

MANAGEMENT TOOLS AND SYSTEMS – USAGE IN LOGISTICS COMPANIES IN THE CZECH REPUBLIC

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Abstract: The paper presents the analysis and comparison of management tools and systems usage in companies in Czech Republic as the part of the research that has been done in 2013 and then in 2021 via structured questionnaires. The aim of the paper is to define which management tools and systems are being used by Czech logistics centers, distribution and transport companies and warehouses, what are differences based on the company size (micro, small and medium, large size companies) and what are similarities and new trends across the research sample. The output of the research presents the total and relative frequency of management tools and systems usage comparing 2013 and 2021 outputs and describe current trend of usage, especially with continuous improvement tools (Kaizen, Lean, 6Sigma) that popularity and positive impact on companies' metrics and results is unarguable. TOP 10 management tools and systems are almost same in 2013 and 2021. Usage of management tools and systems in 2021 is higher than 2013 and the increase is significant. We can see the progress of KPI which total frequency (TF) was 25 and relative frequency (RF) was 5.80% in 2013 and 2021 results presents TF: 292 and RF 76.40%.

1 Introduction

The management of every company plays a key role to define the strategy and philosophy with steps how to achieve planned goals and how to ensure competitiveness. The primary points or management functions of strategy set up are planning, organizing, leading and controlling [1].

The main purpose of the planning is to realize opportunities and to choose the most effective way to achieve goals on time, with planned costs and available resources. There are three areas of managerial planning – strategic (long-term), tactical (mid-term) to support strategic plan and operative (day-to-day) to cover daily progress and prioritization of activities [2]. Prioritization is closely connected with organizing – the process of resources assignment to tasks, activities and projects that are key to achieve company goals. The leading includes key managerial abilities for effective planning and organizing in the company process. The controlling is the process of continuous progress check and comparing with plans to define if any corrective action is required or not. There are many researches that analyze these points

separately and describe their importance but from the overall perspective it is necessary to have complex coverage of planning, organizing, leading and controlling to fulfill the strategic goal as one point cannot work with another [3-5].

The secondary management functions are decision-making, communication and implementation. These secondary functions are omitting very often but they are very important to make a suitable work-environment and to support primary management functions. Decision-making includes wide range of techniques and attitudes to make the right decision in the right time. In the most ideal way, the decision is made based on the objective inputs or data, but managers are facing decision-making problem without any data available – experience, knowledge and also luck are important. Based on the decision-making, planning, organizing, leading and controlling are easier or more difficult. The communication builds bridges between decision making and all primary management functions [6]. The implementation relates to processes, products and their changes in the time – change management [7].

Dynamic progress and development push companies to constantly improve all processes to maintain a position in the market. Management tools are one of the basic elements for managing the company's performance [8]. More and more, it is important to collect the right data for the necessary analyzes so that the right decisions can be made. An appropriate set of tools plays a crucial role in the whole cycle of the company and it is very important for the natural and sustainable development of the organization [9]. The basis of every company is a vision and a plan. A common cause of failure is the application of inappropriate tools or their incorrect use [10]. For this reason, companies also need to focus on training in management tools, whether they are employees working on internal process or working on business development or supply chain management [11,12].

Management tools and systems allow the companies to manage internal processes easily and more effectively. There are a lot of researches on management tools and systems using worldwide but only a couple of these researches focus on Czech Republic. The following chapters present the outputs of research to understand and describe usage of management tools and systems in logistics companies in Czech Republic and discuss obtained results in the context of similar, previously conducted research studies. This research builds on a study from 2013 [9,11,13] and compares the results achieved in 2021.

2 Management tools and systems – theoretical background

Academics define an immense number of management methods, tools, techniques or indicators that were developed to help the companies achieve their goals. Summary of management methods, tools, systems according to the areas of management are listed in Appendix 1. For a purpose of this study, we were aware that finite, processable number of tools must be chosen. Finally, there were 17 selected and considered management tools, methods, systems, techniques or indicators to put into questionnaire. The theoretical background of these methods is as follows:

- **BCG Matrix** (Growth-share matrix) is a portfolio planning tool developed by the consulting company Boston Consulting Group (BCG). The BCG matrix is based on the product life cycle and is used for the evaluation of the organization's product portfolio from two points of view: market growth and relative market share. This tool helps managers determine which product the company should investigate and which one they should avoid or withdraw from the market [14].
- **Business Plan, Strategic Planning (strategic document)** is a comprehensive process for determining what a business should become and how it can best achieve that goal. It appraises the full potential of a business and explicitly links the business's objectives to the actions and resources required to achieve them.

Strategic Planning offers a systematic process to ask and answer the most critical questions confronting a management team - especially large, irrevocable resource commitment decisions [15].

