



Benefits of utilising Agile Scrum Management in Web Development projects

A case study at Mirum Agency

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<p>Abstract:</p> <p>The purpose of this case study was to explore and discuss the effects that Agile Scrum project management methodology has on different aspects of web development projects. In order to find these advantages and possible disadvantages, qualitative research method was used. With the support of secondary sources, such as academic and literary review, a series of interviews with key employees at Mirum Agency were conducted to answer the research questions. With the focus on different aspects, from primary and secondary research alike, such as profitability, client satisfaction, development team's pleasantness with workflow, it was found that agile scrum approach brings the most advantages, in comparison to disadvantages. Although waterfall project management methodology is still quite popular, scrum begins to be the main methodology for software development projects. However, in comparison to literary sources, primary research brought up a hybrid approach for project management. A wagile, being waterfall and agile, consisting of scrum and Kanban, is one of the most versatile project management methodology to be used. Hybrid approach is the most advantageous when pure applications of project management methodologies lack or start hitting a blocker, it is entirely possible to switch out the necessary tools, in order to find a solution to the problem that a project is currently experiencing. Moreover, no single project management methodology should be used on its own. The best and most beneficial way is to use these methodologies as tools. Tools that can be used specifically as they are required, as per project requirement, on client or vendor side alike. Also, scrum heavy approach used in conjunction with Kanban and waterfall turned out to satisfy the clients the most, leading to increased profitability due to client retention. IT was also the most beneficial for the development team due to clear communication from both sides and possibility to dictate the work estimates. All in all, the use of methodologies as the right tools for the right job is the best approach to get the most value for client and vendor side alike.</p>	
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1 INTRODUCTION

Agile scrum methodology is being used in the majority of web development projects in Mirum Agency's Helsinki office. The methodology has been adopted once the company, previously known as Activeark and Activeark JWT, has started to receive projects with big companies, such as Finnair or Nokia, amongst the few, to work and develop websites as well as marketing campaigns, ranging from commercials to social media campaigns.

In the case of Mirum, agile scrum has brought immense client satisfaction, cut down on development time, improved the financial bottom line, which eventually lead to further expansion, as well as allowed the projects to be more specific and be done within the timeframe given. With scrum it is possible to estimate the time it will take the project to be finished from the beginning, having a few days of testing and quality assurance, client review and possible change requests, all agreed upon before any specific project is started. This ensures that client gets exactly what they want and ensures that Mirum delivers exactly what the client asked for, within the estimated project time.

This case study will explore the options in which adopting the agile scrum methodology in web development projects has improved the work flow, client satisfaction, employee satisfaction and competence as well as Mirum's financial bottom line. This thesis will also list the pros and cons that Mirum Agency has faced when agile scrum has been adopted, as well as the pros and cons of today's workflow within the agency. This analysis will produce sufficient information to gain generally valid knowledge in adopting agile scrum methodology in web development projects.

1.1 Research Questions

This case study will explore one main research question in conjunction with a few sub questions relevant to agile scrum.

- In which ways can a company be affected by adopting agile scrum methodology in web development projects?
 - o What were the effects on financial bottom line?
 - o Has the client satisfaction improved, from the company's perspective, upon completion of projects utilising agile scrum, compared to before?
 - o How do the developers feel about working with agile scrum, is it more beneficial to have development sprints in scrum projects?
 - o What parts of agile scrum could be affecting a company in a negative way and how?

1.2 Aim of the research

The aim of this case study is to explore the changes that have occurred within Mirum Agency upon utilising agile scrum methodology, both positive and negative, on clients, employees, projects themselves as well as the financial bottom line. This thesis will explain the benefits of agile scrum in web development projects on a wider scope as well.

1.3 Methodology

Qualitative research will be used to answer the main research questions and most of the sub questions, with the support of quantitative financial data that shows Mirum Agency's change in profits from before and after agile scrum has been implemented for the majority of development projects.

This qualitative research will be conducted by arranging interviews with employees and management, and especially with people who have been in the company prior to using agile scrum, and during its transition. However, Mirum is constantly expanding and constantly growing in its personnel, so the number of interviews with the people might

be limited, however they have a tremendous amount of experience and have been in the company for long.

1.3.1 Limitations of this case study

Since this case study takes a closer look on a specific company within its specific business, it will provide answers found within its innerworkings. Hence, some, if not all, of the answers might not be applicable to other sort of businesses or companies. Moreover, narrowing it down even further to agile scrum project management methodology in web development projects makes it even more specific to this niche.

1.4 Definitions

This section will explain a couple of key words that have been used throughout this case study in detail, as well as explain what the company in this case study is, its business, target market and the methodology adopted by it.

1.4.1 What is Mirum Agency?

Mirum Agency is a collection of many different digital agencies that have joined together as a one company, globally. It now consists of over 2500 employees and 45 offices in the world. As a digital agency, Mirum ‘blurs the lines between strategy, creativity and technology to discover business and human motivations’ (Mirum, mirumagency.com) in order to empower, create and impact brands and create amazing use experiences. Amongst some of the services are: digital marketing campaigns, social media campaigns, creation of web presence, continuous development and maintenance of current services provided for the companies, search engine optimizations and many other. On a broader scale, Mirum Agency is a part of J. Walter Thompson Worldwide, which is the world's best-known marketing communications brand and has been in business for over 154 years (JWT, jwt.com). JWT is also a part of WPP, a British multinational advertising and public relations company and a world leader in communications services (WPP, wpp.com).

Mirum’s Helsinki office consists of over 140 digital savants, storytellers, technologists, makers and relentlessly curious minds (Mirum, mirumagency.com), and provides digital

services to some of the oldest and biggest Finnish brands, such as Finnair and Nokia, amongst others.

