Costing, Target Costing and Life Cycle Costing are less popular. The percentage of enterprises applying such cost accounts is less than 5%. In the case of large companies, there is a significant difference in cost awareness, which is reflected in a much greater interest in applying strategic cost management tools. The most popular solution is quality cost accounting (64.45%), followed by Activity Based Costing (48.17%) and Resource Based Costing (21.93%).

Kaizen Costing, on the other hand, is a tool that is almost unknown and used to a very limited extent.

This type of cost accounting is applied only in 5 surveyed medium-sized companies (1.25%) 38 large enterprises (12.62%).

This is consistent with previous studies (see e.g., Alves et al., 2022; Berhe et al., 2023) and this is largely due to the barriers faced by companies in various countries wishing to effectively implement Kaizen and Kaizen Costing.

In Table 1 the values of correlation coefficients and the U-Mann-Whitney test for equality of distributions are presented for the applied types of cost accounting and time of operation on the market for SMEs, as they are the target group of the conducted research. The time of the company's operation on the market has a statistically significant impact on the method of assessing the possibility of using target cost accounting ($\chi^2 = 7.802$; $\phi = 0.140$; $p = 0.005$), product life cycle cost accounting ($\chi^2 = 6.088$; $\phi = 0.123$; $p = 0.014$) and at the level of the statistical trend of resource and process cost accounting ($\chi^2 = 3.695$; $\phi = 0.096$; $p = 0.055$). Enterprises operating for a shorter time are much more likely to use this type of accounts. Enterprises operating for a longer period also indicate that they do not use these types of cost accounting significantly more often ($\chi^2 = 4.119$; $\phi = -0.101$; $p = 0.042$). All the conclusions were strengthened by the results of the Mann-Whitney tests.

The surveyed enterprises indicating that they use modern solutions in the field of cost accounting were asked to indicate the reason for their implementation, while the enterprises that

gave a negative answer were asked to indicate the reasons for the lack of interest in implementing the listed types of cost accounting.

Table 1. The values of correlation coefficients and the U-Mann-Whitney test for equality of distributions for the applied types of cost accounting and time of operation on the market for SMEs, as they are the target group of the conducted research

Measures	Correlation			Equality	
	χ^2	ϕ	p	Z	p
varieties of cost accounting:					
Quality Cost Accounting	0.288	-0.027	0.592	0.534	0.593
Activity Based Costing	0.761	0.044	0.383	- 0.870	0.384
Resource Based Costing	3.695**	0.096	0.055	- 1.918**	0.055
Target Costing	7.802*	0.140	0.005	- 2.788*	0.005
Product Life Cycle Costing	6.088*	0.123	0.014	- 2.463*	0.014
Kaizen Costing	0.219	0.023	0.640	- 0.464	0.642
Cost accounting of features and characteristics	1.039	0.051	0.308	- 1.016	0.310
Value stream costing	0.010	0.005	0.919	- 0.099	0.921
We do not use	4.119*	-0.101	0.042	2.026*	0.043

The opinions of the surveyed enterprises in this regard were analyzed using a 6-point Likert scale (6 - very important, 1 - completely unimportant). On account of the fact that the subject of this research is medium-sized entities, the statistical analysis was limited to this research group.

The distribution of the assessment of reasons for implementing modern cost accounting solutions for SMEs is presented in Fig. 5 and 6, and the graphical illustration of the significance of differences (using two-mean and Wilcoxon tests) for the assessment of reasons for implementing modern cost accounting solutions is presented in Table 2. (Appendix)

