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LEAN DIEGIMO POVEIKIS DARBUOTOJŲ GEROVEI GAMYBOS ĮMONĖSE	**THE IMPACT OF LEAN IMPLEMENTATION ON EMPLOYEE WELL-BEING IN MANUFACTURING COMPANIES**

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INTRODUCTION

Relevance of the topic – Nowadays, as everything in the world is rapidly changing, businesses are also in constant transformations, with organizations frequently implementing changes to adapt to the always changing market (Amajuoyi, Benjamin, and Adeusi, 2024). However, to sustain these changes, they are focusing not only on making business stakeholders happy but also their employees too (Hela Chebbi et al., 2019). Quick changes can cause a lot of distress on employees as they need to manage everything and make everyone happy with all the implementations (Bernhard-Oettel et al., 2005; Gaeini, 2022).

To help with the business changes, Lean is a "management methodology focused on the design of the processes" and aims to "eliminate or reduce those activities without added value, better known as waste" (De Ramón Fernández, Ruiz Fernández, and Sabuco García, 2019, p. 1306). However, there is not much data available how it impacts not the organization itself but employees of that workplace. There are some suggestions that Lean implementation can improve satisfaction on employee well-being, because this methodology helps to "maximise workflow and eliminate waste" (Letelier et al., 2020, p. 2), however others are suggesting that it increases distress as there is a higher demand from the business to improve workflow.

Usually, research tends to focus on Lean implementation and how much does it really help the organization. However, there are not many studies done about how it impacts employees. The understanding of how this can influence employees enables organizations to adopt Lean practices that benefit both business plans and goals and employee well-being too. As observed, Lean management "aims to improve employees' perceptions of and affective reactions to value creation, workflow, and process-oriented teamwork," (Leyer, Reus and Moormann, 2020, p. 52) which means that is challenging the misconception that Lean is only about automatization of the process and the business growth. Furthermore, acknowledging that employee dissatisfaction can be regarded as a form of waste that disrupts the company's original value-creation process (Leyer et al., 2020) is crucial for human resources and team managers aiming to balance high workflow demands from the leadership with employee satisfaction.

The key findings of this study will be useful to organizations that are seeking to implement Lean strategies and do not want to compromise employee well-being. In addition, this can lead to improved leadership approaches and policy suggestions for the sustainable application of Lean.

Level of exploration – As mentioned before, this topic has not been widely explored. Some research has been conducted, but most of it focuses on overall change implementation and its effects on employees rather than on Lean implementation specifically. Some research has been conducted, with a few studies even beginning at the start of the 21st century. However, interest in the topic has grown fairly recently. Based on university's virtual library, which provides access to other databases too, more than half of the research results from the beginning of the 21st century to the present are from the last five years. This shows that interest has grown, but there are areas that need further exploration. Moreover, the existing literature has not focused on this topic with the same level of specificity. No prior research has incorporated both keywords in the title "Lean" and "employee well-being." This finding shows that this particular area is still unexplored in the current literature. The fact that there have only been roughly 296 results in in scientific database Scopus over the past five years about well-being and Lean indicates that the topic is new and not studied enough yet. Furthermore, a review of the keywords "Lean" and "well-being" in the included works reveals that only 55 of these works primarily focused on the relationship between Lean and well-being. Work-life balance and recovery time are closely related to social sustainability, which is frequently disregarded in Lean research that concentrate on process or economic performance.

Novelty of the study – Even though Lean has been implemented in the organizations for quite some time. Research on its impact on employee well-being within organizations has received relatively less attention till now. The research will provide insight into how Lean practices affect people in their job and how they feel about it. Through this research, the impact of Lean implementation on the well-being of employees will be analysed and structured to identify gaps in this research area. Based on the results of the research, the study can provide recommendations for the implementation of Lean in a way that maintains both efficiency and employee satisfaction.

The research problem – Most Lean implementation research focuses on evaluating its impact on organizational performance, efficiency, and cost reduction, while less attention is paid to its impact on employee's well-being. The research aims to fill this gap by analysing how Lean implementation affects employee well-being in manufacturing.

The aim of this thesis is to explore the impact of Lean practices on the employee well-being in manufacturing organizations by combining theoretical perspectives from the literature and empirical evidence collected through a survey.

Objectives of the thesis:

1. Define the relationship between Lean implementation and employee well-being.

2. Identify and define key concepts of job demands and job resources in the context of Lean implementation.

3. Examine employee well-being in manufacturing organizations that implement Lean based on empirical data.

4. Analyse the collected data and evaluate the impact of Lean practices on employee well-being by integrating theoretical and empirical findings.

Research methods – The theoretical part of the research will analyse the scientific literature on Lean practices and their link to employee well-being. The empirical research part of the thesis will take a quantitative approach, using a survey to collect data from employees in organizations implementing Lean practices. The collected data will then be subjected to statistical analysis, using the results to assess the impact of Lean on employee well-being measures.

Structure of the Thesis: This thesis consists of four main parts. The overview introduces the research problem, objectives, and methodology. The second part reviews the relevant scientific literature on Lean practices and employee well-being. The third part presents the research methodology, including the survey design, data collection, and analysis process. The fourth part concludes the thesis, discussing the results, key findings, and providing recommendations for further research. The appendices include supplementary materials such as the survey instrument.

1. LITERATURE REVIEW ON LEAN IMPLEMENTATION AND EMPLOYEE WELL-BEING

1.1. Overview of Lean management

1.1.1. Challenges in Lean implementation

While putting Lean into practice by utilizing its tools and methods is significant and tends to bring various advantages to the company (Lizarelli et al., 2021), this approach gained recognition after Ries (2011) wrote the book, that led to the implementation of Lean by many startups. It even attracted many other groups of people like entrepreneurs, innovators, researchers (Yordanova, 2018) to learn how to make processes more efficient, reduce waste, but also to bring more value to the customer (Dobrigkeid and De Paula, 2017). Bieraugel (2015) claims that this method has been shown to be successful in lowering risk and uncertainty while offering a structure for managing innovation. But benefits is only one aspect. It is equally important to understand how to implement it properly and what challenges might arise when introducing Lean into different workplace contexts.

First, Lean is being implemented in new companies, such as startups, where it is easier to establish company values, work processes, and overall to set realistic company culture from day one of the company, because "startups in the early stages of their development frequently undergo innovation to the business model and value architecture" (Ghezzi and Cavallo, 2020, p. 2). It is also easier from a process perspective. The implementation of change has been linked to a decrease in the workforce, number of employees, and managerial levels in startups: "speed, customer focus, team, process, and waste elimination" (Lizarelli et al., 2021, p. 542). These organizations' characteristics might foster an environment that is more favourable to the use of change-oriented methods like in Lean.

Additionally, the process with the product or service is simpler in the startup because the organization is closer to the consumer and can spend less resources to hear their feedback. This approach emphasizes rapid market feedback and swift responsiveness as key elements for effective adaptation (Lizarelli et al., 2021). To make a change, the process takes less time than in big companies, because they "use fewer resources to improve and develop new products" (Lizarelli et al., 2021, p. 542).

In big companies changes usually take much longer, which is why implementing Lean is key, because after going through the entire process, there is always some kind of possible improvement, which could make the process faster. But first, there should be alignment among the leadership for all of the needed changes. Making things harder, the company and its community have already been established for some time with their own work culture, which is much more difficult to change. Employees already have their work habits and come to the company with a more conservative mindset, so it is harder to change or shift them (Jenkins, 2017; Di et al., 2019). Still, there are big businesses that have handled the cultural change well. To illustrate this point, the corporation IBM has been able to overcome significant challenges, including the elimination of departmental divisions and the reduction of paperwork, during a period of significant change. As a result, a new work culture has emerged, characterized by enhanced efficiency and collaboration. Leader Gerstner brough few initiatives to improve the business's versatility and a significant emphasis on customer satisfaction, as well as to promote "innovative thinking" and "employee participation in decision-making." Because of this cultural transition, IBM was able to improve its competitiveness, solidify its relationships with customers, and quickly adapt to market developments (Hao, 2024; Saif, 2024).

Although Lean implementation may differ between companies, such as startups and more established companies, some key challenges may arise no matter the company size. Companies may not realize that these changes can cause employees to resist change (Faiza, Siddiqui, and Malik, 2025). They are not only asking employees to change the way they work, but they are also telling them that the company is not so happy with how the team are working. This can cause fear because the main focus of Lean is improving efficiency and reducing waste, but "it also raises anxiety about making costly mistakes" (Di et al., 2019, p. 21). This could mean that some employees could lose their jobs if the company is not satisfied with the results after implementing Lean. It is important for companies to consider the employees who work on the entire business's processes. Successful implementation can lead to everyone being satisfied with their work and the results, from employees to business perspectives.

There have been a few cases in which companies have abandoned Lean due to employee resistance, which made it difficult to achieve sustainable results during implementation. This resistance may be caused by worry about new processes, lack of experience with Lean principles or lack of "strong leadership support and commitment to be successful" (Faiza et al., 2025, p. 597). These conclusions were made based on research in which Lean was implemented on an Indian construction site. The research identified all the reasons why it was difficult to sustain Lean. One of these reasons was "employee reluctance to change and anxiety about unfamiliar procedures"

(Singh et al., 2023, p. 23). Another case study of three Canadian public hospitals identified physician resistance as the main reason Lean was not implemented sustainably. The cause of this resistance was "perceived to negatively impact on their authority and status" (Akmal et al., 2020, 358). These examples show that, in addition to implementation, considering long-term goals is necessary to overcome employee resistance.

1.1.2. Implementation of Lean in manufacturing organizations

The most well-known story about Lean management and how to achieve almost perfect manufacturing process comes from the Toyota Production System (TPS) an automotive industry. "Lean Thinking is a methodology first known as Lean Manufacturing, which was used by the automotive industry" (Sanahuja, 2020, p. 1,), where it "is based on the premise of making work easier for workers. The objective is to thoroughly eliminate waste and shorten lead times to deliver vehicles to customers quickly, at a low cost, and with high quality" (Toyota Motor Corporation, 2024). This TPS was developed in Japan by Taiichi Ohno and Eiji Toyoda.

"Fundamentally, Lean manufacturing aims to make what adds value apparent by eliminating everything else" (Yamamoto et al., 2019, p. 22). This method was soon used not only in the manufacturing companies and mostly in Japan, but Lean management methodology usage has increase and nowadays is being applied in various industries around the world. "During the late 1980s, many companies have taken Japan, as a rising manufacturing nation, as an example," (Dave, 2020, p. 1598) with companies like Toyota, Nissan, Sony, and Honda leading the way in market leadership, both domestically and internationally.

The core principles of Lean, as widely known and already in use across various industries, are based on the framework setting work of Womack and Jones (1997). In their influential book "Lean Thinking", who prepared a framework that focused on delivering value while at the same time reducing waste of non-value adding steps. The core principles are five: define value, map the value stream, create flow, establish pull, and pursue perfection. The usage of these five principles serves as the primary baseline for implementation of Lean (Thangarajoo, 2015).

Overall, the goal of Lean in manufacturing is operational excellence, which aims to make the entire manufacturing process as efficient as possible, with the greatest amount of process improvement in the shortest amount of time, and with the least amount of waste possible. Manufacturing, like any other organization, has its challenges. These include a lack of training, a lack of leadership involvement, and a cultural mismatch with Lean goals. The success of Lean implementation is not just incorporating the core principles into the company's daily routine but sustaining them and

making them part of the company's culture, "The major portion of Lean manufacturing is based on its appropriate methodology and tools; it also depends upon the leadership, participation of management, attitude of the employees and culture of the organization" (Deshmukh et al., 2022, p. 1491).

There are several benefits to Lean Manufacturing. "Vital tool to enhance productivity in manufacturing" is how some describe it (Palange and Dhatrak, 2021). Lean approaches have been shown to produce "smooth production flow" and "increases in productivity" (Palange and Dhatrak, 2021). Lean ideas have been shown to lead to a reduction in the manufacturing time of the component leading to an increase in productivity in the connecting rod manufacturing industry (Balamurugan, Kirubagharan, and Ramesh, 2020). The manufacturing of plastic bags showed a similar trend, with the use of Value Stream Mapping (VSM) tools leading to a significant increase in production efficiency, from "28 rolls per day" to "50 per day" (Deshkar et al., 2018).

In addition, the "waste disposal in a production system" (Palange and Dhatrak, 2021, p. 729) is a key principle of Lean manufacturing. Reduce or eliminate waste to increase productivity or profit by streamlining the process is the aim of this approach (Palange and Dhatrak, 2021). The goal of "guaranteeing product quality at a lower cost" is aided by this focus on waste reduction, management of inventory, and space reduction (Luis et al., 2021, p. 2). A "reduction in production cost, maintenance cost, energy cost, and repair cost" is one of the immediate benefits (Mostafa et al., 2015, p. 729). It has been demonstrated that applying Lean tools to construction management can lead to cost savings of between "5% and 9%" (Aureliano et al., 2019). The removal of "process loss and variability" is the main reason for this decrease (Aureliano et al., 2019, p. 246).

This thesis will research how employees feel when Lean is implemented in their daily work lives. This analysis provides a foundation for further research and supports the relevance of the manufacturing sector as a critical setting for studying Lean implementation.