1.4.2 What is agile scrum methodology?

Scrum is a part of agile movement in project management, as agile was a response to the failings of previously used software development methodologies, such as waterfall management (Scrum Methodology, scrummethodology.com). The agile way of working puts emphasis on communication and collaboration between clients and development team, functioning of the software, and especially important flexibility to adapt to new changes and emerging business opportunities within a small timeframe (Scrum Methodology, scrummethodology.com). The idea of scrum is to have a framework due to which people can work productively and creatively to develop and deliver projects and solve complex issues, with the highest possible value (What is Scrum? scrum.org).

Scrum is easy to pick up initially, as it is lightweight, simple to understand, however for a prolonged use, and especially in bigger development projects, difficult to master (What is Scrum? scrum.org). Scrum has three main roles that continuously work with one another: Product Owner, Scrum Master and the Team.

Product Owner is a person with a vision, authority, availability and responsibility, that communicates these values to the other two roles. It is sometimes difficult for product owners to not micro-manage things, so a balance needs to be found (Scrum Methodology, scrummethodology.com).

A Scrum Master is not a manager, nor does he or she manage the team during the development period, called sprint. The Scrum Master removes any impediments, any blockers that the team might encounter, and will encounter throughout the sprint, that would otherwise impact on the delivery date of the given sprint or project. Scrum Master is also an essential role in helping the product owner to maximise the return on investment for the Team (Scrum Methodology, scrummethodology.com).

Team usually consists of a few developers, visual and user experience designers, software engineers, quality assurance analysts, testers and other similar roles. The team usually has the whole control, as well as responsibility, to meet the goals of the sprint agreed upon previously with the Scrum Master and the Project Owner. The team can also continuously give status updates to the Scrum Master and check in for possible

change requests made by the Project Owner, and adjust the sprint accordingly (Scrum Methodology, scrummethodology.com).

1.4.3 What are development sprints in scrum?

In agile scrum, development sprints are a specifically set periods of time in which a specific part needs to be accomplished by the development team, as well as be ready for client review and have the possibility to accommodate change requests, although these usually extend the time estimated for the sprint (Rouse, 2015). Each sprint is started by a sprint planning session, where the development team, scrum master and the project owner get together to discuss the vision and the required specifications to achieve that vision. After discussion and planning, the development team has the right to estimate the realistic time it would take to complete the tasks within the sprint, and a deadline is set. At the end of the sprint, the development team delivers the requested tasks, and upon reviewing and completing the sprint, a new planning meeting is usually set (Rouse, 2015). Sometimes change requests might come during the development sprint, which then might affect the timeframe given for completion of the sprint, so these can be agreed upon in the next sprint, or by extending the end date of the current sprint in which the change request has been made.

1.4.4 What are web development projects?

Web development projects consist of a couple of parts, which combined in the end, provide a fully functioning standalone website, or a specific part to be implemented in an already established website. The creation of a fully functioning standalone website usually takes a couple of months at best, as it consists of initial designs, approvals, change requests, development time, quality assurance, reviews, further change requests et cetera. A smaller scale projects can consist of maintenance work on a website if something has been not functioning as it was designed to be, a couple of changes, additions or removals of certain elements, rebranding of the visuals to enhance and entice new customers for the client, or anything of the sort, which consists of having a web page on the internet.

2 LITERATURE REVIEW

This section will review academic resources and documentation regarding project management methodologies with a focus on development projects. There is a tremendous amount of project management theories to pick out from, even for just development projects, however they vary in a couple of important ways. Hence, benefit and disadvantages will be compared after a brief introduction to each of the relevant project management theories, as well as compared and contrasted with one another.

2.1 Introduction to Project Management Theories within this Case Study

2.1.1 Agile Methodology

Agile methodology was initially adopted in IT projects, which fits within this case study. Its main points consist of using the best processes to get projects done, via empowering development teams, through constant client interaction and the adaptation to changes that affect the project scope and timeline (McDonough, 2015).

2.1.2 Agile Scrum Methodology

Agile scrum methodology is closely related to Agile Methodology, as it even derived its titles from it. Its main differences to agile is the use of software that helps in tracking the progress in an ongoing project, as well as the time it takes for the project to be finished. Agile scrum projects take an average of four weeks, however the time can be shorter or longer, depending on the scope of the project. It is often combined with Kanban practices and lean methodology (VersionOne, accessed 09.09.18).

2.1.3 Kanban Methodology

Kanban provides visual aids for working with projects. It is presented in four columns, called swim lanes, that show the current status of certain elements within a project. It has a to-do lane, in progress, in review or quality assurance, and delivery. It is often used together with scrum, as the two work very similarly and very well closely together.

Moreover, they offer the same sorts of practices and emphasis as agile methodology (Daly, accessed 09.09.18). A visual representation of how a Kanban board could look like is shown in the figure below. It shows a four swim lane type of board with four different statuses for a given task or an issue. These tasks have to move one by one, from left to right, and have a preferable amount of four to five tasks in each swim lane. They can also move backwards, especially from quality assurance to in progress or to do, if a task requires more work to be done.

