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Apply Lean Thinking in Project Management

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<p>The purpose of this thesis was to study the effects of Lean Thinking in Project Management and how applying Lean Project Management could enhance the productivity of project work.</p> <p>The study was carried using theoretical research and collecting empirical data from three interviews and one case study at a local company.</p> <p>At the end of the study, the major project management problems at the company were identified and analyzed following Lean Principles. It was also pointed out where there is a need to adjust and modify Lean Thinking in order to efficiently apply it in project work. The case study also demonstrates the intinital effects of using Lean tools in more dynamic environment as marketing projects.</p> <p>The results of this study show how using Lean principles can solve problems in project management activities, demonstrate the potential and suggest a suitable approach to applying Lean Thinking in business.</p>	
Keywords	project management, Lean thinking, Lean principles, Kanban, waste, Mura, Muri, Muda

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1 Introduction

In the global economy nowadays, project management plays a central role in various kinds of business activities. There are many activities that can be undertaken in form of projects, such as software development, marketing campaigns, branding events, service building, recruiting systems, and many others. Despite the fact that the success of projects would significantly enhance the success of a business, still, projects are often behind schedule, over budget or do not meet the customer's expectations. In business, delay in projects will lead to delaying the introduction of products into the market. A company may lose its chance to attract potential customers or partners, and the company's superiority might be seriously affected. To be able to survive in the competitive market today, it is crucial for companies to apply an effective and efficient management method.

Looking at the field of manufacturing, in the past decades there has been many successful improvements in quality and productivity by applying Lean Principles in production. Even though the concept of Lean was mainly developed to apply to manufacturing, there are many interesting points in Lean Principles that suggest a better approach for project management. Besides, nowadays, not only in manufacturing but also in the enterprise world, Lean Thinking is suggested as a new model to develop start-up companies, as its theory is very applicable in a rapidly changing market. Despite the different basis of manufacturing, project management and business enterprise (in manufacturing, activities are often repeated; in project management, activities are quite unique; in enterprise, activities tend to be repeated but not stable and have adjustments frequently), there are many common aspects in management and development methodologies that share similar perspectives. For example, they are all performed by people, their resources in time and budget are limited, and their development needs to be planned before being executed. Thus, the aim of this paper is to study to what extent the practices of Lean could be used in project management in order to increase project productivity.

To collect empirical data for this thesis, three interviews and a study case were conducted at Tuxera Inc., a software development company in Finland. The interviews and study focused on project productivity in different departments of the company. Practical

applications of Lean were observed mainly at the Department of Marketing. The results of this research will answer two questions: first, how Lean Thinking can be applied in solving project management problems, and secondly, whether or not Lean Thinking was a suitable project management approach for business companies.

2 Methodology

2.1 Delimitations

First, since Lean is a broad topic and due to the limitation in time and resources, it would be impossible to analyze all the concepts of Lean. Therefore, the study will focus mainly to the five principles of Lean Thinking. Second, the study was based on a limited empirical basis in the context of one business company, the outcome of this study should be considered as only one perspective into the business environment. However, for project management activities in business have many common characteristics, the results would be generalized up to some extent. Third, since the process of applying Lean Thinking in organization is a long-term changing, the results included here would only provide the latest updates at the time of writing. The efficiency of this method at Tuxera is still being observed.

2.2 Overall Research Design

Since the study originated from practical problems in a marketing team at Tuxera, the research was begun from general searching about related problems and solutions on the Internet, followed by further study into the theory of Project Management methodologies and Lean Principles. After that, a list of interview questions were created based on the five main principles of Lean. The interviews were conducted with people working in the marketing team and in a development team at Tuxera, to investigate further the problems and to compare the efficiency of the project activities. The interview responses were then analyzed to provide a comprehensive evaluation about the state of the art practices. Accordingly, an overview of the research design is shown in figure 1:

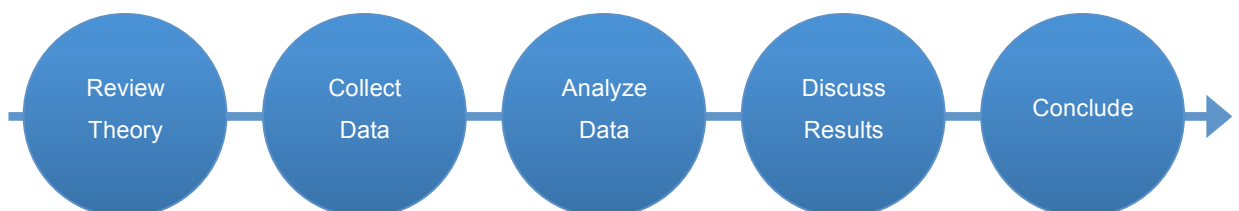


Figure 1. Research design overview

2.3 Literature Search

The literature review process in this research was conducted by using different library platforms, including MetCat (Metropolia Library), Nelliportal, Theseus and Google Search. The concepts, principles and other theories used in this paper were selected from journal articles, academic papers and books. The main keywords include “lean thinking”, “project management” and “lean project management”. It has come to attention that there are only a few studies focusing on Lean Project Management specifically, compared to a wide range of Lean Thinking and Project Management materials available. After carefully considering the scope and the relation of content, a number of articles, academic papers and books were selected as references for this study. Detailed list of them is presented at the end of this paper.

2.4 Empirical Data – Selection of Interviewees

The empirical data is used to examine the current state of project management at Tuxera to study the problems between the problems with the concept of Lean Thinking. Three employees at Tuxera were selected for the interviews. They include:

- 1) Karolina Mosiadz, Marketing Manager – Marketing team
- 2) Hien Le, UI/UX Designer – Marketing team
- 3) Sakari Tanskanen, Software Developer – Development team

The interviewees were selected based on the following reasons:

- To study the problems within the marketing team from different perspectives (manager and designer), assuming that the problems are stressed under management.
- To study the work efficiency of another team and compare the situations, so the problems could be examined in a more comprehensive context (one interviewee from the development team). The development team was chosen because first, their work is highly project-driven; and second, it has been known that the team was using an efficient project management method in their work, namely SCRUM.

2.5 Empirical Data – Selection of Interview Questions

To conduct the interview, a list of 18 questions were created and divided into six categories, including general questions about the interviewees and their work position, and questions related to five Lean principles: specify value, identify the value stream, flow, pull, and perfection.

The purpose of the questions was to help the author understand how the problems in project management would be taken into account under Lean concepts. In order to achieve this purpose, the five principles of Lean were studied carefully to see how the characteristics of the work in manufacturing context would fit into business projects context and the list of questions were designed accordingly. These questions are:

General:

1. What is your position at Tuxera? How long have you been in that position?
2. What kind of projects are you managing?
3. Who are your customers? Where do the requests come from?
4. In your work, who often decides the deadlines and quality of your work?
Are the deadlines fixed or negotiable?

Specify Value:

5. Do you often receive clear requirements for each project? (How often). If not, how do you figure it out?
6. When developing a project, have you ever met the case that you were doing an extra task or extra features that your customer did not want? How often did it happen?

Identify the Value Stream:

7. Can you describe the process of developing a project?
8. Does the process repeat the same or they differ from each project?
9. Do you use or have any tool/model that visualize this process?

Flow:

10. What kinds of problems often delay your workflow?

Pull:

11. Do you start a project when there is a request or do you create a project that you think will be needed?
12. Which type is more common? Can you explain why?

Perfection:

13. How do you evaluate the quality of a project? What criteria (customer satisfaction, time, budget, resources, etc) do you use?
14. Do you and your team review the project afterwards?
15. Do you see your team making improvement after each project?
16. What would hinder your team from making improvement?

Conclusion

17. Does every member in your team share the same understanding about a project? If not, is it a problem for their work?
18. Do you use any tool for managing projects?

2.6 Empirical Data – Interview Method

The interviews were conducted as one-to-one person sessions. The interviewees did not review the questions beforehand. Answers were noted down in papers during each session. Afterwards, they were typed out on a computer for credibility. During the interview, questions were explained if there was anything ambiguous or misunderstandings. Each session was completed within 40 minutes. The interview questions and answers can be found in the appendixes.

2.7 Case Study

The case study in this research was based on the project activities within the marketing team at Tuxera. From the perspective of one of the two designers working in the team, the author has recognized a few flaws in the work stream that may have created obstacles for the team to function efficiently. As the problems were also acknowledged with other team members, several improvement solutions have been suggested and brought to application in order to increase the work productivity, including SCRUM meetings and KANBAN boards. The basis of these solutions is believed to be very close to the practice of Lean Thinking. Therefore, the outcomes of these practices were recorded and included in this paper to demonstrate the effects of Lean Thinking on project activities. The division of work was also recorded in excel files that make it easy to evaluate the work productivity.

At the time of writing this paper, the study had been carried on for four weeks, together with the application of the new management methodologies. The results of this study, thus, are within these first four weeks. Since the process of applying these solutions is still on-going, it would be expected that there are still possibilities of changes to come.