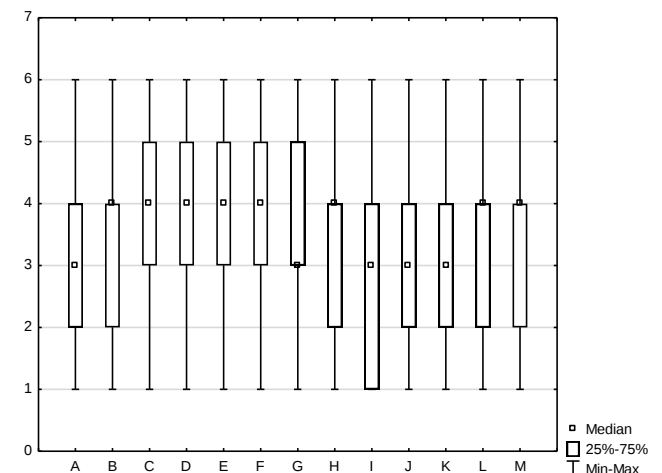
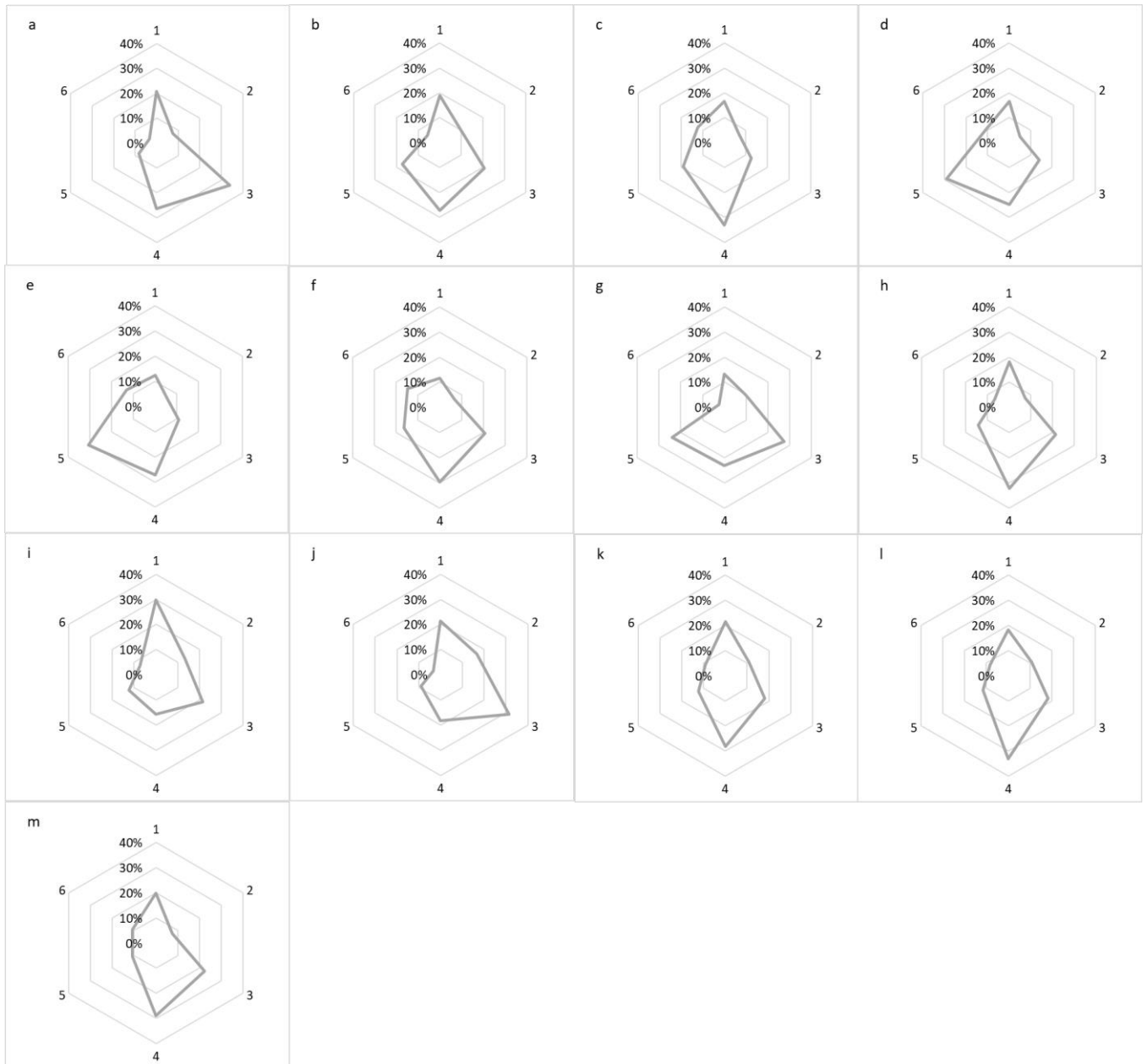


Fig. 5. Distribution of the assessment of reasons for implementing modern cost accounting solutions



Note(s): a) dissatisfaction with the current cost accounting (A), b) change in the company's information needs (B), c) striving to reduce costs and improve results (C), d) striving to improve control (D), e) striving for continuous improvement (E), f) the management board is open to introducing new concepts (F), g) increase in competition (G), h) striving to gain new sales markets (H), i) requirements of the headquarters (I), j) change in the strategy (J), k) implementation of new technologies (K), l) the company has well-defined basic processes and activities (L), m) the company has extensive experience in implementing difficult projects (M).