- **BSC** (Balanced Scorecard) has become the most widely applied performance management system today. It is a system of management and measurement of the performance of the organization, which is based on defining a balanced system of interrelated indicators of business performance. It measures performance across a number of different perspectives (financial, internal business process, innovation and learning and customer perspective) [16].
- **EFQM Excellence Model** (also used in short version EFQM Model) was developed by the European Foundation for Quality Management as a framework for the implementation of quality management methods in the organization. The process perspective is comprised of several categories of indicators from financial and customers to people and leadership [17].
- **EVA** (Economic Value Added) is a frequently used indicator of organizational performance. A positive EVA signifies the value for the shareholders. A negative EVA indicates the loss of value. The basic idea of the indicator is that a company can reach the profit only if its revenue covers the company's cost and the cost of capital. EVA is designed to give shareholders better information about the efficiency of managers' decisions that should create the greater company's wealth [18].
- **ISO 9000 family** is a part of the family of international standards issued by the ISO (International Organization for Standardization) focusing on quality management. Standards of this system are not a management method, it is a standard or norm, which serves as a reference model for setting the basic management processes in an organization that continuously helps improve the quality of provided products or services and customer satisfaction (quality management system). It can be used as a tool for business process and continuous performance improvement [19].
- **ISO 14000 family** is used for environmental management systems. This standard requires the organization to identify all the environmental impacts and related aspects of its business. In addition, it defines the objectives of environment and introduces measures to improve performance through process improvement in areas of high priority [19].
- **Kaizen** is a method of gradual improvement based on cultural traditions of Japan. The improvement focuses on the gradual optimizing of the processes and work practices, quality improvement and scrap reducing, material and time savings leading to cost reduction, work safety and reducing workplace accidents [20].
- **KPI (Key Performance Indicators)** defines key metrics of performance that relate to processes, services, business

unit and whole organization. KPI measures strategic goals achievement in the time [21].

- **Lean Management** is a very broad management tool [22]. The term philosophy that the organization (enterprise) must accept is most often used in connection with Lean. Lean is based on several basic principles. Primarily it is the effort of the organization to continuously improve in all areas and to avoid unnecessary wastage. The second principle is the best possible satisfaction of customers' needs, no matter how. Lean is often used with different attributes; depending on the field this philosophy is applied [20].
- **MBO** (Management by Objectives) was designed by Peter F. Drucker as a method based on setting and mutual agreement of the objectives and the evaluation of the success of their achievement. The task implementers are allowed to decide which method is most appropriate to achieve the objective. The implementer delegates responsibility to meet the objective. The method is applicable in virtually all management fields [23].
- **PEST(LE)** analysis is an analytical technique used for the strategic analysis of organizational surroundings. PESTLE (sometimes also PESTEL, SLEPTE etc.) is an acronym and each letter represent a different type of external factors (Political, Economic, Social, Technological, Legal, and Ecological) [24].
- **Porter's five forces** is the work of Michael E. Porter. It is a way of analyzing the industry and its risks. The model works with five elements (Five Forces). The principle of this method is forecasting the development of the competitive situation in analyzed industry, based on estimating the potential behavior of subjects and objects involved in a given market and forecasting the risk of imminent business [25].
- **Six Sigma** is a complex method of management. It is known more as a philosophy that a company must follow. It is one of the TQM approaches initiated by Motorola (further adopted and propagated by GE), where the focus is put on continuous improvement (innovation) of the organization by understanding customers' needs, using the process analysis and standardization methods in the measurement. It is a comprehensive, flexible management system that is based on understanding customers' needs and expectations, on disciplined use of information and data to management and decision making. It measures the process capability and stability by determining the rate of DPMO (defects per million opportunities) [20].
- **SMART** is an analytical technique for designing objectives in management and planning. SMART is an acronym from the initial letter of the English names of the objective attributes (Specific, Measurable, Achievable/Acceptable, Realistic/Relevant, and Time Specific/Track-able) [23].
- **SWOT** analysis is a universal analytical technique focusing on the evaluation of internal and external factors

affecting the success of an organization or any other evaluated system. Most often, SWOT analysis is used in the strategic management of an organization in the evaluation of a strategic intention. The author of SWOT analysis is Albert Humphrey, who designed it in the sixties of the 20th century [24].

- **TQM** (Total Quality Management) is a very complex management approach that puts emphasis on quality management in all dimensions of the organizational life. It goes beyond quality management. This method ensures cooperation of everyone in a company. It is also a method of strategic management and a management philosophy for all the organizational activities. Associated business processes within this tool force the production to meet and exceed the needs and expectations of a company's customers [19].

3 Current state of knowledge

The current researches describe the importance of management tools and systems but mostly from the very strait perspective – by single tool or system. Strategic document has been described and analyzed by lot of researches. Naseri et al. [25] identified the strategic plan as the critical document for operation and budget planning. They also described close interaction between strategic document and SWOT as the key input for the strategic planning. Dewi and Sunpranto [26] presented similar outputs of the research as they identified strategic document importance from the companies standards and policies perspective as an important part of the strategy.

SWOT analysis is well-known and popular tool. Based on Řehoř et al. [27], the quality of strategic plan and document is always as good as SWOT analysis inputs are. Begon and Todorova [28] evaluated that it doesn't make sense to prepare strategy without SWOT because the SWOT provides a knowledge level that is critical to understand an organisation from the different point of view to apply the most effective strategy and to focus on the right things together with SMART approach.

ISO standards – 9000 and 14000 are also very important systems for industrial companies. Especially ISO 9000 is being the part of industrial companies for a long time. Bello-Pintado et al. [29] presented research outputs with ISO 9000 positive impact on job satisfaction and affective commitment as the system supports the quality extremely. ISO 14000 is controversial topic based on Wang and Zhao [30]. Based on their research, ISO 14000 is perceived as the necessary standard without any added value from the employees perspective. The different outputs were presented from the economic perspective presented by Romero et al. [31] who evaluated positive impacts on economic results especially in large sizes companies who reduced emission and got the certification.

Total Quality Management (TQM) is the purpose of many researches. Romero et al. [31] identified that TQM is critical tool that required well-experienced experts with capabilities to cover quality planning, quality control ,

quality assurance and quality improvement together with the digitalization and lean manufacturing systems implementation. The TQM is closely connected with Lean Management [32]. Outputs of Poppendieck and Poppendieck research [33] presented three critical points – reduction of wasting, effectivity and employee motivation as the key of the TQM and Lean approach. Tetteh et al. [33] also define Lean management as the key technique to redesign the internal process with positive business impact but with continuous development of employees as the key factor and resource to define the opportunities and to work on improvements as the lean manufacturing is continuous improvement process. Six Sigma (6Sigma) is also being more and more popular. The current researches describe DMAIC approach popularity, f.e. Patil et al. [34] because DMAIC (define, measure, analyze, improve, control) covers all critical parts of improvement process so this methodology has its popularity especially in the large size companies with Black Belt experts onsite.

