



ENHANCING EFFICIENCY IN THE INNOVATION PROCESS WITH LEAN PERSPECTIVE

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Abstract

The aim of this study is to examine the integration of Lean Thinking principles into innovation processes, identifying how organizations can enhance their efficiency. A workshop was organized to improve the innovation processes within a software company. In preparing for the workshop, participants were first provided with training sessions on lean thinking and innovation management. Following these training sessions, a workshop team consisting of volunteers from various departments was formed, and collaborative brainstorming took place in a modern OBEYA room. Participants utilized techniques such as value stream mapping to identify challenges in the innovation process, reduce waste, and accelerate decision-making. As a result, workshop participants obtained significant insights into enhancing efficiency by integrating lean thinking principles into their innovation processes. An action plan was developed to embrace a culture of continuous improvement and to demonstrate how this approach could be implemented within the organization. The findings of the study revealed that the integration of lean thinking into innovation processes contributes to organizations achieving a competitive advantage and offers ongoing development opportunities.

Keywords: Innovation, Lean Thinking, Lean Innovation, Efficiency

JEL Classification: O31, M11, D24

YALIN PERSPEKTİFLE İNOVASYON SÜRECİNDE VERİMLİLİĞİN ARTIRILMASI

Öz

Bu çalışmanın amacı, Yalın Düşünce prensiplerinin inovasyon süreçlerine entegrasyonunu inceleyerek, organizasyonların verimliliklerini nasıl artırabileceklerini belirlemektir. Araştırma kapsamında, bir yazılım şirketinde inovasyon süreçlerinin geliştirilmesine yönelik bir atölye düzenlenmiştir. Atölyenin hazırlanmasında ilk olarak katılımcılara yalın düşünce ve inovasyon yönetimi konularında eğitimler verilmiştir. Bu eğitimlerin ardından, farklı departmanlardan gönüllü katılımcılardan oluşan bir atölye ekibi oluşturulmuş ve etkin bir beyin fırtınası gerçekleştirilmesi için modern bir OBEYA odasında çalışmalara başlanmıştır. Katılımcılar, inovasyon süreçlerinde karşılaşılan zorlukları belirlemek, israfları azaltmak ve karar alma süreçlerini hızlandırmak için değer akış haritalama gibi teknikleri kullanmışlardır. Sonuç olarak, atölye katılımcıları, yalın düşünce prensiplerini inovasyon süreçlerine entegre ederek, süreçlerdeki verimliliği artırma konusunda önemli bulgular elde etmişlerdir. Ayrıca sürekli iyileştirme kültürünün benimsenmesi gerektiği ve bu yaklaşımın organizasyonda nasıl uygulanabileceğine dair bir eylem planı geliştirilmiştir. Çalışmanın sonucunda, yalın düşüncenin inovasyon süreçlerine entegrasyonunun, organizasyonların rekabet avantajı sağlamasına ve sürekli gelişim fırsatları sunmasına katkı sağladığı görülmüştür.

Keywords: İnovasyon, Yalın Düşünce, Yalın İnovasyon, Verimlilik

JEL Sınıflandırılması: O31, M11, D24

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1. Introduction

In today's competitive and dynamic markets, businesses always strive to thrive with innovation established in their DNA. Sitting at the heart of everything required for lasting success to blossom, innovation and productivity form a cornerstone on top of which growth and market leadership can be built. The thing is, achieving all this out of these ingredients requires an end-to-end process optimization which leads to increased collaboration and a culture where continuous improvement drives adoption. This is where Lean Thinking emerges as a structure which ensures to unleash innovation kit and caboodle while boosting the productivity of an organization (Tan et al., 2023).

In the organization mindset, innovation and productivity are often treated as two separate entities that exist in isolation from each other. But on closer examination the two are intimately connected. For innovation to flourish, a company needs to foster an environment of testing new ideas in the shortest possible time frame with the least hurdles. In this manner, productivity plays the role of an engine for ensuring that innovation gets adopted more broadly and implemented through optimal resource utilization to drive away stagnation and maintain executional excellence on high-potential ideas (Tucker, 2002). This inherent relationship indicates that the productivity of innovation is enhanced when dealt with as an integrated whole.

Enter Lean Thinking, a time-tested management philosophy derived from the world renowned Toyota Production System aimed at eliminating waste and improving efficiency to create value. A holistic approach to creating this new solution requires the successful integration of Lean Thinking principles with traditional innovation processes in organisations (Du Plessis, 2007). The workshop serves as a groundbreaking initiative that helps organizations tackle this challenge by revealing the synergy between innovation and productivity. It fosters an environment of mutual improvement, driving competitiveness to new heights.

The workshop serves as a beacon of knowledge, guiding participants towards the seamless integration of Lean principles into innovation endeavours. Through interactive sessions, participants delve into Value Stream Mapping, where inefficiencies and bottlenecks in the innovation process come to light. Rapid prototyping and experimental approaches take centre stage, empowering teams to embrace iterative thinking and make informed decisions based on real-world feedback (Setiawan, 2022). Moreover, the workshop cultivates a culture of cross-functional collaboration, recognizing the invaluable contributions of diverse perspectives and unified efforts.