Fig. 6 Distribution of the assessment of reasons for implementing modern cost accounting solutions

By far the highest rated reason for introducing modern solutions in the field of cost accounting was the pursuit of continuous improvement (3.98), rated not significantly higher only in relation to the pursuit of improved control (3.77). The management's openness to introducing new concepts (3.78) and striving to reduce costs and improve results (3.69) were rated almost equally high. These ratings, although not high, indicate the strength of the impact of these reasons. In turn, the least recognized reasons were change in the strategy (2.87) and requirements of the headquarters (2.9). Their average rat-

ings indicate that their role is more often trivialized. The indications of their noticeable impact concerned 31% in the first case and 36% in the second case. While the first four reasons listed were significantly more often (statistically) indicated as influencing decisions, the two weakest ones were significantly more often indicated as having no impact on decisions regarding the introduction of modern cost accounting solutions. The statistical analysis carried out for the SME sector is complemented by cluster analysis for reasons for implementing modern cost accounting solutions (Euclidean distance, Ward's method). It is presented in Fig. 7.

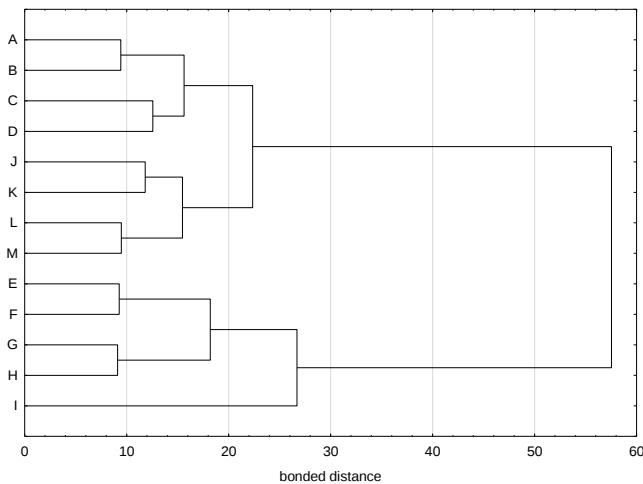


Fig. 7. Cluster analysis for reasons for implementing modern cost accounting solutions (Euclidean distance, Ward's method)

There are clearly two groups of reasons for introducing cost accounting. The smaller one includes striving for continuous improvement, the management openness to introducing new concepts, increased competition, striving to conquer new markets - which is basically an impact on market competitiveness, and additionally, requirements of the headquarters (e.g., the parent company), which are slightly on the side. The second group of reasons is clearly polarized into reasons related to cost management in technical terms and in strategic terms.

Distribution of the assessment of reasons for lack of interest in implementing modern types of cost accounting by SMEs is presented in Fig. 8 and 9, and the graphical illustration of the significance of differences (using two-mean and Wilcoxon tests) for the assessment of reasons for lack of interest in implementing the listed modern types of cost accounting is presented in Table 3 (Appendix).