1.2. Employee well-being in the workplace and its key influencing factors

1.2.1. Understanding employee well-being at work

Employees through their life spend considerable time at work. So, it is their own but also and their company's where they are working responsibility to take care of the well-being during the work. Especially when "prioritising employee's well-being is good for business" (World Economic Forum, 2025). It is not only the catalyst for the better performance but also needed to attract and then keep top talents. If failed to prioritize well-being it is associated with certain risks, for example

healthcare expenses – employee stress alone accounts for nearly $200 billion in annual healthcare costs for US employers in addition it leads to reduced productivity, bigger leave rates (McKinsey & Company, 2021; World Economic Forum, 2025). Therefore, employee well-being should be regarded as an investment in business growth requiring a holistic approach. It should be treated as a "cross-functional business imperative" (World Economic Forum, 2025).

In academic research, the understanding of employee well-being is similar to how companies and their leaders understand it. Well-being can be conceptualized as the state of an individual's physical and mental health, encompassing both their personal and professional lives (Danna and Griffin, 1999). So there simply no full agreement what employee well-being is. It is a complex concept but "healthy workplace can be defined as a workplace that contributes to the physical, mental and social well-being of its users" (Voordt and Jensen, 2021, p. 29). They all interact between how they feel before and after work with how they feel while being at the workplace. Increased productivity and profitability are directly related to employees' positive emotions and favourable opinions of their workplace, which in turn affects their performance and overall well-being (Cignitas et al., 2022).

However, stress has a big impact on work because it can harm every employee in many ways. For example, it can cause burnout, fatigue (Bayes, Tavella, and Parker, 2021), and dissatisfaction with the job, which may lead employees to consider now becoming a trend – "quiet quitting" which commonly associated with burnout and hustle culture in both academic research and public discourse (Kilpatrick, 2022; Atalay and Dağıstan, 2023). Good leaders and Human Resources management should always take a good care of their employees. They should ensure that employees get enough rest, work properly set work hours, and take vacations every year and breaks when needed. This can lead to poor work–life balance, limited career advancement opportunities for certain social groups, weakened employee well-being, and reduced performance (Hrvatin, Markuz and Miklosevic, 2022). Taking regular breaks helps employees' recharge mentally and physically, which can improve their long-term productivity (Oyekunle and Olanrewaju, 2025). Additionally, from the beginning, a positive organizational culture that prioritizes well-being should be established and communicated effectively in the work. This culture should promote positive well-being-related actions and reduce the toxic work environment as much as possible.

1.2.2. The role of leadership and human resources management of employee well-being

Many aspects of how employees feel stem from their managers/leaders because they are most closely related to their employees' work. They assign tasks and ensure that they are completed before the deadline. They also must ensure that each team member feels safe in the work

environment, because it guarantees that employees will feel safe to open up to their supervisors. To learn about the team, managers need to do daily, or at least consistent check-ins. Management ensure that the workload is manageable, and that the employees do not feel overwhelmed, which helps with energy levels and focus (Isyroqul Mubarok et al., 2024). Also, overworking and emotional distress at work can lead to an increase in errors eventually (Magnavita et al., 2021). Additionally, management should ensure the work culture. Ideally, they promote work-life balance, open communication, and recognition for achievements, which helps with motivation. They do this by sharing feedback and encouraging growth.

However, some leaders may be toxic, which can cause additional stress at work. Leaders who lack empathy often treat some of the team members unfairly, as seen in an analysis of toxic workplace culture (Ridawati Sulaeman et al., 2024). They also do not care much about the team's well-being, ignoring comments about how the team feels, which causes a lack of open communication. This is often related to leaders who care mostly about their situation and only focus on reaching organizational goals.

This is where Human Resource Management (HRM) usually comes in. Human resources (HR functions have been shown to influence employee well-being by integrating policy development, engagement initiatives, and performance-related outcomes at both the individual and organizational levels (Nabil et al., 2024). The creation of policies, which establish the primary guidelines for things like holidays, sick leave, working hours, and everything else associated with them, is the most crucial and standard step. This ensures that organizations follow the labour laws set by the country's policies. This gives employees the confidence to request leaves and holidays knowing the policies. There was World Health Organisation (2017) research that stated, that "promoting mental health can reduce absenteeism by up to 27%" in the workplace".

Another important factor from the same research is for people looking for a job that encourage physical well-being through the implementation of fitness programs and health evaluations, and ergonomic work conditions – additional health and wellness plans offered by companies not only support the physical well-being of their workforce report higher levels of overall productivity and enhanced job performance (Nabil et al., 2024). These benefits show that the organization values its employees' health and is willing to invest in their well-being.

HR handles all of this, but from the organization's perspective, where they look into both sides and tries to find suitable middle ground. But HR does more than that: they prepare all the necessary training information for managers and leaders on how to be good managers, how to take care of their teams, and how to foster a positive well-being culture within their teams. This involves

supporting management practices that minimize burnout and raise employee involvement, as well as mentoring programs and leadership development. For example, organizations invest in "programs emphasizing servant and transformational leadership give aspiring leaders the tools they need to motivate coworkers, manage teams, and overcome obstacles" (Hamad et al., 2018, p. 490).

To check how well managers are taking on their leadership roles, organizations check in with all employees yearly or more often to gather feedback and make changes to foster a more positive environment for employees. Organizations can evaluate employee opinions on management, well-being, and work satisfaction through these frequent surveys and feedback systems and then make based on data improvements in response. These methods are an important part of an extensive strategy to controlling stress and keeping employees, which is based on systemic actions, leadership commitment, and continuous assessment an approach. Furthermore, educational initiatives are provided to managers and supervisors, with the objective of enhancing their capacity to identify indications of distress among employees and motivating them to help their employees when necessary (Nabil et al., 2024).

Additionally, HR checks in with leaving employees to ensure they are leaving to change or to grow in their roles and not because of negative experiences within the team or the organisation that led to negative well-being, such as overworking, negative leadership experiences, or conflict. One of the main HR goals is to ensure a safe and positive work environment by enhancing employee satisfaction.

In short, HR and leaders are important for looking after their employees and ensuring a positive work environment that encourages employees to feel good while working there. This will ensure the best possible lasting employee well-being. By doing so, organizations improve dedication, retention, and general organizational success in addition to keeping the well-being of their workforce (Nabil et al., 2024).

1.2.3. Job Demands–Resources (JD-R) model

Based on the previous literature review about organisation's managers, leaders and what are the job demands in relation to employee well-being, the Job Demands–Resources (JD-R) model is considered a valuable framework used to analyse a subject before an empirical study. Because it provides a clearly defined framework for investigating how job demands (such stress, workload, and pressure) and resources (like work-life balance and leadership support) affect employee well-being and performance (Tummers & Bakker, 2021), this study solely uses the Job Demands–

Resources (JD-R) model. A closer look is possible when only one model is used, preventing the study from being overly complicated by contradictory or overlapping theoretical frameworks. The main focus of this study is the connection between organizational practices (like Lean implementation) and employee outcomes (like engagement and burnout) (Galanakis & Tsitouri, 2022). Additionally, it is an ideal foundation for organizing and carrying out of the planned quantitative empirical research because of its broad use in organizational studies, methodological compatibility, and significant relevance to the topic.

Model explains how the organizational environment impacts employee well-being and performance. The model is based on the research "The Job Demands – Resources Model of Burnout," conducted by four researchers – Demerouti, E., Bakker, A. B., Nachreiner, F., and Schaufeli, W. B. (2001). The "model proposes that working conditions can be categorized into 2 broad categories, job demands and job resources, which are differentially related to specific outcomes" (Demerouti et al., 2001). This model has two key components: job demands and job resources. Job demands are more related to the negative or exhausting parts of the work that cause burnout including deadlines, workload, bad relationship with team members, stress, conflict situations. Job resources are related to goals and serve as motivating factors that help "regulate the impact of job demands" (Bakker et al., 2023, p. 32).

Two main fundamental processes are explained by this model, which can be applied in any type of workplace. The process of health impairment is the first downside. The demanding characteristics of work, "prolonged job demands result in depleting job resources and job burnout, which in the long run leads to depression" (Baka et al., 2023, p. 2) when an employee has a lot going on, such as due dates, excessive pressure, and loads of duties. Exhaustion can be recognized as a state resulting from repeated physical, emotional, and cognitive demands, particularly when individuals are exposed to high levels of burden over extended periods (Demerouti et al., 2001). Job demands "usually refer to aspects of the job that require sustained physical or psychological effort or skills and are therefore associated with certain physiological or psychological costs" (Zhou et al., 2022, p. 2). With no interventions employee's health decreases, there is no satisfaction in the work they do, leading to poor performance.

Another one is positive process – motivational process. It happens when employees do their job as expected, but they also receive good support system, good leadership, other benefits from the workplace – which are the job resources. Job resources "play an intrinsic motivational role because they foster employee growth, learning, and development." They are the key player for "achieving work goals" and "stimulating personal growth and development". All of this helps to deal with work demands in more positive way – helps to "buffer the impact of job demands on strain"

(Demerouti et al., 2001). By doing so, employees feel better at work, which helps to do the tasks better, they do not feel the burnout as much, are more productive and more energetic.

Even with all that support, it is not possible to feel only positive emotions at work. You can still feel stressed and anxious about tasks – both occur at the same time. The goal for employers should be to implement as many positive processes as possible so employees can gradually eliminate the negative impacts of work, which can reduce the likelihood of burnout and ultimately contributes to better performance. All of this should be taken care by the HR, managers and everyone who engages in the employee well-being.

1.3. Lean implementation and its impact on employee well-being

Since the thesis focuses on the implementation of Lean, a change in an organization, it is also important to understand how employees perceive the changes and the emotions they experience. Even seemingly minor organizational changes can have a significant impact on employees.

The aim of the Lean tools, first, is to enhance efficiency and second is to reduce waste (Womack and Jones, 1997). However, "there is no consensus in the literature as to whether lean management improves or impairs employee well-being" (Kilroy & Flood, 2022, p. 209). This finding indicates that the implementation of Lean tools can impact employees in diverse ways, functioning either as a catalyst for professional growth or as a source of stress, depending on the level of leadership support. When employees are well-informed and able to trust their leaders, they are more likely to maintain a stable emotional state (Oloba et al., 2024).

1.3.1. A look at different Lean tools and how they affect well-being

The general meaning of "Lean" has been examined. However, Lean includes many different tools. Due to its many components, it can be difficult to discuss Lean as a whole and its effect on employee well-being. Just-in-time, value stream mapping (VSM), Kaizen, material requirement planning, Kanban, and 5S are just a few of the technologies that are successfully used in businesses to reduce waste (Gupta and Jain, 2013). The tools discussed in this section were chosen with the manufacturing setting in mind, as this thesis focuses on it.

One of the most important parts is that Kaizen encourages organizations to involve their employees more in the decision-making process (Kareska, 2024). This helps in the long term for employees to feel certain boost of confidence in their workplace, because they are responsible for certain tasks, which helps "employees develop a sense of ownership over their work processes and outcomes" (Okpala et al., 2024, p. 117). In addition, more involvement of employees in the

workplace and related tasks to leadership is a big motivation for workers, they feel that the tasks that they do are important and that are making a big difference which in nature allows organizations to use collective workforce and knowledge for the result (Ghasemi and Sohrabi, 2023).

Another one is 5S, another very common tool which focuses on maintaining order, organization, and cleanliness in the workplace (Paşa Gültaş, 2025). The implementation of this tool has been demonstrated to positively impact the work environment. Specifically, improved workplace organization has been shown to reduce physical and mental strain, minimize safety risks, and support more efficient task performance (Michalska and Szewieczek, 2007; Wijesinghe et al., 2024). The Sort and Set in Order components of the 5S tool have been shown to contribute to "minimising searching times" that employees spend searching for tools or materials, thereby minimizing frustration and the sense of wasted time and feeling safer in the workspace (Sorooshian et al., 2012; Wijesinghe et al., 2024). Additionally, 5S Shine and Standardize promoted tidy and very clean workspace that lowers the risk of injuries, especially in manufacturing, minimizes possibility of falling, tripping, which makes employees fell more at ease while working and feeling safe in the workspace. Overall 5S works as a useful system "which in turn improves safety, efficiency, ergonomics, stress levels and productivity" (Somers, 2022, p. 51) – the main parts of the well-being of employees.

Gemba walks, which means "the real place" in Japanese, is the third tool. Using this approach, company executives physically visit the workplace to watch how people work in real time and how practices are being followed (Dinbil, 2023). Additionally, it simplifies direct communication between managers and staff, which increases trust between the leadership team and its staff by encouraging a sense of support among them (Kuráth et al., 2023). When employees are encouraged to voice their opinions and their contributions are acknowledged, they develop a stronger sense of ownership and fulfilment in their roles (Modise, 2023).

The implementation of a variety of Lean tools has been demonstrated to facilitate structured problem solving and decision making, thereby enhancing operational performance and fostering a more supportive work environment that, in turn, increases employee effectiveness and engagement (Beraldin et al., 2019; Leyer et al., 2020).

1.3.2. Employee satisfaction in Lean implementation

While many aspects of Lean implementation together with the employees have been checked, however most of them come from the management or leadership side or overall, about the changes. However, there is a growing interest how employees actually feel about Lean implementation in

their workplaces and how they feel satisfied with it. Employee satisfaction in Lean environments tends to be higher among employees who possess more than basic knowledge of Lean principles and are more actively involved in Lean-related activities (Leyer, Reus, & Moormann, 2018). In the financial services context, Lean implementation not only can expect for the increased work efficiency but also increased job satisfaction. In addition, increased work efficiency did not impact in negative way regarding the job satisfaction (Leyer, et al., 2018). A more complete understanding of Lean principles has been shown to be associated with higher levels of job satisfaction among employees. The significance of individual responsibility, leadership style, and a culture of continuous improvement in influencing employee satisfaction within Lean environments. It is noteworthy that the impact of these factors may vary depending on the specific Lean tools implemented (Leyer et al., 2018).