3 Literature Review on Project Management

3.1 The Concepts of Project and Project Management

A Project is temporary in that it has a defined beginning and an end in time, and therefore a defined scope and resources. A project is unique in that it is not a routine operation, but a specific set of operations designed to accomplish a singular goal. The development of software, the construction of a building, the writing of a book or the publishing of a new product into market are all projects. All of them need to be managed be delivered on time and within the specific defined budget that the stakeholders need. [1.]

Project Management is the application of knowledge, skills and techniques to execute a project effectively and efficiently. In business and in organizations, project management is a strategic competency that enables them to lead the results to business goals. [1.]

Project management processes include five phases:

- Initiating
- Planning
- Executing
- Monitoring and controlling
- Closing

Project Management knowledge draws on ten areas: integration, cost, human resources, stakeholder management, scope, quality, communications, time, procurement, risk management [2].

The temporary nature of projects is in contrast with business operations, which are repetitive with permanent or semi-permanent function activities to produce products or services. This makes the management of these two systems different and normally it requires distinctive technical skills and management strategies.

3.2 Project Management Models

There are many approaches to manage project activities. Depending on the overall project objectives, timeline, cost and the roles of all the responsible participants, a suitable approach should be employed.

The Traditional Approach (Waterfall Model)

As can be seen in figure 2, in this methodology, five developmental components of a project are to be executed:

1. Initiation
2. Planning and design
3. Execution and construction
4. Monitoring and controlling systems
5. Completion

This approach has been recognized as a good practice on most projects globally and across industry groups. Not all projects will have every stage, though, as projects can be terminated before the reach completion. Some other projects can repeat steps 2 and 3 multiple times. In software development, this approach is described as the waterfall model, in which a series of tasks is carried one after another in linear sequence. [3.]

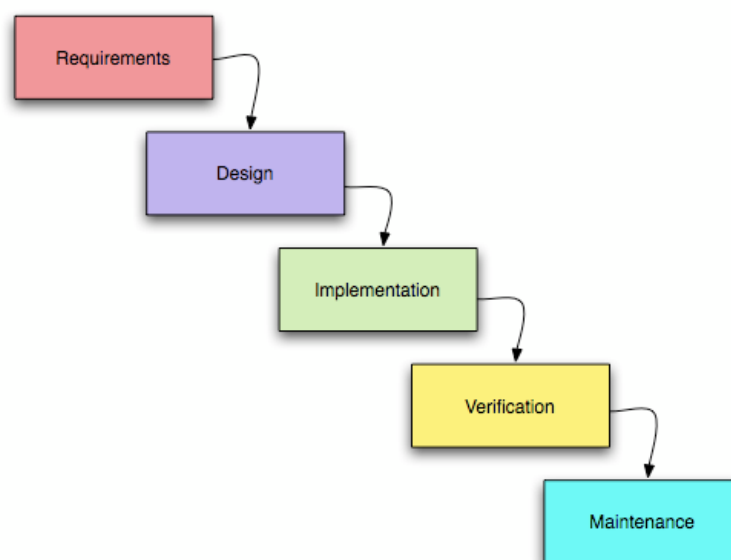


Figure 2. The Waterfall Development Methodology. Copied from umsl.edu, The Traditional Waterfall Approach (2006) [3].

The waterfall model is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, production/implementation and maintenance. [3.]

Agile Project Management

Agile project management encompasses several iterative approaches, based on the principles of human interaction management and founded on a process view of human collaboration. Agile-based methodologies are most typically employed in software development as well as the website, technology, creative, and marketing industries. This sharply contrasts with the traditional approach. As can be seen in figure 3, in the Agile approach the project is seen as a series of relatively small conceived tasks which are executed to conclusion as the situation demands in an adaptive manner, rather than as a completely pre-planned process. [4.]



Figure 3. Agile Scrum Project Management. Copied from scrummethodology.com [15].

Agile is an umbrella term for multiple project management methodologies, including:

- Scrum
- Kanban

- Extreme Programming
- Crystal Clear

[4.]

Extreme Project Management

Extreme Project Management refers to a method of managing very complex and very uncertain projects. It differs from the traditional project management approach because of its open, elastic and undeterministic approach. The main focus is on the human side of the project management (e.g. managing project stakeholders), rather than on intricate scheduling techniques and heavy formalism. [5.]

Lean Project Management

The principles of lean manufacturing are used in Lean Project Management to focus on delivering value with less waste and reduced time [5].

3.3 Common Challenges in Project Management

Undefined goals: This is one of the most common challenges in project management. When the goals are not yet clearly specified, it restrains the team from achieving them. It happens when upper management cannot agree on the objectives of the project. [6.]

Scope changes: This problem occurs when the scope of the project is extended or modified compared to its original goals. This could come from either the upper management level or customers. Depending on the request, the budget and deadlines of the project could be changed accordingly. [6.]

Inadequate skills for a project: This problem occurs when the project requires skills that none of the participants possess. [6.]

Lack of accountability: Team members avoid responsibilities, avoid blame and are unproductive. It happens when people in the team do not share a common goal or do not agree on the common techniques. [6.]

Improper risk management: Unexpected risks lead to failure outcomes. Since projects rarely go exactly according to plans, risk tolerance and risk planning are desirable skills. [6.]

Poor communication: This is a frequent problem that happens in most projects. Lack of proper communication between team members or between the team and the upper management level, or the team and the customer can result to dramatic failure. [6.]

Impossible deadlines: This problem occurs when the expected goal requires more resources from the team than the availability, either human resources or materials resources. [6.]

Resource deprivation: The success of a project requires sufficient resources, including human resources, time and money. [6.]

Lack of stakeholder engagement: A disinterested team member, client, CEO or vendor will discourage the development of the project. [6.]

4 Literature Review on Lean Thinking

4.1 Definition

Lean Thinking is a business methodology which aims to provide a new way to think about how to organize human activities to deliver more benefits to society and value to individuals while eliminating waste. The term was conceived by James P. Womack and Daniel T. Jones to capture the essence of their in-depth study of Toyota's famed Toyota Production System. [7.]

Lean Thinking is a new way of thinking of any activity and seeing the waste inadvertently generated by the way the process is organized by focusing on the concepts of:

1. Value
2. Value streams
3. Flow
4. Pull
5. Perfection

The aim is to create a lean enterprise, one that sustains growth by aligning customer satisfaction with employee satisfaction, and one that offers innovative products or services profitably whilst minimizing unnecessary over-costs to customers, suppliers and the environment. [7.]

4.2 The Concept of Lean

Lean is short for 'Lean Manufacturing' or 'Lean Production', which is a systemic method for the elimination of waste within a manufacturing process. This type of waste is called Muda. It also takes into account waste created through overburden pressure, Muri, and waste created through unevenness in work loads, Mura. The fundamental idea underneath the Lean concept is to maximize customer value while minimizing waste. From the perspective of a client who consumes a product or service, value is any action or process that the client would be willing to pay for. The waste, on the contrary, is what is included in the cost of the product but what the customers obviously do not want to pay for. [8.]

It is important to understand that Lean is a philosophy that can be applied for any business or process. The philosophy lies underneath the way that a company operates, not the tools they use. Lean enables the company or the organization to adapt quicker to the constant changing demands from customers and industry requirements. Instead of focusing on optimizing separate technologies, a lean organization will focus on optimizing the flow of their products throughout the entire value stream. [8.]

4.3 History of Lean

In the 1950s in Japan, Toyota and other manufacturing companies, with the support of Marshall Plan decided to produce goods in Japan for the Asia-Pacific market. They came to America to study the way manufactures, especially automakers, were running here. Toyota found that the mass production method that was used in US automakers manufactures were not adaptable to their market situation. After WWII, Japan had to import nearly everything and were forced to pay premium prices up front. There was also not a lot of land surface available, 60% of their landmark could not be used for housing, agriculture or manufacturing. Most of their young men who are skilled workforce had either died in the war or permanently disabled. [9.]

The only ways that a manufacturing company could succeed were:

- To accelerate the run-through times in order to keep the period between paying for the raw materials and receiving payment for the finished goods from customers as short as possible [10].
- To keep a minimum amount of stock, raw materials, finished goods and work in progress [10].
- To not produce any scrap [10].
- To use a minimum amount of space [10].
- To simplify the work to unskilled workers [10].

This was the beginning of the idea of Lean Manufacturing: trying to eliminate waste wherever possible.

The philosophy was later conducted when the Toyota Production System (TPS) was developed between 1948 and 1975. The creators were Taiichii Ohno and Eiji Toyoda.

Ohno describes the TPS as one of the techniques that was designed to reduce the cost of manufacturing by removing waste, based on two pillars:

Just-in-Time: the technique of supplying exactly the right quantity, at exactly the right time, and at exactly the correct location [11].