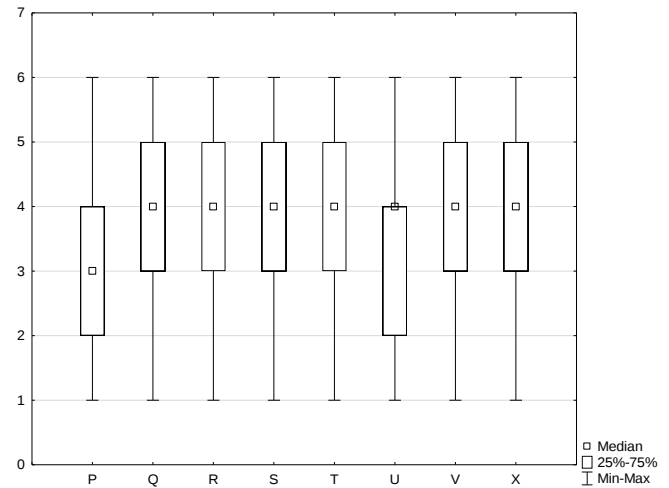
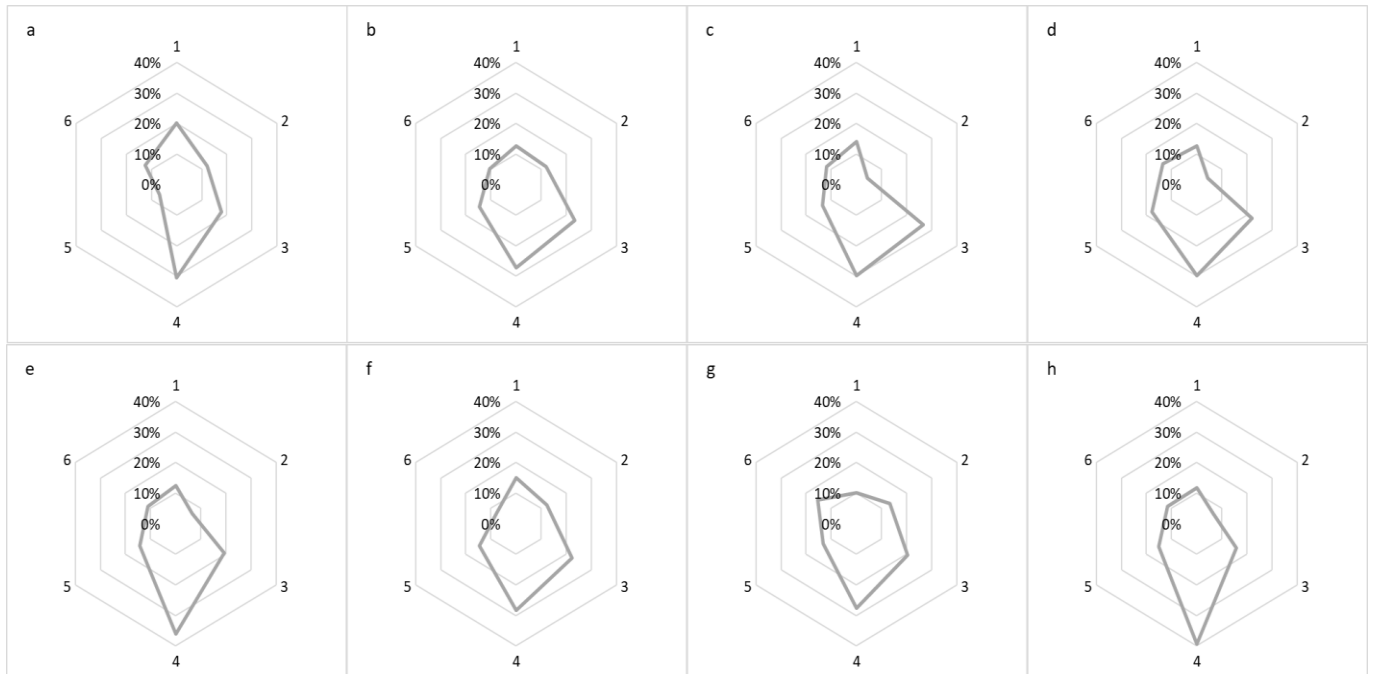


Fig. 8 Distribution of the assessment of reasons for lack of interest in implementing modern versions of cost accounting



Note(s): a) the management board is not interested in introducing changes (P), b) inadequacy of the costs incurred to the information obtained (Q), c) insufficient knowledge of modern cost accounting among employees (R), d) high labor input when implementing and maintaining new solutions (S), e) high costs of implementing and maintaining new solutions (T), f) lack of appropriate IT resources (U), g) the company operates very well and the management does not see the need to introduce new solutions (V), h) satisfaction with the current cost accounting (X).

Fig. 9. Distribution of the assessment of reasons for lack of interest in implementing modern varieties of cost accounting

By far the highest (most negatively) rated reason for lack of interest in implementing the listed modern types of cost accounting was high labor input when implementing and maintaining new solutions (3.77), rated higher than most of the others, and satisfaction with the current cost accounting (3.74). The most trivial reasons for lack of interest in implementing the listed modern types of cost accounting were definitely lack of the management interest in introducing changes (3.29) and lack of appropriate IT resources (3.38).

Cluster analysis for reasons for lack of interest in implementing modern varieties of cost accounting (Euclidean distance, Ward's method) is presented in Fig. 10.

When it comes to cluster analysis for reasons for lack of interest in implementing modern varieties of cost accounting, two clusters are distinguished. One includes indications of satisfaction with the current state and lack of appropriate IT resources, the other one - a negative approach to the effects of such implementation in relation to potential costs, not only financial ones.

The survey also contained the question about the use of methods closely linked to the *Kaizen* concept, applied in Toyota Motor

Corporation in enterprise management. The distribution of responses to the above question is presented in Figure 11.

