Izzivi prihodnosti / Challenges of the Future, Članek / Article
Februar / February 2022, leto / year 7, številka / number 1, str. / pp. 1-20.

DOI: 10.37886/ip.2022.001

Advantages and Disadvantages of Principles of Scientific Management and Lean Organisation

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Abstract

Background and Originality: In this study, I would like to present the advantages and disadvantages of scientific management and lean organisation. I have chosen four factors as the basis for my analysis of the advantages and disadvantages of scientific management and lean organisation: Standardisation of work, training of workers, division of labour, and cooperation between management and workers. From this point of view, the following research questions were developed: How do authors in organisational science view the principles of a lean organisation and the principles of scientific management? And, which of the principles is more useful/valuable for organisations - the principles of lean organisation or the principles of scientific management?
Method: I used text analysis, which involves a critical analysis of different or conflicting perspectives on scientific management and lean organisation principles. The following databases were used: Google Scholar, Springer, and Taylor and Francis databases.
Results: Based on the literature studied, I have found that scientific management was successful because it satisfied most of the needs of the industrial society of the time. On the other hand, scientific management has its limitations and slows down the innovation function in modern industrial society. The principles of lean organisation were supposed to eliminate the shortcomings of scientific management such as lack of motivation, monotonous work, considering people as machines and disregarding human nature. However, our research has shown that standardisation of work, authorisation of workers, lean management, teamwork, and other factors of lean organisation attract similar criticisms to scientific management.
Society: The findings of this article may have theoretical and practical implications for those involved in organisational leadership.
Limitations/ further research: I have covered only the behaviourist aspect in this article. Another limitation was the choice of principles by which I observed the advantages and disadvantages of scientific management and lean organisation. It would be interesting to extend the observation to other aspects and principles.

Keywords: scientific management, lean organisation, standardisation, workers' training, division of labour.

1 Introduction

In the late twentieth century, a global environment developed that fundamentally changed the role of all business organisations. Financial capital gains the main role in the economy, and physical capital is no longer the focus - the goal of the owners of private companies and later public corporations is to invest in any organisation, regardless of its location, that creates added value - a profit. At the level of an organisation, this means that the organisation is designed to

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Prejeto: 18. oktober 2021; revidirano: 7. november 2021; sprejeto: 7. februar 2022. /
Received: 18th October 2021; revised: 7th November 2021; accepted: 7th February 2022.

function successfully and create new value even in a complex and global environment that is changing rapidly (Nordström & Ridderstråle, 2004, p. 205). Customers' individual needs and desires are changing rapidly, which requires a transformation of the organisation. The focus on production is replaced by a focus on the customer (Ambrož, 2009, p. 53).

At the beginning of the 21st century, human society is increasingly confronted with various crisis states. Possible solutions are revealed in multiple forms of organisation in all fields that are not based on the principles of scientific management. (Ishii, 2013, p. 7314) Soon after World War II, it became clear that an organisation based on the principles of scientific management that promoted mass production was no longer appropriate. Therefore, various organisational concepts emerged that considered the consumer society and focused primarily on the consumer. In the 1960s, Toyota Motor Corporation developed an important new management system implemented by top managers in several manufacturing and service companies. In the early 1970s, the lean organisation concept spread to U.S. organisations and later around the globe (Emiliani, 2006, pp. 167-169). Other authors developed similar organisational concepts. Krafcik (1988, p. 41), for example, introduced a similar concept, which he called the lean concept.

The purpose of this article is to find out which authors from the field of organisational science think that the principles of lean organisation or the principles of scientific management are more useful for organisations. It is interesting that in the global scientific literature, we find authors such as Tang (2017, p. 119), Corbacioglu (2017, p. 81), Ribeiro, (2015, p. 77), Liker (2004, p. 158), Bartezzaghi, (1999, pp. 245-246), Charron, Harrington,Voehl & Wiggin (2015, p. 66) who claim that the management methods based on the concept of scientific management are still strongly present in contemporary postmodern organisations. Therefore, the advantages and disadvantages of one or the other concept are similar. Other authors, such as Ballé (1999, p. 198), Duguid (2015, pp. 6-7), Naruse (1991, p. 41), Jenner (1998, p. 402), and Roser (2017, p. 234), claim that the lean organisation is an independent concept and is not based on scientific management.