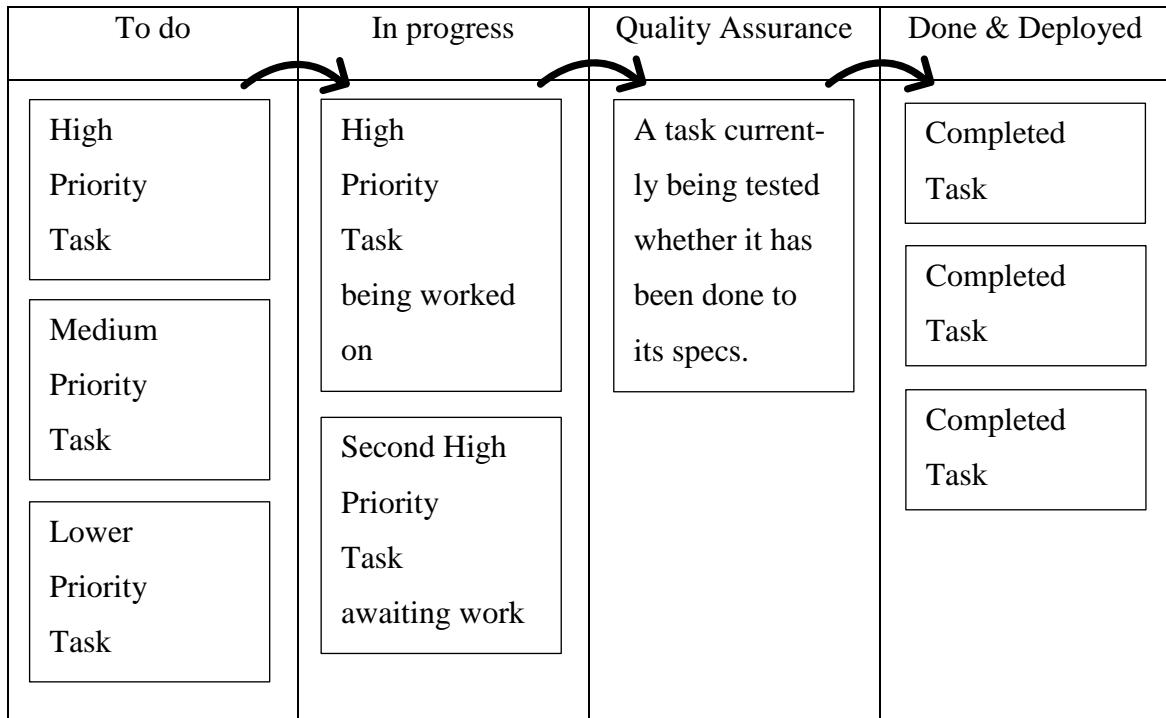


Figure 1, Kanban board example

2.1.4 Lean Methodology

Lean methodology is not new, and its values and principles have been adopted in many different theories. The main idea of lean is to maximize the customer value to gain higher profits. In other words, using less resources to bring more value. The three ‘lean transformations’ include purpose, people and process, always referring to these three values throughout the project timeline (Lean Enterprise Institute, 2018).

2.1.5 Waterfall Methodology

Waterfall methodology has been popular prior to the rise of agile methodology, especially in software engineering. It uses a classical system with a linear approach, where a

given project develops on per phase basis. The phases have to be executed one after another, and have to be finished before starting another phase, as there is no overlapping in work between the phases. Usually projects utilizing Waterfall methodology have seven phases: requirements gathering, analysis read, system design, implementation development, integration and testing of previous phases, development of the actual system, maintenance (The Economic Times, 2018).

2.1.6 Six Sigma Methodology

Six Sigma methodology is heavily dependent on statistical data and analysis. Its main objective is to reduce variance and eliminate issues and problems that a process in any projects creates. It also helps to identify the root causes of any problem with relation to data, and it can then project a positive change and a resolution to this problem. This, however, is a long-term project management methodology, where the team has to document everything on regular basis and keep track of any data that should or could arise. (Munk, 2015).

2.2 Project Time

All development projects have a start and an end date, no matter the type of project nor a project management theory. Every development project goes through a couple of steps before being signed off by the client and released to them by the development company. This section will compare and contrast the benefits and disadvantages of utilizing different project management theories in web development projects.

2.2.1 Project Planning

Agile scrum takes project planning in a slightly different direction than other methodologies. In scrum, each sprint could be considered a project, and have its own review and retrospect at the end. It could, however, contain multiple sprints that are planned together and deliver a product at the end, for instance, a project containing four sprints, such as a technical build sprint, development sprint, quality assurance sprint and finalizing sprint consisting of fixing final issues and deploying or delivering the final product (Sliger, 2011). This particular example, for instance, could be applied for a web devel-

opment project of which the initial sprint is planning and design, and the final outcome is a fully-fledged website.

Waterfall methodology takes on a similar treatment when it comes to project planning. It consists of phases, instead of sprints, and the next phase can only start after the previous phase is completed. This is similar to scrum, as a development sprint occurs after a design sprint, and it depends on design creation to be able to move the project forward. However, in waterfall methodology, unlike in scrum, once a phase is completed, it cannot be adjusted or returned to for change requests. In scrum it is entirely possible to adopt change requests to fit within the next sprint, but that moves the project timeline further, but in waterfall, in order to go back to the previous phase, the project needs to be started over at phase one, as every consecutive phase is reliant and dependant on the entire completion of every prior phase (Lucidchart, 2017). Waterfall methodology is way stricter than scrum, but that is because it was initially created for industrial manufacturing, where change requests might have massive impacts on the final product initially agreed upon. Due to this, the project has to be planned perfectly and everyone involved must be aware of any possible blockers, issues or requirements, otherwise the final product might be defective (Lucidchart, 2017).

Kanban project management is very often used within scrum and sprint planning, as it is also an agile way of working. Kanban utilizes a grid format with a varied set of columns, called swim lanes. Smaller projects can have two or three columns, whereas bigger projects more. Swim lanes then have tasks put on them, and the current status of a task is dependant on its swim lane as well as the position within that swim lane. Kanban is always read from left to right, with the left column consisting of tasks that have yet to be started, and the last column of tasks that have been completed. Moreover, no one should have more than five tasks in progress, as it helps to remove bad type of multi-tasking and helps people stay focused on particular tasks (Borrell, 2018). For instance, there could be five swim lanes in a web development project that utilizes scrum as well, such as: to do, in progress, in quality assurance review, in post quality assurance fix and ready to be deployed to production environment. This example of a five-swim lane Kanban can be utilized in a development sprint in scrum. Each task on any swim lane has an estimated time it takes to complete the task, the time remaining and the actual time taken to have the task completed. In practice, a task should take at least the recommended amount of time as per initial estimation, but it might take more, depending

on any issues that might arise during the progress. Kanban also uses a function of backlog, tasks that have to be done, but do not have the highest priority right now, or issues that have to be eventually fixed. This helps tremendously in scrum, as it is easy to see which tasks could be fit within a specific sprint, that might not be of the highest priority, but time can allow for it to be finished then.