Management tools are one of the basic elements for managing the company’s performance. More and more, it is important to collect the right data for the necessary analyzes so that the right decisions can be made. An appropriate set of tools plays a crucial role in the whole cycle of the company and it is very important for the natural and sustainable development of the organization [35].

The trend and probably a key area of using management tools is digitization. It allows you to combine all the needs in one place with the application of the necessary tools and visualizations to satisfy all the areas of the company [36].

4 The methodology of the paper and data collection

Goal of the paper has been set to analyze and describe the current situation of 17 management tools and systems usage in logistics companies in Czech Republic in 2021 compared to research data from 2013 to analyze the progress. The data from 2013 was part of authors research about management tools, systems, techniques usage [9,11,13]. All respondents had an option *Other Tool* that was not mentioned above.

The questionnaire has been prepared a sent into the Czech companies from the different logistics business areas (logistics centers, distribution and transport companies, warehouses). Then data has been analyzed and evaluated with using of statistical methods (percentage, summary, total and relative frequency), comparison with usage of bar charts visualization.

For the purpose of this paper research, the company size categories are defined in Table 1.

Three research questions were formulated:

1. What is the frequency of defined management tools and systems in companies in Czech Republic in 2021 compared to 2013?

2. What are the biggest differences of management tools and systems usage in 2013 and 2021?
3. What are differences of management tools and systems application between micro size, small and medium size and large size companies?

Table 1 Company size categories based on quantity of employees

Company size categories	Number of employees	Group
Micro size	1 – 10	A
Small size	11 – 50	B
Medium size I	51 – 100	B
Medium size II	101 – 250	B
Large size	250 +	C

The primary data were collected in 2013 in Czech Republic. Totally 500 questionnaires were sent and after filtration and reduction, 431 replies were evaluated so totally 86.20% of feedback was analyzed in 2013.

The purpose of 2021 questionnaires were to analyze the current state of management tools and systems usage in industrial company in Czech Republic. The data presented in this research are made of totally 382 replies that were received from total amount of 415 questionnaires, so 2021 success of return is 92.00%.

From the total amount of 431 inputs, the structure of the 2013 sample was following:

- **Company size categories:** 98 micro size (22.70%), 216 small and medium size (50.10%), 117 large size (27.10%).
- **Logistics business areas:** 82 logistics centers (19.00%), 195 distribution and transport companies (45.20%), 154 warehouses (35.70%).
- All companies provide the current status of the management tools and systems usage.

The sample of 2021 was following:

- **Company size categories:** 42 micro size (11.00%), 203 small and medium size (53.10%), 137 large size (35.90%).
- **Logistics business areas:** 30 logistic centers (7.80%), 206 distribution and transport companies (53.90%), 146 warehouses (38.20%).
- All companies provide the current status of the management tools and systems usage.

Even if samples from 2013 and 2021 are not completely the same, the portion of small and medium size and large size companies is very similar. The same similarity is visible from the business areas perspective.

5 Results of the research

The questionnaire has been prepared a sent into the Czech companies from the different logistics business areas (logistics centers, distribution and transport companies and warehouses). Then data has been analyzed and evaluated with using of statistical methods

(percentage, summary, total and relative frequency), comparison with usage of bar charts visualization. Chapter present most important findings of research. Following outputs presents trends of management tools and systems usage in companies in Czech Republic from logistics

centers, distribution and transport companies and warehouses. Table 2 presents the frequency (total and relative) of 17 chosen management tools and systems usage within research sample in 2013 and 2021.

Table 2 Total and relative frequency of management tools and systems usage in 2013 and 2021

Method, Tool, System	Total Frequency 2013	Relative Frequency 2013	Total Frequency 2021	Relative Frequency 2021
Strategic document	234	54.29%	357	93.42%
SWOT	189	43.85%	288	75.34%
ISO 9000	154	35.73%	250	65.41%
ISO 14000	70	16.24%	152	39.77%
SMART	57	13.23%	99	25.93%
TQM	57	13.23%	125	32.71%
EVA	30	6.96%	24	6.27%
KPI	25	5.80%	292	76.40%
BCG	23	5.34%	28	7.30%
BSC	23	5.34%	36	9.40%
Kaizen	14	3.25%	160	41.82%
Lean	14	3.25%	150	39.21%
MBO	12	2.78%	15	3.87%
6Sigma	10	2.32%	81	21.14%
EFQM	10	2.32%	17	4.41%
5F Porter	7	1.62%	9	2.33%
PESTLE	6	1.39%	7	1.81%
Others	10	2.32%	43	11.20%

Table 2 presents the answer to the first research question. The most important tool in 2013 was strategic document that was used by 234 companies (54.80%). Surprising result was shown by SWOT 189 (44.30%) that popularity and benefit has been increasing in last couple of years generally. ISO systems (9000 and 14000) came after – ISO 9000 154 companies (36.10%) and ISO 14000 70 companies (16.40%). The rest of management tools and systems were below 15.00% of usage that was interesting finding. Especially for Kaizen, Lean and 6Sigma, the results of very low usage were not expected.

