

Article

Lean transformation: role of the lean manager

Norbert MÁTRAI¹

Citation: Matrai, N. (2023). Lean transformation: role of the lean manager. *SEA - Practical Application of Science, Year (volume) XI, Issue (33)*, 185-195.

Received: 03 October 2023

Revised: 20 December 2023

Published: 22 December 2023



Copyright: © 2023 by the authors. Published by SEA Open Research.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract: Lean leadership is often cited in the practitioner literature as an important factor in successful lean transformation. More and more companies are creating full-time lean manager position and dedicated lean teams. There is a lack of research in the literature on whether the integration of a full-time lean manager into the organisational structure improves the effectiveness of lean, and what are the duties and responsibilities of the lean manager. The research has demonstrated that the effectiveness of lean transformation is significantly higher in organisations with a full-time lean team. A dynamic relationship exists between the roles of the full-time lean manager and the company-wide change management framework. A model job description has been developed for the full-time lean manager position, in the context of the organisational change framework for lean manufacturing implementation. The model would serve as the basis for further empirical research and a recommendation for business leaders on how to design a full-time lean manager position in their company.

Keywords: lean transformation; lean manager; organisational change;

JEL Classification: M14

¹ Faculty of Engineering, University of Debrecen, Debrecen, Hungary

INTRODUCTION

Lean and change management

When an organization adopts lean, it is unlikely it has a full sense of where the methodology will take it. It wants the superior business results that a lean company like Toyota enjoys, and knows that lean is a business model that will enable it to operate in new, and more efficient ways (Hartwell and Roth, 2010).

Lean has been widely applied in manufacturing companies worldwide. However, the low success rate of lean transformations in many countries has given a cause for concern. Much of the literature had pointed out that the main reason is due to the failure in managing the change process during a lean manufacturing transformation. Much of the reported literature had discussed lean manufacturing transformation in great detail, but very few had discussed it from the perspective of organisational change management (Nordin et al. 2012).

In a case study on lean transformation Hartwell and Roth (2010) confirms, that one challenge for companies adopting lean methods is change management, moving from their current operations to a new set of practices based on lean methods, achieving improved results, and continuing improvement efforts.

British empirical research suggests culture and change have contributed to every lean failure (Bhasin, 2011). Often omitted from Lean implementations are the organisational development aspects that provide the mechanism to hold things together. This includes a change management process aligned to the culture, a performance reward structure, pay systems, a performance measurement system and workforce organisation. Lean needs to be viewed as a developing discipline and dynamic since it is constantly improving. Lean should be treated as a long-term commitment with the ultimate goal requiring it to be viewed as a philosophy (Bhasin, 2011).

In a literature review conducted by Turesky and Connell (2010), the authors conclude that there are certain factors that are very important to the successful implementation of lean. They are leadership and support from top management, communication, training, project selection, employee engagement, desire to improve, managing resistance to change, project team selection, completing the project, accountability, ownership, and follow up of results.

Role of the full-time lean team in lean transformation

A transformation is the purposeful, intentional, consistent change of an organization's business model over time. A transformation requires many decisions and actions that must be consistent, purposeful, and intentional. Purposeful means having a specific outcome in mind. Intentional means by design. Consistent is having the purpose and intent drive all transformation actions (Kotnour, 2010:45). In successful transformations, the president, division general manager, or department head, plus another five, fifteen or fifty people with a commitment to improved performance pull together as a team. In the most successful cases, the coalition is always powerful in terms of formal titles, information and expertise, reputations and relationships, and the capacity for leadership (Kotter, 1996:6).

Although there are several guidelines available to support management of and leadership within the lean transformation (Renström and Niss, 2015), insufficient senior management skills to implement lean and insufficient understanding of potential lean benefits are prominent obstacles to implementation efforts (Bhasin, 2012). Emiliani and Stec's (2005) literature review suggests that while many organizations have high levels of awareness of lean, most senior managers lack detailed knowledge of lean principles and practices, and they do not recognize it as a management system. This is consistent with their limited understanding of lean, the common tendency to mix lean and non-lean business practices and metrics, and lack of direct participation in continuous improvement activities.

As a consequence, many lean initiatives fail, and an important reason is that senior managers are unable to support the implementation. Renström and Niss (2015) investigates this problem by exploring senior managers' perspectives on lean implementation. The authors' exploratory case study at a global manufacturing company revealed four main obstacles: 1) competence development needs of senior management were not addressed; 2) the lean development initiative was not connected to company strategy; 3) key players within the organisation were initially not involved or tasked; 4) the initiative was not system wide.