Overall, the results showed a bit of different impacts who were the most important on employee satisfaction. One of the most important principles of all is the: “individual responsibility” as it is the main factor of job satisfaction – employee has more different types of tasks, so it increases perceived job meaning and orientation to the result. However, “pull principle” might limit independence of the employees which can have negative impact.

From the culture aspects, the culture of “continuous improvement” had positive impact in the case study. The research results also mention about possible negative impact in the “creation of value streams” as employees can be concerned about the job security because they can be replaced. However, it also showed positive impact in terms of employees’ knowledge of their job performance and satisfaction with personal growth. Although there was conflict with individual responsibility, “leadership style” had positive impacts on supervisor satisfaction, indicating that managers should adjust to their employees’ more responsibility.

1.3.3. Work-life balance in Lean implementing organizations

Efficiency is not the only focus of Lean. Research on work-life balance in the context of implementing Lean, especially in healthcare settings, mentions it, but it is short and indicates that more study is necessary. While Lean is well known for improving operational performance, empirical evidence connecting these improvements to clinical and patient health outcomes remains limited (Srijithesh et al., 2024). The study emphasizes the necessity for additional research to enhance comprehension of the influence of human factors, organizational culture, and leadership styles on the implementation and outcomes of Lean in healthcare settings. Additionally, it emphasizes the significance of examining the integration of Lean methodologies with digital and intelligent technologies to improve efficiency and patient care. Furthermore, particular attention is

drawn to the effects of Lean implementation on healthcare employees' work-life balance and job satisfaction (Srijithesh et al., 2024). This suggests that further empirical research and comprehension are needed to determine how Lean adoption affects employee work-life balance.

One of the activities included in a comprehensive Human Resource Management (HRM) systemic method is work-life balance. A renewed perspective on Lean in healthcare is necessary, considering both human elements and performance outcomes, while addressing the interplay between "hard" and "soft" factors. It must be acknowledged that Lean, despite its effectiveness in enhancing organizational performance due to its emphasis on "hard" activities (tools and procedures), is not designed to improve employee well-being (de Koeijer, Paauwe, Strating, and Huijsman, 2022).

Furthermore, work-life balance is characterized by employees getting "the possibility to work flexible hours and arrange their work schedule" (de Koeijer et al., 2022, p. 875) as part of this strategic HRM approach. Nonetheless, the source points out that patients are expecting more from healthcare providers. As a result, professionals find it difficult to balance the demands of work and life. This implies that regardless of Lean adoption, attaining work-life balance can be challenging in the demanding healthcare industry. HRM approach that incorporates techniques like scheduling flexibility is necessary. HRM practices improve well-being, including work-life balance.

"Hard" practises of Lean are about the efficiency, so this usually have negative effect on the employee well-being, while the "soft lean practices and highlight the significance of human factors and ergonomics, which can lead to the sustainability of the model" (Trstenjak et al., 2025, p. 30). Furthermore, it has been observed that lean management impacts employees' emotional aspects more so than their physical ones. The systematic review is set in Industry 5.0, which supports personal development and places a strong emphasis on "promoting physical and mental health, work–life balance and providing meaningful and creative work" (Trstenjak et al., 2025, p. 37). Therefore, even though it's still unclear how Lean practices relate to perceived work-life balance, a number of studies suggest that strict Lean approaches may have an impact on more general aspects of work-life quality, which are frequently linked to work-life balance (Beraldin et al., 2019; Leyer et al., 2020).

The incorporation of ergonomic factors, especially, those pertaining to fatigue and recovery into production planning procedures has received more attention in an effort to improve worker well-being. These methods seek to decrease mental and physical stress in addition to increasing worker productivity and operational effectiveness. Reducing fatigue at work while simultaneously enhancing workforce planning and machine usage has been found to be possible through changes

in rest break timing and shift time (Xu and Hall, 2021; Trstenjak et al., 2025). Furthermore, the use of fatigue models has demonstrated that implementing modern technologies, such as robotics and automation, can boost productivity while lowering worker exhaustion (Trstenjak et al., 2025). These results imply that technology can assist more efficient recovery processes, reduce fatigue, and increase productivity.

According to source, in the Lean approach with ergonomics aspect it is "crucial to balancing operational efficiency with employee well-being" (Trstenjak et al., 2025, p. 44). Companies may overlook issues like employee fatigue or stress if they just concentrate on making things faster and less expensive ("hard" Lean). However, they can enhance employee well-being and performance by taking a more balanced approach, such as using ergonomic technologies and softer Lean methods. This further emphasizes the fact that although modern technologies can simplify work, there is a chance that the time saved will be used for more difficult tasks (Xu and Hall, 2021; Pandey et al., 2025). Therefore, balancing efficiency and well-being should be the aim rather than choose one over the other. Employers can support employees' wellness and recovery while keeping productivity through applying ergonomics, taking people's needs into account, and utilizing technology appropriately.

Thorough examination of the literature emphasized the variety of elements influencing the connection between organizational outcomes and employee well-being, emphasizing the value of the JD-R model in understanding these dynamics (Pandey et al., 2025). Also, it has been determined that leadership is a primary factor influencing both job demands and resources, thereby underscoring the significance of incorporating Lean effects within the JD-R model's framework (Claes et al., 2023).

2. EMPIRICAL RESEARCH METHODOLOGY FOR ANALYSING THE RELATIONSHIP BETWEEN LEAN IMPLEMENTATION PRACTICES AND EMPLOYEE WELL-BEING IN MANUFACTURING COMPANIES

2.1. Research approach and data collection method

The purpose of the empirical research is to analyse the impact of Lean implementation on employee well-being in the manufacturing organisations using the Job Demands-Resources (JD-R) model.

The research hypotheses were selected according to the research objective. In addition, when analysing other studies, job demands and job resources were analysed separately, and different hypotheses were formulated for each of them, therefore, job demands and job resources were analysed separately in this study as well.

Research hypotheses:

H1: Lean implementation increases job resources in manufacturing organizations.

H2: Lean implementation reduces job demands in manufacturing organizations.

H3: Higher levels of job resources are positively related to employee well-being.

H4: Higher levels of job demands are negatively related to employee well-being.

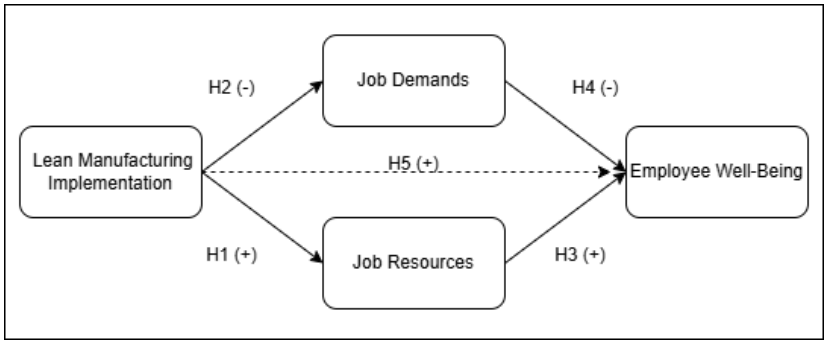
H5: Lean implementation has an indirect positive effect on employee well-being through its impact on job resources and job demands.

To close the research gap, this study will analyse the impact of Lean implementation on employee well-being in manufacturing organisations, emphasizing the two main factors: job demands and resources. The quantitative approach will be used for the research by conducting a structured survey. The Job Demands-Resources (JD-R) model will be used to set up guidelines for the framework and questions.

This research model is based on the Job Demands-Resources (JD-R) theory, which holds that while job resources like autonomy and supervisor support promote motivation and engagement to the employees, job demands like workload and time pressure contribute to stress. This research focuses on this specific area, not all kinds of Lean implementations. This is why it is regarded as an independent variable in this study that affects and shapes job resources and job demands serving

as a mediating variable. These in turn have an impact on the outcomes of employee well-being. Job demands are the parts of a job that usually require constant effort and may result in overworking, burn out, and stress. While job resources are the parts that positively impact employee, elements that support employees in reaching their objectives and promoting engagement. These two mediators affect two dependent variables that are generalisation in one word for both: productivity and presenteeism. The model hypothesizes that Lean implementation can enhance productivity by having job resources. However, it is also possible that this implementation may elevate job demands, potentially contributing to presenteeism. *Figure 1* illustrates the research model used in this study.

Figure 1 Research model



Also to determine whether Lean implementation changes how employees feel at work. Recent research has utilized the Job Demands-Resources (JD-R) model to examine how Lean adoption affects workers' well-being. For example, a Brazilian study that collected 165 responses from an industrial organization used a JD-R based questionnaire to investigate the connection between Lean techniques and workers' well-being on the shop floor (Calcerano et al., 2023).

This study is particularly relevant because it focuses on manufacturing companies who are either applying Lean principles now or have done so in the last few years. About one hundred coworkers at Dexcom who have incorporated Lean into their regular job routines will be included in the research sample, along with contacts and former coworkers from two other Lithuanian manufacturing companies that are also well-known for their Lean practices: Vilniaus Baldai and Thermo Fisher. To make sure that respondents have recent and direct experience with Lean implementation, the survey will be sent to these participants. This study is particularly relevant because it targets manufacturing organizations that are currently implementing Lean principles or have done so within the past few years. Specifically, it will examine whether employees experienced increased work pressure and stress or received the necessary leadership support and tools to make their jobs easier during implementation.

The Job Demands-Resources Questionnaire by Prof. Dr. Arnold B. Bakker (Bakker, 2014) was used for the questionnaire. This questionnaire measures all the variables included in the JD-R model, meaning it can be used to determine the predictors of work engagement and job performance. The questionnaire has sections on demographics, job demands, job resources, personal resources, well-being, performance, and behaviour. However, not all sections were used in the research. The sections addressing behaviour and personality were excluded, and the section on demographics was modified to exclude non-essential details, focusing exclusively on the research objective. The exclusion of these sections was driven by the recognition that their inclusion would have to an overly psychological aspects, thereby diverting from the primary focus on management impact. Consequently, these sections were deemed irrelevant for the purposes of the study and were consequently excluded from the questionnaire.

Questions specifically related to Lean were prepared based on other studies that use the same JR-D model and apply Lean. For example, the study (Reponen et al., 2021) entitled Validation of the Lean Healthcare Implementation Self-Assessment Instrument (LHISI) in the Finnish healthcare context, or questions from this study and its questionnaire: Worker outcomes in Lean implementation in small and medium-sized enterprises (Starić, 2025) and also questions from (Lindskog et al., 2016) Lean in healthcare: Engagement in development, job satisfaction or exhaustion?

2.2. Research design and instruments

The quantitative survey is being conducted for the research. The Job Demands-Resources Questionnaire, developed by Professor Arnold B. Bakker (Bakker, 2014), was used to create the questionnaire. The questions from the questionnaire were not edited, however, certain parts of it were removed. The questions from the above-mentioned questionnaire were also asked in the same order and using the Likert scale from ‘Never’ to ‘Very Often’ or ‘Strongly disagree’ to ‘Strongly agree’ and also from ‘Almost never’ to ‘Almost always,’ based on how it is in the example. Nonetheless, certain sections of the questionnaire were excluded to prioritize empirical research focus areas. The questions in for the research were prepared based on the Bakker example, but the questions have been edited to focus on the key research focus. The additional questions focused on the subject’s occupation, the geographical location of their employment, and the products manufactured by the company. The final set of questions addressed the duration of the subject’s employment, their involvement in the company, and the duration of their involvement with Lean. These questions, when added to the primary questionnaire, will allow for the identification of significant correlations or trends related to Lean implementation in manufacturing companies. The

questionnaire for the research study has been prepared and will be uploaded to the “Microsoft Forms” digital platform. This will facilitate the distribution of the questionnaire, ensure accessibility across various devices, and enhance the questionnaire's professional appearance. Additionally, it will simplify the export of data to Microsoft Excel or SPSS for data analysis.

The introductory text before the survey will include a disclaimer stating that the survey is anonymous and exclusively available to respondents who have implemented Lean manufacturing processes and are currently employed in the manufacturing company. The incorporation of this information into the introductory section and the email containing the survey is intended to establish trust regarding the anonymity of the participants. Additionally, the other components mentioned serve to enhance methodological clarity and ensure that only relevant participants complete the questionnaire.

When trying to set sample size, it was set at approximately one hundred participants, which is considered sufficient for detecting medium-sized effects. Similar studies examining the relationship between Lean implementation and employee well-being have been conducted with sample sizes ranging from 127 to 754 respondents, indicating that a sample of around one hundred participants provides a reasonable basis for comparison and valid statistical analysis within this research scope. Given the accessibility of the target population and the scope of a master’s thesis, this sample size ensures the feasibility of data collection while maintaining sufficient statistical power to identify meaningful relationships between Lean implementation, job demands, job resources, and employee well-being.