I want to create a reference field for future research on organisational approaches in the industry. I have selected only the central principles of scientific management and lean organisation and presented the disadvantages and advantages of these principles. Therefore, it is obligatory to carefully study the principles of both approaches in future research and conduct a detailed comparative analysis. As a basis for the analysis of the advantages and disadvantages of scientific management and lean organisation, I selected four principles of scientific management (Locke, 1982):

- Standardisation of work
- Training of workers
- Division of labour
- Cooperation between management and workers. (p. 15-17)

2 Theoretical framework

2.1 Theory of Scientific Management

At the height of the Industrial Revolution, in the late 20th century, it was difficult for factory owners to monitor the rapidly evolving organisations of modern society. Social conflicts and conflicts within organisations, which erupted in violent confrontations, increased. Some theorists, such as Marx, Weber, and Durkheim, attempted to capture the functioning at the social level with the development of grand theories about society. The organisational theories and models that Durkheim, Toennies, Weber, Fayol, and Taylor developed started from the organisations themselves. F.W. Taylor, the "father of scientific management," was an engineer who contributed significantly to the development of organisational thinking (Locke, 1982, p. 14). He claimed that he could systematically examine each workplace and prepare a set of procedures that would increase worker productivity and satisfaction (Hill & Van Buren, 2018, p. 266; Vijai, Somayaji, Swamy, & Aital 2017, p. 447). He advocated simplification, time study, systematic tests to identify more efficient work performance, and control systems to measure efficiency and rewards (Dalcher, 2017, pp. 2–3; Unterlechner, Meško Štok, & Markič 2009, p. 22). At the beginning of the 20th century, the theory of scientific management was one of the most widely used in Western industrialised countries. It includes scientific methods and theoretical bases for standardising and rationalising production activities (Grachev & Rakitsky, 2013, p. 520).

In developing his scientific management, Taylor assumed that the problem of poor labour efficiency and low wages could be solved for the common good of workers and owners. He established four main principles of organisational efficiency as new guidelines for the work of managers, whom he required to assume certain responsibilities and tasks to understand scientific management fully:

- A scientific study of every movement (including process, operation) of the work, replacing the old rule-of-thumb method
- A systematic selection, training, education and development of each worker,
- Honest cooperation between workers to ensure that the work is done in the best possible way.
- Managers are responsible for how the job gets done, and workers are responsible for getting the job done. (Hodgetts & Greenwood, 1995, p. 218; Turan, 2015, p. 1103)

Kemp (2013, p. 350) noted that scientific management was developed in modern times and perfected in factories until it reached its peak in the 21st century. Thus, Taylor's principles not only fit modern management today, but his principles are a part of it (Bartezzaghi, 1999, p. 232; Naruse, 1991, pp. 34-35). Although Taylor contributed much to management as a science, he was also heavily criticised. The main criticism was related to the fact that he put the human factor in the background (Dalcher, 2017, p. 7; Turan, 2015, p. 1102).

2.2 Lean organisation

The oil crisis and the high imports of Japanese cars to the West have raised the question of the efficiency of car production in the West and the question of the adaptability of this industry to the new circumstances created by the crisis. The testing of the concept of lean organisation in the Western automotive industry has shown that it is more efficient than the methods used by the automotive industry at the time (Holweg, 2007, p. 432).

In the West, J. F. Krafcik was the first to use the term "lean" in its current context in the Sloan Management Review article "Triumph of Lean Production Systems." In the late 1980s, James Womack, founder of the Lean Enterprise Institute and author of "Lean Thinking" and "The Machine that Changed the World," was instrumental in further popularising and eventually establishing the term lean production, which later evolved into the term lean organisation. He was the leader of a research group that created the term "Lean Organisation" to describe the Toyota production concept. According to Bateman, Esain, Massey, Rich and Samuel (2006), the lean organisation is based on the following principles:

- The customer determines the value of the product or service,
- Processes function without downtime,
- Material and information flow without distraction,
- Production is based on customer needs,
- Continuous improvement. (p. 432)

Womack, Jones and Roos (1990, p. 13) and Paez et al. (2004, p. 288) stated that compared to mass production, a lean organisation consumes less of everything: half the human effort in factories, half the production space, half the investment in tools, half the engineering hours to develop a new product, and half the team. Liker (2004, p. 20) stated that the lean organisation was born out of the need for fast, flexible processes that deliver what customers want, when they want it, at the highest quality, and at affordable prices. According to Chauhan & Singh (2012, p. 59), the lean concept emphasises teamwork, continuous training and learning, customised production, mass customisation and batch size reduction, flowing production cells, rapid tool changes, shared productive maintenance, and other techniques. The lean concept describes a modern organisation subject to constant change at all levels. Therefore, Pearce & Pons (2017, p. 10) emphasise that the ultimate goal of the lean concept is a developed learning organisation. Paez et al. (2004, p. 288) described the main characteristics of lean manufacturing based on Womack's appearance before a U.S. Congressional commission in 1994. In his presentation, Womack identified three main characteristics of lean manufacturing that lead to better results. First, lean manufacturing involves a new production philosophy emphasising customer satisfaction and continuous improvement. Second, lean manufacturing involves new organisational techniques for product development, supply chain relationships, production operations, and enterprise-wide coordination. Third, lean manufacturing employs timely, concurrent development and inventory management systems. Jenner (1998, p. 397) viewed the lean organisation as a self-organising dynamic system, which research has shown to be the most

straightforward, creative, and adaptive structure that has emerged in various physical and biological domains.