Lean project management is different than the others mentioned so far. The main goal of lean management is to reduce wastage and increase output, which is why this methodology is widely used in manufacturing. The lower the waste and higher value provided, the better. This methodology is, however, not entirely applicable to web development projects, as they are usually more complex than continuous projects in manufacturing, however several aspects of lean can be seen in agile as well (LeanKit, 2017). For instance, in scrum, a design sprint can consist of multiple smaller designs and templates that, when put together, create a well put and well looking element that can be published for a page. This then helps in designing further modules and elements, as that particular element can be put in many different templates, which also helps in keeping the design and branding elements consistent. This, in turn, also helps the development team tremendously, as the elements have to be built only once, and then reused multiple times, hence less work is required but a higher value is provided, which cuts down on project planning, knowing that all required elements can be prebuilt, and only then put together in a shorter timeframe.

Six Sigma methodology is closely related to lean, as it incorporates similar values. Its main objective is to cut down on waste and increase the final value and offering to the clients. It also focuses on client requirements, the understanding of them and hence in better delivery. It helps a lot in planning projects in this methodology, as everything is planned correctly to client's needs, however there is little to no possibility of a change request happening. It is a fairly strict management with no blockers and smooth workflow, however it is not applicable in web development projects too widely (Anbari, F. T., 2002). If a fully-fledged web project takes roughly a year, for a big corporation, a lot of things can happen within these twelve months that the client might not have the need for anymore, and with the project planned according to Six Sigma, there can be no changes, as it would break the entire cycle that has been planned in the onset, and so the client would get certain elements and features that are, by the time the project releases, outdated and old.

2.2.2 Design & Development Time

Design and development time required for web development projects have differences between the discussed project management methodologies here. For instance, in scrum, design sprint has to be run before development sprint in its majority, so that the development team has the required visual input to build the elements programmatically correctly and to the client's requests. However, unlike Waterfall or Six Sigma, design changes and change requests can still happen even in the later sprints of the project. This usually extends the development sprint time or adds an additional sprint that incorporates these change requests into the final product. It is also usually adding more costs to the project for the client. In Waterfall especially, time allocated for designing everything that was agreed upon has to be done entirely within that specific timeframe. This does not make it flexible, and the costs usually stay the same as they have been agreed upon initially. This also means that the time for both, design and development, are strict and have to be finished within the specific timeframe. If it is not, the entire project gets delayed, as consecutive phases get pushed further and further in the days, which does not bode well for the project as a whole.

Kanban, on the other hand, is widely used with scrum sprints, and it helps with prioritization, time estimates and focus for the teams responsible in delivering their own parts. With the multiple swim lane system, it is possible to estimate how long a particular element, or the entire sprint, is going to take, or how much time a particular module is going to take within a development sprint. On its own, Kanban can also accomplish this for smaller tasks, such as keeping support and maintenance for an already established website, and it helps a lot with client satisfaction and post-launch changes. These smaller support or maintenance tasks could have their own particular development time estimates that can incorporate a smaller Kanban with fewer swim lanes.

For Lean and Six Sigma, the time given for design and development have to also be pre-established like in Waterfall, however they also aim to reduce the wastage, hence only the required elements get created. This can potentially lead to issues, as some functionality might have been overlooked in designs, but is now required, and would hence require a new project to be set for that particular feature. This is usually also why Lean, or Six Sigma, are not that common for web development projects, where the overall scope of the project is best left to be flexible and adjustable in order to minimize the risk as it occurs.

2.2.3 Quality Assurance

Quality assurance is run differently within these project methodologies, as some have it only at one point, whereas others have them at specific intervals. In scrum, quality assurance can occur in two different methods, a specific quality assurance sprint, or a quality assurance team that checks everything as it's made on sprint by sprint basis. In the first case, a quality assurance sprint is run after the majority of the work is done in a development sprint, where the team compares everything to the designs, both visually and functionality wise. The other method consists of having a quality assurance team work alongside the development team, where after completion of a particular module or template, the quality assurance team checks it for issues, inconsistencies and bug, and lets the development team know, as it is still fresh after its creation and hence easy to adjust or fix, instead of retracing the steps from previously built elements.

In waterfall, there often is a specific phase assigned to quality assurance, and it is usually run after the development phase. This allows the quality assurance team to review the product completely and without undeveloped elements. If any issues or bugs arise throughout the testing phases, they are noted down throughout this entire phase, and at its end are usually handed back to the development team to run its next waterfall phase after the quality assurance, to fix the remaining issues that have occurred and been found. It is possible for a client to repeat the quality assurance phase more often or even after the product comes back from implementing resolutions to the bugs and run another quality assurance phase with yet another development phase to fix the last parts of bugs. This, of course, has to be decided before the project begins, as it is with waterfall (QA Testlab, 2018).

2.3 Client Satisfaction

Satisfying clients with a well-developed product goes a long way for a company to keep good relations and possibility of future projects with them. There can be a plethora of ways to make sure that client is satisfied with a product, and it can be achieved and strengthened throughout the entire project. Different project management methodologies offer different ways to ensure that client is satisfied with the results, and this section will explore the different ways the mentioned project management methodologies achieve that.

Agile scrum is very popular with development projects, especially technology related, whether it be software or website. This means that the majority of the clients that request a new product in this category expect the people or a digital agency to work within scrum and stay in touch with them throughout the process, as scrum often does. Such expectation from the clients bodes well if the other party does utilize scrum, and it usually brings a high client satisfaction and the willingness to continue working with the agency or company. However, a research by four individuals at Federal University of Pernambuco in Brazil have conducted an empirical study, in which they took a sample of 19 real life software projects that involved 156 developers, to analyse the impact of adopting scrum and the client satisfaction it provides. Contrary to general claims by strong scrum supporters, these researchers were unable to establish or present any evidence that scrum is helping in achieving higher customer satisfaction or increase success in software projects (Cartaxo, Bruno & Araujo, Allan & Sá Barreto, Antônio & Soares, Sergio, 2013). On the other hand, a different research conducted by Donald L Buresh in 2008 regarding agile methodologies argues that customer satisfaction is the outcome of an emotional process that the client goes through throughout the entire project cycle (Buresh, 2008), in which scrum definitely takes a huge part in, as the client is very highly engaged with the provider. Buresh also brings out the point that the cost of the overall project also plays a huge role in increasing customer satisfaction (Buresh, 2008).