However, this article is also divided into the following parts in which we begin to delve deeper on how Lean Thinking has revolutionized innovation and productivity. These Value Stream Mapping exercises provide the raw material for optimization with an efficient action plan being in place— that can drive tangible impact at scale. All retrospectives, help the organization live and breathe a culture of continuous learning as stimulants for what went well inspires from success & triggers upon mistakes in failures. This action plan adheres to Lean Thinking by virtue of its concern for the customer and efficient workflow, envisioning an innovation cultureworkplace productivity while fostering organizational well-being (Toppazzini, 2024).

Integrating Lean Thinking principles into the innovation process paves the way for organizations to harness the inherent synergy between innovation and productivity (Kalinowski et al., 2025). The workshop is a testament to the transformative power of Lean Thinking, propelling organizations towards a future where efficiency and ingenuity converge, setting the stage for a competitive advantage, and driving organizational success in the dynamic global marketplace (Koska et al., 2016). In this context, understanding how Lean Thinking principles intertwine with the mechanisms of innovation not only requires a practical appreciation of their impact on organizational performance but also demands a thorough conceptual exploration of the theoretical foundations, frameworks, and constructs that underpin this dynamic relationship.

2. Conceptual Dimension

In the introduction section, I emphasized the importance of innovation, efficiency and lean production. Now, in this section, I will try to explain the individual meanings of both concepts and then demonstrate how they are interconnected.

2.1. Innovation

Innovation is the process of discovering new ideas, developing new products, processes, or services, and implementing transformative changes that enhance the current state. An innovative organization aims to go beyond existing methods and practices to create a more efficient, effective, and competitive structure (Yu et al., 2022; Wannakraioj & Velu, 2021). Innovation is a fundamental factor that helps organizations sustain their competitive advantage and foster growth.

In the extant literature, innovation capability is typically addressed within the confines of a limited number of categories, such as product or process innovations. A more comprehensive approach is seldom adopted. As Saunila (2019) observes, studies of innovation capability can be classified as radical or incremental innovation. Radical innovation is defined as fundamental changes that radically alter existing practices, leading to disruptive changes in industries. Such innovations frequently disrupt existing market conditions and business models, thereby creating an innovative paradigm (Tidd & Bessant, 2020). Examples of radical innovation include electric vehicles and artificial intelligence-based solutions. In contrast, incremental innovation involves the gradual refinement of existing products, services or processes with the objective of enhancing effectiveness and efficiency through continuous and incremental improvements (Tidd & Bessant, 2020). Such innovations enhance existing systems and provide optimisation (Chesbrough, 2006). In the automotive industry, incremental innovation is exemplified by the regular introduction of minor design modifications in new models released annually. Furthermore, the concept of open innovation pertains to organisations developing new products by leveraging internal and external resources. This approach enables organisations to expedite their innovation process by incorporating external ideas and technologies (Chesbrough & Bogers, 2014). These classifications offer insights into how opportunities in organisations can be identified and mapped across various dimensions. It is imperative for companies to comprehend the impact of innovation types and strategies on organisational success in order to gain competitive advantage and ensure sustainable success.

The existence of these distinct categories allows organisations to adapt their innovation strategies to specific contexts. By recognising the diverse avenues through which innovation can occur, businesses can allocate resources in a strategic manner and navigate the dynamic landscape of customer needs and technological advancements in order to achieve their objectives. Therefore, the interplay between innovation and efficiency becomes a pivotal consideration in shaping the trajectory of organisations, leading them towards sustainable growth and competitive advantage (Tuna & Yıldız, 2022).

2.2. Efficiency

Efficiency can be defined as a measure of the effective utilisation of a specific resource, frequently in relation to time and cost. An increase in efficiency is defined as the ability to obtain a greater output with a reduction in resources (Gunasekaran & Nath, 1997). Efficiency-oriented organizations endeavour to enhance their business processes, minimise waste and optimise the utilisation of available resources.

Efficiency plays a pivotal role in attaining a competitive advantage, particularly in a dynamic business environment. Organisations that consistently pursue efficiency gains can facilitate more expedient decision-making, a more responsive customer-oriented approach and a more effective capitalisation on evolving market opportunities (Czvetkó et al., 2022).

2.3. Lean Production

The concept of "Lean" is well known for its association with the Toyota Production System. In its simplest form, Lean is concerned with eliminating waste and increasing speed and flow in processes. The creator of the Lean production system, Taiichi Ohno, together with a group of experts at Toyota Motor Company, drew inspiration from the Ford production system. The essence of the Ford production system is to strive for a continuous flow in production, achieved primarily through the introduction of standardized components and assembly lines. In the 1950s, Taiichi Ohno integrated the Fordist production system into the Toyota production system and initiated a company-wide improvement program, which he called Total Quality Control. However, given the cultural differences, it would not be accurate to describe the Total Quality Control programme as simply a copy of the Fordist production system (Morgan & Brenig-Jones, 2012). This emphasises that the system developed by Toyota goes beyond the Fordist model and includes approaches and adaptations that are specific to Japan.

Within Toyota, the management of this entire production philosophy is referred to as "Genryu Management." Genryu is a term that explains how the production process should be designed. It is an integral part of the Toyota production system and means "reduce weight" in Japanese. Taiichi Ohno further developed Genryu Management and introduced the concept of "Limited Capacity" (Hino, 2006). The term "Lean" was first used to describe Genryu when Taiichi Ohno's book "Workplace Management" was translated into English in 1988. Subsequently, with the use of expressions like Lean Thinking, Lean Production, Lean (Womack et al., 1990; Womack and Jones, 1996; May, 2005; Hino, 2006; Liker & Meier, 2006...), it has evolved conceptually to its current position.