Jikoda: a series of cultural and technical issues regarding the use of machines and manpower together, utilizing people for the unique tasks they are able to perform and allowing the machines to self-regulate the quality [11].

4.4 Types of Waste

Since the elimination of waste is the goal of lean, it is important to understand and be able to clarify the type of waste that could be conducted in the system. Toyota defined three broad types of waste: muda, muri and mura.

Muri focuses on the preparation and planning of the process, the type of waste that can be avoided by design [12].

Mura focuses on how the work design is implemented and on the elimination of fluctuation at the operational level, for example: quality and volume [12].

Muda is discovered after the process is in place. It is seen through variation in output. Normally, muda is originated from the muri and mura of the system. [12.]

In TPS, there are seven types of muda that are addressed as shown in figure 4:

1) *Transport*: the waste of moving products that are not actually required to perform the processing. This may include the waste of hiring people and equipment to carry the movement. [12.]

2) *Inventory*: the cost of inventory until the product is actually sold, such as all components, work in progress, and finished products not being processed. This also raises the risk of products getting damaged during transport. [12.]

3) *Motion*: the waste of unnecessary movements of man or machines. This, for example, can be the inappropriate dimensions of machines that require extra movement to function, or the over distance between workstations that requires excessive traveling time. These kinds of problems increase the amount of effort and time needed to invest on a task and raise the unnecessary work-stress level. [12.]

4) *Waiting*: the waste of time on communication, approval or commands being transferred between departments of the company, time waiting for the next production step, interruptions of production during shift change. The waiting time interrupts the workflow and reduces productivity of the production. [12.]

5) *Overproduction*: the waste of producing over the amount expected, or delivering too early before schedule. [12.]

6) *Over Processing*: the waste of implementing inappropriate techniques, oversize equipment, performing processes that are not required by the customers, and so forth. This results in both waste of time and waste of money. [12.]

7) *Defects*: this is the most obvious of the seven wastes though not always easy to detect before arriving to customers. For each defective item, the waste of reproduction, extra resources, materials and documents increase. Another risk is losing customers. [12.]

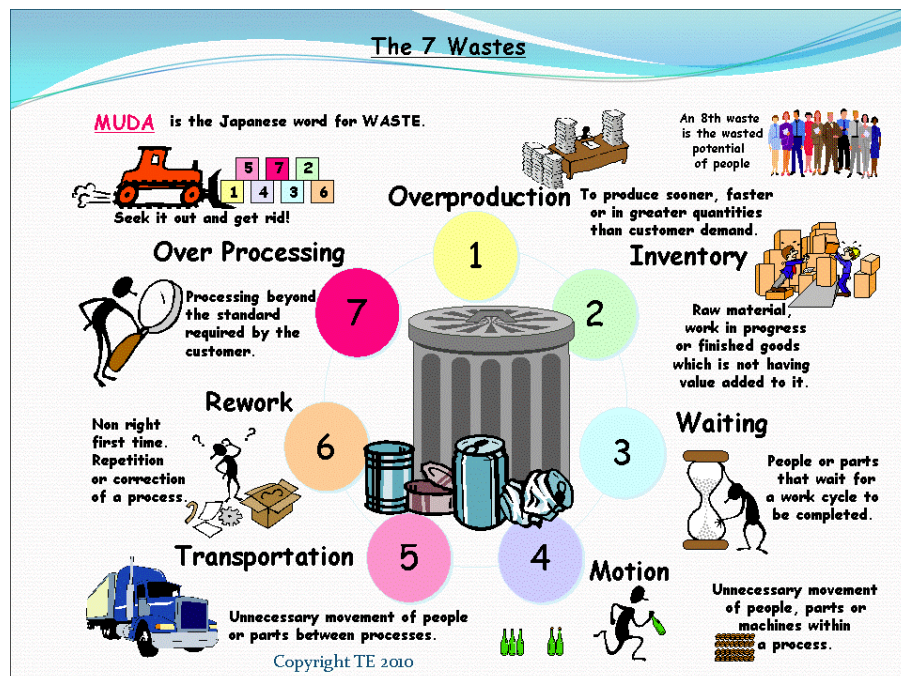


Figure 4. Remove waste to reduce costs. Copied from leanmanufacturingtools.org [12].

By implementing Lean philosophy into the workflow, the elimination of waste can be carried. However, it is important to always remember that the principles of Lean is to focus on the customer value, by increasing the flow efficiency rather than solely focusing on removing waste from specific segments.

4.5 Principles of Lean Thinking

Lean Thinking is a result of narrowing Lean Production concepts to a set of five principles that focus on eliminating waste. The principles of Lean Thinking include: specify value, identify the value stream, create flow, pull, and pursue perfection.

Specify Value

The first principle is to understand the customer needs and what they would be willing to pay for. Once the customer requirements are identified, the next step is to define the value of products or service, and their functions and capabilities at a specific price [7]. To figure out what is really meaningful to the customers is a fundamental step for any company or manager who wants to implement Lean Thinking. In in-house projects where the tasks are divided among teams, the next team that receives the product play the role of the customer [7].

Identify the Value Stream

The second principle of Lean Thinking requires understanding of the whole process to make a specific product, i.e. the whole set of actions during production. A business execution normally requires three major tasks: 1) Problem-solving: from conception through planing and execution to product release; 2) Information management: from taking an order, doing product or market research, planning the schedule to delivery; 3) Physical transformation: from materials transportation and movement during the process to delivery [7].

The underlying goal of this principle is to look at the entire value stream of each product and remove any non-value adding activities (waste).

Flow

The third principle is about creating continuous flow in management. By redefining the work of functions and departments, lean enterprise encourages people to set up a clear objective and provide intense concentration with a lack of interruptions and distractions in order to attain a continuous flow of values [7]. In comparison, the classic batch-and-queue work often hinders workers from seeing the whole picture of the process. There

is often no feedback about the task performance or the progress of the system [7]. Constant interruptions occur frequently, which disturbs the psychological flow.

Thus, in order to successfully implement lean thinking, it requires the company or organization to change their way of thinking, to apply a new way of doing things which could be completely different from the traditional method.

Pull

The fourth principle of lean thinking is about how to provide customers the products they want when they want them. At Toyota, this means they only start the production after they receive an order from a customer [7]. So instead of pushing the products to customers, the company would let the customer pull the products out of their system [7]. This strategy limits the chances of inventory waste. The two most popular tools being used to manage Pull are Kanban and Just in Time (JIT). However, in reality most companies apply the Pull principle in supply rather than in production.

Perfection

The last principle of Lean Thinking simply means there would be no end to the process of reducing waste. The first four principles interact seemingly with each other to increase value and eliminate waste in production. They altogether lead toward perfection [7]. This principle leads the direction and provides inspiration for people to make progress. In lean organisations, it is essential to develop further improvements whenever possible.

5 Applying Lean Thinking in Project Management

5.1 How to Manage Projects in a Lean Way

Specify Value

Analysis: In production, value-adding activities are those activities for which customers are willing to pay. In a project, these are activities that the next team would agree to expect from the results [10]. It is important to identify which activities are adding values and which are not. By defining relevant values, the scope of the project will be cropped down to a range of activities that are essential for customers. Thus, the opportunity of the team losing time, effort and resources would be reduced (or totally eliminated, in some cases) and the effectiveness and the chance that project would be completed in time would be increased.

Identify the value stream

Analysis: To identify the value stream in a project is to identify the process to develop a specific product [10]. Value stream mapping (VSM) is a method to create a picture of the project process, a whole set of activities, starting from order taking, proceeding to planning, execution and delivery of project. The underlying goal of this method is to identify the flow of information, materials and processes [10]. By visualizing the process, VSM makes it easier for the team to spot non-added values activities, reduce unnecessary time and increase efficiency. One disadvantage of this method is that the process can only be visualized if the process is often repeated. Thus, it depends on the type of project whether VSM could be applied or not.

Flow

Analysis: In production, flow means the flow of materials and obstacles [10]. In a project, it is often the flow of information, data, requirements and/or instructions [10]. As long as there are no obstacles that interrupt the process, there is always a flow. If the flow is properly planned from the beginning, there will be time to foresee obstacles and eliminate them. Obstacles are the activities that can affect the delivery of the project. Unclear instructions or requirements during execution also bring up frustration and

postpone the delivery time. Once again, since the nature of the project is unique, obstacles often would only be identified on a case-by-case basis.

Pull

Analysis: The Pull concept in production means letting the customer pull the product from the company instead of a company pushing products toward customer [10]. In a project, this can be understood as the company should consider whether or not the project should be undertaken in order to meet customer demands [10]. The Pull concept can also be applied to project activities. By dividing the process to a series of steps and setting milestones and deadlines for each task, the work will be pulled toward the prefixed milestones. This approach effectively supports the flow of the project, reduces time delays and increases the project efficiency. The most common tool to apply the Pull concept is using the Kanban board.