The biggest difference of 2021 outputs are visible in increase of management tools and systems usage in general. The strategic document is being used by 357 (93.42%) of respondents. SWOT, ISO 9000. ISO 14000 and TQM still have their important role in Czech

companies. The biggest progress has been performed by continuous improvement tools – Kaizen, Lean and 6Sigma. These tools are often presented as a key for companies operation and progress at the market. A growth of continuous improvement tools is significant – Kaizen (2013: 14 companies; 3.25% vs. 2021: 160 companies; 41.82%), Lean (2013: 14 companies; 3.25% vs. 2021: 150 companies; 39.21%), 6Sigma (2013: 10 companies; 2.32% vs. 2021: 81 companies; 21.14%).

Following figures presents the details of micro, small and medium, large size companies.

Figure 1 shows the relative frequency of management tools and systems that are being used in micro size companies (up to 10 employees). Figure 2 shows the usage of tools and systems in 2021 and outputs are compared.

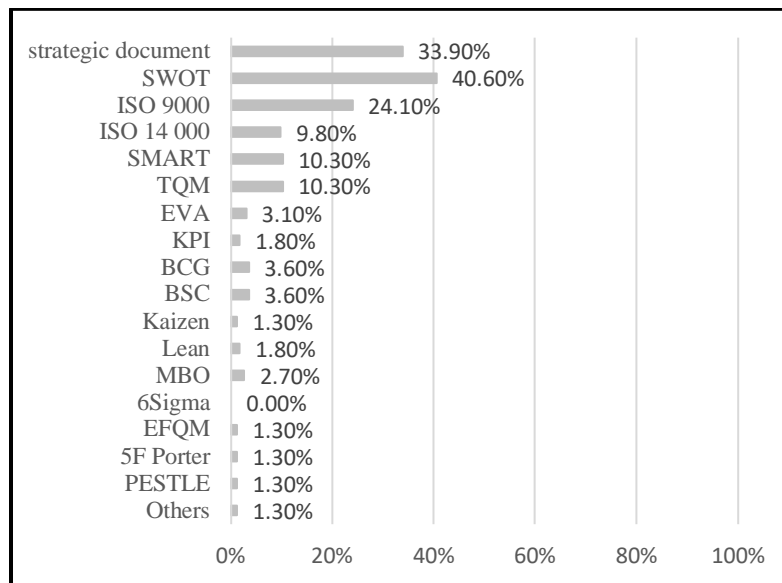


Figure 1 Usage of management tools and systems in micro size companies in 2013

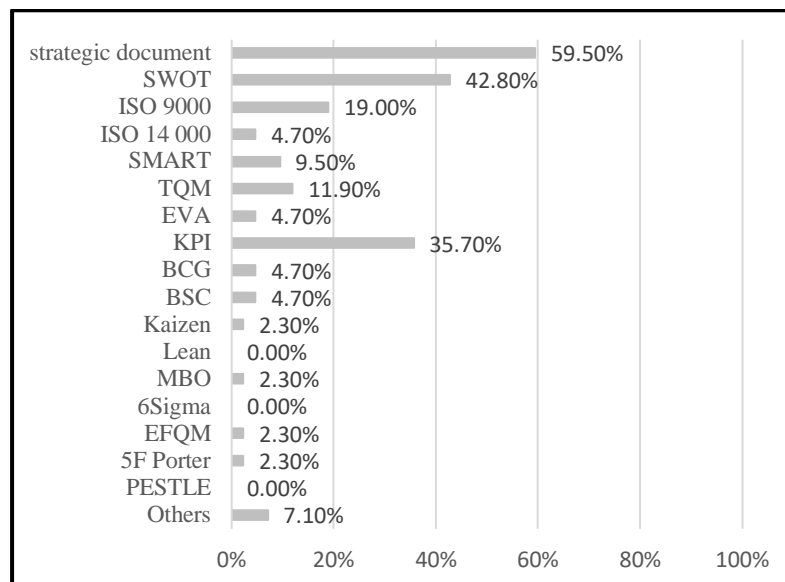


Figure 2 Usage of management tools and systems in micro size companies in 2021

The detail of micro size companies from 2013 presents, that also for this area strategic document (33.90%), SWOT (40.60%), ISO 9000 (24.10%) are the three most important tools and systems that are used. Boundary of 10% was also exceeded by SMART (10.30%), TQM (10.30%). ISO 14000 (9.80%) is nearly. SMART role is to define the goal of the micro size companies as all employees needs to understand clearly what the mission is and what is required to achieve the goal. TQM presents the key system to rise the competitiveness of the micro companies that are facing the larger companies. The rest of the management tools and systems are being used rarely and 6Sigma is not used in our sample of micro size companies.

The data from 2021 are very similar to 2013 outputs. There is a significant growth of strategic document usage (2013: 33.90% vs. 2021: 59.50%). The biggest increase is performed by KPI (2013: 1.80% vs. 2021: 35.70%). We can see also small drop of ISO 9000 (2013: 24.10% vs. 2021: 19.00%). The rest of tools are on same level of usage in 2021 as in 2013. The trend of continuous improvement tools (Kaizen, Lean and 6Sigma) is almost the same in 2021 as it was in 2013 – Kaizen (2.30%), Lean and 6Sigma (both 0.00%).

Figures 3 and 4 present the outputs of small and medium size companies (11-250 employees) usage of management tools and systems in research sample from 2013 and 2021 and their comparison.