The foundation of the Lean vision is to focus on each individual product and its value stream (identifying value-added and non-value-added activities) and eliminate all waste (*muda*) throughout the system in all areas and functions (Womack & Jones, 1996; Spear, 2004). While simplifying and speeding up the system seems to be the initial approach, the goal is to create value for the customer and eliminate waste from all processes (Goldsby & Marthichenko, 2005).

2.4. The Relationship Between Innovation, Efficiency, and Lean Production

In the contemporary business environment, organisations are engaged in an ongoing pursuit of diverse strategies to enhance their competitive advantage, align their offerings with customer expectations, and identify avenues for future growth and expansion. In this context, three key concepts of paramount importance for businesses are innovation, efficiency, and lean production (Vaněček et al., 2018). These three concepts are inextricably linked and, when employed in conjunction, can confer considerable benefits upon organisations seeking success.

Although innovation and efficiency may initially appear to be distinct concepts, they are, in fact, closely related. The effective management of innovation processes allows organisations to implement new ideas and projects in a timely manner (Tidd, 2023). Similarly, the implementation of efficient business processes enables organisations to reallocate a greater proportion of their resources to innovation projects. It is imperative to view efficiency as a pivotal element within the context of innovation processes. The streamlining of processes not only facilitates the timely and cost-effective completion of innovation projects but also enables employees to focus on creativity and idea generation (Pan et al., 2022).

Furthermore, the principles of lean production contribute to the more efficient and effective management of innovation processes. The utilisation of lean tools, such as value stream mapping and process analysis, enables the identification and elimination of waste within innovation processes. This, in turn, facilitates the achievement of faster and more cost-effective innovation (Paternoster et al., 2014).

Innovation, efficiency and lean production are inextricably linked, forming a potent combination for organisations when they are effectively integrated (Biazzo et al. 2015). The implementation of effective innovation management strategies enables organisations to expeditiously materialise novel concepts and initiatives, thereby facilitating a more expedient response to customer demands and a more comprehensive exploration of market opportunities. The adoption of new technologies has been the subject of numerous studies which have emphasised the importance of organisational factors, often overlooked in examining the impact on productivity, as complementary innovations (Sultan & Chan, 2000; Gallivan, 2001; Kim & Chung, 2017).

Effective innovation processes play a critical role in helping organisations maintain their competitive advantage and ensure long-term success. In this context, lean manufacturing principles increase process efficiency by reducing waste and enabling more efficient use of resources. These productivity improvements increase the innovation capacity of organisations and enable them to adapt more quickly to market changes (Womack & Jones, 1996). In the automotive industry, for example, Toyota has become a pioneer in both production processes and product innovation by adopting lean production principles (Liker, 2006). Similarly, in the healthcare sector, lean practices have reduced patient waiting times, optimised resource utilisation and paved the way for the development of new service models (Poksinska, 2010). There is thus a mutually reinforcing relationship between innovation, productivity and lean production. Managing these elements in an integrated way not only supports operational excellence (Smeds, 1994), but also enables organisations to become more resilient and adaptable to changing environmental conditions (Netland & Ferdows, 2016).

3. Method: Innovation Workshop with Lean Thinking

This application will provide a guide for organizing an interactive workshop to learn how to enhance your business's innovation processes with lean thinking principles and increase efficiency.

Step 1: Workshop Preparation

Firstly, a series of training sessions on Lean Thinking, Innovation Management, and the impact of these two philosophies on productivity were provided to the participants in the software company where the workshop would take place. These training sessions aimed to familiarize the participants with the concepts of Lean Thinking and Innovation Management and how they can enhance efficiency.

After the training sessions, a workshop team consisting solely of volunteers was formed. The workshop team included members from various departments, such as Product Development Experts, Marketing Specialists, RandD Specialists, and Managers. This diverse team was essential to bring different perspectives and expertise into the workshop.

The determined date and time were scheduled for the workshop, and the participants worked together to create a highly conducive modern OBEYA room, where they could brainstorm and conduct their activities effectively. This modern OBEYA room provided the physical space necessary for collaborative and productive discussions during the workshop. It should be noted that 'obeya' means 'big room.' The term implies that a team works together in a spacious and well-illuminated room to complete their tasks. This methodology can be used for various purposes, including product development, software development, project management, workflow management, and even event planning (Mathijssen, 2014).

Table 1. Workshop Preparation

Workshop Date and Time: 17th July 09:00 AM - 06:00 PM	
Participants:	Product Development Team, Marketing Team, RandD Team, Managers

In the subsequent stage, the workshop team prepared for Value Stream Mapping, which would be a crucial activity during the workshop. They gathered relevant data and materials to be used during the Value Stream Mapping process.

By meticulously preparing the participants, forming a dedicated workshop team, establishing an ideal workshop environment, and making necessary preparations for the Value Stream Mapping, the workshop was set up for success. This comprehensive preparation ensured that the participants would be ready to engage actively in the workshop and make meaningful contributions to improving the company's innovation processes using Lean Thinking principles.