In the context of sample size determination, the target was set at a minimum of approximately one hundred participants, a figure typically deemed adequate for similar type of a research. A series of studies have been conducted that examine the relationship between Lean implementation and employee well-being. These studies have utilized sample sizes ranging from 127 to 754 respondents. The findings of these studies suggest that a sample size of approximately one hundred participants provides a sufficient basis for conducting meaningful comparisons and conducting valid statistical analyses within the scope of this research. Given the accessibility of the target population and the scope of a master’s thesis, this sample size should work for collecting data while maintaining statistical power to see meaningful relationships between Lean implementation, job demands, job resources, and employee well-being.

Similar studies have used survey questionnaires and Likert scale. These studies had between 127 and 754 participants (Beraldin et al., 2019; Kleeff et al., 2023; Zaidi & Lakhal, 2025). Based on these studies, that can be seen in *Table 1*, it is estimated that one hundred respondents would be

enough for this research. The number of samples is enough for the quantitative analysis and its results.

Table 1 Prior research that used survey questionnaires and similar models.

Study/Author (Year)	Research Topic	Survey Type	Sample Size (n)	Country	Used model	Measurement Scales Used
(Beraldin et al., 2019)	An investigation of the relationship between lean and well-being based on the job demands-resources model	Survey questionnaire	138	Italy	Job demands-resources model	Likert scale (1–7)
(Kleeff et al., 2023)	'Lean Dancing': How Involvement in Continuous Improvement and Lean Techniques Relate to Hospital Performance and Workers' Wellbeing through Autonomy	Survey questionnaire	754	The Netherlands	Job Characteristics Theory and the Job Demands-Resources model	Likert scale (1–5)
(Zaidi & Lakhal, 2025)	An empirical investigation of the impact of lean manufacturing practices on corporate social performance: a sociotechnical perspective	Survey questionnaire	127	Tunisia	Sociotechnical system theory	Likert scale (1–5)

3. EMPIRICAL STUDY RESULTS ON THE IMPACT OF LEAN IMPLEMENTATION ON EMPLOYEE WELL-BEING THROUGH JOB DEMANDS AND RESOURCES IN MANUFACTURING COMPANIES

The reliability results of the developed scales (Lean implementation, job resources, job demands, and well-being) are shown at the start of the empirical study results section. Following this initial step, descriptive statistics that provide an overview of the dataset's features are presented. A methodological framework used to evaluate direct correlations between key study variables is correlation analysis. The initial verification or rejection of the hypothesis is assessed using this methodology. Lastly, the predictive work of Lean implementation, job resources, and job demands on employee well-being was measured using multiple linear regression analysis. This contains a model that takes into consideration years of experience with Lean methods and the length of time an individual has worked for the organization.

The study's findings offer thorough empirical proof of how Lean impacts workers' well-being in manufacturing companies. They also offer an analytical evaluation of each of the five research hypotheses.

3.1. Sample description

A total of 114 valid respondents from manufacturing organizations participated in the empirical research. The respondents represented a variety of roles, organizational units, levels of experience with Lean, and lengths of tenure in the company. The duration of employment in their organization ranged from less than one year to more than five years, and the experience with Lean practices ranged from less than one year to three or more years.

When checking the tenure of respondents – *Table 2*, most workers (58 out of 114; 50.9%) had been employed by their companies for one to three years, suggesting that mid-tenure workers make up most of the sample. In contrast, sixteen respondents (14.0%) had worked for their employer for more than five years, nineteen respondents (16.7%) for three to five years, and twenty-one respondents (18.4%) for less than a year.

The respondents' experiences with Lean ranged greatly: thirty-seven (32.5%) had participated in Lean for less than a year, thirty-seven (32.5%) for more than three years, thirty (26.2%) for one to two years, and ten (8.8%) for two to three years. This distribution, which can be seen in *Table 3* shows that both inexperienced and skilled Lean practitioners are included in the sample.

Table 2 Length of time in the company (N = 114)

Length of Employment	Count	Percentage
< 1 year	21	18.4%
1–3 years	58	50.9%
3–5 years	19	16.7%
> 5 years	16	14.0%
Total	**114**	**100%**

Table 3 Distribution of respondents by length of involvement with Lean practices (N = 114)

Category	Count	Percentage (%)
< 1 year	37	32.5%
1–2 years	30	26.2%
2–3 years	10	8.8%
3+ years	37	32.5%
Total	**114**	**100.0%**

3.2. Measurement reliability and descriptive statistics

Cronbach's alpha (α) coefficients were computed for each of the following multi-item scales: Lean implementation, job demands, job resources, and employee well-being (positive and negative) in order to evaluate the internal consistency of the combined constructs used in this study. Using SPSS, reliability analysis was conducted in accordance with defined scientific criteria, where $\alpha \geq 0.70$ implies acceptable reliability, $\alpha \geq 0.80$ good reliability, and $\alpha \geq 0.90$ exceptional reliability.

The Cronbach's alpha scores showed strong to exceptional internal consistency across the main constructs, indicating that each measure's items reliably measure the same core construct.

Excellent reliability (α = 0.929) was demonstrated by Lean implementation, suggesting that the items demonstrating leadership commitment, standardization, and continuous improvement create a cohesive measurement.

Given the variability of demand items, job demands (including work intensity, labour hassles, competing expectations, and psychological demands) demonstrated excellent reliability (α = 0.723), which is considered sufficient.

The reliability of both the positive well-being (α = 0.933) and negative well-being (α = 0.861) scales were extremely high, showing their cognitive robustness. The obtained coefficients are presented in *Table 4*.

Table 2 Reliability statistics for main study scales

Scale	**Cronbach's Alpha (α)**	**Interpretation**
Work situation (job demands)	0.723	Acceptable
Collaboration	0.782	Good
Emotions at work	0.793	Good
Feedback	0.876	Excellent
Conflicting expectations	0.831	Excellent
Hassles	0.881	Excellent
Supervisor	0.901	Excellent
Opportunities for development	0.871	Excellent
The way of working	0.901	Excellent
Positive well-being	0.933	Excellent
Negative well-being	0.861	Excellent
Performance	0.829	Good
Lean implementation (overall)	0.929	Excellent

Since high reliability eliminates error in measurement and improves the credibility of conclusions, all scales were considered appropriate for additional correlational and regression analyses in

considering these findings. Cronbach's alpha values above 0.70 suggest acceptable reliability, values above 0.80 indicate good reliability, and values above 0.90 imply exceptional internal consistency, according to accepted norms. The methodological literature (Taber, 2017; Izah et al., 2023) consistently supports these thresholds.

The study's four key constructs' main characteristics and variability are summarized by the **descriptive statistics**. The highest mean score (M = 107.44) for job resources indicates that respondents believe there are enough of resources available to help their work. The moderate mean level of job demands (M = 68.49) indicates that employees are subject to a visible but manageable degree of work stress and demands. The sample's overall well-being is moderate, with significant individual variance (SD = 14.36), according to the employee well-being mean of 55.46. The results are presented in *Table 5*.

Table 3 Descriptive statistics of key study variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation (SD)
Job resources	114	50	140	107.44	18.31
Job demands	114	38	103	68.49	12.63
Employee well-being	114	13	83	55.46	14.36
Lean implementation	114	17	85	58.47	12.93

Additionally, Lean implementation has a modest mean score (M = 58.47), meaning that while Lean methods are common in the participating companies, they are not consistently effective across every team. By showing the total levels of each construct within the sample, these descriptive values assist in placing following correlation and regression results in context.

3.3. Correlations between Lean, job demands, job resources and well-being

Pearson correlation analysis was used to look at the correlations between the main study variables. The correlations between Lean implementation, job demands, job resources, and employee well-being are presented in *Table 6*. The results showed some statistically significant correlations that support the research model's theoretical foundations.

First, there was a significantly positive association ($r = 0.466$, $p<0.01$) between employee well-being and Lean implementation. This suggests that boosted employee well-being is correlated to

higher levels of Lean practices, including daily management, standardization, supervisory support, and continuous improvement.

Second, there was a high and positive correlation ($r = 0.499$, $p<0.01$) between Lean implementation and job resources. In line with previous analyses indicating that Lean enhances efficiency, organizational structure, and process stability, this indicates that Lean tools and managerial practices typically increase the accessibility of positive job resources (feedback, opportunities for development, supervisor support, and autonomy) and these resources should be incorporated into work design and leadership practices (Bakker and Demerouti, 2007; Håkansson et al., 2017).

In the overall correlation matrix, job resources similarly showed the strongest correlation with well-being ($r = 0.652$, $p < 0.01$). The findings confirm hypothesis 2, which suggested that job resources and employee well-being are positively correlated. According to the Job Demands–Resources (JD–R) theory, employee who have greater access to job resources typically report greater levels of well-being.

Table 4 Correlation matrix between Lean implementation, job demands, job resources, and well-being

Variable	**Lean Implementation**	**Well-being**	**Job Demands**	**Job Resources**
Lean implementation	1	**0.466**[1]	−0.024	**0.499**[1]
Well-being	**0.466**[1]	1	−0.157	**0.652**[1]
Job demands	−0.024	−0.157	1	0.002
Job resources	**0.499**[1]	**0.652**[1]	0.002	1

On the other hand, there was no significant relationship between job demands and either job resources ($r = 0.002$, $p = 0.985$) or Lean adoption ($r = −0.024$, $p = 0.803$). Job demands and well-being did not significantly correlate ($r = −0.157$, $p = 0.096$). This result suggests that although Lean is successful in improving resources, it does not necessarily improve or decrease actual job demands.

[1] $p < .01$.

Based on the data available, it appears that Lean, as an organizational tool, improves employee well-being more by strengthening job resources than by lowering job demands.

The scatter plots presented in Figures 2–4 offer a visual representation of the relationships between the examined variables. *Figure 2* suggests a positive association between Lean implementation and employee well-being, while *Figure 3* indicates a clearer positive relationship between job resources and employee well-being. Alternatively, *Figure 4* presents a more dispersed pattern, which may indicate a weaker or less consistent association between job demands and employee well-being.

Figure 2 *Relationship between Lean implementation and employee well-being*

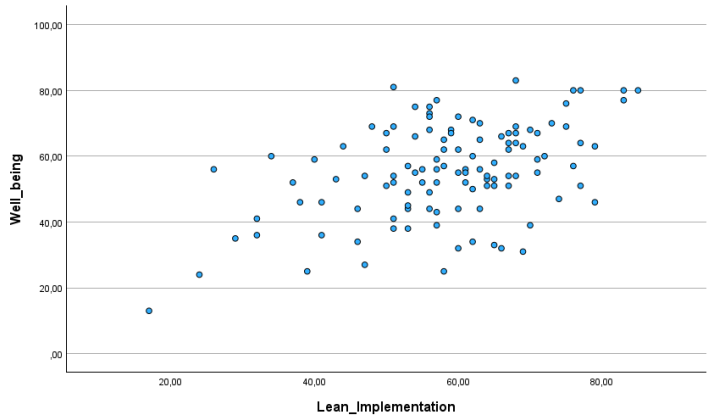


Figure 3 *Relationship between job resources and employee well-being*

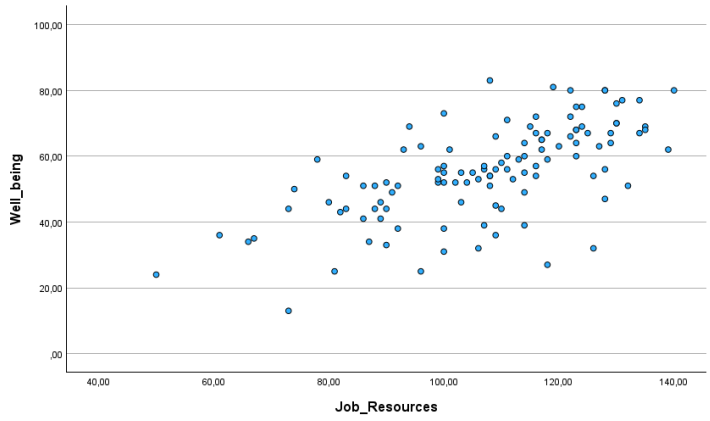
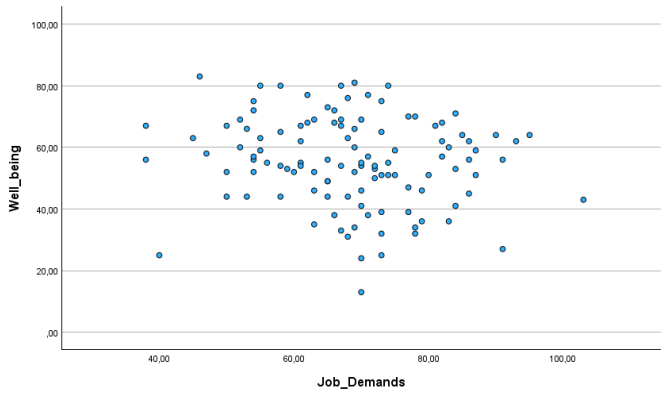


Figure 4 *Relationship between job demands and employee well-being*



Overall, the figures provide an initial visual summary of the connections among the important factors. In the following sections, correlation and regression analysis are used to further investigate these patterns.

An **analysis of multiple linear regression** was conducted to determine how much Lean implementation, job demands, and job resources affect employee well-being. The model containing the three main variables – employment needs, job resources, and Lean implementation was statistically significant: 47.5% of the variation in well-being is explained by $F(3, 110) = 33.13$, $p<0.001$ ($R^2 = 0.475$, Adjusted $R^2 = 0.460$).