Martínez et al. (2013) concludes that in the phase prior to lean adoption, the success factors are the incorporation of external change agents and the management averting inertia, whereas in the other phases of the adoption process five main factors were found: training, communication, rewards, job design and work organization. In relation to the

work organization, the authors found that one explanatory success factor was the designation of a committed person taking charge of the lean initiative in the plant on a full-time basis. Little attention has been paid to this finding in the literature, but it is nonetheless crucial during the first stages of lean production implementation.

Worley and Doolen (2015) underlines the significance of dedicated personnel in lean implementation. Without dedicated individuals to plan and drive the lean manufacturing initiative, it did not fully become a part of the culture on the manufacturing floor. Instead, members of the executive management team focused on the lean implementation only as schedules permitted. Without dedicated personnel, employees on the manufacturing floor had little leadership or guidance on how to integrate the lean tools into the work environment.

De Vries and Van Der Poll (2018) studied two cases of discrete manufacturing organisational restructuring and organisational behavioural change in the context of teamwork in South Africa. One of the authors' conclusion is that for effective lean transformations, team formations should, therefore, include a lean champion leading a team of lean specialists that would normally be allocated to either cross-functional or self-directed flow line teams. These specialists would actively participate in the employee-development processes.

According to Koenigsaecker (2013), full-time lean resources are critical when taking an organization to the next level of performance. To make sure the company does not slide back to the old practices after each improvement event, it has been found that the appropriate support organization is about 3 percent of the value stream, work site, or business unit total employment. These "3 percent" individuals do much of the preparation work before events, are usually team members during events (and because they will get the most event experience, they are your only real source of future sensei), and support the area supervisor for follow-up problem solving after an event.

METHODOLOGY OF RESEARCH

Objectives and the hypothesis

The primary objective of the study was to find out whether the effectiveness of lean transformation is higher in organisations with a full-time lean team. The hypothesis was that the effectiveness of lean transformation is significantly higher in

organisations with a lean team as a separate organisational unit.

Furthermore, a detailed description of the duties and responsibilities of the full-time lean manager was also analysed and a model job description was developed.

The questionnaire and the respondents

A questionnaire-based survey has been conducted in Hungary for the period 2020-2023. The questionnaire consisted of two parts. The first section (questions 1-43) was designed based on the instrument "Dimensions of the Learning Organization Questionnaire" used by Tortorella and Fogliatto (2014) in a lean organizational setting. The second part of the questionnaire was developed in the course of the present research and included questions on the perception of lean effectiveness (question 44-49). The statements characterize the respondents' perceptions of the success of lean management from the perspectives of business and operational performance and key stakeholders. In addition, the questionnaire included an open question on the duties and responsibilities of the lean manager, the answers to which were used as the basis for the text analysis. The present study investigates the answers to questions 44-49 of the questionnaire (perception of lean effectiveness), and explores the results of the text analysis.

The research questionnaire was sent out to a total of 1,751 addresses. The number of responses received was 217, representing a response rate of 12.4%. 29% of respondents work full-time as a lean manager or as a member of a lean team in a separate department. 35.3% of the respondents' organisations (76 out of 215 responses) do not have a full-time lean manager, while 64.7% have a full-time lean team of at least one person as shown in Figure 1.

Statistical processing of data

To assess the different ways of perception of lean effectiveness (questions 44-49), and develop dimensions representing these perceptions, principal component analysis (PCA) was applied. The Kaiser-Meyer-Olkin (KMO) value (values between 0.8 and 1 indicate the sampling is adequate), and the Bartlett test for sphericity were calculated. From the KMO value (0.901) and the significant Bartlett test ($p < 0.05$), it was concluded that the variables were highly correlated and suitable for dimension reduction by principal component analysis. With the PCA, one component was developed, which explains 83.46% of the total variance. The component matrix presented in Table 1 shows the correlations of the respective items with the

component developed. The correlation between the original variables and the component are positive in all cases.

The analysis indicates that the original variables of the success of the lean transformation can be well represented by a single principal component, which has been named „Lean effectiveness”.

RESULTS AND DISCUSSION

Hypothesis testing

Two-sample t-test was performed to test the following hypothesis: the effectiveness of lean transformation is significantly higher in organisations with a lean team as a separate organisational unit. The aim was to determine whether or not the means of the two populations were equal for the variable „Lean Effectiveness”. The subsamples representing the two populations were: organisations without full-time lean team (74 responses) and organisations with a full-time lean team of at least one person (140 responses). The group statistics and the result of the independent samples test are shown in Table 2 and Table 3, respectively.