Critics of the concept of lean organisation claim that the definition of lean organisation itself is vague and confusing and is used to describe very different experiences, even based on conflicting principles and models. A pure lean organisation is more a myth than an accurate representation of actual change processes. According to this view, lean production should not be seen as a break with the previous paradigm, but as a renewal and reinforcement of its characteristic features, such as rigid standardisation, excessive division of labour, the definition of limited roles, short work cycles and hierarchical organisation (Bartezzaghi, 1999, p. 232).

In reviewing the literature, I found that authors attribute both advantages and disadvantages to scientific management and lean organisation. As such, the following research questions were developed:

- How do authors in the field of organisational sciences view the principles of lean organisation and the principles of scientific management? and
- Which of the principles are more useful/valuable to organisations - the principles of lean organisation or the principles of scientific management?

3 Method

An integrative review of the literature from academic databases in Taylor's lean organisation and scientific management was conducted to answer the research questions. I focused on the literature discussing the advantages and disadvantages of scientific management and lean organisation. I then evaluated the advantages and disadvantages of scientific management and lean organisation. An integrative literature review was conducted (see Figure 1) to offer a new perspective on an already known issue (Pautasso, 2013, p. 1; Torraco, 2016, p. 19). Google Scholar, Taylor & Francies, and SpringerLink were used to access relevant literature. The following keywords were used as a starting point for selecting literature:

- Advantages and Disadvantages of Lean Organisation, and
- Advantages and Disadvantages of Scientific Management.