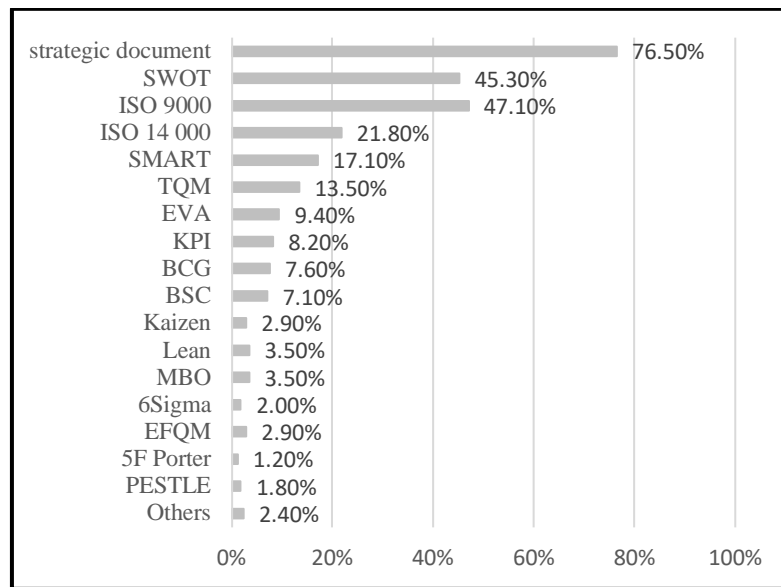


Figure 3 Usage of management tools and systems in small and medium size companies in 2013

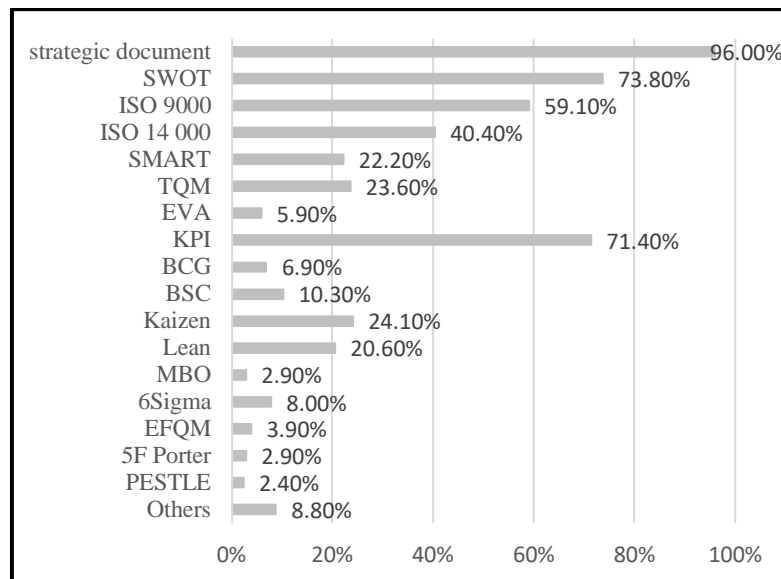


Figure 4 Usage of management tools and systems in small and medium size companies in 2021

The outputs from 2013 of small and medium size companies show the increasing trend of strategic document importance as 76.50% are using it. ISO 9000 (47.10%) exceeded SWOT (45.30%). Comparing to micro size companies – also ISO 14000 (9.80% vs. 21.80%) is more important for small and medium size companies. We can see increasing trend of EVA (9.40%), KPI (8.20%), BCG (7.60%), BSC (7.10%) comparing to micro size companies. However, the occurrence of Kaizen (2.90%), Lean (3.50%) and 6Sigma (1.80%) is still not extensive as we would predict higher volume based on the current trend in the world.

The 2021 results present significant increase of all management tools and systems usage comparing to 2013.

Strategic document (96.00%) is still the most important tool. SWOT (73.80%), ISO 9000 (59.10%), ISO 14000 (40.40%) are still very important for small and medium size companies and their growth is confirming that. However, the biggest progress is again performed by KPI (71.40%) that causes jump of KPI to the third position of usage in 2021. We can also see a positive growth of continuous improvement tools (Kaizen, Lean, 6Sigma) as in 2013 all of them were below 4.00% of relative frequency and in 2021 results are: Kaizen (24.10%), Lean (20.60%) and 6Sigma (8.00%) that confirms the popularity of these tools especially in industrial companies.

Figures 5 and 6 present the data of large size companies with more than 250 employees from 2013 and 2021.