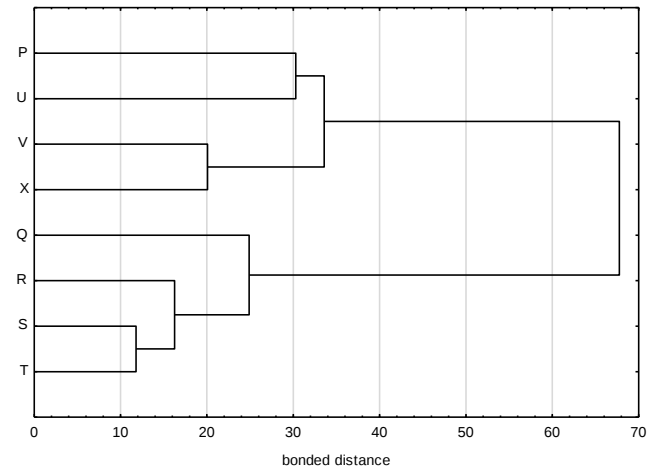


Fig. 10. Cluster analysis for reasons for lack of interest in implementing modern varieties of cost accounting (Euclidean distance, Ward's method).

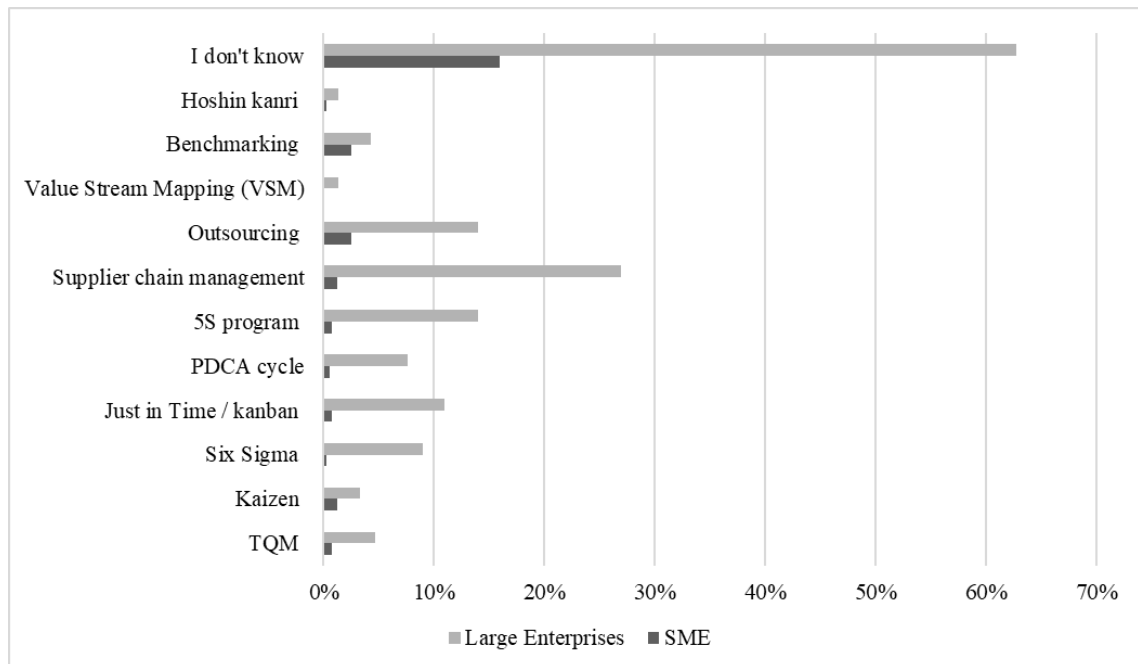


Fig. 11. Possibility to use selected management methods in the enterprise

The presented data indicate that a small percentage of the surveyed respondents from both groups point to the use of tools related to the *Kaizen* concept and comprehensive quality management. However, in the group of large enterprises, it should be noted that a significant number of respondents (62.79%) participating in the survey did not have relevant knowledge, marking the answer "I do not know". Among the respondents from the SME group, such a response was marked by 16% of those questioned.

Table 4 presents the values of correlation coefficients and the U-Mann-Whitney test for equality of distributions for the applied management methods and the time of operation on the market for SMEs.

It must be admitted that not all the indicated management methods were popular among the surveyed entrepreneurs. It was noticed that there is a statistically significant correlation between the time of operation on the market and the use of the 5S program ($\chi^2 = 7.697$; $\phi = 0.139$; $p = 0.006$) and at the level of the statistical trend of the Kaizen method ($\chi^2 = 3.264$; $\phi = 0.090$; $p = 0.071$). Enterprises operating on the market for a shorter period also indicated significantly more often that they did not know about the use of a given method (they did not know it) ($\chi^2 = 12.391$; $\phi = 0.176$; $p < 0.001$). Interestingly, the relationships show that young enterprises use selected methods more often, which is also confirmed by the Mann-Whitney test. It can therefore be concluded that young enterprises are

characterized by less knowledge of the methods that can be used, but if they already know them, they use them more frequently than the ones operating on the market longer. The organizational culture of enterprises encourages the use of methods identified and described in the literature.