The most reliable indicator of employee well-being has been shown to be job resources ($\beta = 0.561$, $p<0.001$), suggesting that better access to resources (such as autonomy, leadership support, and growth opportunities in the company) is linked with improved levels of well-being. Additionally, well-being was strongly predicted by Lean implementation ($\beta = 0.183$, $p = 0.024$), indicating an association between improved employee well-being and more robust Lean implementations.

Crucially, well-being was significantly impacted negatively by job demands ($\beta = -0.153$, $p = 0.029$). This result validates hypothesis 4, which predicted that low employee well-being would be linked to higher job demands. Job demands continued to be a unique factor to decreased well-being even after controlling for Lean implementation and job resources, which is consistent with the processes related to strains defined in the JD-R model.

Together, these findings support the hypothesis development section's claim that job demands have a negative impact on employee well-being whereas Lean implementation alongside job resources have a positive effect.

Three statistical tables, including the Model Summary – see *Table 7*, the ANOVA table – see *Table 8*, and the Coefficients table – see *Table 9*, were added in this section to support in the understanding of the regression results.

Table 5 Regression model summary

Model	R	R^2	Adjusted R^2	Std. Error
1	,689	,475	,460	10.55

Table 6 ANOVA for regression model

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	**Regression**	11057,467	3	3685,822	33,133	<,001[b]
	Residual	12236,814	110	111,244		
	Total	23294,281	113			
a. Dependent Variable: Well_being						
b. Predictors: (Constant), Job_Demands, Job_Resources, Lean_Implementation						

These tables illustrate the level of variance in well-being that the regression model predicts, demonstrate the distinct contribution of each variable (Lean implementation, job resources, job demands), and provide essential evidence that the model is statistically valid.

Table 7 Regression coefficients

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	**(Constant)**	8,283	8,224		1,007	,316
	Lean_Implementation	,203	,089	,183	2,293	,024

	Job_Resources	,440	,063	,561	7,029	<,001
	Job_Demands	-,174	,079	-,153	-2,219	,029
a. Dependent Variable: Well_being						

Together, they show that, as predicted, job demands have a negative impact on well-being, job resources have the most beneficial effect on employee well-being, and Lean implementation makes a smaller but significant increase.

3.4. Additional analysis of effect of tenure and Lean experience

An additional analysis was conducted to investigate whether employees' organizational tenure and the length on their personal involvement with Lean tools had any relation to job demands, job resources, perceptions of Lean implementation, and general well-being, in addition to the main connections predicted in the hypotheses. Spearman's rho correlations were used to analyse these variables since employees' expectations, transparency in roles, and views of organizational systems may be influenced by their experience within the company and familiarity with Lean (see *Table 10*).

The results of this study show a positive correlation between organizational tenure and well-being ($\rho = 0.221$, $p = 0.018$), indicating that more senior employees often report greater degrees of work-related well-being. Additionally, there was a moderate relationship between tenure and views of Lean implementation ($\rho = 0.120$, $p = 0.202$) and job resources ($\rho = 0.174$, $p = 0.064$), although these associations were not statistically significant. Tenure and job demands did not significantly correlate ($\rho = 0.173$, $p = 0.065$), suggesting that an employee's felt workload strain is not consistently influenced by their length of employment.

Table 8 Spearman correlations between tenure, Lean experience, job demands, job resources, Lean implementation, and well-being

Variable	**1**	**2**	**3**	**4**	**5**	**6**
1. Length of time in the company	1	,458**	,173	,174	,120	,221*
2. Length of involvement with Lean	,458**	1	,156	,268**	,356**	,186*
3. Job demands	,173	,156	1	,002	-,012	,048

4. Job resources	,174	,268**	,002	1	,456**	,707**
5. Lean implementation	,120	,356**	-,012	,456**	1	,379**
6. Well-being	,221*	,186*	,048	,707**	,379**	1

* p < .05, ** p < .01

On the other hand, statistically significant correlations were found between the duration of an individual's engagement with Lean tools. Lean implementation involvement ($\rho = 0.356$, $p < 0.001$), job resources ($\rho = 0.268$, $p = 0.004$), and well-being ($\rho = 0.186$, $p = 0.047$) were all positively correlated with Lean competence. According to the JD-R model, which conceptualizes Lean as a resource-building system, employees who had been exposed to Lean for a longer period tend to view their workplace as more structured and helpful. Additionally, there was no significant correlation found between Lean experience and job demands ($\rho = 0.156$, $p = 0.097$), validating previous findings that Lean does not increase the perceived work in this group of people.

When analysed together, these findings give the primary analysis more depth. The additional results show that positive well-being has a stronger connection with developed organizational knowledge and ongoing exposure to Lean than with immediate workload circumstances even if job demands did not significantly foresee well-being in the overall framework. This confirms earlier findings that employees' sense of efficiency, engagement, and control are strengthened when they are familiar with Lean frameworks – factors that may eventually reduce stress and improve well-being.

3.5. Summary of hypothesis testing

Based on the Job Demands-Resources (JD-R) model and the Lean implementation research, this study developed five hypotheses. In manufacturing contexts, the hypothesis investigated the relationship between Lean tools and job resources, job demands, and employee well-being (see *Table 11*).

Table 9 Summary of the hypothesis testing

Hypothesis	Statement	Result	Evidence
H1	Lean implementation increases job resources in manufacturing organizations.	Supported	Significant positive correlation ($r \approx .46–.50$, $p < .001$); regression coefficient significant.

H2	Lean implementation reduces job demands.	Not supported	Correlation non-significant (r = −.024, $p > .05$); regression coefficient non-significant.
H3	Higher levels of job resources are positively related to employee well-being.	Supported	Strong positive correlation (r = .652**, $p < .001$); regression significant ($\beta \approx .56$, $p < .001$).
H4	Higher levels of job demands are negatively related to employee well-being.	Supported	Significant negative correlations with well-being indicators ($p < .05$); regression coefficient significant ($\beta \approx -.15$, $p \approx .029$).
H5	Lean implementation indirectly improves employee well-being through job resources and demands.	Partially supported	Indirect effect operates through job resources (supported), but not through job demands (not supported).

The results showed that the assumptions were partially supported, suggesting that several factors affect how Lean implementation affects employee well-being. The study's findings showed that the data supported hypothesis 1, which implied that Lean implementation enhances job resources in manufacturing companies. Higher levels of Lean implementation are linked to greater levels of job resources, according to a statistically significant positive association and a substantial regression coefficient. On the other hand, hypothesis 2, which looked at the connection between job demands and Lean implementation, was not confirmed. Regression and correlation studies were unable to show a statistically significant relationship between these variables. The third hypothesis, which looked at the connection between job resources and employee well-being, was validated. The study's conclusions showed a strong positive relationship between job resources and workers' well-being. Regression study also showed that job resources are important indicators of employee well-being. Additionally, the hypothesis 4, that job demands and employee well-being are negatively correlated, was validated. The results showed a statistically significant inverse relationship between job demands and indicators of employee well-being. Lastly, there was some confirmation of hypothesis 5, which claimed that the implementation of Lean indirectly enhances employee well-being through job resources and job demands. Job resources demonstrated the indirect impact of Lean on employee well-being, whereas job demands did not show any noticeable indirect influence. In conclusion, the study's findings demonstrate the significance of job resources as the main driver by which Lean implementation is connected to employee well-being and partially validate the suggested research model.

CONCLUSIONS AND RECOMMENDATIONS

The following key conclusions were formed based on the results of the master's thesis:

1. In manufacturing organizations, Lean implementation impact not only process effectiveness and operational effectiveness but also the working environment and well-being of those working there. Lean tools can improve job resources like autonomy, support from managers, feedback, and growth possibilities, but they can also increase job demands like job stress and time pressure. Therefore, how companies handle job demands and job resources throughout implementation will determine how Lean affects employee well-being.
2. A theoretical framework called the Job Demands-Resources (JD-R) model examines how workplace conditions affect the well-being of employees. This model indicates that job resources (including as opportunities for growth, supervisor support, and feedback) have been demonstrated to increase motivation and engagement. On the other hand, employment demands (such as workload, time constraints, and emotional strain) necessitate consistent effort and have been shown to result in fatigue and decreased motivation to work or try to improve oneself in the workplace. The JD-R model was used in this study to clarify how Lean implementation might affect workers' views of their workplace and, in turn, their well-being in the manufacturing industry.
3. According to the research findings, job resources were found to be positively and significantly correlated with Lean implementation. Employees in organizations that have been using Lean for a longer period reported better levels of support from managers, constructive criticism, teamwork, opportunities for growth, and proactive working methods, all of which are essential components of job resources and strategies for improving employee satisfaction in the workplace. According to this research, Lean tools can increase motivational resources and create a supportive work environment when used properly. Therefore, rather than just making work more intense, Lean seems improve performance.
4. On the other hand, there was not an apparent connection found in the research analysis between the implementation of Lean and job demands. The results of this study indicate that, in this specific sample, Lean tools did not significantly reduce or increase employees perceived job demands, despite the widely held belief that Lean practices result in increased work scope or time pressure. This finding suggests that, when compared to the time when Lean was not used, people did not feel more strain or stress throughout its use. This result implies that while other corporate or environmental variables unrelated to Lean

tools continue to drive demands, the application of Lean may mainly affect the resource element of work.

5. The results of the empirical research clearly show that job resources and employee well-being are positively correlated. Increased energy, interest, inspiration, and general satisfaction in the job have been linked to higher levels of resources, supervisor participation, authority over one's work, flexibility, and other aspects. Additionally, among all the factors in the model, job resources were found to be the best predictor of well-being in the regression analysis. This emphasizes how important it is for manufacturing companies to have supportive and motivating work environments to promote well-being for employees.
6. Job demands and employee well-being were found to be negatively correlated, although the association between job demands and the implementation of Lean was not statistically significant. The regression model revealed that the correlation was strong, suggesting that it has negative effects on employee well-being. This result supports the JD-R model's principle that excessive demands – such as high workloads or mentally difficult tasks drain employees' emotional reserves and cause strain. These findings support the idea that, even in the context of Lean tools job demands have a negative impact on well-being.
7. The study's results showed a positive correlation between Lean implementation and employee well-being, which stayed as a key factor in the regression framework even after adjusting for resources and job demands. At the same time, Lean showed a strong association with job resources, which showed a strong statistical relationship with well-being. These results imply that Lean improves job resources, which has a direct and indirect positive impact on employee well-being. However, since Lean was not correlated with demands, the proposed indirect impact in job demands was not confirmed.
8. Further research revealed a positive correlation between employees' length of time employed and their individual experiences with Lean tools. This conclusion implies that extended learning about Lean and its workplace setting may improve employees' understanding of Lean tools and their capacity to benefit from them, thus sustaining favourable results over time.

Main practical implications and **recommendations** for the manufacturing companies can be proposed:

1. It is crucial to foster a deep commitment to the principles of Lean among managerial employees, while highlighting its function as a people-oriented approach rather than just a set of efficiency tools. This commitment comprises giving techniques that empower workers and

improve job resources like adequate time, coaching, and leadership attention. These behaviours include, but are not limited to, motivating managers to let employees take part in decision-making sessions, giving them feedback on their performance, setting aside time for team talks, and having frequent conversations about chances for professional growth.

2. In Lean workplaces, it is essential to establish routine monitoring of working conditions. This may be accomplished by combining typical Lean metrics like delivery, price, and quality with work needs and job resources characteristics in systems for performance management. This approach would guarantee that all employees' well-being is assessed in addition to the company's revenues.
3. Lean practitioners, including managers and staff, need to understand that sustained Lean implementation requires more than just process optimization. Establishing work environments that support employee engagement, spirit, and persistence is also crucial.
4. Leadership behaviours, staff engagement, and resource-building strategies should be given priority in the methods used by consultants and trainers that support Lean implementation. Additionally, they must provide guidance on recognizing and decreasing the possible negative consequences of work intensification linked to Lean. Such an organizational approach would allow organizations to achieve operational excellence while simultaneously promoting employee well-being and guaranteeing long-term organizational viability.

The study's methodology, collection of data approach, and analytical scope are its primary **limitation**. First, the study relies on a particular kind of survey design known as a cross-sectional survey design. This specific design gathers respondents' opinions at one moment in time. Because of this, it makes it impossible to draw conclusions about correlation or evaluate how employee well-being has changed over time since Lean implementation may shift. Second, all the data was gathered using measures that individuals reported, which could be impacted by social desirability effects and common technique bias. The observed correlations between Lean methodology, job resources and demands, and well-being may be misinterpreted as a result. Thirdly, although the sample size (N = 114) provides enough information for statistical analysis, most respondents only have limited to moderate duration in the organization and Lean knowledge, which may restrict the findings' applicability to more established Lean environments. Additionally, employee views were used to evaluate the application of Lean concepts rather than official evaluations of organizational effectiveness or objective performance metrics. This method might not adequately reflect the scope or consistency of Lean methods throughout companies. The main components of the JD-R model were the focus of this investigation. Employee well-being in Lean workplaces may also be impacted by unrelated to the model issues.

This part provides a **discussion** of the research results of the literature analysis on Lean implementation and employee well-being. Lean implementation, being one of the ways companies make changes, may have both positive and negative effects on their work environment and employee well-being, according to the literature analysis. Lean tools and implementation can boost productivity, but if the change journey is poorly managed, it may additionally raise work pressure and mental strain (Beraldin et al., 2019; Di et al., 2019). Lean tools boosts resources in manufacturing organizations, according to hypothesis 1 of the empirical research results. This hypothesis is supported by the empirical research's findings, which showed a favourable correlation between Lean implementation and increased job resource levels. The finding is consistent with previous research from literature analysis showing that, when applied in an organized and collaborative way, Lean can improve resources like constructive criticism, independence, and support from managers (Leyer et al., 2020; Bakker et al., 2023).