Perfection (Continuous Improvement)

Analysis: In a project, the idea of reaching perfection by maintaining continuous improvement is somewhat similar to that in manufacturing [10]. However, since a project is often iterative and not repetitive, there is a need to define a standard process in order to improve the projects [10]. Even though each project has a different developing method for different products, the lifecycle of projects is often similar. For example, although the development method of computer software and a marketing campaign is totally different, the process of getting data and instructions, developing an execution plan within the team, releasing and maintaining the final product are basically taking similar sequences. Having a standardization for processing projects makes it possible to continuously improve them as a whole [10].

Making the value stream visible to everyone in the team is also one important factor in improving project efficiency. Making the process visualized helps all members in the project share a common understanding and be aware of their role in the whole process. This is an important factor to improve project efficiency. It has been proven to effectively increase motivation and positive thinking of project participants.

5.2 Most Common Lean Tools

5S

Definition: 5S is a workplace organization method that uses a list of five Japanese words: seiri, seiton, seiso, seiketsu, and shitsuke.

- Sort: eliminate what is not needed
- Set in order: organize remaining items
- Shine: clean and inspect work area
- Standardize: write standards for the above
- Sustain: regularly apply the standards

[13]

Effect:

- Eliminate waste that results from a poorly organized work area (e.g. wasting time looking for a tool). [13.]

Bottleneck Analysis

Definition: Bottleneck Analysis means identifying which part of the manufacturing process limits the overall throughput and improving the performance of that part of the process [13].

Effect: Bottleneck Analysis should be used to improve throughput by strengthening the weakest link in the manufacturing process [13].

Jidoka (Automation)

Definition: This is one of the two pillars of the Toyota Production System. Jidoka highlights the causes of problems because work stops immediately when a problem occurs. This leads to improvements in the processes that build in quality by eliminating the root causes of defects. [13.]

Effect: After Jidoka, workers can frequently monitor multiple stations (reducing labor costs) and many quality issues can be detected immediately (improving quality). [13.]

Just-in-Time (JIT)

Definition: It is important to pull parts through production based on customer demand instead of pushing parts through production based on projected demand. JIT relies on many tools, such as Continuous Flow, Kanban, Standardized Work and Takt Time. [13.]

Effect: This method is highly effective in reducing inventory levels. It improves cash flow and reduces space requirements [13].

Kaizen (Continuous Improvement)

Definition: Kaizen is a strategy where employees work together proactively to achieve regular, incremental improvements in the manufacturing process [13].

Effect: Kaizen combines the collective talents of a company to create an engine for continually eliminating waste from manufacturing processes [13].

Kanban (Pull System)

Definition: Kanban is a method of regulating the flow of goods both within the factory and with outside suppliers and customers. It was based on automatic replenishment through signal cards that indicate when more goods are needed. [13.]

Effect: Kanban eliminates waste from inventory and overproduction. It can eliminate the need for physical inventories (instead of relying on signal cards to indicate when more goods need to be ordered). [13.]

PDCA (Plan, Do, Check, Act)

Definition: PDCA is an iterative methodology for implementing improvements.

- Plan: establish plan and expected results
- Do: implement plan
- Check: verify expected results achieved
- Act: review and assess; do it again

[13.]

Effect: PDCA applies a scientific approach to making improvements.

- Plan: develop a hypothesis
- Do: run experiment
- Check: evaluate results
- Act: refine your experiment; try again

[13.]

SMART Goals

Definition: SMART goals are specific, measurable, attainable, relevant and time-specific [13].

Effect: SMART goals help workers to ensure that goals are effective [13].

Standardized Work

Definition: Standardized Work documents procedures for manufacturing that capture best practices (including the time to complete each task) [13].

Effect: Standardized Work eliminates waste by consistently applying best practices. Forms a baseline for future improvement activities [13].

Value Stream Mapping

Definition: Value Stream Mapping is a tool used to visually map the flow of production. It shows the current and future state of processes in a way that highlights opportunities communication of information. [13.]

Effect: Value Stream Mapping exposes waste in the current processes and provides a roadmap for improvement though the future state [13].

6 Empirical Data

6.1 The Interviews

As mentioned earlier, in order to approach the problems in a more dynamic view, three interviews were conducted with employees at Tuxera. All of the people who participated in the interview have been working for the company for at least one year and have a good understanding of the system.

The first one was Marketing Manager, Karolina Mosiadz. Her full job title is Communication and Marketing Manager, which means that the projects that she manages involve communicating with customers and designing content and marketing plans for Tuxera's marketing activities. She has been working at her position for two and a half years. At this position, Karolina is dealing with project requests from both in-house customers (Sales team, Business Development Director, Development team) and external customers (business customers of the company). The deadlines of the in-house projects are decided by her and the internal parties; for projects that have been externally requested, the deadlines are decided by customers. From Karolina's point of view, these deadlines can be negotiated.

The second interviewee was a UX/UI Designer, Hien Le, also from the Marketing team. He has been working at Tuxera for 3 years and has been working in both Marketing and Development sides for a while. Hien receives project requests directly from his upper management level and the work can involve both in-house and external projects.

The third interviewee was a Software Developer from the Development team. His name is Sakari Tanskanen. Sakari joined the company one year ago and currently he is working along with the Development team in developing a streaming application. This streaming application is a new product that is being developed and customized based on customer requests. For his work, the deadlines of the project are agreed on between his Product Manager and Business Development Manager. Products are reviewed in-house before being delivered to business customers.

Specify Value

Talking about identifying project requirements, Hien reviewed that the requests he receives are sometimes not clear enough, and in that case he would need to clarify them with other team members, asking managers directly or doing research by himself. In fact, there are cases where he had to spend quite a lot of time doing research about requests that cut off his actual time of working on the task. This resulted in either delay the delivery time or reduced the quality of the work since the designer had less time or work on his/her task, or, he/she did not fully understand the project ideas.

In Development team this was often not the case since the work is considered a long-term project so that there is no pre-defined specifications, quick change can come at any time and adjustments can be quickly made during the process.

Identify the Value Stream

In general the value stream of the project work in the Marketing team is described as below:

- From Designer: Requirements come -> Discussion -> Brainstorm ideas until there are enough details -> Start implementing -> Review -> (Revise if there are problems & Review again) -> Deliver
- From Marketing Manager: Get info -> Prepare the first draft -> Check with person who is responsible -> Continue working if necessary -> Delivery

Value stream of the Development team is described as below:

- Think about the requirements, what customers might need -> Create architecture -> Plan -> Implement -> Develop the plan-> Review within the team (peer review) -> (Revise if necessary) -> Deliver to customer -> Wait for customer evaluation -> Receive feedbacks from customers -> Revise if necessary.

None of the team uses any proper tool to visualize this process but they both agree that on a high level the stream does not change much. Thus, it is possible to identify and eliminate waste that was often repeated regular projects, such as time waiting for approval or moving between departments asking for information/resources. However,

because of the unique characteristics of each project, the flow of information and resources can vary. Especially with the Marketing team, it is observed that whereas many in-house projects are repeated tasks (i.e. updating documents) which makes it easier to review and improve the process, external requests can be quite demanding and a lot of them are one-time activities (i.e. filming a specific products feature demo).

In the Development team, the value stream is more stable. The main difference is that it depends on where the feedback comes from (business customers or end-users) and whether the changes will be executed or not.

Flow

In order to clarify the flow of projects, interviewees were asked about what would be the obstacles that hinder their workflow. The problems are listed below:

The Marketing Manager:

- Unclear information from customers
- Priorities distraction (i.e. urgent tasks with higher priority come from other customers)
- Waiting for approval from upper managers in order to continue

The Designer:

- Insufficient guidelines, lack of requirement information and support
- Sometimes there are problems that managers could not help (i.e. problems that requires specialized knowledge). In this case designer has to search for help by his own
- Idea brainstorming takes up too much time
- Impossible deadlines
- Ideas are not clear
- Lack of resources (i.e. stock images)

The Software Developer:

- Urgent tasks with higher priorities come in the middle

As can be seen, the Marketing team receives a lot more problems on the way. Some of them can be fixed by improving within the team or within the company. For example, the team can work on improving communication between managers and team members so that the instruction and guidelines can be more supportive, or there can be

negotiations between managers and designers so that the project deadlines would be achievable; upper managers can provide solutions to upgrade resources, and others. The Development team does not have such problems as mentioned; however, Sakari mentioned one interesting fact, namely that during the developing process, it is also required for some features to get feedback and approved before being developed further. During this approval time, the developers will not stop to wait but instead, they will switch to other tasks, which can be about developing another feature of the product, and then switch back to developing the former feature when approval is done. This method is applicable to the Development side since the tasks always belong to one main project. For the Marketing side, for the scale of projects are much smaller, the variety of projects is higher, and the work of each project is distinct. Therefore, it is feasible to switch between different projects when waiting for approval but the productivity considered in each individual project is still reduced.