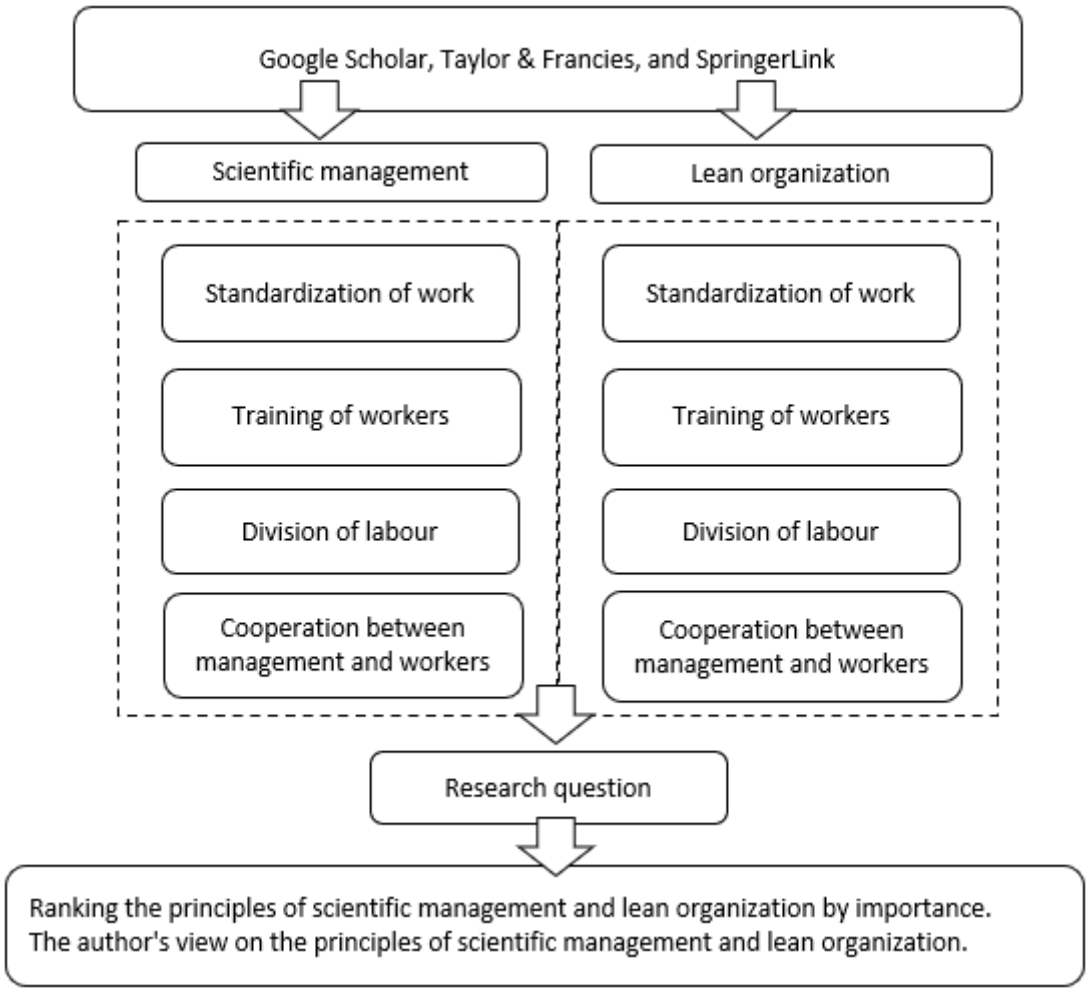

Figure 1. Research model

Using the first set of keywords, I searched for articles dealing with the concept of lean organisation and received 24,395 hits. Using the second set of keywords, I focused on articles dealing with the principles of scientific management, and the search yielded 23,322 hits (see Table 1).

Table 1. Results of the literature review by keywords

Database	Keywords	Number of results	Selected results
Taylor & Francis	advantages and disadvantages of a lean organisation	1,082	5
	advantages and disadvantages of scientific management	3,941	9
Google Scholar	advantages and disadvantages of a lean organisation	20,600	26
	advantages and disadvantages of scientific management	17,800	21
SpringerLink	advantages and disadvantages of a lean organisation	2,713	7
	advantages and disadvantages of scientific management	1,581	8

As there were many results (Table 1), I continued the selection based on the following categories: standardisation of work, training of workers, division of labour, cooperation between management and workers. In this way, I was able to narrow down the selection of literature considerably. Then I decided to include the literature in the analysis based on the extent to which the author agreed or disagreed with scientific management and lean organisation principles. As such, 76 units were included in the analysis (see Table 1, column Selected results). See Table 2 for a list of exclusion criteria.

Table 2. Exclusion criteria

Number	Exclusion criterion
1	The article deals with only one of our search terms and not all terms: standardisation of work, training of workers, division of labour, cooperation between management and workers.
2	The abstract does not contain both views: scientific management and lean manufacturing.
3	The article does not offer a comprehensive and clear division of the categories considered: standardisation of work, training of workers, division of labour, cooperation between management and workers.

In the Results section, I present my rating scale (see Table 4 and Table 5) for the importance of each principle, which is based on the literature we analysed and also depended on how much importance the authors themselves attach to each principle. Finally, in the radar chart (see Figure 3), I depict which principles are most important and which are less important for scientific management and lean organisation. I limited my search to the period 1980-2020. I limited the number of materials to 76 units. I was guided by Hammond's (2018, p. 8) argument that the author of the article must find key elements in the literature searched, based on which they then offer the reader new perspectives on the research problem. I used the content analysis

method for a comparative analysis of scientific management and lean organisation principles (Miles & Huberman, 1994).

The validity of the results of this paper is based on our interpretation of secondary data and analysis of previous research and literature. The coded data were checked by three intra-rater checks of the researcher's coding. First, immediately after the completion of the initial coding; second, two months after the initial coding; and the final intra-rater check was done before I started making the radar chart diagram, about three months after the initial coding of the data. We calculated the consistency between the three encodings – reliability. Intra-rater reliability was calculated using the Miles & Huberman intercoder reliability method (Miles & Huberman, 1994, p. 64). Reliability estimates were 92,13%, 91,19% and 97,45, respectively %.

4 Results

As a basis for analysing the advantages and disadvantages of scientific management and lean organisation, the following four principles of scientific management was chosen (Locke, 1982):

- Standardisation of work,
- Training of workers,
- Division of labour,
- Cooperation between management and workers. (p. 15-17)

The abstracts (see Table 3) present the views of various authors on the advantages and disadvantages of scientific management and lean organisation.