Table 4. Values of correlation coefficients and the U-Mann-Whitney test for equality of distributions for the applied management methods and the time of operation on the market for SMEs.

Measure:	Correlation			Equality	
method:	χ^2	φ	p	Z	p
TQM	-	-	-	0.667	0.505
Kaizen	3.264**	0.090	0.071	- 1.801**	0.072
Six Sigma	-	-	-	- 2.580*	0.010
Just in Time / kanban	1.105	0.053	0.293	- 1.046	0.296
PDCA cycle	-	-	-	0.542	0.588
5S program	7.697*	0.139	0.006	- 2.767*	0.006
Supply chain management	0.219	0.023	0.640	- 0.464	0.642
outsourcing	-	-	-	- 1.614	0.106
benchmarking	0.082	-0.014	0.775	0.283	0.777
hoshin kanri	-	-	-	- 2.580*	0.010
I dont now	12.391*	0.176	0.000	- 3.515*	0.000

The statistical analysis was supplemented with cluster analysis (Fig.12)

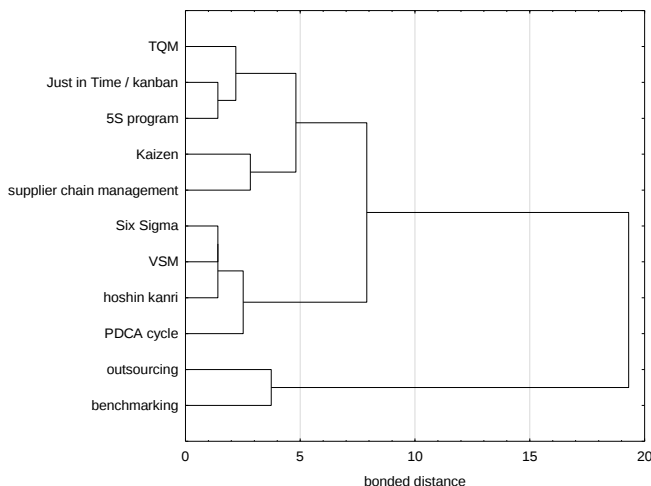


Fig. 12. Cluster analysis for methods used in enterprise management (Euclidean distance, Ward's method)

The division into two groups of methods seems to be clear. One involves benchmarking and outsourcing, i.e., methods with less real impact on enterprise management through direct interference in processes. The other group is additionally divided into two more, containing tools that are used more frequently together.

The above results, indicating that *Kaizen Costing* and management tools closely linked to the *Kaizen* concept are not suf-

ficiently applied in practice in Polish enterprises, are compliant with the results of the studied conducted in this field in other countries (Carneiro et al., 2023; Berhe, 2022; Lina and Ullah, 2019; Alvarado-Ramírez et al., 2018; Marin-Garcia et al., 2018; Ma et al., 2017; Chung, 2018; Chan et al., 2018; Baker Al-Barghuthia et al., 2020; Singh and Singh, 2012; Singh and Singh, 2015; Omotayo et al., 2018; Kaur and Kaur, 2013).

It should be noted that the examples of the use of Kaizen and Kaizen Costing in companies from various industries are the most often presented in the subject literature (see more: Michalski, 2020; Janiszewski and Krasiński, 2017; Krasiński 2014, Walentynowicz 2016 a,b, 2014). Despite the analysis of a large number of publications in this field, the author of this article has not found another study in which the degree of the Kaizen Costing application in a randomly selected group of enterprises in a given country was examined. In this regard, this study fills the existing research gap.

5. Conclusions and implications for research and practice

From the research conducted by the author so far, it emerges that an increasing number of enterprises are seeking detailed information about their incurred costs. There is also a growing interest in specialized cost accounting among businesses in the SME sector. The vast majority of the respondents of this group declare taking actions aimed at continuous improvement (71.5%), elimination of waste (62.75%), improvement in the quality and speed of operational activities as well as cost reduction (74.75%) and increase in the efficiency of the company's operations (71.25%).

This position is confirmed by the responses to the question discussed above on the indication of reasons for introducing modern cost accounting solutions. It should be noted, however, that the knowledge of these solutions among SMEs is too selective and requires greater dissemination.

The answers obtained to the questions posed in this study: "Are enterprises from the SME sector interested in implementing strategic management accounting instruments, including Kaizen Costing? Is Kaizen Costing more widely used in SMEs operating in Poland?" are not satisfactory. They indicate that these solutions are relatively poorly known and rarely used by these enterprises.