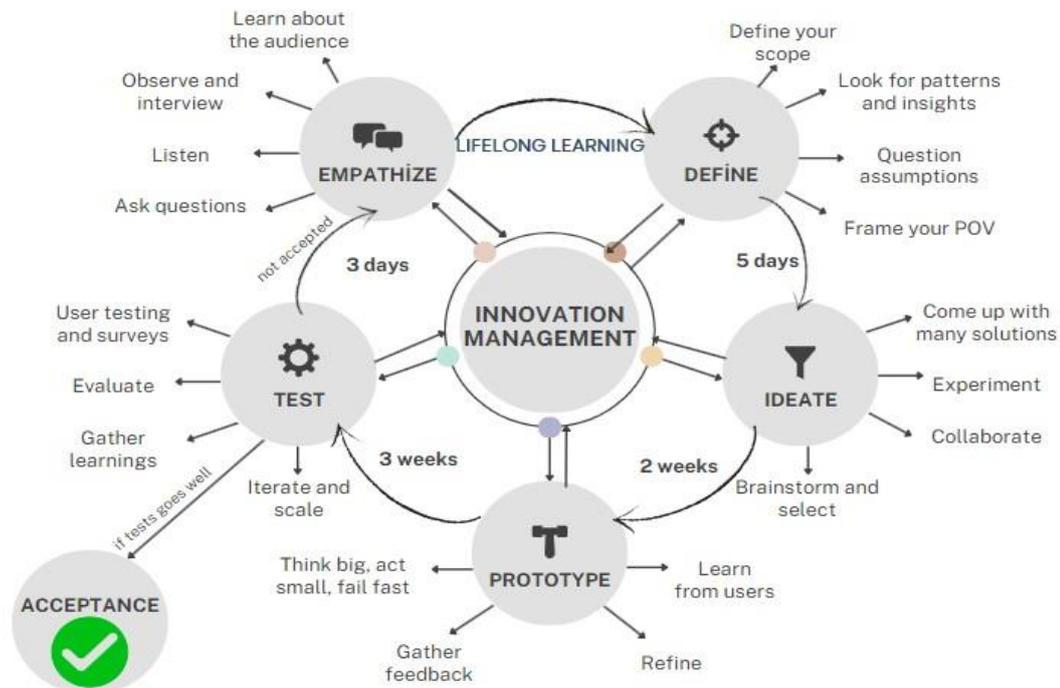
Step 2: Value Stream Mapping: Focusing on the Mobile Game Development Office

Prior to the workshop, it was discovered that the software company was in the process of developing a new mobile game and facing various challenges in the game development stage. Recognizing the significance of addressing these challenges, the decision was made to center the workshop around the processes of the mobile game development office.

During the workshop, the Value Stream Mapping method was utilized to thoroughly expose the game development processes. Particular attention was given to the stages of prototyping and testing, where it was noticed that weeks were being spent on these activities. This lengthy duration posed a substantial time and cost burden in terms of man-hours and expenses.

The workshop team successfully completed the Value Stream Mapping process, which revealed these inefficiencies in the game development office's workflow. This analysis allowed the team to identify critical areas that needed improvement and served as a basis for further optimization efforts.

Figure 1. A Diagram of Basic Value Stream Map of Innovation Process



The insights gained from the Value Stream Mapping process paved the way for the team to identify bottlenecks, streamline the prototyping and testing phases, and reduce unnecessary rework. The aim was to optimize the processes to ensure that only validated and approved work

items progressed efficiently to the next stages, eliminating unnecessary delays and reducing costs significantly.

With the Value Stream Mapping process concluded, the workshop team was now well-equipped to move forward and develop actionable plans to enhance the mobile game development office's productivity using Lean Thinking principles. The team was ready to embark on a journey of continuous improvement to boost efficiency and innovation within the game development process.

Step 3: Identification of Non-Value-Added Activities

In the traditional approach, work items that received approval during the testing phase were integrated into the final product, while those that didn't pass the approval process had to start the entire process from the beginning. This resulted in an additional approximate two-month duration for these non-approved items, which was deemed unacceptable.

- **Non-Approved Activities in the Prototyping Process:** Activities that do not receive approval during the prototyping phase are restarted without being included in the final product, taking approximately 2 months to complete (Figure 1). This process results in significant time waste and increased costs.
- **Process Redundancies:** Restarting activities for non-approved items leads to redundant work, consuming unnecessary labor and resources.
- **Test Approval Process:** The test approval process takes a considerable amount of time, leading to delays and waiting times for the progression of activities.
- **Waiting and Approval Waiting Times:** Various stages of the process involve waiting times, causing delays and increasing the overall process time.
- **Documentation and Process Document Control:** Documentation and approval processes for activities slow down the workflow and consume additional time on non-value-adding documentation tasks.

Based on the results of the Value Stream Mapping, these five processes have been identified as areas that do not add value and need improvement in terms of efficiency. Optimizing these processes can result in significant time and cost savings in the innovation process and contribute to increased productivity.

Step 4: Potential Outcomes of Integrating Lean Thinking and Innovation with Rapid Prototyping

By encouraging participants to explore how Lean Thinking principles can be integrated into the innovation process and promoting the adoption of rapid prototyping and experimental approaches, several potential outcomes may arise. These outcomes can have a significant positive impact on addressing the previously identified processes that do not add value. Here are some potential results:

- **Reduced Rework and Lead Time:** The application of rapid prototyping and experimental methods can help identify and address issues at an early stage of the innovation process. By validating ideas quickly through prototypes and experiments, non-value-adding activities can be minimized, leading to reduced rework and overall lead time.
- **Faster Decision Making:** With the adoption of rapid prototyping, decision-making processes can be accelerated. By obtaining real-world feedback from prototypes and experiments, participants can make informed decisions more swiftly, eliminating prolonged waiting times in the approval process.
- **Increased Collaboration and Cross-Functional Involvement:** Lean Thinking encourages a collaborative approach. By involving cross-functional teams in the rapid prototyping and

experimental processes, a diversity of perspectives can be leveraged to improve innovation outcomes. This approach can also lead to better communication and teamwork, addressing the challenges of collaboration among different teams.