Since the Levene's test was significant ($p < 0.05$, the two groups did not show homogeneity of variance on the dependent variable), the results had to be tested under the "equal variances not assumed" condition. It was concluded that the difference between the means for the two groups is significant ($t = -2.98$; $df = 125.73$; $p < 0.05$). The mean scores indicate that the effectiveness of the lean transformation („Lean effectiveness”) is significantly higher in organisations that have a full-time lean team (at least one person) compared to those that do not.

Text analysis: duties and responsibilities of the lean manager

The text analysis was based on the answers to the open question of the questionnaire: what are the tasks of the lean manager in an organisation? The responses were analysed using quantitative and qualitative text analysis techniques in order to be able to create a new model and recommendation for the lean manager's job description. The total text examined (174 responses) contained 1,659 different words. The number of words by frequency of occurrence is shown in Table 4.

The code system design was based on the words that occurred at least five times in the total text (103 words). Words that did not individually carry a meaning related to the research (articles,

conjunctions, pronouns, auxiliary verbs) were excluded from the list, leaving 61 words as the basis for the code system. An "in Vivo" code system was then created using the most frequently occurring words. The codes were constructed using the simplest form of the words. As an example, the word "develop" was the base of a code, which contained all text units that included this sequence of letters, such as "develop"; "develops"; "developing"; "development"; etc. In total, 37 codes have been formulated. The sentences were then extracted from the entire text under study (174 responses) that contained the respective codes. As a result, 37 units of text were produced, each consisted of the sentences that contained the specific code that formed the basis of that unit. After analysing and interpreting the 37 coded text units, 11 code categories were identified, which exhaustively and exclusively include the 37 codes. The 11 code categories formed and the frequency of occurrence of the corresponding codes are presented in descending order in Table 5 and Figure 2.

After a detailed review of the sentences assigned to the code categories, duplicates and multiple occurrences have been removed, creating the final text units describing the lean manager's tasks. As a final step in the text analysis, the sentences were linguistically standardised while retaining the original meaning. The results of the text analysis provided the basis for a new, comprehensive job description, in which the duties and responsibilities of the full-time lean manager could be interpreted within the structure of the organisational change framework adapted by Nordin et. al. (2012) to lean manufacturing implementation. The framework consists of two cycles: first, readiness for change, and second, the change implementation as presented in Table 6.

Tables 7 and 8 present the proposed job description of the full-time lean manager. It contains the list of duties and responsibilities identified in this research, grouped under the six key stages of the organisational change framework.

REFERENCE LIST

Journal article

- [1] Bhasin, S. (2011). Performance of Organisations Treating Lean as an Ideology. *Business Process Management Journal*, 17:6, 986-1011.

- [2] Bhasin, S. (2012). Prominent Obstacles to Lean. *International Journal of Productivity and Performance Management*, 61:4, 403 – 425.
- [3] Emiliani, M.L., Stec, D.J. (2005). Leaders Lost in Transformation. *Leadership & Organization Development Journal*, 26:5, 370-387.
- [4] Hartwell, J.K., Roth, G. (2010). Doing More with Less at Ariens: a Leadership and Transformation Case Study. *Organization Management Journal*, 7:2, 89-109.
- [5] Martínez-Jurado, P.J., Moyano-Fuentes, J., Gómez, P.J. (2013). HR Management during Lean Production Adoption. *Management Decision*, 51:4, 742-760.
- [6] Nordin, N., Deros, B. Md., Wahab, D.A., Rahman, M.N. Ab. (2012). A Framework for Organisational Change Management in Lean Manufacturing Implementation. *International Journal of Services and Operations Management*, 12:1, 101-117.
- [7] Renström, J., Niss, C. (2015). Senior Managers' Perspectives on Lean Implementation. *International Journal of Lean Enterprise Research*, 1:4, 317-328.
- [8] Tortorella, G.L., Fogliatto, F.S. (2014). Method for Assessing Human Resources Management Practices and Organisational Learning Factors in a Company under Lean Manufacturing Implementation. *International Journal of Production Research*, 52:15, 4623-4645.
- [9] Turesky, E.F., Connell, P. (2010). Off the Rails: Understanding the Derailment of a Lean Manufacturing Initiative. *Organization Management Journal*, 7:2, 110-132.
- [10] Vries, H., de – Poll, H. M. van der (2018). Cellular and Organisational Team Formations for Effective Lean Transformations. *Production & Manufacturing Research*, 6:1, 284-307.
- [11] Worley, J.M., Doolen, T.L. (2015). Organizational Structure, Employee Problem Solving, and lean Implementation. *International Journal of Lean Six Sigma*, 6:1, 39-58.

