INNOVATIVE WAYS OF ACCOMPLISHING ORGANIZATIONAL CHANGE VIA LARGE-SCALE SCRUM

Ing. Tatiana Lekýrová
Masarykův ústav vyšších studií ČVUT v Praze
tatianalekyrova@gmail.com

Abstract:
The pandemic has disrupted the status quo companies around the world operated in before. The effective lever to achieve quick responsiveness to change and strategic advantage is the agile mindset based on pillars such as lean thinking, transparency, and empiricism. The problem of acquiring a selected agile framework to scaled contexts and its impact on one software organization lies at the core of this study. The study provides a strategy proposal based on a qualitative assessment of the situation to the researched firm. All the phases of qualitative assessment, including data gathering, were conducted virtually. An in-depth analysis of the data sources results in a SWOT matrix, which serves as a base for strategic planning. The strategy proposal synthetized strengths and weaknesses used in the scaled agile adoption. The study brings new innovative approaches from the fully virtual environment to agile practitioners and academia.

Introduction

The COVID-19 pandemic has affected businesses around the world. All the parts of organizations were impacted. From having to come up with new business models, to adjust their way of working and shift their operations and development to the online environment. Uncertainty and unpredictability became the new status quo. Individuals as well as companies had to undergo rapid change in their mindsets.

The psychological processes individuals experience under transition periods can be described by psychodynamic models of change, such as the Kubler-Ross model (Cameron & Green, 2019). Individuals go through stages of denial, anger, bargaining, depression, until they reach the acceptance stage, and are open to exploration and experimentation under the new conditions in the acceptance stage (Cameron & Green, 2019). Companies have been correspondingly subjected to similar processes in these uncertain times.

What can help businesses cope with change is agility. The word *agile* originates from Japanese and describes the ability to adaptively respond to one's circumstances. Agility can thus be beneficial to organizations. There are multiple frameworks how to scale agility to large company contexts (Digital.ai, 2021), such as the Spotify model, Scrum of Scrums, The Scaled Agile Framework (SAFe), and Large-Scale Scrum (LeSS).

The aim of this study was to analyze the Large-Scale Scrum adoption within one software company and provide the organization with a strategy proposal. To fulfill the research objective, the author chose the methodology based on the three sources of data, including semi-structured interviews, observations, and group of artifacts. The dataset was interpreted

using thematic analysis. The author then compiled the data into SWOT analysis, which served as a base for the generation of strategy variants.

The following chapters provide an introduction to strategic management process and a theory of Large-Scale Scrum compared with the other scaling frameworks. Furthermore, a large-scale agile adoption from one software company is described. Qualitative study from this company follows and concludes with a strategy proposal outlining several alternatives which the researched company may consider.

1 Theoretical Background

1.1 Strategic Management Process

Strategy helps companies gain competitive advantage over their competitors. Strategic management process describes sequenced activities that aid create and fulfill the strategy of an organization (Barney & Hesterly, 2010). The following scheme can be used to describe the steps of the strategic management process, as depicted in Figure 1.

The process starts with defining the mission of the firm and specifies why the organization exists. The second step consists of describing the objectives the company needs to realize to fulfill its mission. Objectives should adhere to the definition of SMARTER (specific, measurable, attainable, realistic, time-bound, ethical, and resourced) (Fotr et al., 2012). Once the objectives are defined, external and internal analysis of the firm's environment takes place. A typical tool in this step is the SWOT analysis, which can be written in the form of a matrix, where each quadrant illustrates one characteristic of a firm's environs. The acronym stands for strengths, weaknesses, opportunities, and threats (Fotr et al., 2012).