The obtained results confirm previous research. However, previous research into the Kaizen method in Poland usually referred to case studies. Conducting the survey research on a randomly selected group of medium-sized enterprises allowed for confirming some previous individual studies conducted by various researchers and verifying the hypotheses put forward in the article. The research has also proven that there is a relationship between the degree of application of Kaizen and Kaizen Costing and the size of enterprises (Hypothesis 1). In large enterprises, the degree of interest in Kaizen and Kaizen Costing was higher than in SMEs. It is also possible to indicate a positive relationship between involvement in pro-quality management and interest in Kaizen and Kaizen Costing (Hypothesis 2).

Research carried out in Poland so far has shown many problems with a cultural context and concerning the social sphere (Walentynowicz, Wojnicka-Sycz, 2018, Stankiewicz-Mróz, 2016; Krasieński, 2014; Piasecka-Głuszek 2011). These studies as well as those carried out in other countries, point primarily to the cultural barrier. Lack of introductory activities to prepare employees and business owners to implement a philosophy derived from a separate culture, employees' resistance and reluctance to change, and lack of support from top managers are also emphasized.

All companies strive to achieve competitive advantage. Most often, they try to achieve this by dynamically implementing innovative solutions. Continuous improvement is an evolutionary process, extended over time, and so are its effects. The research conducted by Stankiewicz - Mróz (2016) showed that the readiness of the surveyed organizations to implement the Kaizen philosophy is low. The dominant approach is the one that promotes quick achievement of individual results and competition.

In recent years, many small businesses have faced an increasingly complex and uncertain environment in which increased competition and risk no longer guarantee survival. This situation created the need for rapid adaptation and led to changes in the management approach and strategy (Olah et al., 2019). Enterprises are increasingly looking for low-cost sources of innovation. Therefore, it is important to promote the ideas of Kaizen and Kaizen Costing among SMEs. The aim of this study was to draw attention to the above aspects. Kaizen and Kaizen Costing can be a great support for SMEs.

We should agree with the opinion of Piasecka, Ludwiczak, Tutko, (2021) that although the process of building a Kaizen culture is long-lasting, proper maintenance of the workplace, elimination of waste and standardization can be easily understood, accepted and introduced into the everyday activities of the organization in a shorter period of time. Their implementation does not require specialized knowledge, employee competences, technology or significant financial outlays. By definition, these activities are common sense and low-cost, so they can be implemented in all types of organizations, bringing them numerous benefits (see more: Cherrafi et al., 2016; Reis et al., 2022; Taylor et al., 2021; Michalski, 2020).

Similar observations have been made by Zighan and Ruel (2023) as well as Ruel and El Baz, (2021) indicate in their research that, in an increasingly variable, complex and uncertain business environment exposed to numerous shocks, continuous improvement plays a large role in building the resilience of small and medium-sized enterprises.

This study can provide useful assistance to companies that are searching for new solutions in the field of cost management. The conducted research also prompts to ask the question *"Why, in the era of such a rapid development of technology and a large demand for information essential for effective management, do so many enterprises still apply only traditional solutions in the field of cost accounting and management? Why do enterprises not reach for proven and described in detail in the subject literature solutions, which were used Toyota Motor Corporation?"*

The question is justified since Japanese management methods are known in Poland, as evidenced by numerous translations of Imai and Liker and many books and publications by Polish authors (e.g., Krasieński, 2017) describing both theoretical aspects and examples of the implementation in the economic practice. In Poland, there is also the Kaizen Institute Poland, associating members and offering extensive training (<https://pl.kaizen.com/>). All of this makes that the results in this field should be significantly different.

Unfortunately, many enterprises, especially from the group of SME, are not aware of the need for cost optimization. A significant part of the management staff of these companies believe that the applied cost accounting is sufficient for decision-making purposes. According to the author, this is largely due to the lack of knowledge of what type of information can be provided by modern cost accounting solutions and what are the benefits of strategic cost management. Many enterprises also argue that they do not have adequate capital for the implementation of new solutions, they operate day by day, trying to survive in the market, not knowing what "tomorrow" will bring. In relation to *Kaizen*, the basic barrier to the implementation and development in Polish enterprises which can be indicated is cultural constraints as well as the lack of interest of management staff in the introduction of new solutions.