Waterfall methodology, on the other hand tackles the project cycle a bit differently than scrum, and it affects client satisfaction differently. Knowing that in waterfall there is one continuous and not interruptible project cycle, the client knows exactly what he or she paid for, and the price stays the same. Depending on the length of the project, this might have either positive or negative effects on the client satisfaction, as with a longer project, there might have been changes that have been thought of afterwards for the project but cannot be introduced anymore, resulting in a client receiving features that are behind or outdated in comparison to new technological developments, which in turn reduces the satisfaction. That is by no means the cause of the agency of the client, but rather the project management methodology which the two agreed upon for a particular project. However, according to Christine (2016) waterfall methodology has the tendency to get projects done faster, which has a positive impact on the client. They can then decide to run another project within waterfall for any possible change requests they

might have had during the project cycle. On the other hand, McCormick (2012) argues that even though client gets exactly what he or she is paying for, the end product is often inferior to the products developed using scrum, as in scrum both, the customer and the provider have transparency, possibilities to introduce changes and room for future improvements and developments, especially in technology fields.

When it comes to client satisfaction, there is one project management methodology that focuses primarily on that aspect, lean methodology. In lean, every step and every process is thought of previously whether it brings a high value for the client whilst reducing wasteful activities. It is not all that well known in the software development projects, however it might be useful for SaaS projects (Software as a Service) with a continuous workflow with the client, where every action brings value to the client. In a perfect delivery, lean is the best methodology if a business focuses on client satisfaction (McArdle, 2017), however it is not always possible to do that. Although the business might be client oriented first, this might not provide them with a higher client satisfaction, even if they incorporate lean, as trying to please the client throughout the entirety of the project might extend the project cycle continuously, stretching the costs, development time, as well as client expectations. A poor execution might also lead to a loss of a client, if a project is taking too long to accomplish since things are constantly being changed and done from scratch, especially in web development.

3 RESEARCH

The primary research conducted was an open-ended interview with eight leading questions, however it was not strictly followed, as the wide variety of information was needed in order to answer the research questions. A total of nine people were interviewed in Mirum Helsinki office, ranging from web developers, service design, project managers and an account director, who also worked as an agile coach and teacher. Every one of the nine interviewees had over five years of experience in their related field, working across multitude of project management methodologies, mainly waterfall and agile scrum, on both, the client and the vendor side. The insights shared were many and in good quality, however the names and the names of the clients that the projects have been worked on with are anonymised for this part of the thesis. Also, the most prevalent parts and similarities discussed with the interviewees are mentioned in this section.

Moreover, the majority has worked with waterfall that has turned into agile scrum, and scrum that has turned into waterfall, and there was only one case of working with lean methodology mixed with agile scrum, called the lean scrum methodology, which is quite difficult to handle, but can exist and be efficient under certain circumstances (Account Director, 05.11.18).

3.1 Methodologies pleasant to work with

When comparing scrum with waterfall, there was a major pull towards agile scrum as the preferred and the more pleasant methodology to work with. From knowing what other team members are doing due to the daily scrum meetings to hosting sprint and project retrospect with and without the client, and the overall workflow just seemed to resonate with everyone almost the same. There was also a remark about a properly executed lean scrum methodology where a project ran extremely smoothly, and everyone was satisfied, the team and the client, at the same level, and it brought a lot of pleasant-ries with it for future projects with that client. Lean agile, however, is difficult to maintain, as there needs to be a lot of trust in between the team members, as well as equally strong trust between the vendor and the client (Account Director, 05.11.18). Moreover, the communication has to be ever flowing and ever present, so that no party involved is surprised if anything unexpected happens. That trust is sometimes difficult to come by, that is why a lean scrum methodology should be used very rarely and with a client that

knows the vendor very well and preferably has worked on previous projects, hence it is not the most popular methodology within Mirum.

Although everyone prefers to work with scrum, as it is the most rewarding and the most pleasant methodology to work with, according to the interviewees, a pure scrum method was not entirely preferred (Senior Project Manager & Operations Developer, 02.11.18). It was discussed that a pure scrum can, in reality, have negative impacts, and a by the book running of scrum in a project can yield diminishing returns and hurt the project timeline, as well as costs (Digital Strategist & Program Manager, 02.11.18). Hence, a few interviewees, especially the account director and a senior project manager discussed that scrum should be used as a tool, alongside other tools, such as other methodologies. A hybrid approach of the best practices is what Mirum tends to adopt, however it is also a very good approach. Taking the best practices of waterfall and the best practices of scrum at a crucial part of the project can have a tremendous difference. These best practices and elements from different methodologies can also vary per sprint or per phase, and used primarily as a tool, a tool which can have many great applications, but is not necessarily suited for everything. No single tool can achieve what many different tools can, within the project, if applied correctly and taken the right elements from them. If a workflow like that exists, that becomes smooth, flexible and really satisfying and pleasant to work with (Account Director & Senior Project Manager, 05.11.18).

Another approach that was mentioned relates closely to the previous point of using methodologies as tools and picking the right one for the right situation where it can shine. A wagile approach was mentioned, a hybrid of waterfall and agile methodologies, primarily scrum and Kanban. With wagile it is possible to nit-pick the correct and proper elements of the involved methodologies and adjust to the current situation of the projects, and if it is applied correctly, the process and workflow becomes smooth and easy to work with (Senior Project Manager & Operations Developer, 02.11.18). There were also instances mentioned of switching between scrum and waterfall as the project was in motion, however it is more difficult to switch to agile from waterfall, than to waterfall from agile, according to a lead project manager. These situations can actually become problematic more so than just being unpleasant to work with, if handled poorly (Head of Project Management, 06.11.18).