Figure 1: *Strategic management process*
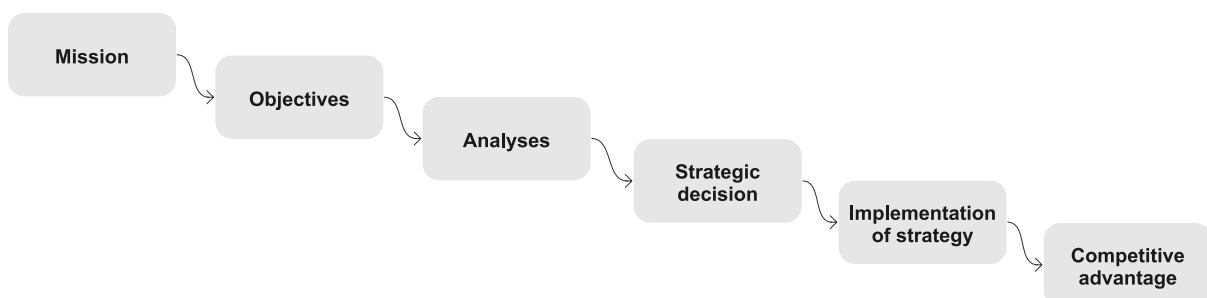
Source: adapted from Barney and Hesterly (2010) by the author

After the SWOT analysis, the process follows with strategic choice. The organization considers the strategy alternatives and selects the most suitable one aligned with its mission and objectives. One of the tools to produce strategy variants is the TOWS matrix. TOWS (threats, opportunities, weaknesses, strengths) takes the input from SWOT and transforms it into four strategy alternatives (Fotr et al., 2012): SO, which uses strengths in combination with opportunities, WO eliminates shortcomings to exploit opportunities, ST uses the firm's strengths to exclude threats, and WT which aims to reduce both weaknesses and potential threats the firm may encounter.

Once the alternative is decided, the company starts with implementation of strategy. Upon the completion of implementation, more economic value is gained, and strategy advantage is achieved (Barney & Hesterly, 2010).

1.2 Frameworks for Scaling Agile

The agile movement has its roots in the Manifesto for Agile Software Development which originated at the beginning of this century (Beck et al., 2001). The agile values promote interactions and individuals over processes, working code, customer collaboration, and adapting to circumstances over following a given plan (Beck et al., 2001). The 12 agile principles focus on continual delivery, cooperation among the business and technical sides, supportive environment, attention to quality, simplicity, self-organizing teams, and regular reflections and improvements based on previous experience (Beck et al., 2001).

There are multiple agile frameworks such as Scrum or Kanban (Diebold et al., 2018). In Scrum, the three important roles are the Scrum Master, the Product Owner, and the Development Team. The three roles together make a Scrum Team and work in iterations called Sprints. During Sprints, several ceremonies take place to ensure the open communication among the members of the Scrum Team and to aid deliver something of value to the customer at the end of each Sprint (Schwaber & Sutherland, 2020). Scrum uses the Product Backlog which stores the items to be delivered (Schwaber & Sutherland, 2020).

Scrum can be scaled to large departments via multiple frameworks. Large-Scale Scrum is based on pillars including Scrum itself, lean thinking, empiricism, transparency, customer and product focus, continuous improvement, queueing theory and systems thinking. LeSS possesses several differences to the basic Scrum events, such as two Sprint Planning events, and an overall Retrospective for the whole product group (Larman & Vodde, 2008).

At the heart of LeSS are the feature teams, which are cross-functional and autonomous teams with their focus being on the customer. Large-Scale Scrum promotes shared-code ownership. To ensure coordination of the same skill set across all feature teams, LeSS establishes the concept of communities of practice, which supports learning and lateral share of knowledge across organization (Larman & Vodde, 2008).

Recommended strategies to start with Large-Scale Scrum is to begin small and focus deeply on one and only one product, to use a mixture of top-down and bottom-up approaches and to work with volunteers and enthusiasts from the product group (Larman & Vodde, 2016). The LeSS framework describes two options based on the size of the product group: (1) basic LeSS with as many as eight teams and (2) LeSS Huge, which can have tens or hundreds of teams (Larman & Vodde, 2016).

In Large-Scale Scrum Huge, additional structure is necessary to sustain the extended complexity. The structure is ensured via classification of Product Backlog items which are then bundled into requirement areas (Larman & Vodde, 2010). In LeSS, a single Product Backlog is used across the whole product group. In LeSS Huge, there is one Product Backlog for each requirement area (Larman & Vodde, 2016).