The relationship between job demands and Lean implementation, meanwhile, appears to be more complicated. According to some empirical research, the Lean methodology's strong emphasis on productivity and waste reduction which may increase workload, stress, and time constraints (Beraldin et al., 2019; Maware and Parsley, 2022). Hypothesis 2 assumed that implementing Lean would minimize job demands based on this perception. However, since there was no apparent correlation between Lean implementation and job demands, the current study's findings did not support this hypothesis. According to this research, the impact of Lean tools could differ depending on specific variables including corporate culture, managerial approaches, and how the fundamentals of Lean are implemented.

Job resources have been shown to be critical to employee well-being, which agrees with the JD-R model. Prior studies from the literature analysis have consistently shown that job resources promote motivation and defend workers from stress at work (Bakker and Demerouti, 2007; Bakker et al., 2023). The empirical research results showed significant proof for hypothesis 3, which suggested a positive association between employee well-being and job resources. The findings demonstrated a strong positive correlation between job resources and well-being, demonstrating that resources are a crucial tool for companies can use to promote staff satisfaction and wellness in Lean surroundings.

Similarly, there is plenty of support in the literature regarding the unfavourable effects that job demands have on the well-being of workers. Burnout, lack of energy, and lower levels of job fulfilment have been associated with high workloads and time constraints (Demerouti et al., 2001; Bayes et al., 2021). The study's empirical findings confirmed the hypothesis 4, which suggested a negative correlation between job demands and employee well-being. The JD-R concept that

demands represented a significant threat for the health of staff regardless of Lean implementation was supported by the finding that higher job demands were linked to lower levels of employee well-being.

Hypothesis 5 suggested that through job demands and job resources, Lean implementation contributes to employee well-being. The hypothesis is supported by the results. Lean implementation has been proved to indirectly improve employee well-being through better job resources, even if no additional impact through job demands was found. This finding is in alignment with literature analysis findings that are highlighting that Lean's positive impact on workers are mostly realized when it gets incorporated into encouraging organizational structures which place a high priority on employee participation and management involvement (Kilroy and Flood, 2022; Claes et al., 2023).

Overall, the results of this study add to the existing literature of research by demonstrating that, according to what the JD-R model suggests, Lean implementation largely affects employee well-being through job resources. Although other research (e.g., Beraldin et al., 2019; Kilroy & Flood, 2022) reports opposing impacts of Lean on labor and employee stress, the current findings show that Lean was favorably correlated with job resources while not directly related to job demands. Contextual factors, such as employees' familiarity with Lean methods, the level of implementation maturity, and organizational traits, could account for this difference from some previous findings. As a result, the findings validate the literature's conclusion that, when applied in a collaborative, supportive way that enhances job resources rather than increases demands, Lean can improve employee well-being.

Directions for the further research: for future research to use experimental approaches to look at how the use of Lean changes and how it affects job demands, job resources, and employee well-being over time, with emphasis on how these processes differ between organizations at various stages of Lean adoption. Additionally, a more thorough and trustworthy assessment of Lean outcomes would be made possible by combining survey data with unbiased organizational indicators, such as process efficiency measurements, absence rates, and attrition statistics. Future research could expand the model by adding more explanatory factors, including workplace culture or mental security. A more thorough knowledge of the circumstances in which Lean leads to either positive or negative effects on workers may be made possible by these extra factors. Additionally, comparing different industries and national settings would help determine whether these observed connections are specific to workplaces or more universal. Lastly, various techniques, such as empirical research and interviews, may offer a greater awareness of how employees encounter

Lean principles in their day-to-day job and how particular implementation strategies affect their well-being.

LITERATURE AND REFERENCES

Akmal, A., Foote, J., Podgorodnichenko, N., Greatbanks, R., & Gauld, R. (2020). Understanding resistance in lean implementation in healthcare environments: An institutional logics perspective. *Production Planning & Control, 33*(4), 356–370. https://doi.org/10.1080/09537287.2020.1823510

Amajuoyi, P., & Adeusi, K. B. (2024). Agile methodologies: Adapting product management to rapidly changing market conditions. *GSC Advanced Research and Reviews, 19*(2), 249–267. https://doi.org/10.30574/gscarr.2024.19.2.0181

Atalay, M., & Dağıstan, U. (2023). Quiet quitting: A new wine in an old bottle? *Personnel Review, 53*(4). https://doi.org/10.1108/PR-02-2023-0122

Baka, Ł. (2015). Does job burnout mediate negative effects of job demands on mental and physical health in a group of teachers? Testing the energetic process of job demands–resources model. *International Journal of Occupational Medicine and Environmental Health*. https://doi.org/10.13075/ijomeh.1896.00246

Baka, L., Prusik, M., & Jasielska, D. (2023). Toward a better understanding of the health impairment process: Types of demand and burnout component matter. *Frontiers in Psychiatry, 13*, Article 1037053. https://doi.org/10.3389/fpsyt.2022.1037053

Bakker, A. B. (2014). *The job demands–resources questionnaire*. Erasmus University.

Bakker, A. B., & Demerouti, E. (2007). The job demands–resources model: State of the art. *Journal of Managerial Psychology, 22*(3), 309–328. https://peopleful.io/Job-Demands-Resource-Model-research.pdf

Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior, 10*(1), 25–53. https://doi.org/10.1146/annurev-orgpsych-120920-053933

Balamurugan, R., Kirubagharan, R., & Ramesh, C. (2020). Implementation of lean tools and techniques in a connecting rod manufacturing industry. *Materials Today: Proceedings, 33*, 3108–3113. https://doi.org/10.1016/j.matpr.2020.03.702

Bayes, A., Tavella, G., & Parker, G. (2021). The biology of burnout: Causes and consequences. *The World Journal of Biological Psychiatry, 22*(9), 686–698. https://doi.org/10.1080/15622975.2021.1907713

Beraldin, A. R., Danese, P., & Romano, P. (2019). An investigation of the relationship between lean and well-being based on the job demands–resources model. *International Journal of Operations & Production Management, 39*(12), 1295–1322. https://doi.org/10.1108/IJOPM-05-2019-0377

Bernhard-Oettel, C., Sverke, M., & De Witte, H. (2005). Comparing three alternative types of employment with permanent full-time work: How do employment contract and perceived job conditions relate to health complaints? *Work & Stress, 19*(4), 301–318.

Bieraugel, M. (2015). Managing library innovation using the lean startup method. *Library Management, 36*(4–5), 351–361.

Calcerano, T., Ferreira, L., & Pinto, A. (2023). *The well-being of workers in lean manufacturing work environments*. ResearchGate. https://www.researchgate.net/publication/372217548_The_well-being_of_workers_in_Lean_Manufacturing_work_environments

Chebbi, H., Yahiaoui, D., Sellami, M., Papasolomou, I., & Melanthiou, Y. (2019). Focusing on internal stakeholders to enable the implementation of organizational change towards corporate entrepreneurship: A case study from France. *Journal of Business Research, 119*, 209–217. https://doi.org/10.1016/j.jbusres.2019.06.003

Cignitas, C. P., Antonio, J., & Vilajosana Crusells, J. (2022). Literature review on the effect of balanced scorecard on employee wellbeing. *International Journal of Business and Management, 17*(3), 103. https://doi.org/10.5539/ijbm.v17n3p103

Claes, S., Vandepitte, S., Clays, E., & Annemans, L. (2023). How job demands and job resources contribute to our overall subjective well-being. *Frontiers in Psychology, 14*, Article 1220263. https://doi.org/10.3389/fpsyg.2023.1220263

Danna, K., & Griffin, R. W. (1999). Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management, 25*(3), 357–384. https://doi.org/10.1177/014920639902500305

Dave, P. (2020). *The history of lean manufacturing by the view of Toyota–Ford*. ResearchGate. https://www.researchgate.net/publication/344460563

de J., Paauwe, J., Strating, M. M. H., & Huijsman, R. (2022). A renewed perspective on lean six sigma in healthcare—People and performance. In *Perspective chapter*. IntechOpen. https://doi.org/10.5772/intechopen.106875

De, A., Fernández, D. R., & García, Y. S. (2019). Business process management for optimizing clinical processes: A systematic literature review. *Health Informatics Journal, 26*(2), 1305–1320. https://doi.org/10.1177/1460458219877092

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands–resources model of burnout. *Journal of Applied Psychology, 86*(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

Deshkar, A., Kamle, S., Giri, J., & Korde, V. (2018). Design and evaluation of a lean manufacturing framework using value stream mapping (VSM) for a plastic bag manufacturing unit. *Materials Today: Proceedings, 5*(2), 7668–7677. https://doi.org/10.1016/j.matpr.2017.11.442

Deshmukh, M., Gangele, A., Gope, D. K., & Dewangan, S. (2022). Study and implementation of lean manufacturing strategies: A literature review. *Materials Today: Proceedings, 62*, 1489–1495. https://doi.org/10.1016/j.matpr.2022.02.155

Dinbil, A. (2023). *Developing non-conformity process in case company* (Bachelor's thesis, Laurea University of Applied Sciences). Theseus. https://www.theseus.fi/bitstream/handle/10024/796063/Dinbil_Abdirahman.pdf

Dobrigkeit, F., & de Paula, D. (2017). The best of three worlds—The creation of InnoDev: A software development approach that integrates design thinking, Scrum and lean startup. In *Proceedings of the 21st International Conference on Engineering Design (ICED 17)* (Vol. 8, pp. 319–328).

Faiza, S., Siddiqui, N. A., & Malik, Z. (2025). Lean manufacturing sustainability: A critical review of barriers and its impact. *Pakistan Social Sciences Review, 9*(1), 592–610. https://doi.org/10.35484/pssr.2025(9-I)46

Gaeini, S. (2022). *Organisational change and stress* (Unpublished manuscript). https://documentserver.uhasselt.be/bitstream/1942/38367/1/31711da7-b8e4-4201-8086-9f5331b96e50.pdf

Galanakis, M. D., & Tsitouri, E. (2022). Positive psychology in the working environment: Job demands–resources theory, work engagement and burnout: A systematic literature review. *Frontiers in Psychology, 13*, Article 1022102. https://doi.org/10.3389/fpsyg.2022.1022102

Ghasemi, H., & Sohrabi, N. (2023). The role of continuous improvement in engineering management: A review of Kaizen and Six Sigma practices. *Management Strategies and Engineering Sciences, 5*(2), 1–10.

Gupta, S., & Jain, S. K. (2013). A literature review of lean manufacturing. *International Journal of Management Science and Engineering Management, 8*(4), 241–249. https://doi.org/10.1080/17509653.2013.825074

Håkansson, M., Holden, R. J., Eriksson, A., & Dellve, L. (2017). Managerial practices that support lean and socially sustainable working conditions. *Nordic Journal of Working Life Studies, 7*(3), 63–84. https://doi.org/10.18291/njwls.v7i3.97078

Hamad, A., Hamed, M., Alkhathami, A. M., Alharbi, A. A., Albalawi, K. I., Alenezi, A. M., Alsahli, S. S., Alharbi, A. M., Binselm, K. R. A., Alotaibi, M. S. H., Hamed, M., & Binselm, K. R. A. (2018). Burnout and workforce retention in healthcare: Challenges and evidence-based strategies. *International Journal of Health Sciences, 2*(S1), 480–503. https://doi.org/10.53730/ijhs.v2ns1.15407

Hao, J. (2024). The evolution of IBM's core values guided by strategy: From hardware giant to solution innovator. *World Journal of Information and Knowledge Management, 2*(2). https://doi.org/10.61784/wjikm3018

Hrvatin, S., Markuz, A., & Miklosevic, I. (2022, May 6–7). Project manager's social responsibility: Ensuring work-life balance and equal opportunity in project teams. In *International Scientific Conference on Economic and Social Development – "Green Economy and Sustainable Development"*. Čakovec, Croatia.