3.2 Client Satisfaction at Mirum

Generally, the interviewees highlighted that a scrum heavy approach caused the clients to be more satisfied with the project workflow than waterfall or any other. As the client has entire visibility of the project, has a dedicated product owner that conveys the messages between the vendor and the stakeholders on the client side, as well as takes parts in daily scrums, retrospect and other scrum related activities, the satisfaction is generally higher (Senior Service Designer 01.11.18 & Culture and Talent Lead, 05.11.18). In that one instance of a properly run lean agile project the satisfaction has exceeded even the scrum heavy approach, but that is quite a unique case with the client and the vendor, but with the project running as well and as smoothly as it can, the outcome was the best (Account Director, 05.11.18).

However, there have been instances where a client is not so entirely satisfied with either projects' outcomes, the workflow or the overall actions that the vendor does. There was a case from a different vendor, when one of the interviewees worked on the client side, where the team worked with a pure scrum methodology, by the book approach, however not many things were getting done on time. This has caused the client, in this case this interviewee's company, a lot of frustration and dissatisfaction with the vendor. The features that were discussed for sprints were not done on time or within the sprint, and not a lot of was ever showed during the sprint reviews, and hence the product owner, the interviewee in this case, has decided to change the people that the vendor was utilizing for this project. Shortly after the change, the project was renewed, and everything went according to plan (Head of Project Management, 06.11.18). Not pointing fingers at anyone, but the interviewee, product owner at that moment, has mentioned that their side, the client's side, was glad to have reached out to the vendor and managed to get a different team to work for them, instead of the team that was initially assigned.

Moreover, there was also a case where the client did not have a properly dedicated product owner on their side, and many different stakeholders were the points of contact for the team, which made things chaotic for the team and the scrum master in particular. With information coming from roughly six different stakeholders on the client's side, with everyone's priorities higher than the next one's, according to each of their own, not a whole lot was being done, as the latest stakeholder's words were the current priority, unless the next one shouted. This, of course, brought the satisfaction considerably low,

but it was not the fault on the vendor side. The client did not have a proper product owner that would funnel the correct and filtered information onto the team so that they can work on with a clear goal in mind (Senior Web Developer, 02.11.18). Moreover, the communication was not the greatest, as these different stakeholders did not communicate well enough between themselves, and definitely not enough to the vendor. This was eventually resolved, and the client became happier and more satisfied once they have decided to hire a dedicated product owner that kept the communication open, as well as funnelled the proper instructions and the requests from the client side to the team's scrum master, and hence the vendor as a whole. All in all, the better and clearer the communication, the higher the client satisfaction all across the project, company and overall healthy relationship between the client and the vendor side (Senior Project Manager, 05.11.18).

Moreover, there are a few cases where an agile scrum project has to suddenly switch to waterfall, when a strict deadline is set, which is unheard of in scrum. The project then becomes a wagile project, or a pure waterfall, where everything is set and has to be delivered on the date. This can cause a lot of confusion on the side of the vendor, however it is also up to the product owner on the client side to explain that since the deadline cannot move any more, and the end date is set for the project to go live, some of the features might have to be put in the post-launch project, as there is simply no time. Once that gets agreed upon, the client satisfaction is generally good, although it might not be the same on the vendor side (Digital Strategist & Program Manager, 02.11.18).

3.3 Profitability

As far as profitability goes, it generally coincides together with client retention. As with the previous point about client satisfaction, a happy client tends to come back and purchase again, only in this case, the product is a project. Scrum, or using scrum as a tool, or a wagile approach, according to the interviewees, tends to bring in more profits for the vendor. If sprints get extended due to unforeseen features being required beforehand, the client has to accept the adjustment of the sprint and generally pay more in the end, if the given feature was not initially discussed. If the same scenario is put within a pure waterfall, this feature would have to go in a post-launch of the project part and would not be initially as a part of the launch on the given date (Senior Project Manager

& Operations Developer, 02.11.18). Moreover, if a discussed element of the project does not get done in time, using waterfall, it usually goes into an unbillable type of work for the vendor, where the developers work overtime, but do not bring profits for the company. The individuals themselves, of course, do get paid by the vendor, but the vendor does not bring in any more out of the client for this type of work, hence losing profitability. If this trend occurs, as it has in the past, the team does not bring in enough and some changes generally have to be applied to the team and make it profitable again. One of these changes could be adopting scrum elements into the workflow, causing it to become a wagile approach, where time is flexible and project time can be extended (Lead Developer, 02.11.18).

3.4 Work Estimates

Work estimation related closely to the previous point about profitability. This was one of the questions asked in the interviews, how projects can be affected by wrong estimates in scrum. This was an easy answer from all of the interviewees, as, in scrum, the project time can be adjusted, the sprint time can be adjusted, everything is flexible. As long as there is a proper communication between the scrum master and the product owner to the stakeholders on the client side, things can be done with a little bit of a delay (Lead Developer, 02.11.18). Such is the innerworkings of agile methodology. However, the issues arises when a client is used to a waterfall type of work from the vendor side, or a wagile approach with a strict deadline. This can cause the team to have to work outside of the billable hours and bring profitability down, all because some features might have been estimated poorly. A lead developer working on a project, while having an oversight on other projects, has highlighted that even someone with more than ten years of experience in web development can overestimate a feature, and cause the project to have to adapt or work during non-billable hours. Things happen, things that are sometimes impossible to predict that cause a blocker or a slowdown, and hence working with agile methodology, and especially scrum, is the best for dealing with issues of estimates (Lead Developer, 02.11.18).