Table 3. Evaluation of categories of scientific management and lean organisation

Principles	Approach	Advantages	Disadvantages
Work standardisation	Scientific management	Locke (1982), Carney & Williams (1997), Rossler & Beruvidis, (1994) note that work was not standardised before the introduction of scientific management. Bluedorn (1986), Braverman (1998), Bartezzaghi (1999) & Casey (2002) find that standardisation of work eliminates all irrational ways of working.	Braverman (1998) finds that the standardisation of work is dull and uncreative. Locke (1982), Pruijt (2000) & Adler (1992) believe that extreme specialisation leads to dullness reduces motivation for work and creativity. Koumparoulis & Vlachopoulioti (2012) find that standardised work is not innovative because strict rules constrain it. Simha & Lemak (2010) find that standardised work subordinates the worker and reduces his creative potential.
	Lean organisation	Dennis (2015) believes that standardisation of work is only a starting point for working in the workplace and improves standardised procedures. Liker & Meier (2006) agree with this view but believe that the supervision of the manager is necessary for the first phase of this process.	Forza (1996) finds that the continuous improvement of standardised procedures in lean organisations creates stressful situations that negatively affect work ability. Hasle, Limborg, Kallehave, Klitgaard, & Andersen (2012), Vallas (1999), Prechel (1994) emphasise that

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»continued«		Nicholas (2018) sees standard work as a starting point for process stabilisation. Standard work is further combined into standard combinations that allow the production of each product during the cycle (Monden, 2004).	standardisation of work in lean organisation reduces work autonomy and strengthens centralised decision-making at the top of the organisation.
Training of workers	Scientific management	Bluedorn (1986) claims that scientific management has systematically selected the best workers for a particular job. Hodgetts and Greenwood (1995) think that scientific management is the selection mechanism for choosing the most capable workers. Ambrož (2009) finds that the selection of a worker by a direct manager was an effective way of choosing the best worker.	Dalcher (2017) & Casey (2002) find that scientific management does not consider the worker's personality characteristics. Dalcher (2017) believes that such a way of selecting workers triggered a dropout of professionals. Derksen (2014) believes that scientific management did not pay much attention to worker selection, as it focused primarily on eliminating poor workers.
	Lean organisation	Honold (1997) emphasises the benefits of empowering employees in lean organisations: personal responsibility for success, work autonomy, control over decisions directly related to work, work enrichment and a decentralised organisational structure. Baird & Wang (2010) find that empowered employee performance is an important factor for success in an organisation. Koberg, Boss, Senjem, & Goodman (1999) link empowered employee performance with workplace satisfaction.	Vidal (2007) claims that new responsibilities and empowered performance of employees cause stressful situations. Employees experience this as a burden and not as a challenge that does not contribute to job satisfaction. Vallas (1999) finds that modern organisations prioritise top professionals, which neglects other employees in the organisation. Knowledge is centralised due to this way of choosing (Bouville & Alis, 2014). Vidal (2006) find that teamwork and direct responsibility increase employee stress.
Division of labor	Scientific management	Simha and Lemak (2010) find that according to the principles of scientific management, the worker is responsible for the work done by the goals of the organisation. Professionals and other support staff are responsible for planning and preparing work, thus enabling less-skilled workers to do their job efficiently and successfully. Unterlechner, Meško Štok & Markič (2009) emphasise the importance of taking into account the ideas, concepts and experiences of employees in the process of preparing work in scientific management.	Adler and Borys (1996) believe that scientific management stifles creativity, encourages dissatisfaction, and demotivates employees. Braverman (1998) finds that the division of work between planning and implementation hinders the understanding of processes in an organisation. Ambrož (2009) warns that the division of labour in scientific management often indicates a slave relationship between the management and workers.
»continued«	Lean organisation	Styhre (2001) notes that Kaizen strengthens trust between the management and employees. Kaizen is a method by which new	Boje and Winsor (1993) find that teamwork and employee empowerment and participation are TQM and Kaizen, only a

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		ideas and views on how to work in production can be created. It encourages the creative functioning of the individual and continuous improvement and ensures the achievement of the organisation's goals at the group level and at the organisation level Ambrož (2009). Vo, Kongar & Suárez Barraza (2019) believe that Kaizen is a philosophy that can significantly improve. Powell (1995) attributes the impact on customer and stakeholder satisfaction, on the quality of internal communication, on problem-solving, on greater commitment and motivation of employees and on reducing costs to the Total Quality Management method.	subtle method of employee supervision that is no different from supervision in scientific management. Kaizen consistently pursues the meticulous task execution based on rules set by the management. Coriot (1980) thinks that the concept of lean organisation envisages only a different, a group way of controlling the employees compared to scientific management, which controls the individual. Fallah Ebrahimi, Wei Chong & Hosseini Rad (2014) find that the employees' level of stress boosts with increasing level of involvement in decision-making. Powell (1995) warns that the use of the TQM model is based on a large financial investment for education, a large expenditure of time, requires more administration and more formal procedures. TQM works effectively if employees are above-averagely committed to work and focus more on the process than on the results.
Cooperation between the management and workers	Scientific management	Ferleger and Lavallee (2015) find that scientific management reduces the conflict that arises from payment relationships in an organisation by linking the payment to the effort a worker puts into his work. Another advantage of scientific management is the support staff that helps the worker to operate at the highest possible level (Tadajewski & Jones, 2012). Brogan (2011) also emphasise the importance of assistance of a superior manager to a worker in performing his tasks. Turan (2015) also positively assesses the principle of scientific management, which stems from the finding that the employer must link his long-term existence with the well-being of the workers.	Duguid (2015) finds that the help of an operational manager means that people in scientific management system are just one of the resources equivalent to machines and equipment and nothing more. Braverman (1998) believes that sincere participation is questionable because the worker was not allowed to participate in planning his work process. Wagner-Tsukamoto (2008) adds that sincere cooperation between the management and the employees is not possible even at the behavioural, organisational, and psychological level, as the system operates in one-way according to the principles of bureaucratic organisation.