- **Enhanced Customer-Centricity:** Rapid prototyping and experimental approaches enable a deeper understanding of customer needs and preferences. By gaining early feedback from customers through prototypes, participants can tailor innovations to meet customer demands more effectively, increasing customer satisfaction and reducing the risk of delivering non-value-adding features.
- **Waste Reduction:** Lean Thinking focuses on identifying and eliminating waste. By applying rapid prototyping and experimental methods, participants can identify non-value-adding activities and redundant steps in the innovation process. This insight can lead to more efficient processes and cost savings, addressing the challenges of non-approved activities and unnecessary documentation.
- **Culture of Continuous Improvement:** The integration of Lean Thinking principles with innovation fosters a culture of continuous improvement. By encouraging a mindset of experimentation and learning from failures, participants can continuously enhance the innovation process. This culture of improvement can address issues related to process redundancies and long approval waiting times.

Overall, the integration of Lean Thinking and innovation through rapid prototyping and experimental approaches has the potential to lead to a more streamlined and efficient innovation process. By promoting a customer-centric, collaborative, and waste-eliminating approach, participants can tackle the challenges identified during the Value Stream Mapping phase and drive meaningful improvements in their innovation endeavors.

Step 5: Actions to Foster Communication and Collaboration Among Different Teams in Innovation Projects:

Based on the suggestions provided earlier in the solution, here are some actionable steps to take during this stage to promote better communication and collaboration among different teams in innovation projects:

- **Cross-Functional Workshops:** Organize cross-functional workshops that bring together experts from different disciplines involved in the innovation process. These workshops should focus on sharing knowledge, best practices, and challenges faced by each team. Encourage open discussions to identify opportunities for collaboration and mutual support.
- **Collaborative Project Planning:** Facilitate collaborative project planning sessions where representatives from various teams jointly define project objectives, key milestones, and dependencies. This collaborative planning approach can enhance alignment and reduce communication gaps between teams.
- **Design Thinking Workshops:** Conduct design thinking workshops that involve participants from different teams. Design thinking fosters empathy and encourages a user-centric approach to problem-solving. By working together in these workshops, teams can better understand each other's perspectives and uncover new insights for innovative solutions.
- **Regular Stand-Up Meetings:** Hold regular stand-up meetings involving representatives from different teams. These short and focused meetings provide a platform for quick updates, issue resolution, and coordination among teams. It enables everyone to stay informed and aligned on project progress.
- **Cross-Team Task Forces:** Form cross-team task forces to address specific challenges or opportunities that require expertise from multiple disciplines. Task forces should be

empowered to make decisions and drive actions collaboratively, enhancing the sense of ownership and collective responsibility.

- **Communication Channels:** Establish effective communication channels, such as shared online platforms or collaboration tools, where teams can easily exchange information, share updates, and collaborate on documents in real-time.
- **Interdisciplinary Team Building Activities:** Organize team-building activities that involve participants from various teams. Team-building exercises can help foster a positive team culture and enhance trust and cooperation among team members.
- **Feedback and Recognition:** Create a culture of giving and receiving feedback across teams. Recognize and celebrate successful collaborative efforts and innovative outcomes. Regularly seek input from team members to identify potential areas for improvement in communication and collaboration.
- **Training and Workshops on Interdisciplinary Collaboration:** Offer training sessions or workshops focused on enhancing interdisciplinary collaboration skills. These sessions can provide participants with the tools and techniques to effectively collaborate with experts from diverse backgrounds.

By implementing these actions, the organization can create an environment that supports effective communication and collaboration among different teams. This will not only address the challenges related to collaboration identified earlier but also contribute to a more harmonious and efficient innovation process, fostering a culture of shared success and continuous improvement.

Step 6: Establishing a Culture of Continuous Improvement and Learning in Innovation Projects

Following the emphasis on the importance of a culture of continuous improvement in the 6th step, conducting a retrospective with the participants after completing innovation projects is an excellent way to reinforce this culture and promote learning. Here are some key points to consider during the retrospective:

- **Continuously Learning from Failures:** Emphasize the importance of learning from failures and setbacks encountered during the innovation projects. Encourage participants to view failures as opportunities for growth and improvement. Share stories of how past failures have led to valuable lessons and subsequent successes.
- **Continuous Learning Opportunities:** Foster a culture of continuous learning by providing opportunities for skill development, workshops, and knowledge-sharing sessions. Encourage participation in conferences, webinars, and industry events to stay updated with the latest trends and best practices in innovation.

By incorporating retrospectives into the innovation process and promoting a culture of continuous improvement and learning, the organization can capitalize on the insights gained from completed projects to enhance future innovation endeavors. This iterative approach will facilitate the growth of the organization and its members, enabling them to adapt, innovate, and thrive in a dynamic and ever-evolving business landscape.