Book

- [1] Koenigsaecker, G. (2013). *Leading the Lean Enterprise Transformation. 2nd edition*. Boca Raton, FL: CRC Press
- [2] Kotnour, T.G. (2010). *Transforming Organizations – Strategies and Methods*. Boca Raton, FL: CRC Press
- [3] Kotter, J.P. (1996). *Leading Change*. Boston, Massachusetts: Harvard Business School Press

LIST OF TABLES

Table 1
Component matrix

Component Matrix ^a	Component
	1
Statement 46: In my company, lean is effective because it improves the company's business performance.	,949
Statement 44: In my company, lean is effective because it improves the company's operational efficiency (quality, cost, delivery, flexibility).	,941
Statement 47: In my company, lean is effective because it improves the company's competitiveness in the marketplace.	,936
Statement 45: In my company, lean is effective because it improves the company's ability to change.	,923
Statement 49: In my company, lean is effective because it improves customer satisfaction.	,884
Statement 48: In my company, lean is effective because it improves employee satisfaction.	,843
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Source: own work. Note. The software used for the analyses was SPSS version 22.

Table 2
Group statistics

Is there a full-time lean team in the organisation?	N	Mean	Std. Deviation	Std. Error Mean
REGR factor score 1 for analysis 1	No	74	-,2915909	1,10558748
	Yes	140	,1541266	,90622467

Source: own work. Note. The software used for the analyses was SPSS version 22.

Table 3
Independent samples test

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances assumed	6,779	,010	-3,166	212	,002	-,44571757	,14077184	-,72320942
Equal variances not assumed			-2,979	125,728	,003	-,44571757	,14961253	-,74180258	-,14963256

Source: own work. Note. The software used for the analyses was SPSS version 22.

Table 4
Word frequencies

Frequency	Number of words
1	1242
2	198
3	81
4	35
5	30
6	14
7	10
8	10
9	2
10	5
>10	32
Total	1659

Source: own work. Note. The text analysis was performed using MAXQDA Analytics pro 2022.

Table 5
Code frequencies

Category	Category frequency	Code within category (translated from Hungarian)	Code frequency
Continuous improvement	99	improve	13
		develop	56
		continuous	30
Optimization	80	effective	26
		better	7
		reduce	14
		increase	19
		optimize	14
Thinking	68	culture	15
		think	13
		attitude	40
Implementation	67	create	6
		define	7
		build	5
		form	19
		apply	17
		implement	13

Methods, waste	65	tool	28
		method	12
		waste	25
Support	62	help	30
		support	32
Goals, organisation	53	strategy	10
		goal	18
		organisation	25
Sustainment, coordination	40	ensure	10
		sustain	15
		coordinate	15
Knowledge transfer	35	coach	9
		train	16
		transfer	10
Customer focus	34	client	1
		demand	8
		satisfied	9
		customer	16
People focus	26	people	10
		employee	16

Source: own work. Note. The text analysis was performed using MAXQDA Analytics pro 2022.

Table 6
Structure for composing the lean manager's job description

Readiness for change	1. Need for Change
	2. Leadership & Direction
	3. Change Agent System
Implementing the change	4. Effective Communication
	5. Empowerment
	6. System and Controls

Source: based on the Organisational change framework in lean manufacturing implementation (Nordin et al., 2012).

Table 7
Job description: duties and responsibilities of the lean manager – readiness for change

<i>Duties of the Lean Manager – Creating a Need for Change</i>
Participation in the creation of the company's vision together with top managers and stakeholders and conveying it to the whole organization.
Setting common goals, policy deployment, supporting the coordination of organisational and employee goals.
Defining the direction of development supporting the company strategy, leading continuous improvement (CI).