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Lean organisation	Forrester (1995), Dibia, Nath & Onuh (2014) find that collaboration at the group level connects the goals of the organisation. Forza (1996) finds that leadership that operates on the principles of lean organisation involves workers in problem solving, which has a positive impact on organisation's business.	Chason (2005) finds that a lean organisation does not allow workers to participate properly in decision-making because it is more apparent. Barker (1993), Smith (1996) link only group organisation to coordinated supervision, which is more subtle but powerful form than a traditional bureaucratic oversight.

I developed a scale to rate the strengths and weaknesses of scientific management and lean organisation (see Table 4). The scale in Table 4 shows the value of each evaluation category to facilitate ranking the importance of each principle by scientific management and lean organisation. Based on the analysis of the texts read, ratings were given to each principle to then compare scientific management and lean organisation.

Table 4. Evaluation scale of advantages and disadvantages of scientific management and lean organisation

Scale	**Category**	**Category**
1	Very low advantage	Very low disadvantage
2	Low advantage	Low disadvantage
3	Medium advantage	Medium disadvantage
4	High advantage	High disadvantage
5	Very high advantage	Very high disadvantage

The ratings for each principle are shown in Table 5. The radar chart would look slightly different and would depend on the rating of another author of the literature studied.

Table 5. Weights of advantages and disadvantages of scientific management and lean organisation

Categories	Scientific management		Lean organisation	
	Advantages	Disadvantages	Advantages	Disadvantages
Work standardisation	5	3	3	4
Training of workers	5	2	4	2
Division of labour	4	1	3	3
Cooperation between management and workers	3	2	5	1

Based on the results, a radar diagram was created (see Figure 3) showing the dimensions of the strengths and weaknesses of scientific management and lean organisation. In this diagram, each principle is ranked according to the ratings given on the basis of the literature examined. In scientific management, there are four principles, selected according to their importance and ordered as follows: standardisation, training of workers, division of labour, cooperation between management and workers. In a lean organisation, the four selected principles are

ordered in terms of their advantages and disadvantages as follows: cooperation between management and workers, training of workers, division of labour, standardisation