Pull

The Pull concept in production means letting the customer pull the product from the company, so in the project, it was understood as considering the need for a project before undertaking it. The questions in the interviews were to examine how often it happens that a project is executed under a clear request, and how often it was activated not from external requests. It was recorded that for the Marketing side, projects on demand account for larger percentage than self-initiated projects (50 - 80%), since their priorities are often higher (often come with prefixed deadlines). Thus, there will be lack of time to develop self-initiated projects. The self-initiated projects are anticipated and developed based on past experience and internal discussions with other involved departments about what could be used or be helpful for future use. For the Development side, since the product is newly developed, the need for the project was set concretely from the beginning. It could be seen that while the importance of the Development projects was set, the need and priorities of the Marketing projects were not clearly clarified. Self-anticipated projects that might be more beneficial for the work would be postponed if an on-demand project with more urgent deadlines came in. In fact, the situation could become quite hectic when customer requests came at high traffic time and mixed up the priorities.

Perfection

In order to understand how it would be possible for the team to achieve perfection, the interviews included a question of how the team evaluates the quality of a project. It turned out that there is no specific way to define a successful project, since each project has a different set of requirements. For the Marketing team, customer satisfaction from direct or upper management level tends to be the major factor, since business customer do not often give feedbacks about marketing materials that were sent to them. The secondary factors were time and resources spent on developing the project. In general, the team would improve their work by estimating the scale and the importance of a project before investing time and effort on it. For the Development team, the situation was partially similar. Product Managers and Business Development Directors decide if the products were good enough to be delivered to customers. At the end of the day, the determining factor was about whether customers would want to buy the product or not. Improvements and adjustments are made based on the feedback of customers.

It was also revealed that while the Development team has weekly review and peer review regularly within the team, in the Marketing team there is no review after each project. To determine whether this was the reason why the team has not made any concrete improvement is still a question. On the other hand, there are a lot of reasons that explain the lack of revision. One of them is that marketing materials do not receive feedback from outside customers. If there are any mistakes, the damages would not be significant enough to be mentioned (i.e. no harm to customer benefits). Other reasons include lack of time and communication inside the team. New project requests would arrive right after one project is done. Thus there was not enough time in between for the team to discuss and review the result.

Management Tool

For the last question concerning which tool the team has been using for work management, it was noticed that the Marketing team does not use any proper tool for project management. Development projects, on the other hand, rely strongly on JIRA and Confluence (both are in-house management tools) and SCRUM meetings. They also have a daily update with the whole team at 10 AM everyday.

6.2 Case Study

As mentioned previously, in an effort to reorganize and improve the work productivity in the Marketing team, some new management approaches have been introduced to the team. The experience recorded from these new approaches would provide practical insight for this research.

Based on a period of four weeks, two management tools were applied: KANBAN and SCRUM meetings.

6.2.1 Brief Literature Review

KANBAN

In production, Kanban is a system to control the logistical chain of a product. It was developed by Taiichi Ohno at Toyota. Kanban is Japanese word for “visual signal” or “card”. Toyota line-workers used Kanban or cards to signal steps in their manufacturing process. The system allowed the team at Toyota to communicate effectively on what and when work needed to be done. In practice, Kanban supports workers by visualizing the “picture” of work with sticky notes on a whiteboard as shown in figure 5. [14.]

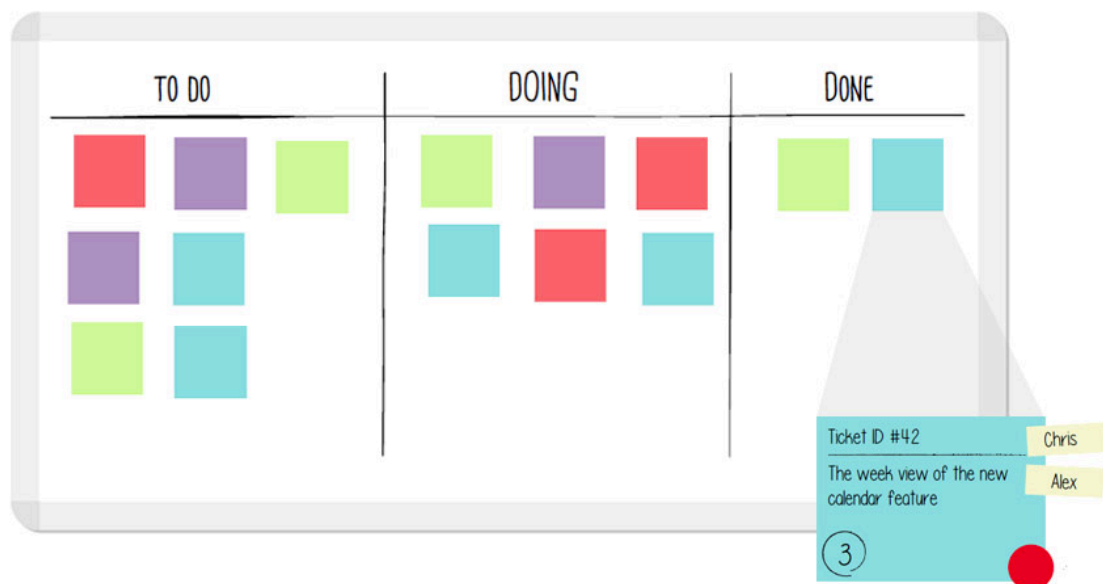


Figure 5. Kanban board. Copied from leankit.com [14].

The four main principles of Kanban are: 1) visualize work, 2) limit work in process, 3) focus on flow, 4) continuous improvement. As can be seen, Kanban is one transparent demonstration of applying Lean Thinking in management. [14.]

SCRUM

Scrum is an iterative and incremental agile software development methodology for managing product development. The concept of Scrum was first defined in 1986 by Hiro-taka Takeuchi and Ikujiro Nonaka in their study called the New New Product Development Game, published in the Harvard Business Review magazine. A key principle of Scrum is its recognition that during a project the customers can change their minds about what they want and need, so in the Scrum method, the team accepts that the problem cannot be fully defined and focuses on maximizing the team's ability to deliver quickly and respond to emerging requirements. Scrum provides a framework for teams to work together to develop a product, with each piece building upon previously created pieces. The fundamental structure of Scrum is governed by three primary roles: 1) Product Owner (determine what needs to be built), 2) Development Team (build the product), 3) Scrum Master (ensure that the process runs as smoothly as possible). [15.]

In this study at Tuxera, instead of using cards to follow the production of one product, Kanban was used to navigate different projects that were undertaken by the Marketing team. At the same time, Scrum meetings have been the main approach to control the workflow in the Development team and the effects of this method were clearly recognized. In the 4 week period, the Marketing team attempted to adopt Scrum in the project management activities, along with the use of Kanban. While the benefits of these approaches are not yet confirmed, it would be interesting to examine their effects on projects with more dynamic characteristics as marketing activities.

6.2.2 About Tuxera

Tuxera is a computer technology company located in Helsinki, Finland. The company develops and licenses sophisticated systems, middleware data handling and streaming solutions to leading consumer electronic manufacturers, including Samsung, Sony, LGE and Fujitsu, on a global level. Tuxera solutions are widely deployed in many industries including mobiles & tablets, automotive in-vehicle infotainment (IVI) systems, home entertainment, portable storage and demanding industrial applications. For example, automotive solutions of Tuxera can be found in the navigation and entertainment systems running in the latest Mercedes, BMW, Toyota and Audi models and many others.

Tuxera has offices in America, Korea, Taiwan and China. Since the main customers are mostly from Asia (Japan, China, Taiwan, and Korea) and America, the company has employed approximately 80 professionals from over 14 countries around the world.

Tuxera organization is flat with low hierarchy:

- The top management level: CTO, CEO and Director of Operation and Legal
- The second management level: department managers with 12 different departments
- The third level: sales people, developers, designers, testers and other staff officers

This style of flat and low hierarchy architecture makes it easier for people to steer the work and communicate with people from different sections. It reduces the time and effort to reach an individual (which is one important factor to improve work efficiency) but also requires the leader level to manage a broad view and take some extra responsibilities.

From a general overview, every department in the company shares a similar workflow: requests would come from the top manager level and be brought to the team via department managers.

6.2.3 Tuxera Marketing Department

About Tuxera Marketing Team

The Marketing Department at Tuxera is an important part of the company organization. The team consists of four members, including marketing manager, web developer/designer, graphic designer and product support manager. Normally, the team will get information support from the other teams when there is a new product or service that needs to be developed. The Marketing team is responsible for any marketing activities related at Tuxera. These can include company image branding, products branding, visualization for Human Resources Recruitment, developing a promotional campaign for a new product and producing materials for an event (i.e. career fair, market fair). The work also includes developing non disclosure agreement marketing materials between the company and specific customers. They can be whitepapers, presentations or templates of contract agreements, and many others. In brief, any activity that requires communication support to promote the company image or products would be assigned as marketing activity.