<p>Understanding customer demands and keeping them in focus through lean transformation, prioritization of improvements in order to maintain and improve business excellence. Supporting and ensuring internal customer-supplier approach. Analyzation of processes and mapping the potentials, searching for improvement opportunities in the operational processes. Defining the potentials which have the greatest business impact. Investigating the wastes / non-value added processes which can be reduced and communicating them to the members of the organisation.</p>
<p><i>Duties of the Lean Manager – Leadership and Direction</i></p> <p>Spreading lean approach among top- and middle management, supporting the corporate culture change. Supporting top- and middle management in order for their teams to be able to use lean tools, leadership coaching through lean transformation. Creating lean transformation strategy with top management which is in harmony with the company goals. Defining lean measures and KPIs in the whole value chain, measuring process effectiveness. Representing lean to the management, leading lean transformation. Coordination of lean strategy, project management support. Defining the source and time needed for the execution of lean strategy, the optimal allocation and the coordination of availability of them. Creating process-based operation, supporting process management. Process improvement based on effectiveness, analysing work for defining wastes objectively.</p>
<p><i>Duties of the Lean Manager – Change Agent</i></p> <p>Supporting corporate culture change, transferring lean philosophy and thinking to employees. Leading paradigm shift, inspiring and leading by example in lean transformation. Bringing about openness towards lean approach. Respect for people and CI: strengthening and representing the 2 principles of lean. Authentic representation, creation and maintenance of CI carried out together and the culture of trust. Make people understand and spread lean across the whole organization by practical methods and learning by doing. Integrating lean approach in the everyday operation of the company by individual cases, best practices and implemented improvements. Demonstrating the gist of lean activities and their advantages for all the employees of the company. Strengthening awareness, supporting strong workplace cohesion and cooperation. Facilitate change management and sustainable lean transformation. Leading MUDA-hunts, demonstrating the goals of lean tools and their usefulness for the colleagues. Avoiding unnecessary, ineffective projects and dummy activities during lean transformation.</p>

Source: own work.

Table 8

Job description: duties and responsibilities of the lean manager – implementing the change

<p><i>Duties of the Lean Manager – Effective Communication</i></p> <p>Supporting the creation of an open and honest communication culture. Supporting policy deployment and its communication throughout the whole company. Creation of lean knowledge management, support of using lean tools appropriately. Planning lean trainings, active participation in the education of employees in the entire company. Facilitating cooperation, communication and transparency among functions / departments / work teams. Facilitating CI workshops. Making employees understand lean and spreading lean approach through practices and learning by doing. Continuous follow-up and evaluation of the results of lean improvements, recognition of successes. Ensuring transparency, continuous feedback about the results of improvements for everyone in the organisation. Supporting the use of lean tools, communication of standard and best practices within the organisation.</p>
<p><i>Duties of the Lean Manager – Empowerment</i></p> <p>Engaging, winning over and mentoring employees on the lean way. Focusing on people, supporting the development of employees, maintaining continuous learning. Leading part in the creation of a learning organization, improving and encouraging employees' critical thinking. Facilitating lean team work focusing on flow, supporting team leaders and team members in CI.</p>

Ensuring lean coaching and consultancy for improvement teams.
 Role of the "train the trainer", supporting the mapping of potentials.
 Improving employees' skills and knowledge in order for them to be able to do autonomous lean activities.
 Creation of an organisation and work environment which support achieving business excellence and encourage improvements.
 Managing bottom-up improvement framework, encouraging employees' ideas, managing suggestions for improvements and coordinating execution.
 Professional management of lean teams and lean specialists of departments.

Duties of the Lean Manager – System and Controls

Creating standard lean syllabus and its continuous improvement.
 Initiating, managing, coordinating and monitoring QCD improvement projects which are in harmony with company goals, increase customer satisfaction and the results can be measured.
 Supporting efficiency improvements in direct and indirect processes with lean tools, active participation in the improvement activities of various departments (support of quality improvements, cost reduction, on-time delivery and flexibility, resource optimization, layout, material flow and scheduling).
 Improving organisational systems thinking, coordinating processes.
 Facilitating problem-solving work, creating a rapid-intervention system in the organization.
 Organizing and managing incentive schemes, maintaining motivation.
 Creation, management and evaluation of frameworks supporting lean operation.
 Administrative support of lean transformation, creating budget plans, preparing decisions.
 Planning and managing a lean audit system, implementing daily "Gemba walks".
 Participation in the change of the organisational structure in accordance with lean transformation.

Source: own work.