3.5 Applications of Scrum and other methodologies

As mentioned earlier, according to an account director, a person who has worked on the client and vendor side, as a project manager, product owner, scrum master and developer, as well as a teaching the scrum methodology in various courses, scrum, as well as other methodologies, should be used as tools. They are nothing more, nothing less, they do not define elements entirely, they are preferably never to be used as pure something. Pure scrum, while having advantages, has an equal number of disadvantages, even more so if the scrum master is faulty and makes mistakes, or is not as experienced. Tools, best practices, best teachings from each of the methodologies to be applied properly in a given situation (Account Director, 05.11.18). Sometimes the strict deadline is the only way because it is tied to another product launch, hence a waterfall is adopted, however within a larger timeframe, it is entirely possible to have the conversation open between the client and the vendor and work agile-like and scrum (Digital Strategist & Program Manager, 02.11.18). Then if many change requests happen, the vendor side can expand, bring in more developers to work on the additional elements, bring in more quality assurance people to test the quality before the strict deadline launch. This, in turn, has to be properly communicated with the client and the client has to cover these extra resources, or these features will not be done in time. Everything is extremely reliant on communication, no matter the methodology. If it is poor, the product will not be of the highest quality, client will not be satisfied and might not come back to the same vendor for any new projects. The case of that properly run lean agile methodology was extremely reliant on trustworthiness and constant communication of the client as well as the vendor, and it yielded immense satisfaction to both of the parties. The client was happy to continue working with the vendor, and does to this day still, although in a more wagile approach, but with the same trust and communication (Head of Project Management, 06.11.18).

3.6 Negative impacts of scrum

As with everything, there can be negative sides that impact the client and vendor similarly. There were a few remarks from the interviewees about the negatives of scrum, however mostly everyone just praised it and the highlights it brings, especially a well-run scrum project. Hence, it is immediately seen that a scrum project that is not a well-

run project is an issue by itself. Whether the client has many points of contact and not a dedicated product owner, or the vendor has inexperienced team, a scrum master or project manager, the issues that arise can have hefty negative impacts. The ones that were rather prevalent across the answers from the interviews were the costs, as well as a possibility of losing a client (Digital Strategist & Program Manager, 02.11.18).

3.6.1 Costs

Scrum is usually cost efficient and works well for both client and vendor, but that is with majority of the projects. Some projects, however, can be problematic due to issues on either side, and the product owner's or scrum master's inability to resolve these problems due to other reasons. This often causes the costs to either rank up pretty high, if features get pushed constantly and sprint reviews are empty when the vendor side has nothing to show, and the client then having to dish out additional payments to cover for the additional time required or drop other features in order to get things done and moving. These types issues are usually quite difficult to resolve, and their resolution quite often is also costly, but can improve for the future workings with the client and the vendor (Account Director, 05.11.18). Moreover, if a project is not well defined, and scrum is the only way to go, but then a client requests changes and needs the project to be done by set date, the team might have to expand and bring in extra resources, extra people, spend the time and costs to introduce them to the project, something a client might not be aware of or might not want to pay for. This then becomes sort of non-billable work, hence bringing the negative aspect of scrum wide open. This, of course, does not happen often, only under certain circumstances (Senior Project Manager & Operations Developer, 02.11.18).

3.6.2 Losing a client

The topic of losing a client was brought up, whether a poorly executed scrum project could cause such a tremendous impact that the client decides to look elsewhere for other, new projects, or finish the current one. Although such cases are extremely rare, it is possible, it causes the client to have to put out a lot more money, however, and break all ties with the current vendor. According to the interviewees, no such action was taken by the client anywhere, even across different companies, but one case was quite close to

losing a client. This interviewee has worked as a product owner at a different company, and the vendor they have had was constantly not up to their standards and had nothing to show, sprint after sprint. Instead of dropping the vendor as a client, the product owner reached out to the managing partners and stakeholders of the vendor company and requested some things to change, such as the entire team that worked on the project for them, as the results were not satisfactory. They were close to dropping them as a client and look elsewhere, but the vendor has decided to switch the team out for a more experienced one, and no further problems of the same magnitude have ever arisen again (Account Director, 05.11.18).

The interviewees strongly argued that a poorly executed scrum project is not usually the only reason that the client decides to drop out, there have to be other reasons along with them. Whether it be bad blood between the companies, or other, major reasons (Head of Project Management, 06.11.18).

4 CONCLUSION

According to the research conducted at Mirum Agency and the information obtained from secondary sources, adopting agile scrum for project management brings a tremendous amount of advantages for a company. The teams working with scrum have been pleasantly surprised by how better they feel amongst themselves and within the team and working with the projects in a flexible way. The openness and clarity of communication brings benefits on its own to the team, making people in the team a cohesive unit and hence work better together, at least in the case of Mirum.

When it comes to the financial bottom line, the client retention and client satisfaction play a huge role. Overall, with scrum, the client satisfaction is much higher, especially even more so with a dedicated product owner on the client's side. Also, the flexible project time adds up very well for the vendor side, as the client has to pay slightly more for certain additional features, without compromising the overall quality of the originally purchased project. However, the best of the project methodologies for increasing financial bottom line would have to be hybrid methods of project management, a wagile method or using the best practices of different methodologies for particular parts of the project, where the best of the best can be applied. These can then be priced accordingly to the way the features have been created, and with the scrum project and higher client satisfaction, the client usually comes back and hence ensures the future projects and steady flow of profits. Even though scrum can have negative impacts on the company, the poorly run scrum project is not usually the only reason as to why the negatives have an impact, and should not be seen as a major disadvantage in running scrum, besides, other methodologies also have plenty of disadvantages, as with everything.

All in all, agile scrum, wagile or a hybrid method of project management with a huge influence of scrum is one of the most beneficial and most rewarding methodologies to be used within web development projects, from the onset to the finalization.