Types of Project that the Team Has Been Doing

- In-house marketing activities: deadline is not rushed, content needs to be updated frequently, customers are in-house (sales team, developing team), types of media vary.
- Events marketing activities: most of them are one time activities with predefined deadlines, content is unique, customers are in-house (upper management level), types of media depend on the requirements.
- B2B marketing activities: deadlines are often quite urgent, content is unique, customers are external, types of media depend on the requirements.

Overall Project Management Problem

In the Marketing team, the main person who is responsible for project management is the Marketing Manager. The normal flow of the work would come from the upper manager level and then be assigned to the team via emails or talking directly. The most common problems that often occur are too many tasks come in and there were not enough resources (human, stock pictures, time) to execute, tasks were missing and the progress of the task could not be tracked; since the priorities of the tasks were not assigned clearly and were not balanced with the available resources, impossible deadlines occurred; members of the team did not share a common understanding of the project and the workload (workload divided were not visible to the team) that stimulated uncomfortable working atmosphere. The consequences are: tasks were missing, overdue, produced with low quality, wasting time and resources, tense atmosphere inside the team.

6.2.4 Applying SCRUM Meetings

Adopting the idea from the Development team, the Marketing team started to arrange a Scrum meeting every Monday at 11:00 to review and estimate the workload of each member every week. There is one person (Product Support Manager) who controls the meetings and prepares an Excel sheet of the tasks or projects list as shown in figures 6,7,8 and 9. The participants will estimate the approximate time that he or she will contribute to Marketing activities each week. After that there will be a list of tasks that need to be done as shown in figure 10. For each task the person who is mainly responsible will estimate together with the team how much time he or she will spend on the task, and then the most suitable time estimated and it will be noted down to the Excel sheet until the time that he or she is willing to contribute for that week is full.

Week 11							
From	09.03.2015						
Until	13.03.2015						
				Focus factor	0,8		
TEAM							
Member	Days Available	available per day	available per week	effective per week	Remaining	Assigned	
Hien	1,5	8	12	9,6	0,1	9,5	
Chi	5	8	40	32	0	32	
Karolina	4	8	32	25,6	0	25,6	
Eva	4	4	16	12,8	0	12,8	
TOTAL				80	0,1	79,9	

Figure 6. Scrum meeting log week 11

Week 12							
From	16.03.2015						
Until	20.03.2015						
				Focus factor	0,8		
TEAM							
Member	Days Available	available per day	available per week	effective per week	Remaining	Assigned	
Hien	2	8	16	12,8	0	12,8	
Chi	5	8	40	32	2	30	
Karolina	4	8	32	25,6	0	25,6	
Eva	4	5	20	16	0	16	
TOTAL				86,4	2	84,4	

Figure 7. Scrum meeting log week 12

Week 13							
From	23.03.2015						
Until	27.03.2015						
				Focus factor	0,8		
TEAM							
Member	Days Available	available per day	available per week	effective per week	Remaining	Assigned	
Hien	2	8	16	12,8	0	12,8	
Chi	5	8	40	32	-6	38	
Karolina	4	8	32	25,6	0	25,6	
Eva	4	5	20	16	0	16	
TOTAL				86,4	-6	92,4	

Figure 8. Scrum meeting log week 13

At the time of writing, four Scrum meetings have been arranged, and the results so far are recorded as below:

Pros:

- The team shares a common understanding of the workload.
- The tasks are divided equally based on the time and resources available.
- 60% of the work is carried out in time with expected quality, most have fixed deadlines.

Cons:

- 40% of the work is either underestimated or overestimated, which leads to missed deadlines or time cut off from other projects.
- Time was strongly affected by unexpected or urgent tasks that came in between.
- Design activities are generally harder to estimate the workforce compared to software developing activities.
- When the work is undone and get carried to the next week, it generates unwanted pressure on people.
- The priorities of the tasks are not clear.

6.2.5 Applying Kanban

Together with the Scrum meetings, the team has ordered a whiteboard to start applying the Kanban tool as shown in figure 11. The board has been divided into two sections: the upper section is a monthly calendar with tasks that need to be done over the month, the lower section is for the main Kanban columns: to do, doing, done. Post-it notes are used to highlight the work.

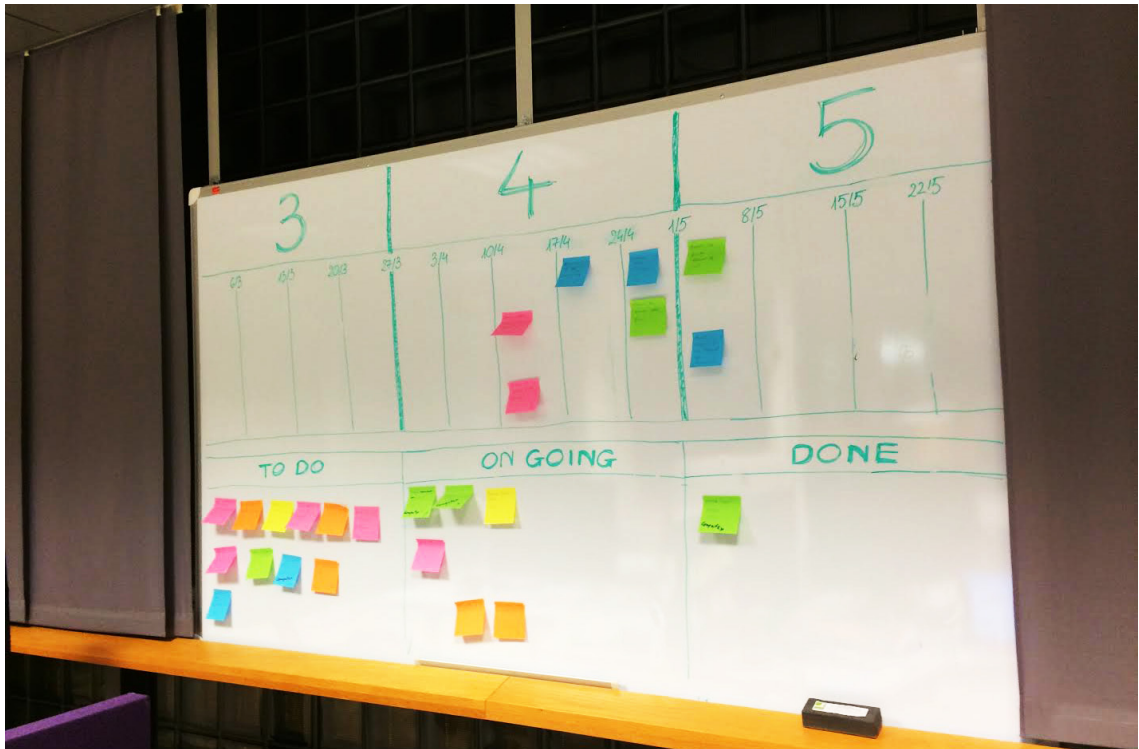


Figure 11. Kanban board at Tuxera

After the first four weeks, it has been shown that the workload of the team is mainly visible in Kanban. The list of to-do work, on going work and finished work are updated (by moving the notes) frequently, which makes it easy for everybody to follow the work progress. A small version of the Kanban board was also applied for each individual worker, as seen in figure 12 below:

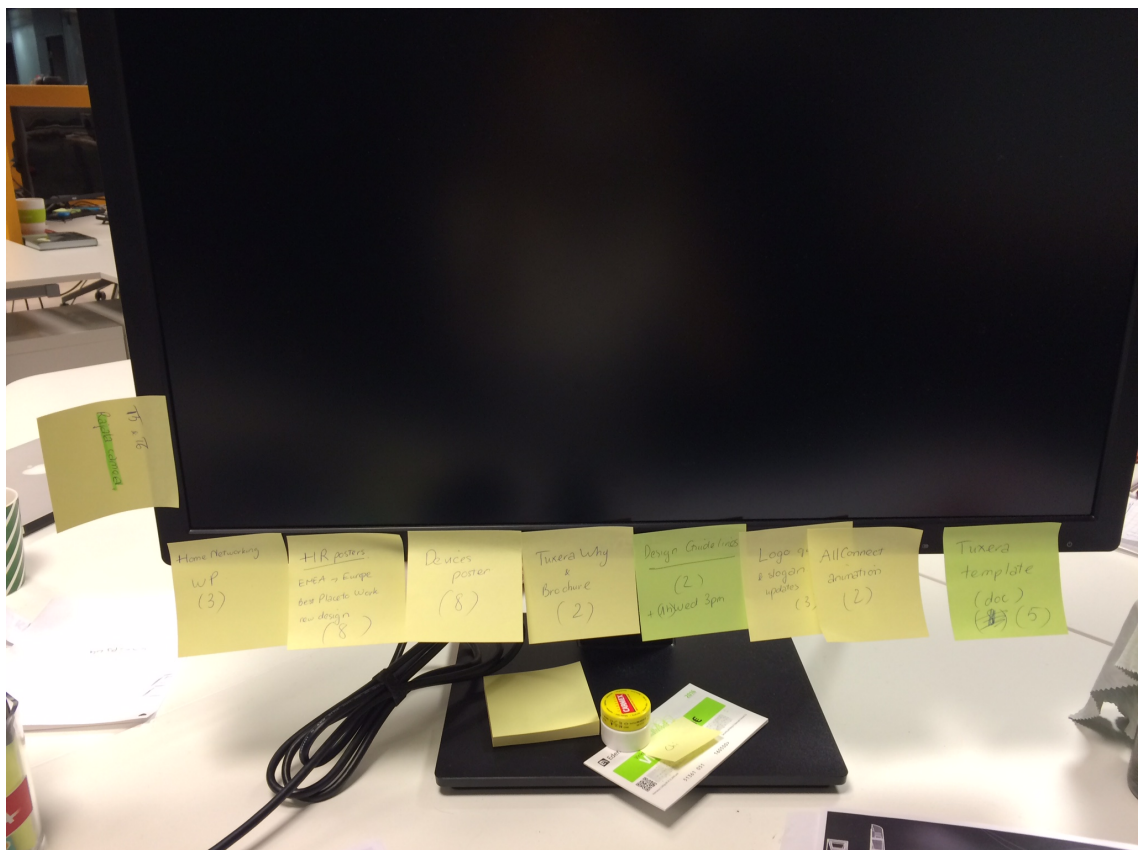


Figure 12. Personal Kanban model at Tuxera

Using Kanban in project management showed pros and cons as listed below:

Pros:

- Work progress is visible for everybody. Members of the team can keep track of what is going on and what is lying ahead (pull).
- The workload is updated frequently.
- Work in progress is limited.

Cons:

- Lack of color codes makes it difficult to spot the work for each person.

Also, it has been recognized that the Kanban method works better for each person in the team if he or she is using a personal Kanban board to control his or her own workflow. Since Marketing activities are not collective, meaning each project is an individual task and does not contribute to a big project (like in production), the use of a big Kanban board would help to visualize the workload, but it would not be as helpful as expected in helping people manage their own workflow. Thus, in order to efficiently keep track of the work, it would be recommended to team member to create his or her own Kanban board to follow their work progress.

7 Results and Discussion

As mentioned at the beginning, the goal of this study was to answer two questions. The first one is: how can Lean Thinking be applied in solving project management problems? The second question is: is Lean Thinking a suitable project management approach for business? In order to answer the questions above, interviews and case study were conducted, and the results are presented below. However, it is important to take into account that the results of this study are limited within the business environment of the company and could be affected by the characteristics of the team.

From the interviews

Specify Value: It was recorded that in Marketing projects, customer values are often unclear or unidentified from the beginning and the team will need to spend extra time to further identify the project values, which extends the time to deliver a project. As agreed, this will delay the process and reduce the productivity of the team. However, in projects, there are often multiple customers (i.e. upper management level, external customers) instead of only one customer that gets involved in one project. This adds complexity evaluating the customer value. In many cases, the projects are brought up because they are expected to meet some specific external customer demands. Thus the requirements of the projects would be adjusted based on the company's understanding about the specific customer and changed if different ideas come up.

Identify Value Stream: It was observed that while none of the interviewees provide any value stream visualization during their work, the process is pretty transparent to every member of the team. They both agreed that on a high level the stream does not change much. This could be understood as the value stream in projects is generally shorter and easier to recognize, compared to the value stream in production. In small and medium business, the flow of data, information and resources are often transparent to everybody and they do not change much throughout different projects.

Flow: The interviews reflect that the Marketing team often has to face a lot of obstacles that hinder their workflow. The list of obstacles were presented above. While these obstacles obviously disrupt the work, they are hard to predict and eliminate. The main reasons are that 1. projects are unique, and the problems identified in one project are not likely repeated in another one; 2. problems come from unavoided external sources

(i.e. more urgent projects come in). Thus, it is assumed that the idea of flow in Lean Thinking can be applied to eliminate waste in projects only on a broad level to reduce the impact of the problems, but would not completely remove the waste.

Pull: In Lean Thinking, the concept of Pull is understood as letting customers pull products out of the production, so that the production would run only after a request was put on the table. This is to avoid the waste of inventories and overproduction. When applied to projects, it was recognized that actually a large percentage of projects were created based on anticipated requests, or based on management experience. It can be seen that since the final results of a project are often not as many as in production, the risk of overproduction and inventories is less considered. Meanwhile, the opportunity to meet customer demands is emphasized more. Also, when projects were created based on experience with customers and experience with project work itself, it is more likely that the end result of the project will meet a specific goal, which also reduces the risks of wasting resources or inventories.

Perfection: The idea of perfection in Lean Thinking was adopted from improving the whole production into improving the processing projects as in standardization. In both the Marketing and Development team, it was observed that this standardization could be achievable by taking project management work at a higher level. Improvements can be made when the project work is reviewed as a whole after certain periods of time. The main problem with the Marketing team is about setting up a time schedule for reviewing and improvements.

From the Case Study

It was unintentional that the team decided to apply both the Scrum meetings and Kanban board at the same time of changing project management methods. The results show that while the Scrum meetings work perfectly with the Development team, it does not seem to be a suitable approach with the Marketing team. The main reason could be that Scrum meetings were designed to fit the nature of software development work, which is to control different tasks within one big project and to adapt with any change quickly, so the main idea of Scrum meetings would be about one specific project that every participant is already familiar with. Meanwhile, the project work of the Marketing team included a wide range of different unique projects with different scopes, purposes and resources, which make it not very easy to follow in one meeting. The idea of a

Scrum meeting can still be applied though to help the team keep track of the workload and share a common understanding about the team responsibilities. However, it would be important to keep in mind that the dynamic characteristics of Marketing activities can strongly affect the pipeline and so project progress would be more difficult to follow.

On the other hand, the Kanban board seemed to be an effective solution. The value stream of the whole workforce which includes various projects was visible. The progress of the workload was able to be tracked and monitored. Also, since the board is very easy to update, any project that comes in unexpectedly would be updated instantly and still be monitored according to the limit number required for the work in progress. The effect of Pull in the Kanban method was also noticeable. With a fixed request and to-do list of work visible, members of the team were more likely to keep track of what he or she was supposed to do and manage their workflow accordingly.

Summary

Firstly, it is safe to say that it is feasible to apply Lean Thinking in solving project management problems. However, because of the dynamic features of projects compared to production, it is essential to examine which aspect of the project work is similar to that in production, and which requires more flexible adaptation.

Secondly, based on the initial results of the case study, it has been shown that there is a lot of potential in applying Lean in project management in business, provided there has not been many specific project management models that would have demonstrated with effective results. Furthermore, while the Kanban board was a good example, there are many other Lean tools that have not been tested. It would be interesting to see how lean concepts would be developed in future research to fit in project scopes, so that at the end a specific form of the Lean project management concept would be defined.

8 Conclusion

In the scope of this study, the theories of Lean and Project Management have been studied and analyzed to rationalize a combined concept, namely Lean Project Management. Interviews and a case study at a local business were conducted to study to what extent that Lean Principles could be applied in solving project management problems, and how would Lean affect the productivity of the work. By the end of the study, a summary of problems that have reduced the efficiency of project work was drawn. By applying Lean principles and practical experience in analyzing the problems, it was concluded that it is possible to apply the Lean concept in projects; however, it is essential to understand the differences in nature between projects and production, so that there could be appropriate adjustment when applying the Lean concept. The initial results from the case study show that there are high potentials in applying Lean tools in project management. The approach has also proved to generate positive results in work productivity and efficiency.

Strengths: The empirical data of this research was collected from professionals in marketing and development fields to ensure the interview responses are close to practice. Moreover, since the interviews were from two different departments (which handles different types of projects), it was easy to compare the results and understand the causes of problems in relation to their relevant context, so that the results will be reflected more accurately.

Limitations: As mentioned in the beginning, due to the limit of time and resources, the concept of Lean in this study focuses mainly on five Lean principles. Besides, since all interviews were from the same company, the characteristics of the interviewees' work would also be affected by the common culture of the company, so that the empirical data of this research is partly dependant on the limitation of the context and cannot provide a broad view of practicing Lean in business. It should also be taken into account that during this study, two project management tools were applied at the same time (Scrum and Kanban) and only Kanban was considered as a practice of the Lean tools. The correlation of these tools on project productivity were not yet analyzed in the study, but it could be assumed that there were mutual effects of these tools that could affect the efficiency of the other one.

Suggestion for future research: Based on the results of this study, it is suggested that to truly understand the relevance of the Lean concepts in Project Management activities, more research needs to be carried. The case study of this research has reflected a very important conclusion that it is not proficient to apply roughly the principles of Lean in solving project management problems. The process requires flexible adjustment for project activities to well adapt the effects of Lean Thinking. Thus, it is important to carry practical applications to identify how the differences in project work would affect the appliance of Lean, and from there it would be more effective to evaluate and adjust Lean concepts in project activities.