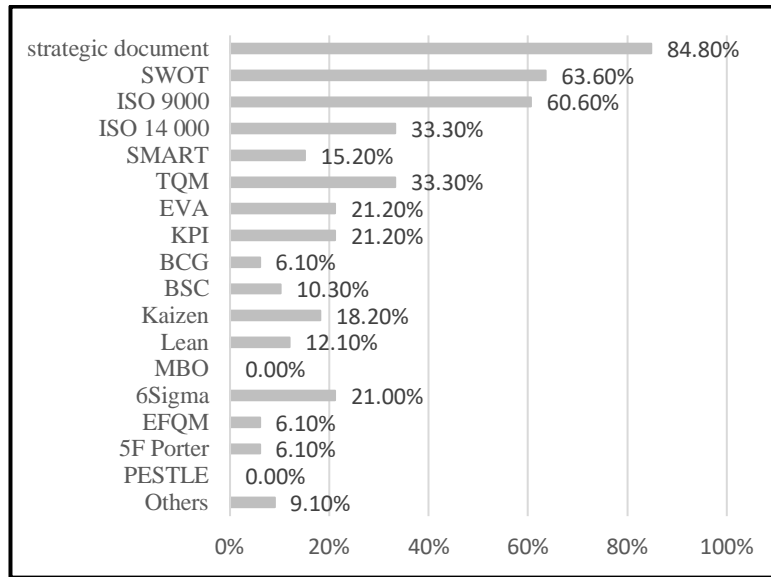


Figure 5 Usage of management tools and systems in large size companies in 2013

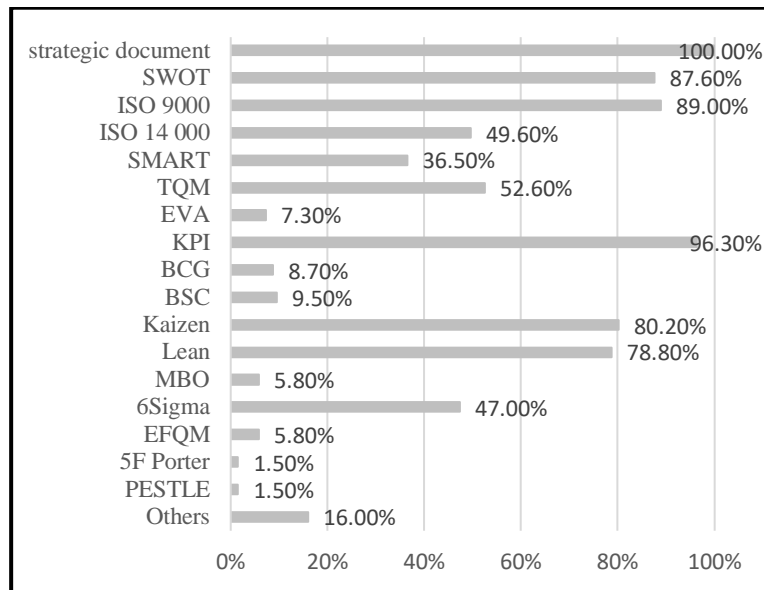


Figure 6 Usage of management tools and systems in large size companies in 2021

The results of large size companies research from 2013 show that strategic document (84.80%), SWOT (63.60%), ISO 9000 (60.60%) are key tools and systems. The impact of SMART is almost on the same level as in small and medium size companies (15.20%). The increasing trend of TQM (33.30%), EVA (21.20%), KPI (21.20%) continues. The significant growth is in Kaizen (18.20%), Lean (12.10%), 6Sigma (21.20%). Based on that, we can say that bigger companies focus on the continuous improvement tools that Kaizen, Lean and 6Sigma are. Large size companies have also 9.10% of Other tools and systems.

The 2021 outputs follow on increasing trend of small and medium size results. The strategic document

(100.00%), ISO 9000 (89.00%), SWOT (87.60%), are still key tools and systems for large companies. As we saw in micro, small and medium size companies, new key management tool in 2021 is KPI that presents 96.30% in 2021 and it means the second position and confirm the increase of importance of KPI that is currently one of the most important tools. The continuous improvement tools jump from 2013 to 2021 is extreme Kaizen (2013: 18.20% vs. 2021: 80.20%), Lean (2013: 12.10% vs. 2021: 78.80%) and 6Sigma (2013: 21.00% vs. 2021: 47.00%).

6 Discussion of research results

The summary of TOP management tools and systems for micro, small and medium, large size companies from 2013 and 2021 is presented in Table 3.

Table 3 Summary of TOP 10 management tools and systems usage comparing 2013 and 2021

TOP 10	2013	Total Frequency 2013	Relative Frequency 2013	2021	Total Frequency 2021	Relative Frequency 2021
1	Strategic document	234	54.29%	Strategic document	357	93.42%
2	SWOT	189	43.85%	KPI	292	76.40%
3	ISO 9000	154	35.73%	SWOT	288	75.34%
4	ISO 14000	70	16.24%	ISO 9000	250	65.41%
5	SMART; TQM	57	13.23%	Kaizen	160	41.82%
6	SMART; TQM	57	13.23%	ISO 14000	152	39.77%
7	EVA	30	6.96%	Lean	150	39.21%
8	KPI	25	5.80%	TQM	125	32.71%
9	BCG; BSC	23	5.34%	SMART	99	25.93%
10	BCG; BSC	23	5.34%	6Sigma	81	21.14%

Table 3 presents the overall results for usage of management tools and systems in micro, small and medium size and large size companies. We can see that in TOP 10 are almost the same management tools and systems in 2013 and 2021 – strategic document, SWOT, ISO 9000, ISO 14000, SMART, TQM and KPI. However, the total and relative frequency is different together with the position of every single system or tool. Generally, 2021 usage of management tools and systems is higher than 2013 and the increase is significant. We can see the progress of KPI which total frequency (TF) was 25 and relative frequency (RF) was 5.80% in 2013 and 2021 results presents TF: 292 and RF 76.40%. New members of TOP 10 are continuous improvement tools (Kaizen, Lean and 6Sigma) which popularity and importance is growing and our research confirms the trend.

We can say that the goal of the paper to analyze and describe the current situation of management tools and systems usage in companies in Czech Republic was fulfilled. The three research questions were answered as follows:

1. *What is the frequency of defined management tools and systems in companies in Czech Republic in 2021 compared to 2013?* Both (total frequency and relative frequency) for all tools are presented in Table 2 and TOP 10 summary is shown in Table 3.
2. *What are the biggest differences of management tools and systems usage in 2013 and 2021?* The biggest differences between 2013 and 2021 are frequency of management tools and systems usage, importance of KPI and usage of continuous improvement tools. All tools have higher total and relative frequency in 2021.