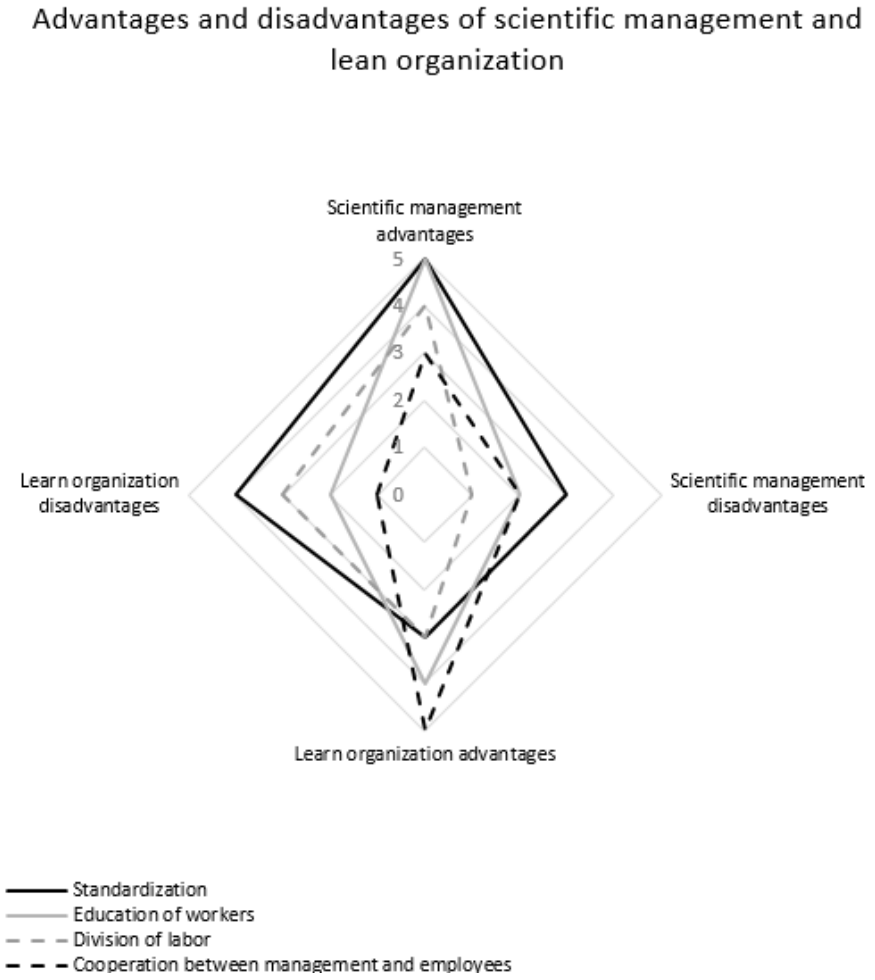

Figure 3. The dimensions of advantages and disadvantages of scientific management and lean organisation.

5 Discussion and Conlusion

In scientific management, there are four principles (see Figure 3), selected according to their importance and ordered as follows:

1. Standardisation, training of workers
2. Division of labour
3. Cooperation between management and workers.

In a lean organisation, the four selected principles (see Figure 3) are ordered in terms of their advantages and disadvantages as follows.

1. Cooperation between management and workers
2. Training of workers
3. Division of labour, standardisation

In the graph (Figure 3), the main advantages of scientific management are standardisation and worker training. This stems from the fact that at the time of the emergence of scientific management in the United States in the late nineteenth century, the workforce was largely made up of newcomers from Europe who did not speak English well (Olson, 2016, p. 10). Each had his own tools and used them in their own way. In lean organisations, however, excessive standardisation kills employee creativity (Hasle et al., 2012, p. 635; Prechel, 1994, p. 723) Figure 3 shows that in lean organisations, collaboration between management and employees is most important. This is logical because one of the foundations of a lean organisation is decentralising decision making and empowering employees when it comes to operational issues (Forza, 1996; Forrester, 1995; Dibia, Nath & Onuh, 2014). Employees are the first to notice deviations from the norm and know best about common breakdowns and disruptions.

Based on the ranking of the individual principles in Figure 3, both scientific management and lean organisation have certain advantages and disadvantages. It follows that it is not possible to give preference to one concept or the other. To answer the research question, we cannot conclude from the analysed literature which of the principles most authors tend to. There are authors such as Ballé (1999, p. 198), Duguid (2015, pp. 6-7), Naruse (1991, p. 41), Jenner (1998, p. 402), and Roser (2017, p. 234) who emphasise the advantages of lean organisation principles and others such as Tang (2017, p. 119), Corbacioglu (2017, p. 81), Ribeiro, (2015, p. 77), Liker (2004, p. 158), Bartezzaghi, (1999, pp. 245-246), Charron, Harrington, Voehl, and Wiggin (2015, p. 66), who give priority to the principles of scientific management.

Scientific management was successful when it was introduced because it met most of the needs of the industrial society of the time (Hodgetts & Greenwood, 1995). It greatly improved the efficiency of hierarchy, reduced the abuse of power, and developed a rational way of organising work that simplified tasks to the point where anyone could perform them (Pinchot & Pinchot, 1993). Modern times require a new way of thinking and perfecting the old way of thinking.

Environments are becoming more complex and, as a result, organisations are becoming flatter, stratified, networked, flexible, and with fuzzy boundaries.

Standardisation of work, training of workers, division of labour, and cooperation between management and workers are factors present in scientific management and lean organisation. However, the contribution of each factor to the success of one concept or the other varies. The extent to which each of the above factors has influenced the success of scientific management and the lean organisation concept depends largely on when both concepts were developed. At the time of the emergence of scientific management in the late 19th century, the social situation was different than it is today. The vast majority of workers were illiterate and production workers were more familiar with work processes than managers (Tailor, 1996). Given this social condition, the application of standardisation of work, division of labour, training of workers, and cooperation between management and workers had led to a remarkable improvement of results in organisations (Hodgetts & Greenwood, 2017, p. 218). Throughout history and up to the present day, the social environment has changed and so has the influence of each of these factors on the organisation's success. In the present time we have a different social situation than when scientific management was born. We have a regulated legislation, which regulates the relations between employers and employees (OECD), there is practically no illiteracy (World Population Review), the market is very demanding and oversaturated with universal goods (Füller& Matzler, 2008, p. 116). As we can see, the situation at the time of the emergence of scientific management and lean organisation was very different, so the impact and importance of the factors of standardisation of work, training of workers, division of labour and cooperation between management and workers on the success of one or the other concept are different (Hodgetts & Greenwood, 2017, p. 218) .