Scaled Agile Framework is a scaling scheme established on lean practices. The ten fundamental principles focus on the business benefits, systems thinking, queues and work in progress management, cadence, intrinsic motivation of employees, and incremental learning.

Organizations interested in applying the SAFe framework may choose from four set-ups: Essential SAFe, Large Solution SAFe, Portfolio SAFe, and Full SAFe (Scaled Agile, Inc., 2021a, 2021b).

Essential SAFe is the most basic setup. It contains two layers: a team and a portfolio layer. At a team layer, Product Owner cooperates with the Scrum Master and a cross-functional team under a ScrumXP setting. Together these three roles form an Agile Team. ScrumXP is an amalgam of Scrum and Extreme Programming (XP) methods. Team uses a Team Backlog to store work to be done and works in iterations on Stories or Enablers (Scaled Agile, Inc., 2021a).

An analogy of a Product Owner at a portfolio layer is Product Management, Scrum Master is scaled to Release Train Engineer and System Architect is an equivalent role to cross-functional team. Iterations are analogical to Program Increment at a portfolio layer. SAFe uses Agile Release Trains that consist of teams of Agile Teams to deliver increments under a value stream (Scaled Agile, Inc, 2021a). At a portfolio layer, key stakeholders are Business Owners who cooperate with Agile Release Trains.

The Spotify model is an agile scaling model which originated in the Swedish audio streaming company (Kniberg, 2014a). In Spotify, teams are called Squads, which are comparable to Scrum Teams. Each of Squads has a mission and an end-to-end responsibility for the feature they develop. Squads are gathered into Tribes, which are a representation of a lightweight matrix. The primary dimension is a Squad, while the secondary dimension is called Chapter. Each person from each Squad is part of Chapter (Kniberg, 2014a).

Spotify developed their own heterogenous tailoring approach to agile at scale. The company uses the combination of each Squad deciding their development method and coordinating with the product objectives meanwhile being aligned with all other Squads in common shared practices (Kniberg, 2014b).

2 Research Methodology

The research methodology used in this study was qualitative assessment. The author gathered and evaluated a triplet of primary sources of data. As a base, semi-structured interviews were used, whose findings and outcomes were supplemented by observations and group of artifacts. The two latter sources furthermore provided a validation of concepts emergent from the interviews. The outcomes of primary sources of data were validated against the secondary sources of data, whose summary was provided in the previous sections at the beginning of this study.

The purpose of the research conducted in the selected software company was to qualitatively assess the adoption of the selected agile scaling framework and provide the organization with a strategy proposal based on the research outcomes. To fulfill the research objective, the author formulated the following research question.

RQ: How did the virtual large-scale agile adoption in the studied company perform in terms of strengths, challenges, and innovative aspects?

The author carried out 16 interviews using video conferencing online platform Zoom (2021) and used f4transkript (Audiotranskription, 2021) and SonixAI (2021) tools for transcription.

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After transcription, the author performed thematic analysis as defined by Braun and Clarke (2013) to study the acquired primary data and define and evaluate the themes which then provided a base for the strategy planning activity. The author used an open-source analytical tool Taguette (Rampin et al., 2021) to perform thematic analysis. Braun and Clarke (2013) recommend the four-step process to carry out a thematic analysis. The first step is to re-read the transcripts to get familiar with the data. Following in thematic analysis is coding, which is a process of identifying parts of transcripts that address the research questions. The third step is to form clusters of codes from the previous step which together create themes. The final step reviews the resulting themes.

3 Strategy Proposal

3.1 SWOT Analysis

Proposed strategy is based on the qualitative assessment of the LeSS adoption in a scaled company context. The studied company can leverage the suggestions from this paper and use it for its own strategy formulation. At the beginning of the LeSS adoption, the two smaller departments merged and took a cooperative approach product-wise. The following paragraphs aid answering the research question of this study, whose objective is to determine the performance of the scaled agile adoption in terms of strengths, challenges, and innovative aspects.