The growth of KPI was presented above but to summarize that, 2013 outputs are TF 25 and RF 5.80% and 2021 outputs are TF 292 and RF 76.40% that is significant increase. Continuous improvement tools deserve own research but as a part of this paper, we can see that the importance and popularity has grown significantly as KPI - Kaizen (2013: TF 14; RF 3.25% vs. 2021: TF 160 companies; RF 41.82%), Lean (2013: TF 14; RF 3.25% vs. 2021: TF 150; RF 39.21%), 6Sigma (2013: TF 10; RF 2.32% vs. 2021: TF 81; RF 21.14%).

3. *What are differences of management tools and systems application between micro size, small and medium size, and large size companies?* The data that are shown in chapter 3 presents very similar trend of management tools and system usage with little differences. For all groups – micro, small and medium and large size, strategic document, KPI, ISO 9000 and SWOT are the most important ones. The biggest difference is with continuous improvement tools usage in large companies comparing to micro and small and medium size. The micro size companies almost don't use them. Small and medium size companies have the usage of Kaizen, Lean and 6Sigma but the real progress and usage is visible in the large size companies that have completely different attitude to Kaizen, Lean and 6Sigma usage.

The main research findings of authors that worked on same area of research are listed in Table 4. We can state that our results are in accordance with the conclusions of previous research studies.

Table 4 Main findings of similar research studies

#	Author	Research output
1	Johnson [37]	Key tool for competitiveness is strategic document.
2	Analoui [38]	Strategic document and other management methods increase preparation of enterprises to dynamic markets changes.
3	Andersen [39]	Strategic document is important tool for company performance.
4	Song [40]	Performance increase is supported by strategic document and overall planning process and management tools, method usage.
5	Rudd [41]	Strategic document is key element that needs to be updated to increase the positive impact.
6	Drucker [42]	Strategic document and other management method and techniques is a must for long-term success.
7	Stonehouse [43]	Strategic management is mainly focused by large size companies comparing to medium and small size companies that focus on process management and planning.
8	Frost, 2003 [44]	The size of company correlates with usage of management methods and techniques as in large size company is higher usage of these management tools.
9	Laforet 2008 [45]	Large size companies – more resources to utilise an advantage of management tools to support KPI's
10	Tapinos, 2005 [46]	Strategic document defined as key for success in long term perspective.
11	Hartz, 1998 [47]	Long term goals, managerial tools and regular updates are three important elements of successful company.
12	Hussey, 1997 [48]	Small size companies use around 2-3 management tools at the average.
13	Temtime, 2003 [49]	Strategic planning is important for resources planning and development.

Research outputs from Table 4 underline important fact that usage of management tools, methods, techniques are crucial especially for strategic management of companies and that strategic document is key element of company success and development. Strategic planning is an effective approach to increase companies competitiveness at the market. The important fact of these research studies was that for large size companies is more common to use management tools and methods than for medium or small size companies.

7 Conclusion

The research questions were answered and fulfilled. The sample and data of the research are reliable and huge. The output of research performed in 2021 presents the usage of management tools and system in logistics centers, distribution and transport companies and warehouses and from the different size of companies – micro, small, medium and large compared to 2013 research results. Future researches could be aimed also on other countries as our research was performed only in Czech Republic companies so it would be good to compare the attitudes across different countries. It would be also good to deeply analyze concrete companies based on size or business area.

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Review process

Single-blind peer review process.

Appendix 1 Management methods, tools, techniques, systems according to areas of management

Area of management	Name of tool, technique, method, system
Strategic Management	7 Classes of Strategic Risks (Slywotzky), Strategic document , Porter 5F (Five Forces) Analysis, BCG (Boston matrix), BSC (Balanced Scorecard), the Blue Ocean Strategy, Gap Analysis, EFE Matrix, IFE Matrix, Hierarchy of Strategies, Management by Objectives, MOST , PESTLE Analysis, the Strategy → Structure Principle, Forecasting, Scenarios Technique, SPACE Analysis, SWOT Analysis, SMART - Goal Design, VRIO Analysis, Winterling Crisis Matrix, Critical Success Factors, KPI (Key Performance Indicators).
Management Organization	BSC (Balanced Scorecard), ERP (Enterprise Resource Planning), MBC (Management by Competencies), MBO (Management by Objectives), Organizational Development, Process