Step 7: Action Plan for Integrating Lean Thinking into Innovation Processes and Enhancing Efficiency

The action plan, developed collaboratively with the participants at the end of the workshop, aims to concrete the gains of the workshop and outline the steps to be implemented in your organization. The following are the key elements of the action plan:

- **Create a Cross-Functional Lean Innovation Team:** Establish a dedicated team comprising members from different disciplines to drive the integration of Lean Thinking into the

innovation processes. This team will be responsible for leading the implementation of the action plan.

- **Conduct Value Stream Mapping for Innovation Processes:** Initiate Value Stream Mapping exercises for key innovation projects. Identify bottlenecks, inefficiencies, and non-value-adding activities in the processes. Use the insights gained from the Value Stream Mapping to prioritize improvement areas.
- **Implement Rapid Prototyping and Experimental Approaches:** Encourage teams to adopt rapid prototyping and experimental methods to test ideas and concepts. By validating assumptions early in the process, this approach will reduce rework and accelerate decision-making.
- **Streamline Approval Processes:** Review and streamline the approval processes in the innovation projects. Implement a clear and efficient approval mechanism that ensures timely decisions and reduces waiting times.
- **Establish Knowledge Sharing Platforms:** Create platforms for knowledge sharing and collaboration among teams involved in innovation projects. These platforms can facilitate communication, encourage idea exchange, and foster a culture of cross-functional learning.
- **Promote a Culture of Continuous Improvement:** Instill a culture of continuous improvement by recognizing and celebrating successful implementations of Lean Thinking principles in innovation projects. Encourage regular retrospectives to identify further opportunities for optimization.
- **Provide Training on Lean Thinking and Innovation:** Offer training sessions and workshops to enhance employees' understanding of Lean Thinking principles and their application in the context of innovation. Ensure that employees are equipped with the necessary skills to drive the culture of continuous improvement.
- **Monitor and Measure Progress:** Establish key performance indicators (KPIs) to measure the impact of Lean Thinking on innovation processes. Regularly monitor progress and assess the effectiveness of implemented improvements.
- **Celebrate Successes:** Celebrate and communicate success stories resulting from the integration of Lean Thinking into innovation projects. Share achievements across the organization to inspire others to embrace Lean principles and drive efficiency.
- **Review and Update the Action Plan:** Periodically review the action plan to adapt to changing needs and challenges. Continuously seek feedback from stakeholders to refine and improve the integration of Lean Thinking in innovation processes.

By implementing this action plan, the organization will strengthen its innovation capabilities, improve efficiency, and cultivate a culture of continuous improvement. The integration of Lean Thinking principles into the innovation processes will lead to more effective product development, reduced time-to-market, and enhanced customer satisfaction, positioning the organization for sustained success in a competitive market.

4. Discussion

The workshop on "Enhancing Efficiency in the Innovation Process with Lean Perspective" provided valuable insights into the integration of Lean Thinking principles into innovation processes. Through the workshop, participants gained a deeper understanding of how Lean Thinking can be applied to drive efficiency, improve collaboration, and foster a culture of continuous improvement in their organization's innovation endeavors. The discussions during the workshop highlighted the critical relationship between innovation, productivity, and Lean principles, emphasizing their potential to create a powerful synergy.

During the workshop, the participants actively engaged in activities such as Value Stream Mapping, exploring the challenges faced in the innovation process, and identifying non-value-adding activities. They learned how to leverage rapid prototyping and experimental approaches to accelerate decision-making and minimize waste. Cross-functional collaboration emerged as a key theme, as participants recognized the value of diverse perspectives and collective efforts in driving successful innovation projects.

The workshop also shed light on areas where the innovation process could be optimized, such as reducing rework, streamlining approval processes, and eliminating unnecessary waiting times. Through retrospectives and open discussions, participants embraced a culture of learning from failures and actively sought opportunities for continuous improvement.

5. Conclusion

This research examines how lean thinking can produce tangible outputs in the mobile gaming industry, one of the creative industries, through an applied innovation workshop experience. The extent to which the lean management approach, which is traditionally associated with production-based sectors, can be transformative in a sector based on intangible outputs, such as software development, is still a controversial issue in the literature (Dombrowski & Mielke, 2013). This study aims to fill this gap and shows that lean thinking has an impact not only on operational efficiency but also on organizational behaviors, communication styles and strategic decision processes.

Observations, interviews and value stream mapping (VSM) practices throughout the process demonstrated the adaptability of lean principles to the field. Specifically, the redefinition of the concept of "customer value" through the internal customer (i.e. other functions within the team) enabled the systematic recognition of errors that occurred early in the production process. However, the prototype approval process as delineated in the VSM analysis gave rise to duplication of effort and time due to delayed feedback. This finding directly contradicts the fundamental principle of Womack and Jones (1996) that the flow of value in a lean system should be uninterrupted. After the intervention, the proposed flowchart and redesign of the approval mechanism with visual management elements accelerated the feedback loop.

A further significant outcome of the innovation workshop was to re-establish the "human-centred" nature of lean thinking. The lean approach, which is frequently reduced to process efficiency in the extant literature, functioned in this study as a learning environment that increased communication between teams and encouraged creative interactions (Liker & Morgan, 2006; Bhamu & Sangwan, 2014). Participants reported that lean practices addressed rational goals such as "reducing waste", as well as emotional dimensions such as transparency, mutual trust and a sense of shared goals within the team. This observation aligns with the findings reported by Hargadon and Bechky (2006) in their "collective problem solving" model, which emphasised the role of collective thinking practices over individual creativity.