Several strengths were identified in connection with success drivers and innovative ways the company used for the Large-Scale Scrum adoption. Considerable benefit lied in the online environment and digital tools that were used to carry out the studied LeSS adoption. Means of online communication and collaboration, such as Zoom (2021), Miro (2021), or Slack (2021) allowed for interaction, transparency, asynchronous information exchange and participation of even more introverted employees. Furthermore, the Dry Run event to rehearse the LeSS adoption proved to uncover initial pain points and favored effective conversations before the organization flipped to the new organizational setup.

Through the innovative success metrics, the newly merged department was able to measure employee autonomy and engagement. Continuous improvement enabled to empirically learn and adjust the framework and processes. Single Product Backlog across teams, which is a typical feature of the LeSS setup (Larman & Vodde, 2008) assisted transformation towards new unified product. One level of management was removed, and silos were consequently breaking down. Creation of communities of practice promoted skill sets and interests coordination and knowledge transfer across all teams from the department. The positive effect the establishment of communities of practice had is aligned with the theory (Larman & Vodde, 2016).

Several opportunities arose from the Large-Scale Scrum adoption. The department was able to gradually shift its mindset from a static, monolithic view into more dynamic way of thinking. Agility with the new unified product enabled for more innovation from bottom-up. The major opportunity lies in expanding Large-Scale Scrum to the whole firm in the future to become more agile and be able to respond faster to the company's ever-changing environment.

The LeSS acquirement assisted to identify technical debt and support its resolution. Short increments invited more user feedback and thus aided with better product design. The department was able to bring solutions faster to market and be more customer oriented.

Company's overall reputation and consumer trust benefited from the aforementioned factors. Furthermore, LeSS allowed for better architectural alignment throughout the department. The summary of strengths and opportunities is illustrated in Figure 2.

Figure 2: *SWOT analysis of the studied organization's LeSS adoption*

Strenghts	Weaknesses
- online environment and digital tools - Dry Run event - innovative measurements of success - enabled continuous improvement - single Product Backlog - flatter organization and eradication of silos - value from company-wide CoPs	- unequal preparedness for change between departments - negligence of LeSS rules - too many requirement areas - undone UX department - overload of meetings
Opportunities	Threats
- mindset shift towards more dynamic way of thinking - shift towards unified product - solving technical debt - faster time to market - more customer-centricity - shift towards better design and architectural alignment - extend LeSS to the whole company	- suboptimization due to Product Management team setup - initial chaos and ineffectiveness - misalignment between the two managers

Source: author's own work

Weaknesses that occurred during LeSS acquirement journey are generally connected to unequal preparedness for transition between the two sub departments. Whereas one sub department carried out agile experiments before the LeSS transformation, the other sub department did none of the preparations. The second weakness of the LeSS transition which caused some pain points in its initial weeks was the negligence of the LeSS adoption rules, such as all-at-once transition instead of the recommended gradual approach (Larman & Vodde, 2016) and putting too many requirement areas in place for the number of people participating in the transition. Omission of the LeSS rules had a side effect, when the employees were overloaded with coordination meetings, which contributed to initial ineffectiveness of the product group. This factor was later resolved thanks to the merge of the requirement areas and teams reshuffling.

Additionally, undone department occurred in the studied department, which is a feature sometimes present in LeSS adoptions (Larman & Vodde, 2016; Kalenda et al., 2018). The department had insufficient number of User Experience (UX) designers. The UX design team