	Management, Project Management, Change Management, SOEM (Service Oriented Enterprise Management), SOM (Service Oriented Management), Porter 5F (Five Forces) Analysis, BCG , Critical Success Factors, Pareto principle, Strategy → Structure Principle, PESTLE Analysis, Reengineering, SMART - goal design, SWOT analysis, VRIO analysis, KGI (Key Goal Indicators), KPI (Key Performance Indicators), Excellence Model EFQM.
Quality Management	APQP (Advanced Product Quality Planning), PDCA (Deming Cycle), DMAIC Improvement Cycle, Excellence Model EFQM , Kaizen , Quality Rings, Lean , Poka-yoke, Six Sigma, TQM (Total Quality Management), the 5S, DOE (Design of Experiments) Ishikawa diagram, Kano model, Pareto Principle, FMEA (Failure Mode and Effect Analysis), FTA (Fault Tree Analysis), QFD (Quality Function Deployment), House of quality, G8D (Eight Disciplines), MSA (Measurement System Analysis), PPAP (Production Part Approval Process), Quality Management Systems ISO 9001 .
Innovation Management	Blue Ocean Strategy, CAF (Common Assessment Framework), DMAIC Improvement Cycle, PDCA (Deming cycle), Excellence Model EFQM , Kaizen , Quality Rings, Open Innovation, Six Sigma, TQM (Total Quality Management), User Centered Design, Brainstorming, Mindmaps, Pareto principle, SMART - goals design.
Change Management	Three step change (Lewin), Four step change, Eight step change, organizational development, change management by CSF (Critical Success Factors), Porter 5F (Five Forces) Analysis, Kolb Cycle of learning, Delphi method, Pareto principle, SMART - goals design, SWOT analysis, Scenarios Technique, PESTLE analysis.
Production Management	ABC-D, BOA (Belastungorientierte Auftragsfreigabe), CIM (Computer Integrated Management), CRP (Capacity Resource Planning), DBR (Drum Buffer Rope), JIT (Just-in-time), MRP (Material Requirements Planning), MRP II (Manufacturing Resource Planning), ERP (Enterprise Resource Planning), KANBAN, FIFO (First In First Out), FEFO (First Expired, First Out), HIFO (Highest In First Out), LIFO (Lowest In First Out), Lean Production, BCG Matrix, Pareto principle, VRIO analysis, ISO 9001 , ISO 14000 .
Marketing and Sales	5K Method, TLM (Total Loyalty Marketing), Branding, Blue Ocean Strategy, Holistic marketing concept, Marketing strategy, Marketing mix 3V, 4C, 4P, Positioning, CRM (Customer Relationship Management), Brand Management, PR (Public Relations), Market segmentation, Targeting, Product concept, Web marketing mix 4S, WOMM (Word of Mouth Marketing), Porter 5F (Five Forces) analysis, An off matrix, BCG (Boston matrix), Kano model, Customer portfolio matrix, PESTLE analysis, SWOT analysis, VRIO analysis.
Process Management	BCM (Business Continuity Management), BPM (Business Process Management), ITIL (ICT processes management), Six Sigma , PDCA (Deming cycle), DMAIC improvement cycle, reengineering, Time frames, statistical methods, ISO 9001 , TQM (Total Quality Management).
Economy and Finance Management	Pareto principle, Financial leverage, PESTLE analysis, SWOT analysis, VRIO analysis, Break Even Point Analysis, Financial statements analysis, Determination of financial indicators (liquidity, rentability, investments, indebtedness, activities, market value, productivity), TCO (Total Cost of Ownership), EBIT (Earnings before Interest and Taxes), Gross margin, Cash Flow, NOPAT (Net Operating Profit after Taxes), EVA (Economic Value Added), MVA (Market Value Added), WAAC (Weighted Average Cost of Capital), 29NPV (Net Present Value), IRR (Internal Rate of Return), Altman analysis (Altman Z-score).
Service Management	BCG matrix, Pareto principle, CorSet Framework, ITIL, ITSM (IT Service Management), SSME (Service Science, Management and Engineering), SOEM (Service Oriented Enterprise Management), SOM (Service Oriented Management), Services management system ICT ISO 20000.
Computer science and IT Management	SOA (Service Oriented Architecture), Code and Fix, EUP (Enterprise Unified Process), MSF (Microsoft Solutions Framework), MMDIS (Multidimensional Management and Development of Information Systems), DSDM (Dynamic System Development Method), ASD (Adaptive Software Development), BPEL (Business Process Execution Language), BPMN (Business Process Modelling Notation), ISO 8000, ISO 9001 , ISO 15504, ISO 20000.
Facility Management	Process analysis, Benchmarking, Insourcing, Business Process Improvement, Outsourcing, Spatial optimization, SLA (Service Level Agreement), SLM (Service Level Management), SWOT analysis, Maintenance, FMS (Facility Management Systems), CAFM (Computer Aided Facility Management).

Logistics and Transport	APS (Advanced Planning & Scheduling), Benchmarking, ERP (Enterprise Resource Planning), JIT (Just-in-time), KANBAN, MRP (Material Requirements Planning), MRP II (Manufacturing Resource Planning), Outsourcing, SCM (Supply Chain Management), CPM (Critical Path Method), TOC (Theory of Constraints), Network Analysis, model SCOR (Supply Chain Operations Reference-model).
Project Management	Gantt chart, Project schedule, Network analysis methods, RACI and RASCI responsibility matrix, Project plan, Project-Based Management, WBS (Work Breakdown Structure), Impact Analysis, PMBOK (Project Management Body of Knowledge), PRINCE2 (Projects in Controlled Environment), Project management standards ISO 10006, ISO 21500.
Crisis Management	Crisis plan, Winterling Crisis Matrix, Pareto principle, Forecasting, SMART - objective design, Scenarios technique.
Knowledge Management	Social network analysis, Sociogram, Sociometrics, Management epistemology, Learning.
Risk Management	BASEL I-III, CorIA (Core Impact Assessment), Checklist analysis, CCA (Cause-Consequence Analysis), CRI (Continuous Risk Improvement), Delphi method, CCTA Risk Analysis and Management Method), CPQRA (Chemical Process Quantitative Risk Analysis), EWRM (Enterprise-Wide Risk Management), ETA (Event Tree Analysis), FMEA (Failure Modes and Effects Analysis), FMECA (Failure Mode, Effects and Critical Analysis), FTA (Fault Tree Analysis), HAZOP (Hazard and Operability Study), HAZID (Hazard Identification Study), HRA (Human Reliability Analysis), PHA (Preliminary Hazard Analysis), PPAP (Production Part Approval Process), Forecasting, RIPRAN (Risk Project Analysis), RR (Relative Ranking), SA (Safety Audit) SR (Safety Review), VaR (Value at Risk), W-I (What-if Analysis), Winterling Crisis Matrix, Risk Management ISO 31000, OHSAS 18001.
Human Resources Management	360° feedback, Jobs analysis, Social network analysis, BEI (Behavioral Event Interview), Jack Welch Matrix, Job description, Staff audit, Role prossets, Sociogram, Sociometry, Job specification, Satisfaction Survey Methods.