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Interview 1

Lean Project Management Interview

No 1. **Hien Le** – Marketing team

Date: **Wednesday 24.03.15**

General:

1. **What is your position at Tuxra? How long have you been in that position?**
 - *UI/UX Designer*
 - *3 years*
2. **What kind of projects are you managing?**
 - *Android Web App development*
 - *Web Development*
3. **Who are your customers? (where the request of your work comes from)**
 - *In-house customers (sales, business development, marketing)*
4. **In your work, who often decide the deadlines and quality of your work?**
Are the deadlines fixed or negotiable?
 - *Direct managers*
 - *Externals customers*
 - *Often we have a long term goal(e.g. a big release) so it's a longterm fixed deadlines. Individuals projects deadlines are more flexible.*

Specify Value:

5. **Do you often receive clear requirements for each project? (How often). If not, how do you figure it out?**
 - *Sometimes yes, sometimes no*
 - *I clarify the request by asking other team members or asking direct managers or sometimes I do research by myself.*
6. **When developing a project, have you ever met the case that you were doing extra task or extra features that your customer didnt want? How often it happens?**
 - *No*

Identify the Value Stream:

7. **Can you describe the process of developing a project?**
 - *Requirements come -> discussion -> brainstorm ideas until have enough details -> start implementing -> review -> delivery*
8. **Does the process repeat the same or they differ from each project?**
 - *Mostly the same*
9. **Do you use or have any tool/model that visualize this process?**
 - *No*

Flow:

10. What kinds of problems that often delay your workflow?

- *Insufficient guidelines, lack of requirements info and support*
- *Sometimes there are problems that managers couldn't help (lack of specialized knowledge=*
- *Time to develop ideas*
- *Impossible deadlines*
- *Ideas are not clear*
- *Lack of resources e.g. stock images*

Pull:**11. Do you start a project when there is a request? Or do you create the project that you think it will be needed?**

- *Both. Personal projects often have lower priorities, lack of time to develop*

12. Which type is more often? Can you explain why?

- *Projects on request takes 80%*

Perfection:**13. How do you evaluate the quality of a project? In what criteria (customer satisfaction, time, budget, resources, etc)**

- *Depends on resources, cost. Projects are delivered in time but sometimes they are over cost.*

14. Do you and your team review the project afterwards?

- *Depends on the type of projects. R&D projects: yes, we collect feedback from users, peer review and from professional views. Marketing projects: no, projects are often delivered without feedback returned.*

15. Do you see your team making improvement after each project?

- *No*

16. What would hinder your team from making improvement?

- *Marketing materials do not receive feedbacks when being delivered to outside. Because of the nature of the work.*
- *Mistakes are not serious, the damages are not critical*

Conclusion**17. Does every member in your team share the same understanding about a project? If not, is it a problem for their work?**

- *Yes*

18. Do you use any tool for managing projects?

- *No. I contact managers only to know the status of work*

Interview 2

Lean Project Management Interview

No 3. **Karolina Mosiadz**- Marketing team

Date: **Thursday 25.03.15**

General:

- 1. What is your position at Tuxra? How long have you been in that position?**
 - *Communication and Marketing Manager*
 - *2,5 years*
- 2. What kind of projects are you managing?**
 - *Design marketing materials, making plan, write content etc*
 - *Communicate to customers*
- 3. Who are your customers? (where the request of your work comes from)**
 - *In-house customers (sales team, business development team, R&D)*
 - *External customers*
- 4. In your work, who often decide the deadlines and quality of your work?**

Are the deadlines fixed or negotiable?

 - *Me and the internal parties*
 - *Externals customers*
 - *Deadlines can be negotiated*

Specify Value:

- 5. Do you often receive clear requirements for each project? (How often). If not, how do you figure it out?**
 - *Usually*
 - *By talking to people (direct talking to internal customers or sending emails to external customers)*
- 6. When developing a project, have you ever met the case that you were doing extra task or extra features that your customer didnt want? How often it happens?**
 - *Sometimes, about 20%.*
 - *I can estimate the additional work that would be good or can be reused in the future.*

Identify the Value Stream:

- 7. Can you describe the process of developing a project?**
 - *Get info -> prepare the first draft -> check with person who is responsible -> continue working on if necessary -> delivery*
- 8. Does the process repeat the same or they differ from each project?**
 - *Usually the same*
- 9. Do you use or have any tool/model that visualize this process?**
 - *Sometimes, either draw or write down*

Flow:**10. What kinds of problems that often delay your workflow?**

- Unclear info from customers
- Priorities distraction, approval waiting time, meetings

Pull:**11. Do you start a project when there is a request? Or do you create the project that you think it will be needed?**

- Often projects comes from demand. Self-initiated projects have to depend on how it fits the schedule (lower priorities).

12. Which type is more often? Can you explain why?

- 50/50. I can anticipate the request. By talking to people from Sale and R&D I know what may come in the future so I can put the tasks on pipeline.

Perfection:**13. How do you evaluate the quality of a project? In what criteria (customer satisfaction, time, budget, resources, etc)**

- It depends on external parties and their requirements. Budget is often not the problem but mainly time and customer satisfaction.

14. Do you and your team review the project afterwards?

- No

15. Do you see your team making improvement after each project?

- Yes

16. What would hinder your team from making improvement?

- Communication
- Request information is not clear
- Extra requirements
- Distraction from external parties, higher priorities request come in

Conclusion**17. Does every member in your team share the same understanding about a project? If not, is it a problem for their work?**

- Mostly yes. It is sometimes a problem.

18. Do you use any tool for managing projects?

- Not really, JIRA is not used by all members of the team
- Have been trying SCRUM meetings for a few weeks

Interview 3

Lean Project Management Interview

No 3. **Sakari Tanskanen** – R&D team

Date: **Friday 26.03.15**

General:

1. What is your position at Tuxra? How long have you been in that position?

- *Software Engineer*
- *1 year*

2. What kind of projects are you managing?

- *Android Streaming library (currently)*

3. Who are your customers? (where the request of your work comes from)

- *Request came from in-house customers, upper level management. Higher demanding request come from external customers and delivered via managers.*

4. In your work, who often decide the deadlines and quality of your work?

Are the deadlines fixed or negotiable?

- *Product Manager and Business Development Manager. The actual deadlines are from customer and go through BDM. Deadlines therefore will be monitored to be review in-house before deliver to external customers (EC). EC often requires strict deadlines.*

Specify Value:

5. Do you often receive clear requirements for each project? (How often). If not, how do you figure it out?

- *Managers and the team try to know exactly what customers want. If not, try to get as much as possible or make quick change during the work (by contact managers).*

6. When developing a project, have you ever met the case that you were doing extra task or extra features that your customer didnt want? How often it happens?

- *Yes. More product features than what customers want. Reasons are because products are developed in house based on customers predictions. Some things would never be used. For in-house customers changes are made quickly since there is close communication in between the team.*

Identify the Value Stream:

7. Can you describe the process of developing a project?

- *Think about the requirements, what customers might need -> create architecture -> plan -> implement -> develop it -> review within the team (peer review) -> (make changes if needed) -> deliver to customer + customer evaluate -> (change if needed, otherwise closed).*

8. Does the process repeat the same or they differ from each project?

- *At a high level the process is the same. In some specific projects, it depends on customer. If the request comes from business customers, changes have to be made.*
- *When the customers are end-users, the team can take the feedback and decide whether they want to implement it or not.*

9. Do you use or have any tool/model that visualize this process?

- *Yes, Confluence and JIRA and documentation.*

Flow:

10. What kinds of problems that often delay your workflow?

- *Urgen tasks with higher priorities come in the middle.*

Pull:

11. Do you start a project when there is a request? Or do you create the project that you think it will be needed?

- *Develop proprietary products are the main tasks.*

12. Which type is more often? Can you explain why?

- *Because of the nature of companies business. Streaming App is a proprietary product that is just introduced to the market.*

Perfection:

13. How do you evaluate the quality of a project? In what criteria (customer satisfaction, time, budget, resources, etc)

- *In big projects, managers decide. The main factor is whether the product can be sold or not.*

14. Do you and your team review the project afterwards?

- *Yes, every week.*

15. Do you see your team making improvement after each project?

- *Yes*

16. What would hinder your team from making improvement?

- *Feedbacks were not clear or helpful enough.*
- *Or the problems are known but the solutions are not yet figured.*

Conclusion

17. Does every member in your team share the same understanding about a project? If not, is it a problem for their work?

- *Yes, everybody gets the big picture, but not know the specific tasks of each other*

18. Do you use any tool for managing projects?

- *JIRA, Confluence, excel sheet, Agile development, SCRUM meetings*
- *Daily updates everyday at 10am.*