Based on the research conducted, one may also formulate the following recommendations for entities that consider the implementation of *Kaizen Costing* in the future:

- The launch of *Kaizen Costing* ought to be considered by both production and service companies wishing to increase the effectiveness and efficiency of operations without incurring large financial outlays.
- *Kaizen Costing* can be one of the elements of strategic cost management in the enterprise, e.g., Lean Management.
- *Kaizen Costing* can be integrated with other solutions, e.g., it can be the supplement of *Target Costing* in the production process.
- The implementation of *Kaizen Costing* allows for savings and rational management of the unit resources.
- An important criterion necessary to be met in companies wishing to implement the concepts of *Kaizen* and *Kaizen Costing* is to possess a stable financial situation. Continuous improvement cost accounting is a method of gradual implementation of improvements, therefore, in entities with financial problems, the solutions of *Kaizen Costing* may turn out to be insufficient, due to the long period of waiting for the effects of the implemented changes.
- The implementation of *Kaizen Costing* requires greater involvement of employees. Employees must be focused on cooperation and continuous improvement. This is related to the change in the work style and standardization of working time.
- It is also necessary to introduce the periodic evaluation of undertaken tasks since the results of this evaluation should motivate managers to make further attempts of improvements.

For a more detailed analysis of the application of *Kaizen Costing* and the related benefits, the case study method ought to be applied more widely. This method would allow for a detailed look at how, in the specific entity (entities) it operates and is applied and assessed by management staff and employees. Conducting case studies would provide an in-depth understanding of how such a method functions in reality and how it is perceived and assessed by both management and employees.

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Appendix

Table 2. Values of correlation coefficients and the U-Mann-Whitney test for equality of distributions for the applied types of cost accounting and time of operation on the market

reason	dissatisfaction with the current cost accounting	change in the company's information needs	striving to reduce costs and improve results	striving to improve control	striving for continuous improvement	the management board is open to introducing new concepts	increase in competition	striving to gain new sales markets	requirements of the headquarters	change in the strategy	implementation of new technologies	the company has well-defined basic processes and activities	the company has extensive experience in implementing difficult projects
dissatisfaction with the current cost accounting		↑	↑	↑	↑	↑	↑	↑	-	-	-	↑	↑
change in the company's information needs	←		↑	↑	↑	↑	-	-	←	←	-	-	-
striving to reduce costs and improve results	←	←		-	↑	-	←	←	←	←	←	←	←
striving to improve control	←	←	-		-	-	←	←	←	←	←	←	←
striving for continuous improvement	←	←	-	-		-	←	←	←	←	←	←	←
the management board is open to introducing new concepts	←	←	-	-	↑		←	←	←	←	←	←	←
increase in competition	←	-	-	↑	↑	↑		-	←	←	-	-	-
striving to gain new sales markets	←	-	↑	↑	↑	↑	-		←	←	-	-	-
requirements of the headquarters	-	↑	↑	↑	↑	↑	↑	↑		-	↑	↑	↑
change in the strategy	-	↑	↑	↑	↑	↑	↑	↑	-		↑	↑	↑
implementation of new technologies	←	-	↑	↑	↑	↑	-	-	←	←		-	-
the company has well-defined basic processes and activities	←	-	↑	↑	↑	↑	-	-	←	←	-		-
the company has extensive experience in implementing difficult projects	←	-	↑	↑	↑	↑	-	-	←	←	-	-	

Note(s): Direction of the arrows indicates the reason with a higher rating. Thick arrows – significance of differences at $\alpha < 0.05$; thin arrows, significance of differences at $\alpha < 0.10$.

Table 3. Graphical illustration of the significance of differences (using two-mean and Wilcoxon tests) for assessing the reasons for lack of interest in implementing the listed modern varieties of cost accounting

reasons	the management board is not interested in introducing changes	inadequacy of the costs incurred to the information obtained	insufficient knowledge of modern cost accounting among employees	high labor input when implementing and maintaining new solutions	high costs of implementing and maintaining new solutions	lack of appropriate IT resources	the company operates very well and the management does not see the need to introduce new solutions	satisfaction with the current cost accounting
the management board is not interested in introducing changes		↑	↑	↑	↑	-	↑	↑
inadequacy of the costs incurred to the information obtained	-		-	↑	↑	-	-	↑
insufficient knowledge of modern cost accounting among employees	←	-		↑	-	←	-	-
high labor input when implementing and maintaining new solutions	←	←	←		-	←	-	-
high costs of implementing and maintaining new solutions	←	←	-	↑		←	-	-
lack of appropriate IT resources	-	-	↑	↑	↑		↑	↑
the company operates very well and the management does not see the need to introduce new solutions	←	-	-	-	-	←		-
satisfaction with the current cost accounting	←	←	-	-	-	←	-	

Note(s): Direction of the arrows indicates the reason with a higher rating. Thick arrows – significance of differences at $\alpha < 0.05$; thin arrows, significance of differences at $\alpha < 0.10$.