5 REFERENCES

5.1 Literature Sources:

Anbari, Frank T., Six sigma method and its applications in project management. Paper presented at Project Management Institute Annual Seminars & Symposium, San Antonio, TX. Newtown Square, PA: Project Management Institute, 2002,

<https://www.pmi.org/learning/library/six-sigma-method-applications-pm-8515> Accessed 07.10.18

Borrell, Monica, article, website, 07.08.2018, <https://www.thebalancecareers.com/how-does-kanban-in-project-management-work-2779575> Accessed 07.10.18

Burseh, Donald L., Customer Satisfaction and Agile Methods, an article which is part of the IEEE Reliability Society 2008 Annual Technology Report, 2008,

<https://pdfs.semanticscholar.org/5347/cf49af4dd491ba591c0453a488288e3a0baa.pdf>

Accessed 21.10.18

Cartaxo, Bruno & Araujo, Allan & Sá Barreto, Antônio & Soares, Sergio. (2013). The Impact of Scrum on Customer Satisfaction: An Empirical Study. Proceedings - 2013 27th Brazilian Symposium on Software Engineering, SBES 2013. 129-136.

10.1109/SBES.2013.10,

https://www.researchgate.net/publication/271430457_The_Impact_of_Scrum_on_Customer_Satisfaction_An_Empirical_Study Accessed 21.10.18

Christine, article, website, Which Is Better for Client Satisfaction: Waterfall or Agile Development?, 2016, <http://smarterware.org/2016/10/better-client-satisfaction-waterfall-agile-development/>

Accessed 21.10.18

Daly, Laura, Agile guru, website, <https://www.atlassian.com/agile/kanban/kanplan> Accessed: 09.09.18

James Walter Thompson, website, <https://www.jwt.com/en/>, Accessed: 02.09.18

James, Michael, Agile coach and Certified Scrum Trainer,

2017 <http://scrummethodology.com/>, Accessed: 02.09.

Lean Enterprise Institute, website, <https://www.lean.org/WhatsLean/> Accessed:

09.09.18

Leankit, website, 2017, <https://leankit.com/learn/lean/agile-and-lean-project-management/> Accessed 07.10.18

Lucidchart, website, 23.08.2017, <https://www.lucidchart.com/blog/waterfall-project-management-methodology> Accessed 07.10.18

McArdle, Collin, How the 5 Lean manufacturing principles promote customer satisfaction, 18.10.2017, <https://www.kaizenkulture.com/blog/how-the-5-lean-manufacturing-principles-promote-customer-satisfaction> Accessed 21.10.18

McCormick, Mike, MPCS, Inc. Revised Edition 08.09.2012
http://www.mccormickpcs.com/images/Waterfall_vs_Agile_Methodology.pdf Accessed 21.10.18

Mirum Agency, website, <https://www.mirumagency.com/en/home>, Accessed: 02.09.18

Munk, Jared, article, 2015, <https://www.sixsigmadaily.com/the-difference-between-six-sigma-and-project-management/> Accessed: 16.09.18

QATestLab, QA Activities in Waterfall Process, website, 08.08.2018,
<http://qatestlab.com/resources/knowledge-center/waterfall-process/> Accessed 21.10.18

Radigan, Dan, Agile evangelist & coach, website,
<https://www.atlassian.com/agile/kanban>, Accessed: 09.09.18

Rouse, Margaret, 2015, website,
<https://searchsoftwarequality.techtarget.com/definition/Scrum-sprint> Accessed: 02.09.18

Scheid, Jean, website, 2010, <https://www.brighthubpm.com/methods-strategies/67087-project-management-methodologies-how-do-they-compare/> Accessed: 09.09.18

Scrum.org, website, <https://www.scrum.org/resources/what-is-scrum> Accessed: 02.09.18

Sliger, Michelle, Agile project management with Scrum. Paper presented at PMI® Global Congress 2011—North America, Dallas, TX. Newtown Square, PA: Project Management Institute, 2011, <https://www.pmi.org/learning/library/agile-project-management-scrum-6269> Accessed 30.09.18

Temeschinko, Thomas, Scrum - Methodology for cost estimation, academic article, website, 29.05.2012, <https://www.axxessio.com/en/blog-en/blog-scrum-aufwandsschaetzung> Accessed 28.10.18

The Economic Times, website,

<https://economictimes.indiatimes.com/definition/waterfall-model> Accessed 16.09.18

VersionOne, website, <https://www.versionone.com/agile-101/what-is-scrum/> Accessed:
09.09.18

WPP, website, <https://www.wpp.com>, Accessed: 02.09.18

5.2 List of Interviewees:

Senior Service Designer at Mirum Agency, interviewed on 01.11.18

Lead Developer at Mirum Agency, interviewed on 02.11.18

Digital Strategist & Program Manager at Mirum Agency, interviewed on 02.11.18

Senior Web Developer at Mirum Agency, interviewed on 02.11.18

Senior Project Manager & Operations Developer at Mirum Agency, interviewed on
02.11.18

Account Director for the DST (Digital Services & Transformation) Team at Mirum
Agency, interviewed on 05.11.18

Senior Project Manager at Mirum Agency, interviewed on 05.11.18

Culture and Talent Lead at Mirum Agency, interviewed on 05.11.18

Head of Project Management at Mirum Agency, interviewed on 06.11.18

APPENDICES

List of questions used for the interviews, used as a guideline to stay relevant to the topic, mainly aimed at project managers, between 20 and 30 minutes.

1. How many years have you been a PM (Project Manager), which methodologies have you worked with, and for how long (rough estimates)?

2. Which of the methodologies you have worked with have been the most pleasant to work with? Why? / Why not?

3. When working with Scrum, have you noticed if client satisfaction has been better than working with other methodologies, i.e. Waterfall?

4. How about profitability? Has a higher profit margin been achieved on per project basis with the use of scrum, or not?

5. By working with scrum, you give developers a sense of freedom when it comes to estimating the time it takes for a project or a feature to be done. Can this sometimes cause a different profit estimation?

6. How about other aspects of working with scrum, could they have a negative impact on the company, financially or otherwise? How?

7. Working with scrum can sometimes lead to projects taking longer than originally estimated due to change requests. Could this, potentially, lead to a loss of client, and hence have a major negative impact on the company?

8. With all things considered, do you think that working with X (methodology they have worked with aside of scrum) methodology is better, or not, than working with scrum? Why? / Why not?