In this context, the practice of OBEYA (i.e. synchronised access to information by teams in the same physical or digital space) was functional not only in terms of knowledge management but also in terms of emotional bonding and creating a shared vision. In the context of software development, which is characterised by the need for rapid feedback and continuous integration, delays in communication have been shown to lead to technical errors and diminished workforce motivation (Poppendieck & Poppendieck, 2003). In this context, one of the most significant findings of the research is that lean tools make visible the "hidden waste" caused by human resources as well as technical processes.

It is interesting to note that these practices were also directly related to innovation outcomes. The participants reported that lean processes enabled them to develop game ideas in less time, test design proposals at an earlier stage and significantly reduce the error rate. This finding indicates that lean thinking is not only associated with manufacturing processes, but also with the

field of innovation management literature (Bessant et al., 2011). Consequently, lean is regarded in this context not as a mere catalyst for productivity but as a conduit for innovation.

The limitations of this study are twofold: firstly, the sample was limited to a single company, and secondly, the intervention process was based on short-term observations. Nevertheless, these limitations should not obscure the potential of practice in the field. Conversely, these lean innovation practices have the potential to contribute to the development of generalizable models by being tested in different sectors and over longer time periods in the future.

In conclusion, this study reveals that lean thinking is not only a mechanical system focused on reducing production costs, but also a way of thinking that encourages the establishment of people-centred, flexible and learning organisations. In the context of creative industries, lean thinking is a pivotal mechanism for both strategic governance and the enhancement of the employee experience. In structures that face constant change and uncertainty, such as software companies, lean tools are effective in both revealing invisible wastes and creating a common innovation culture.

References

- Bessant, J., Lamming, R., Noke, H., & Phillips, W. (2011). Managing Innovation Beyond the Steady State. *Technovation*, 25(12), 1366–1376. <https://doi.org/10.1016/j.technovation.2005.04.007>
- Bhamu, J., & Sangwan, K. S. (2014). Lean Manufacturing: Literature Review and Research Issues. *International Journal of Operations & Production Management*, 34(7), 876–940. <https://doi.org/10.1108/IJOPM-08-2012-0315>
- Biazzo, S., Panizzolo, R., & de Crescenzo, A. M. (2015). Lean Management and Product Innovation: A Critical Review. *Understanding The Lean Enterprise: Strategies, Methodologies, and Principles for a More Responsive Organization*, 237-260.
- Brynjolfsson, E., & Hitt, L. M. (2003). Computing Productivity: Firm-Level Evidence. *Review of Economics and Statistics*, 85(4), 793-808. <https://doi.org/10.1162/003465303772815736>
- Chesbrough, H. (2006). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business Press.
- Chesbrough, H., & Bogers, M. (2014). Explicating Open Innovation: Clarifying an Emerging Paradigm for Understanding Innovation. In H. Chesbrough, W. Vanhaverbeke, & J. West (Eds.), *New Frontiers in Open Innovation* (ss. 3-28). Oxford: Oxford University Press.
- Czvetkó, T., Kummer, A., Ruppert, T., & Abonyi, J. (2022). Data-Driven Business Process Management-Based Development of Industry 4.0 Solutions. *CIRP Journal of Manufacturing Science and Technology*, 36, 117-132. <https://doi.org/10.1016/j.cirpj.2021.12.002>
- Dombrowski, U., & Mielke, T. (2013). Lean Leadership—Fundamental Principles and Their Application. *Procedia CIRP*, 7, 569-574. <https://doi.org/10.1016/j.procir.2013.06.034>
- Du Plessis, M. (2007). The Role of Knowledge Management in Innovation. *Journal of Knowledge Management*, 11(4), 20-29.
- Gallivan, M. J. (2001). Organizational Adoption And Assimilation of Complex Technological Innovations: Development and Application Of A New Framework. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, 32(3), 51-85.
- Goldsby, T., & Martichenko, R. (2005). *Lean Six Sigma Logistics*. J. Ross Publishing Inc., USA.