LIST OF FIGURES

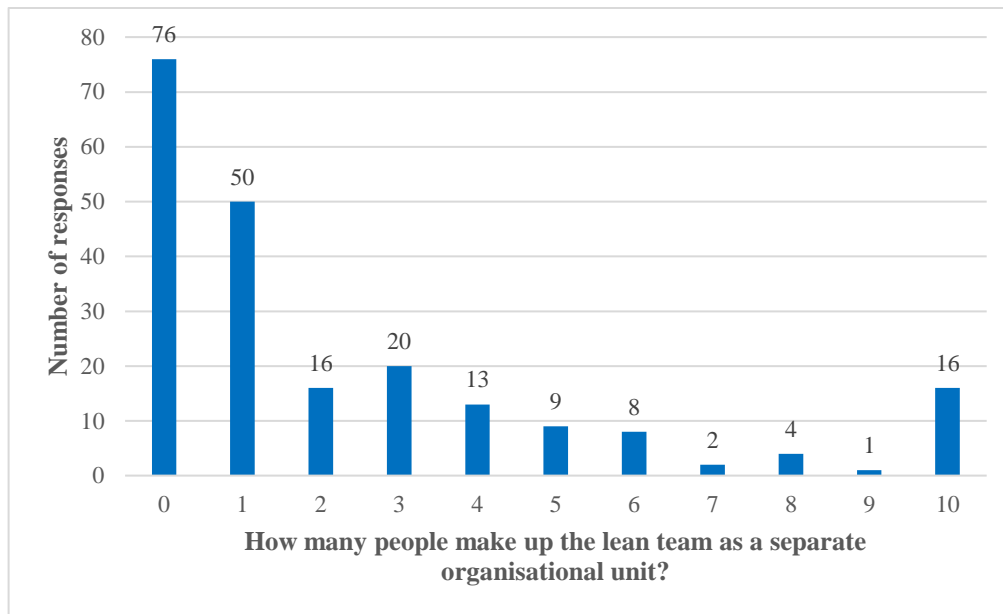


Figure 1
Size of full-time lean team in the organisation

Source: own work.

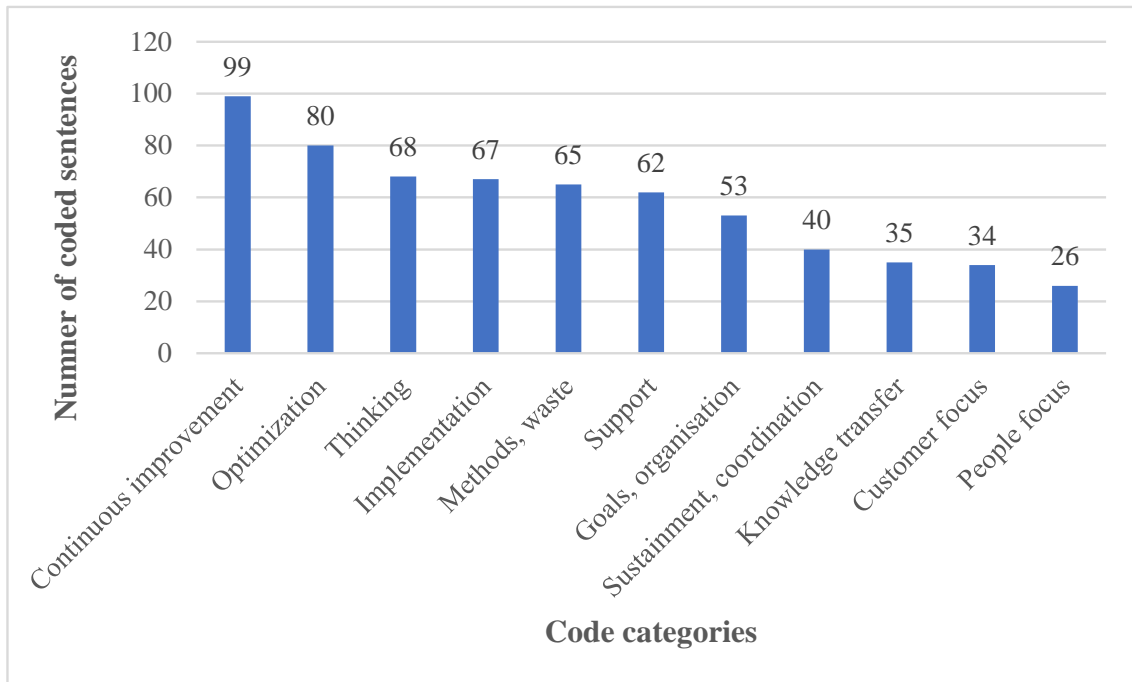


Figure 2
Frequency of code categories
Source: own work.