was thus on the side as a separate team and helped the feature teams according to the capacity of UX team members. The author observed that the studied department eliminated all shortcomings except for the undone department.
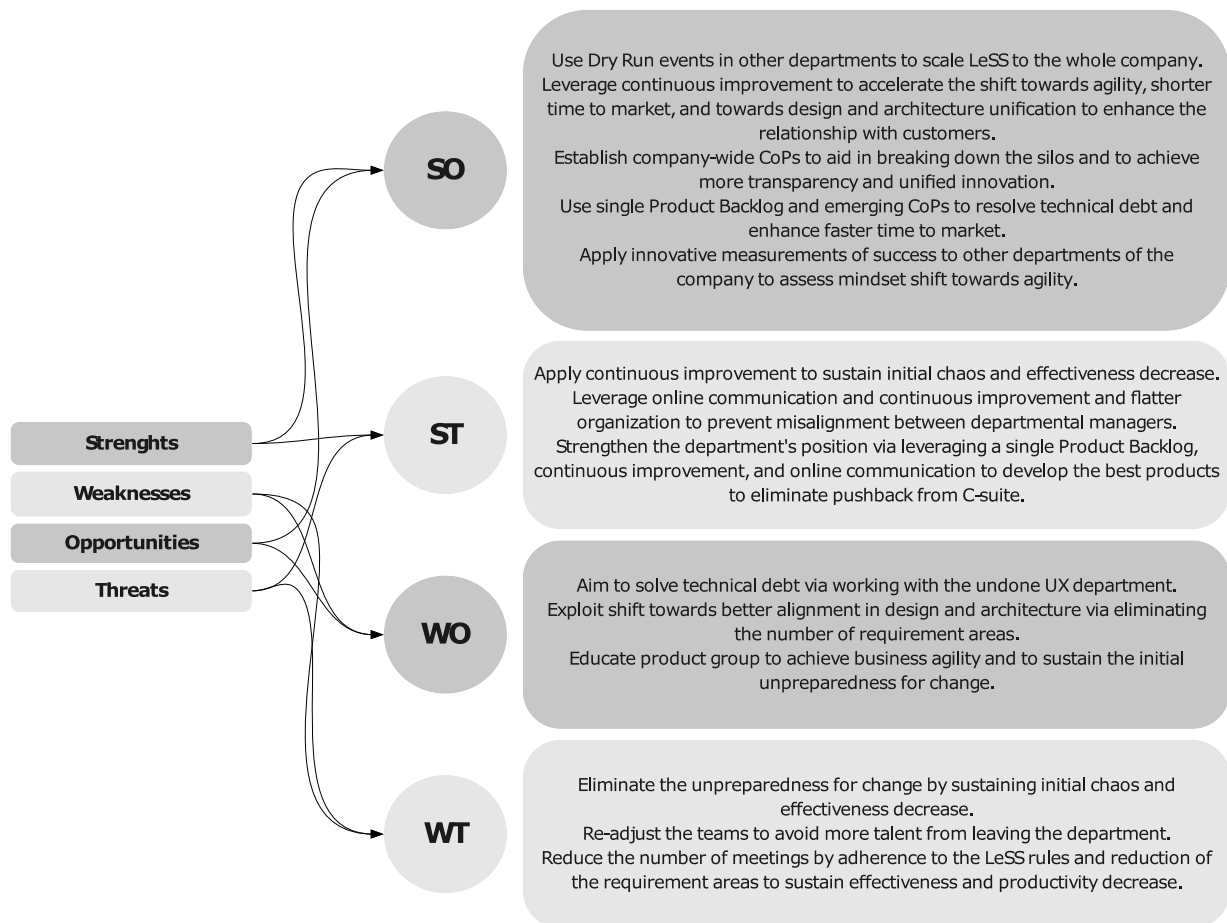
Threats that appeared during the LeSS adoption can be categorized into elapsed and potential threats. The category of elapsed threats includes initial ineffectiveness which was successfully eradicated over time. Potential threats incorporate suboptimization and misalignment posed by the rotating role of Product Manager goalie and the setup of the Product Management team. Furthermore, the former two sub departmental managers who now manage the whole unified department together may have unaligned views on the department's development in the future. Weaknesses and threats summarized are portrayed in Figure 2.

3.2 Strategy Variants

The TOWS matrix based on the previous analysis yields four strategy variants illustrated in Figure 3. During the research phase, when the author worked closely with the organization, the studied department had already used the WT strategy to eliminate its threats and weaknesses. For this reason and due to the stabilized position of the department, the author recommends the company to follow the SO strategy.