The four principles of scientific management, i.e. standardisation of work, training of workers, division of labour, cooperation between management and workers, which are also included in a lean organisation, have never been an obstacle or an advantage to the economic success of an organisation. The problem lies in the actual implementation and application of the principles of one concept or another in practise. For example, Taylor's principle of standardisation is no different from the standardisation of work in a lean organisation. Both principles, when applied judiciously as explained in one concept or the other, will lead to similar success. From the perspective of the four principles mentioned above, against which we have evaluated both concepts, it follows that it does not matter which concept is used for the organisation's success. What is important is the correct implementation of these principles in both concepts. The differences between the two concepts arise mainly from the historical context in which they both emerged. The social, political, and societal conditions at the end of the nineteenth century, when scientific management emerged, and those at the end of the twentieth century, when lean organisation began to spread, differ significantly.

The contribution of the findings to the science and profession of management is the synthesis of the advantages and disadvantages of scientific management and lean organisation. In this

study, I limited myself to four selected factors, and it would be interesting to extend the analysis to other important factors. It would be interesting to conduct a similar study in reverse, that is, to compare the weaknesses and strengths of scientific management and lean organisation using the principles of lean organisation. I am aware that the assessment of the views of the studied authors is subjective and that this is an important limitation of my research. An important aspect that influenced the research results are selected databases in which I searched for articles. Expanding the databases would probably give different results. I have tried to overcome the above limitations by using intra-rater reliability and by including as many studies from three databases as possible. The study could be replicated and would yield similar results if the author used the rating scale as shown in Table 4.

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Povzetek:
Prednosti in slabosti znanstvenega menedžmenta in vitke organizacije

Ozadje in izvirnost: V tej študiji bi rad predstavil prednosti in slabosti znanstvenega menedžmenta in vitke organizacije. Za osnovo za analizo prednosti in slabosti znanstvenega vodenja in vitke organizacije sem izbral štiri dejavnike: standardizacijo dela, usposabljanje delavcev, delitev dela ter sodelovanje med vodstvom in delavci. S tega vidika so se razvila naslednja raziskovalna vprašanja: Kako avtorji v organizacijski znanosti gledajo na načela vitke organizacije in načela znanstvenega menedžmenta? Katera od načel je bolj uporabna/dragocena za organizacije – načela vitke organizacije ali načela znanstvenega menedžmenta?

Metoda: Uporabil sem analizo besedila, ki vključuje kritično analizo različnih ali nasprotujočih si pogledov na znanstveno upravljanje in načela vitke organizacije. Uporabljene so bile naslednje baze podatkov: baze podatkov Google Scholar, Springer ter Taylor in Francis.
Rezultati: Na podlagi preučene literature smo ugotovili, da je bilo znanstveno upravljanje uspešno, saj je zadovoljevalo večino potreb takratne industrijske družbe. Po drugi strani ima znanstveno upravljanje omejitve in upočasnjuje inovativno funkcijo v sodobni industrijski družbi. Načela vitke organizacije naj bi zavrnila pomanjkljivosti znanstvenega menedžmenta, kot so pomanjkanje motivacije, monotono delo, opazovanje človeka kot stroja in neskladnost s človekovo naravo. Izkazalo pa se je, da so tudi standardizacija dela, avtorizacija delavcev, vitko upravljanje, timsko delo in drugi dejavniki vitke organizacije poželi podobne kritike kot znanstveni menedžment.
Družba: Ugotovitve tega članka imajo lahko teoretične in praktične posledice za tiste, ki so vključeni v vodenje organizacij.
Omejitve/nadaljnje raziskovanje: V članku smo obravnavali le vedenjski vidik. Druga omejitev so izbrana načela, s katerimi smo opazovali prednosti in slabosti znanstvenega menedžmenta in vitke organizacije. Zanimivo bi bilo opazovanje razširiti na druge vidike in načela.

Ključne besede: znanstveno vodenje, vitka organizacija, standardizacija, izobraževanje delavcev, delitev dela.