- Gunasekaran, A., & Nath, B. (1997). The Role of Information Technology in Business Process Reengineering. *International Journal of Production Economics*, 50(2-3), 91-104. [https://doi.org/10.1016/S0925-5273\(97\)00035-2](https://doi.org/10.1016/S0925-5273(97)00035-2)
- Hargadon, A. B., & Bechky, B. A. (2006). When Collections of Creatives Become Creative Collectives: A Field Study of Problem Solving at Work. *Organization Science*, 17(4), 484–500. <https://doi.org/10.1287/orsc.1060.0200>
- Hino, S. (2006). *Inside the Mind of Toyota: Management Principles for Enduring Growth*. Productivity Press, USA.
- Kalinowski, M., Romao, L., Rodrigues, A., Barbosa, C., Villamizar, H., Barbosa, S. D. J., & Lopes, H. (2025). *Experiences Applying Lean R&D in Industry-Academia Collaboration Projects*. arXiv preprint arXiv:2501.11774. 1-15.
- Kim, J. S., & Chung, G. H. (2017). Implementing Innovations within Organizations: A Systematic Review and Research Agenda. *Innovation*, 19(3), 372-399.
- Koska, A., Göksu, N., & Sünbül, M. B. (2016). *Yalın Stratejinin Faaliyet Performansına Etkisi: Kahramanmaraş Tekstil İşletmelerinde Bir Uygulama*. Kastamonu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 13(2), 284-298.
- Liker, J. K., & Meier, D. (2006). *Toyota Way Fieldbook*. McGraw-Hill Education.
- Liker, J. K., & Morgan, J. M. (2006). The Toyota Way in services: The case of lean product development. *Academy of Management Perspectives*, 20(2), 5–20. <https://doi.org/10.5465/amp.2006.20591002>
- Mathijssen, F. (2014). How Nike Created a Successful Lean IT Obeya. Retrieved from <https://www.planet-lean.com/articles/lean-management-nike-obeya>, viewed: 12/08/2023.
- May, M. (2005). Lean Thinking for Knowledge Work. *Quality Progress*, June 2005, 33-40.
- Morgan, J., & Brening-Jones, M. (2012). *Lean Six Sigma for Dummies* (2nd ed.). John Wiley & Sons Ltd., United Kingdom.
- Netland, T. H., & Ferdows, K. (2016). The S-Curve Effect of Lean Implementation. *Production and Operations Management*, 25(6), 1106–1120. <https://doi.org/10.1111/poms.12539>
- Pan, W., Xie, T., Wang, Z., & Ma, L. (2022). Digital Economy: An Innovation Driver for Total Factor Productivity. *Journal of Business Research*, 139, 303-311. <https://doi.org/10.1016/j.jbusres.2021.09.061>
- Paternoster, N., Giardino, C., Unterkalmsteiner, M., Gorschek, T., & Abrahamsson, P. (2014). Software Development in Startup Companies: A Systematic Mapping Study. *Information and Software Technology*, 56(10), 1200-1218. <https://doi.org/10.1016/j.infsof.2014.04.014>
- Poksinska, B. (2010). The Current State of Lean Implementation in Health Care: Literature Review. *Quality Management in Healthcare*, 19(4), 319–329. <https://doi.org/10.1097/QMH.0b013e3181fa07bb>
- Poppendieck, M., & Poppendieck, T. (2003). *Lean Software Development: An Agile Toolkit*. Addison-Wesley.
- Reis, E. (2011). *The Lean Startup*. New York: Crown Business.
- Saunila, M. (2019). Innovation Capability in SMEs: A Systematic Review of the Literature. *Journal of Innovation and Knowledge*, 5(4), 260-265. <https://doi.org/10.1016/j.jik.2019.11.002>

- Setiawan, F. (2022). Implementation of Lean Manufacturing with a Value Stream Mapping Approach to Improve the Efficiency of the Production Process. *Jurnal Al-Azhar Indonesia Seri Sainsdan Teknologi*, 7(3), 169.
- Smeds, R. (1994). Managing Change Towards Lean Enterprises. *International Journal of Operations and Production Management*, 14(3), 66–82. <https://doi.org/10.1108/01443579410058531>
- Spear, S. J. (2004). Learning to Lead at Toyota. *Harvard Business Review*, US.
- Sultan, F., & Chan, L. (2000). The Adoption of New Technology: The Case of Object-Oriented Computing in Software Companies. *IEEE transactions on Engineering Management*, 47(1), 106-126.
- Tan, A. B. C., van Dun, D. H., & Wilderom, C. P. M. (2023). Lean Innovation Training and Transformational Leadership for Employee Creative Role Identity and Innovative Work Behavior in a Public Service Organization. *International Journal of Lean Six Sigma*. Advance online publication. <https://doi.org/10.1108/IJLSS-06-2022-0126>
- Tidd, J. (2023). Managing Innovation. *IEEE Technology and Engineering Management Society Body of Knowledge (TEMSBOK)*, 95-108.
- Tidd, J., & Bessant, J. (2020). *Managing Innovation: Integrating Technological, Market and Organizational Change*. Wiley.
- Tuna, Ö., ve Yıldız, M. (2022), Rekabet Üstünlüğü Sağlamada İnovasyon ve Rekabet Stratejileri Arasındaki İlişki, *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 31 (2), 491-513.
- Toppazzini, K. (2024). *The New Lean: The Modern Approach to Continuous Improvement*. CRC Press.
- Tucker, R. B. (2002). *Driving Growth Through Innovation: How Leading Firms are Transforming Their Futures*. Berrett-Koehler Publishers.
- Vaněček, D., Pech, M., & Rost, M. (2018). Innovation and Lean Production. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 66(2), 595-603. doi: 10.11118/actaun201866020595
- Wannakrairoj, W., & Velu, C. (2021). Productivity Growth and Business Model Innovation. *Economics Letters*, 199, 109679. <https://doi.org/10.1016/j.econlet.2020.109679>
- Womack, J. P., Jones, D. T., & Roos, D. (1990). *The Machine that Changed the World*. Scribner; Reprint edition (March 13, 2007), USA.
- Womack, J. P., & Jones, D. T. (1996). *Lean Thinking / Yalın Düşünce* (Translation to Turkish: Oygur Yamak). Optimist Yayınları, İstanbul.
- Yu, H., Yang, L., & Lee, H. (2022). Effective Practices for Improving Service Professionals' Ethical Behaviors: A Multiple Method Study. *Frontiers in Psychology*, 13, 1042142. <https://doi.org/10.3389/fpsyg.2022.1042142>