Izah, S. C., Sylva, L., & Hait, M. (2023). Cronbach's alpha: A cornerstone in ensuring reliability and validity in environmental health assessment. *ES Energy and Environment, 23*. https://www.espublisher.com/journals/articledetails/1057

Jenkins, A. (2017). Advancing lean leadership. In McKinsey & Company (Eds.), *The work of leaders in a lean management enterprise* (pp. 60–63). https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Operations/Our%20Insights/The%20work%20of%20leaders%20in%20a%20lean%20management%20enterprise/The-work-of-leaders-in-a-lean-management-enterprise.ashx

Kareska, P. K. (2024). Kaizen in manufacturing: Transforming productivity and quality through continuous improvement. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4844999

Kilpatrick, A. (2022, August 22). A look at "quiet quitting"—and whether it is a good or bad thing. *NPR*. https://www.npr.org/2022/08/22/1118843708/a-look-at-quiet-quitting-and-whether-its-a-good-orbad-thing

Kilroy, S., & Flood, P. C. (2022). *Lean management and employee well-being*. In P. Brough, K. Daniels, & E. Gardiner (Eds.), *Handbook of management and employment practices* (pp. 209–227). Springer. https://doi.org/10.1007/978-3-030-29010-8_9

Kleeff, R. van, Harten, J. van, Knies, E., & Boselie, P. (2023). Lean dancing: How involvement in continuous improvement and lean techniques relate to hospital performance and workers' wellbeing through autonomy. *Sustainability, 15*(6), 5546. https://doi.org/10.3390/su15065546

Kuráth, G., Banyai, E., Sipos, N., & Márta, K. S. (2023, September). *Trust and communication in the context of leaders and employees*. Centre of Sociological Research. https://www.researchgate.net/publication/374684061_Trust_and_communication_in_the_context_of_leaders_and_employees

Letelier, P., Guzmán, N., Medina, G., Calcumil, L., Huencho, P., Mora, J., Quiñones, F., Jara, J., Reyno, C., Farías, J., Herrera, B., Brebi, P., & Riquelme, I. (2020). Workflow optimization in a clinical laboratory using lean management principles in the pre-analytical phase. *Journal of Medical Biochemistry, 40*(1), 26–32. https://doi.org/10.5937/jomb0-26055

Leyer, M., Reus, M., & Moormann, J. (2020). How satisfied are employees with lean environments? *Production Planning & Control, 32*(1), 52–62. https://doi.org/10.1080/09537287.2020.1711981

Lindskog, P., Hemphälä, J., Eklund, J., & Eriksson, A. (2016). Lean in healthcare: Engagement in development, job satisfaction or exhaustion? *Journal of Hospital Administration, 5*(5). https://doi.org/10.5430/jha.v5n5p91

Lizarelli, F. L., Torres, A. F., Antony, J., Ribeiro, R., Salentijn, W., Fernandes, M. M., & Campos, A. T. (2021). Critical success factors and challenges for lean startup: A systematic literature review. *The TQM Journal*. https://doi.org/10.1108/TQM-06-2021-0177

Luis, J., Adriana, F., Tiznado, O., Vargas, A. R., Macías, E. J., & Lardies, C. J. (2021). Effect of quality lean manufacturing tools on commercial benefits gained by Mexican maquiladoras. *Mathematics, 9*(9), 971. https://doi.org/10.3390/math9090971

Magnavita, N., Chirico, F., Garbarino, S., Bragazzi, N. L., Santacroce, E., & Zaffina, S. (2021). SARS/MERS/SARS-CoV-2 outbreaks and burnout syndrome among healthcare workers: An umbrella systematic review. *International Journal of Environmental Research and Public Health, 18*(8), 4361. https://doi.org/10.3390/ijerph18084361

McKinsey & Company. (2021, April 12). The overlooked essentials of employee well-being. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/the-overlooked-essentials-of-employee-well-being

Michalska, J., & Szewieczek, D. (2007). The 5S methodology as a tool for improving the organisation. *Journal of Achievements in Materials and Manufacturing Engineering, 24*(2), 211–214. http://jamme.acmsse.h2.pl/papers_vol24_2/24247.pdf

Modise, J. (2023, July). *The impacts of employee workplace empowerment, effective commitment and performance: An organizational systematic review*. ResearchGate. https://www.researchgate.net/publication/376260679_The_Impacts_of_Employee_Workplace_Empowerment_Effective_Commitment_and_Performance_An_Organizational_Systematic_Review

Mostafa, S., Dumrak, J., & Soltan, H. (2015). Lean maintenance roadmap. *Procedia Manufacturing, 2*, 434–444. https://doi.org/10.1016/j.promfg.2015.07.076

Mubarok, E. I., Gideon, A., Sugiarti, R., Suhariadi, F., & N, E. (2024). Analysis of the influence of work stress and work culture on employee performance. *International Journal of Education, Information Technology, and Others, 7*(1), 229–238. https://doi.org/10.5281/zenodo.10558691

Nabil, R., Abdelhay, B., & Hamid, B. (2024). Employee wellbeing in the workplace: The role of HR in mental health and wellness initiatives. *International Journal of Economic Studies and Management, 4*(5), 1160–1185. https://doi.org/10.5281/zenodo.13948367

Okpala, C., Nwamekwe, C. O., & Ezeanyim, O. C. (2024). The implementation of Kaizen principles in manufacturing processes: A pathway to continuous improvement. *International Journal of Engineering Inventions, 13*(7), 116–124. https://hal.science/hal-04669397

Oloba, B. L., Olola, T. M., & Ijiga, A. C. (2024). Powering reputation: Employee communication as the key to boosting resilience and growth in the U.S. service industry. World Journal of Advanced Research and Reviews, 23(3), 2020–2040. https://doi.org/10.30574/wjarr.2024.23.3.2689

Oyekunle, A., & Olanrewaju, S. (2025). Predictors and impact of burnout among nurses in Nigerian tertiary hospitals: A general review. *South Asian Research Journal of Nursing and Healthcare, 7*(2). https://doi.org/10.36346/sarjnhc.2025.v07i02.001

Palange, A., & Dhatrak, P. (2021). Lean manufacturing: A vital tool to enhance productivity in manufacturing. *Materials Today: Proceedings, 46*, 729–736. https://doi.org/10.1016/j.matpr.2020.12.193

Pandey, A., Maheshwari, M., & Malik, N. (2025). A systematic literature review on employee well-being: Mapping multi-level antecedents, moderators, mediators and future research agenda. *Acta Psychologica, 258*, 105080. https://doi.org/10.1016/j.actpsy.2025.105080

Paşa Gültaş. (2025). Lean municipality: Case studies, practical applications, and a comprehensive literature review within bibliometric analysis. *Journal of Economics and Business Issues, 5*(1), 11–25. https://jebi-academic.org/index.php/jebi/article/view/111

Reponen, E., Jokela, R., Blodgett, J. C., Rundall, T. G., Shortell, S. M., Nuutinen, M., Skants, N., Mäkijärvi, M., & Torkki, P. (2021). Validation of the Lean Healthcare Implementation Self-Assessment Instrument (LHISI) in the Finnish healthcare context. *BMC Health Services Research, 21*(1). https://doi.org/10.1186/s12913-021-07322-2

Saif, D. (2024). The importance of organizational culture for business success. *Jurnal Riset Multidisiplin Dan Inovasi Teknologi, 2*(3), 727–735. https://doi.org/10.59653/jimat.v2i03.1098

Sanahuja, S. M. (2020). Towards lean teaching: Non-value-added issues in education. *Education Sciences, 10*(6), 160. https://doi.org/10.3390/educsci10060160

Silva, B. M. S. R. da, Oliveira, V. A. N. de, & Magalhães, J. L. (2023). Analysis of Lean Six Sigma use in pharmaceutical production. *Brazilian Journal of Pharmaceutical Sciences, 59*. https://doi.org/10.1590/s2175-97902023e22949

Singh, A., Kumar, V., Mittal, A., & Verma, P. (2023). Identifying critical challenges to lean construction adoption. *Construction Innovation, 24*(1), 67–105. https://doi.org/10.1108/CI-09-2022-0229

Somers, M. (2022). Organisation tips for a safer laboratory—An introduction to 5S for schools. *Elementary Chemistry, 55*, 51, 58, 60, 65.

Sorooshian, S., Salimi, M., Bavani, S., & Aminattaheri, H. (2012). Case report: Experience of 5S implementation. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2178780

Srijithesh, P. R., Gijo, E. V., Raja, P., Bhat, S., Mythirayee, S., Kulkarni, G. B., Siani, J., & Aravinda, H. R. (2024). Leveraging lean six sigma principles in an Indian tertiary care hospital: A case study. *International Journal of Quality & Reliability Management*. https://doi.org/10.1108/IJQRM-01-2024-0025

Starić, V. (2025). *Worker outcomes in lean implementation in small and medium-sized enterprises*. http://www.cek.ef.uni-lj.si/doktor/Staric170-25.pdf

Sulaeman, R., Amien, N. N., Budiadi, H., Fitriani, H., & Ismiyatun. (2024). Toxic workplace culture: Causes and consequences. *The Journal of Academic Science, 1*(4), 384–394. https://doi.org/10.59613/p9hfcf75

Taber, K. S. (2017). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Thangarajoo, Y. (2015). *Lean thinking: An overview*. ResearchGate. https://www.researchgate.net/publication/281189935_Lean_Thinking_An_Overview

Torraco, R. J. (2005). Work design theory: A review and critique with implications for human resource development. *Human Resource Development Quarterly, 16*(1), 85–109. https://doi.org/10.1002/hrdq.1125

Toyota Motor Corporation. (2024). Toyota production system | Vision and philosophy. https://global.toyota/en/company/vision-and-philosophy/production-system/

Trstenjak, M., Benešova, A., Opetuk, T., & Cajner, H. (2025). Human factors and ergonomics in Industry 5.0—A systematic literature review. *Applied Sciences, 15*(4), 2123. https://doi.org/10.3390/app15042123

Tummers, L. G., & Bakker, A. B. (2021). Leadership and job demands–resources theory: A systematic review. *Frontiers in Psychology, 12*, Article 722080. https://doi.org/10.3389/fpsyg.2021.722080

van der Voordt, T., & Jensen, P. A. (2021). The impact of healthy workplaces on employee satisfaction, productivity and costs. *Journal of Corporate Real Estate, 25*(1), 29–49. https://doi.org/10.1108/JCRE-03-2021-0012

Wijesinghe, E. D. A. T., Jayawickrama, T. S., Tennakoon, G. A., & Wijewickrama, M. K. C. S. (2024). 5S principles for sustainable resource and waste management in Sri Lankan construction projects. In *12th World Construction Symposium 2024* (pp. 1–14). https://doi.org/10.31705/wcs.2024.1

Womack, J. P., & Jones, D. T. (1997). Lean thinking—Banish waste and create wealth in your corporation. *Journal of the Operational Research Society, 48*(11), 1148. https://doi.org/10.1057/palgrave.jors.2600967

World Economic Forum. (2025, March 4). Why prioritizing employee well-being is good for business. https://www.weforum.org/stories/2025/03/prioritizing-employee-wellbeing-good-for-business/

World Health Organization. (2017, November 30). Protecting workers' health. https://www.who.int/news-room/fact-sheets/detail/protecting-workers'-health

Xu, S., & Hall, N. G. (2021). Fatigue, personnel scheduling and operations: Review and research opportunities. *European Journal of Operational Research, 295*(3), 807–822. https://doi.org/10.1016/j.ejor.2021.03.036

Yamamoto, K., Milstead, M., & Lloyd, R. (2019). *A review of the development of lean manufacturing and related lean practices: The case of Toyota production system and managerial thinking*. ResearchGate. https://www.researchgate.net/publication/340449306_A_review_of_the_development_of_lean_manufacturing_and_related_lean_practices_The_case_of_Toyota_production_system_and_managerial_thinking

Yordanova, Z. (2018). Lean startup method hampers breakthrough innovations and company's innovativeness. *International Journal of Innovation and Technology Management, 15*(2), 1850012.

Zaidi, A., & Lakhal, L. (2025). An empirical investigation of the impact of lean manufacturing practices on corporate social performance: A sociotechnical perspective. *International Journal of Quality & Reliability Management*. https://doi.org/10.1108/IJQRM-05-2024-0149

Zheng, X., Zhu, W., Zhao, H., & Zhang, C. (2015). Employee well-being in organizations: Theoretical model, scale development, and cross-cultural validation. *Journal of Organizational Behavior, 36*(5), 621–644. https://doi.org/10.1002/job.1990

Zhou, T., Xu, C., Wang, C., Sha, S., Wang, Z., Zhou, Y., Zhang, X., Hu, D., Liu, Y., Tian, T., Liang, S., Zhou, L., & Wang, Q. (2022). Burnout and well-being of healthcare workers in the post-pandemic period of COVID-19: A perspective from the job demands–resources model. *BMC Health Services Research, 22*(1). https://doi.org/10.1186/s12913-022-07608-z

LEAN DIEGIMO POVEIKIS DARBUOTOJŲ GEROVEI GAMYBOS ĮMONĖSE

Augustė Liepa KAMAŠINAITĖ

Magistro darbas

Verslo procesų valdymo magistro programa

Ekonomikos ir verslo administravimo fakultetas, Vilniaus universitetas

Darbo vadovė doc. dr. Roma Adomaitienė

Vilnius, 2025

SANTRAUKA

65 puslapiai, 4 paveikslai, 9 lentelės, 1 priedas ir 87 šaltiniai.

Magistro darbo tikslas – ištirti Lean diegimo poveikį gamybos organizacijų darbuotojų gerovei, derinant teorines literatūros perspektyvas ir empirinius duomenis, surinktus per apklausą.

Darbo uždaviniai:

1. Peržiūrėti esamą literatūrą apie Lean įdiegimo poveikį darbuotojų gerovei.

2. Nustatyti ir apibrėžti pagrindines darbo reikalavimų ir darbo išteklių sąvokas Lean diegimo kontekste.

3. Parengti ir atlikti tyrimą, siekiant surinkti empirinius duomenis apie darbuotojų gerovę gamybos organizacijose, kurios įgyvendina Lean.

4. Analizuoti surinktus duomenis ir įvertinti Lean diegimo poveikį darbuotojų gerovei, integruojant teorinius ir empirinius rezultatus.

Empiriniam tyrimui buvo taikytas kiekybinis metodas – anketinė apklausa, kurioje dalyvavo 114 dalyvių, dirbančių gamybos organizacijose ir turinčių patirties su Lean įrankiais. Duomenų analizė buvo atlikta naudojant SPSS programinę įrangą. Buvo taikomi šie metodai: aprašomoji statistika, Cronbacho alfa patikimumo analizė, koreliacijos analizė, Spearmano koreliacija ir daugialypė linijinė regresija.

Rezultatai parodė, kad Lean įgyvendinimas yra statistiškai reikšmingas ir teigiamai susijęs su darbo ištekliais ir darbuotojų gerove darbe. Darbo ištekliai turėjo stipriausią teigiamą poveikį darbuotojų gerovei. Taip pat nustatyta, kad Lean diegimas tiesiogiai ir netiesiogiai per darbo išteklius (job resources) prisideda prie darbuotojų gerovės. Priešingai nei tikėtasi, Lean diegimas nebuvo reikšmingai susijęs su darbo reikalavimų (job demands) sumažėjimu, nors darbo reikalavimai turėjo neigiamą poveikį darbuotojų gerovei.

Papildoma analizė parodė, kad ilgesnė darbuotojų patirtis taikant Lean įrankius ir praktikas yra susijusi su didesniais darbo ištekliais ir geresne darbuotojų gerove.

Pagrindinės išvados: Lean diegimas gali būti laikomas svarbiu organizaciniu veiksniu, kuris stiprina darbo išteklius ir taip prisideda prie darbuotojų gerovės gerinimo. Tačiau vien Lean diegimas nebūtinai sumažina darbo reikalavimus, todėl organizacijoms svarbu papildomai valdyti darbo krūvį ir streso veiksnius.

Reikšminiai žodžiai: Lean diegimas, darbuotojų gerovė, darbo reikalavimai, darbo ištekliai, JD-R modelis, gamybos įmonės.

THE IMPACT OF LEAN IMPLEMENTATION ON EMPLOYEE WELL-BEING IN MANUFACTURING COMPANIES

Augustė Liepa KAMAŠINAITĖ

Master Thesis

Business Process Management Master Programme

Faculty of Economics and Business Administration, Vilnius University

Supervisor - doc. dr. Roma Adomaitienė

Vilnius, 2025

SUMMARY

65 pages, 4 figures, 9 tables, 1 annex, and 87 references.

The aim of this thesis is to explore the impact of Lean practices on the employee well-being in manufacturing organizations by combining theoretical perspectives from the literature and empirical evidence collected through a survey.

Objectives of the thesis:

1. Review the existing literature on the effects of Lean implementation on employee well-being.

2. Identify and define key concepts of job demands and job resources in the context of Lean implementation.

3. Design and conduct a survey to collect empirical data on the well-being of employees in manufacturing organizations that implement Lean.

4. Analyse the collected data and evaluate the impact of Lean practices on employee well-being by integrating theoretical and empirical findings.

A quantitative method was used for the empirical study – a questionnaire survey involving 114 participants working in manufacturing organizations and having experience with Lean tools. Data analysis was performed using SPSS software. The following methods were used: descriptive statistics, Cronbach's alpha reliability analysis, correlation analysis, Spearman's correlation, and multiple linear regression.

The results showed that Lean implementation is statistically significant and positively related to job resources and employee well-being at work. Job resources had the strongest positive effect on employee well-being. It was also found that Lean implementation contributes directly and indirectly to employee well-being through job resources. Contrary to expectations, Lean implementation was not significantly associated with a reduction in job demands, although job demands had a negative impact on employee well-being.

Additional analysis showed that longer employee experience with Lean tools and practices is associated with greater job resources and better employee well-being.

Key findings: The implementation of Lean can be considered an important organizational factor that strengthens job resources and thus contributes to improving employee well-being. However, the implementation of Lean alone does not necessarily reduce job demands, so it is important for organizations to additionally manage workload and stress factors.

Keywords: Lean implementation, employee well-being, job demands, job resources, JD-R model, manufacturing companies.

ANNEXES

Annex 1. Questionnaire for the research

Impact of Lean Implementation on Employee Well-Being in Manufacturing companies

* Required

Dear Respondent, I am a student of Vilnius University's Business Process Management Master's degree program. You are invited to participate in a survey, the purpose of which is to evaluate **the impact of Lean implementation on employee wellbeing in manufacturing organizations.** You are kindly asked to answer the questions below. The survey is anonymous, and the completion process will take up to **10 minutes.** Your information is highly confidential. The data collected will be used for internal research purposes only and will not be shared externally.

Impact of Lean Implementation on Employee Well-Being in Manufacturing companies

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1. Work Situation (JD-R) *

	Never	Sometimes	Regularly	Often	Very often
Do you have flexibility in the execution of your job?	◯	◯	◯	◯	◯
Do you have control over how your work is carried out?	◯	◯	◯	◯	◯
Can you participate in decision-making regarding your work?	◯	◯	◯	◯	◯
Do you have to work at speed?	◯	◯	◯	◯	◯
Do you have too much work to do?	◯	◯	◯	◯	◯
How often do you have to work extra hard to reach a deadline?	◯	◯	◯	◯	◯
Do you work under time pressure?	◯	◯	◯	◯	◯
Does your work require a lot of concentration?	◯	◯	◯	◯	◯
Does your work demand enhanced care or precision?	◯	◯	◯	◯	◯
Do you regard your work as mentally very straining?	◯	◯	◯	◯	◯
Does your work require your constant attention?	◯	◯	◯	◯	◯

Workplace Interactions

2. Collaboration (JD-R) *

	Never	Sometimes	Regularly	Often	Very often
If necessary, can you ask your colleagues for help?	◯	◯	◯	◯	◯
Can you count on your colleagues to support you if difficulties arise in your work?	◯	◯	◯	◯	◯
In your work, do you feel valued by your colleagues?	◯	◯	◯	◯	◯

3. Emotions at Work (JD-R) *

	Never	Sometimes	Regularly	Often	Very often
Is your work emotionally demanding?	◯	◯	◯	◯	◯
In your work, are you confronted with things that personally touch you?	◯	◯	◯	◯	◯
Do you face emotionally charged situations in your work?	◯	◯	◯	◯	◯
Do you deal with clients (internal/external) who incessantly complain?	◯	◯	◯	◯	◯
Do you have to deal with demanding clients?	◯	◯	◯	◯	◯
Do you have to deal with clients who do not treat you with respect and politeness?	◯	◯	◯	◯	◯

4. Feedback (JD-R) *

	Never	Sometimes	Regularly	Often	Very often
I receive sufficient information about my work objectives.	◯	◯	◯	◯	◯
My job offers me opportunities to find out how well I do my work.	◯	◯	◯	◯	◯
I receive sufficient information about the results of my work.	◯	◯	◯	◯	◯

Conflicting Job Demands

5. Conflicting Expectations (JD-R) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I receive conflicting requests from two or more people.	◯	◯	◯	◯	◯
I am unable to fulfill the conflicting expectations of my coworkers.	◯	◯	◯	◯	◯
The expectations of my colleagues are in conflict.	◯	◯	◯	◯	◯
At my work, different groups of people expect opposite things from me.	◯	◯	◯	◯	◯

6. Hassles (JD-R) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I have to deal with administrative hassles.	◯	◯	◯	◯	◯
I have many hassles to go through to get projects/assign ments done.	◯	◯	◯	◯	◯
I have to go through a lot of red tape to get my job done.	◯	◯	◯	◯	◯
I am confronted with unexpected hassles at work.	◯	◯	◯	◯	◯
I have many hassles to go through to get my work done.	◯	◯	◯	◯	◯

Leadership and Managerial Support

7. Your Supervisor (JD-R) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My supervisor informs me whether he/she is satisfied with my work.	◯	◯	◯	◯	◯
My supervisor shows consideration for my problems and desires regarding my work.	◯	◯	◯	◯	◯
I feel valued by my supervisor.	◯	◯	◯	◯	◯
My supervisor uses his/her influence to help me solve problems at work.	◯	◯	◯	◯	◯
My supervisor is friendly and open to me.	◯	◯	◯	◯	◯

8. Opportunities for Development (JD-R) *

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I have the opportunity to develop my strong points.	◯	◯	◯	◯	◯
I can develop myself sufficiently.	◯	◯	◯	◯	◯
My work offers me the possibility to learn new things.	◯	◯	◯	◯	◯

9. Your Way of Working (JD-R) *

	Almost never	Rarely	Occasionally	Sometimes	Frequently	Usually	Almost always
I actively look for job tasks I am good at.	◯	◯	◯	◯	◯	◯	◯
I use my strengths at work.	◯	◯	◯	◯	◯	◯	◯
I try to apply my talents as much as possible.	◯	◯	◯	◯	◯	◯	◯
I organize my job to suit my strong points.	◯	◯	◯	◯	◯	◯	◯
I draw on my talents in the workplace.	◯	◯	◯	◯	◯	◯	◯
At work, I focus on the things I do well.	◯	◯	◯	◯	◯	◯	◯
I make the most of my strong points.	◯	◯	◯	◯	◯	◯	◯
I capitalize on my strengths at work.	◯	◯	◯	◯	◯	◯	◯
I seek opportunities to do my work in a manner that best suits my strong points.	◯	◯	◯	◯	◯	◯	◯

10. Well-Being (JD-R) *

	Almost never	Rarely	Occasionally	Sometimes	Frequently	Usually	Almost always
At my work, I feel bursting with energy.	◯	◯	◯	◯	◯	◯	◯
I feel strong and vigorous in my job.	◯	◯	◯	◯	◯	◯	◯
I am enthusiastic about my job.	◯	◯	◯	◯	◯	◯	◯
My job inspires me.	◯	◯	◯	◯	◯	◯	◯
When I get up in the morning, I feel like going to work.	◯	◯	◯	◯	◯	◯	◯
I feel happy when I am working intensely.	◯	◯	◯	◯	◯	◯	◯
I am proud of the work that I do.	◯	◯	◯	◯	◯	◯	◯
I am immersed in my work.	◯	◯	◯	◯	◯	◯	◯
I get carried away when I am working.	◯	◯	◯	◯	◯	◯	◯
There are days when I feel tired before I arrive at work.	◯	◯	◯	◯	◯	◯	◯
After work, I tend to need more time than in the past to relax and feel better.	◯	◯	◯	◯	◯	◯	◯
During my work, I often feel emotionally drained.	◯	◯	◯	◯	◯	◯	◯
After my work, I usually feel worn out and weary.	◯	◯	◯	◯	◯	◯	◯

11. Performance (JD-R) *

	Almost never	Rarely	Occasionally	Sometimes	Frequently	Usually	Almost always
You help your colleagues with their work when they return from absence.	◯	◯	◯	◯	◯	◯	◯
You achieve your targets that come within the scope of your position.	◯	◯	◯	◯	◯	◯	◯
You meet all the standards regarding performance.	◯	◯	◯	◯	◯	◯	◯
You help colleagues under high work pressure or with problems.	◯	◯	◯	◯	◯	◯	◯
You meet all the requirements of your position.	◯	◯	◯	◯	◯	◯	◯
You are prepared to do things not part of your job but in the interest of the organization, but which are in the interest of your organisation as a whole.	◯	◯	◯	◯	◯	◯	◯

Lean Practices in the Workplace

12. Lean Commitment and Leadership Support *

	Totally disagree	Disagree	Neutral	Agree	Strongly agree
In my department, management staff are committed to Lean principles.	○	○	○	○	○
In my department, employees are committed to Lean principles.	○	○	○	○	○
Lean has a sponsor/champion in the company who shows visible and active support.	○	○	○	○	○

13. Standardization and Lean Practices *

	Totally disagree	Disagree	Neutral	Agree	Strongly agree
In my department, management staff use A3 problem-solving to identify and address the root causes of issues.	○	○	○	○	○
Standard work procedures are clearly documented and easy for employees to access.	○	○	○	○	○
Employees in my department are encouraged to suggest improvements to existing work standards.	○	○	○	○	○
Compliance with standard work is regularly reviewed and discussed by management.	○	○	○	○	○
Work processes are stable and predictable, allowing employees to perform their tasks efficiently.	○	○	○	○	○
Visual management tools (e.g., boards, charts, metrics) are used to track performance and process standards.	○	○	○	○	○

14. Daily Management and Continuous Improvement *

	Totally disagree	Disagree	Neutral	Agree	Strongly agree
Employees in my department attend daily team meetings (huddles).	◯	◯	◯	◯	◯
Management staff in my department attend daily team meetings (huddles).	◯	◯	◯	◯	◯
A daily management system (e.g., huddles, gemba walks, visual management) is used in my department.	◯	◯	◯	◯	◯
Employees are encouraged to suggest improvement ideas in my department.	◯	◯	◯	◯	◯
Continuous improvement activities (e.g., Kaizen events, small improvement projects) are a regular practice in my department.	◯	◯	◯	◯	◯
Lessons learned from improvement activities are shared across teams.	◯	◯	◯	◯	◯
Improvements from daily management activities have a positive impact on our work.	◯	◯	◯	◯	◯
Feedback from management is communicated clearly and consistently.	◯	◯	◯	◯	◯

15. What is your job role/occupation? *

- ◯ Production / Manufacturing
- ◯ Engineering / Technical
- ◯ Administration / Management
- ◯ Support / GBS / IT
- ◯ Other

16. Where do you work? *

- ◯ Lithuania
- ◯ Germany
- ◯ United Kingdom
- ◯ France
- ◯ Italy
- ◯ Other

17. What products does your company manufacture? *

18. Length of time in the company? *

- ◯ < 1 year
- ◯ 1–3 years
- ◯ 3–5 years
- ◯ >5 years

19. How long have you personally been involved with Lean practices? *

- ◯ <1 year
- ◯ 1–2 years
- ◯ 2–3 years
- ◯ 3+ years