The SO strategy advises using rehearsals in other departments with an opportunity to scale LeSS even further, to the whole company. Moreover, empirical, continuous learning and improvement may serve a purpose to shorten the time to market, enhance design quality and provide a base for software architecture unification. The studied firm can benefit from establishing company-wide communities of practice which assist in breaking down the organizational silos. Specifically important is to include all levels of managements, from the lowest to C-level. Beneficial to the speed to market, quality of products and customer satisfaction is the resolution of the technical debt, for which purpose single Product Backlog may be used. Additionally, innovative success metrics in other departments may aid with the overall mindset shift towards agility and improvement of employee satisfaction at work.

Figure 3: *TOWS matrix based on the qualitative analysis of the studied company's LeSS adoption*

SO

Use Dry Run events in other departments to scale LeSS to the whole company.
Leverage continuous improvement to accelerate the shift towards agility, shorter time to market, and towards design and architecture unification to enhance the relationship with customers.
Establish company-wide CoPs to aid in breaking down the silos and to achieve more transparency and unified innovation.
Use single Product Backlog and emerging CoPs to resolve technical debt and enhance faster time to market.
Apply innovative measurements of success to other departments of the company to assess mindset shift towards agility.

ST

Apply continuous improvement to sustain initial chaos and effectiveness decrease.
Leverage online communication and continuous improvement and flatter organization to prevent misalignment between departmental managers.
Strengthen the department's position via leveraging a single Product Backlog, continuous improvement, and online communication to develop the best products to eliminate pushback from C-suite.

WO

Aim to solve technical debt via working with the undone UX department.
Exploit shift towards better alignment in design and architecture via eliminating the number of requirement areas.
Educate product group to achieve business agility and to sustain the initial unpreparedness for change.

WT

Eliminate the unpreparedness for change by sustaining initial chaos and effectiveness decrease.
Re-adjust the teams to avoid more talent from leaving the department.
Reduce the number of meetings by adherence to the LeSS rules and reduction of the requirement areas to sustain effectiveness and productivity decrease.

Strenghts
Weaknesses
Opportunities
Threats

Source: author's own work

Conclusion

In this paper, the author described the scaled agile adoption journey of a selected software firm. One product group within the organization adopted the Large-Scale Scrum framework in a fully virtual environment. This study presented the strategy proposal based on the qualitative analysis. The author identified strengths, opportunities, weaknesses, and potential threats which occurred during the Large-Scale Scrum adoption. The identification helped the author to answer the research question whose purpose was to determine the successes, challenges, and innovative aspects of the adoption of a selected agile framework conducted remotely.

Literature presented at the beginning of this paper provides advice on how to proceed with the agile transformations and adoptions. However, given the unique conditions posed by the COVID-19 pandemic, due to which all company operations were shifted to the online environment, the studied firm had no manual on how to successfully carry out a scaled virtual agile adoption. Notwithstanding the unusual, novel conditions, the researched organization successfully adopted Large-Scale Scrum. The digital technology platforms and means of communication were essential to the adoption.

New opportunities arose from the new status quo, such as shift towards new unified product, more open communication among teams and management levels due to silos breaking down, resolution of identified technical debt, and improved architectural alignment. The major opportunity lies in extending the Large-Scale Scrum framework to the whole company and thus become more customer-centric and better position the organization on the market.

Strengths the author identified include the online environment itself, which allowed for interactive knowledge transfer and more engaging contribution from even the more introverted employees. Furthermore, the Dry Run event of the transformation proved to be beneficial. The author advised the company to follow the SO strategy yielded by the TOWS matrix due to the stabilized position of the department at the time when this paper was finalized.

The SO strategy provides several options to consider. Online environment and rehearsals alongside with continuous improvement are levers to improve the internal processes, product development and build more meaningful relationships with the customers. The company can extend LeSS to its other departments and benefit from the structure given by the framework. Advantageous is the one Product Backlog which may unify efforts across the whole organization and company-wide communities of practice enabling effective knowledge exchange. Shift towards agility provides better responsiveness from the organization to its environment and competitors. Under the LeSS structure the innovation responsibility is given to the teams, which allows for faster improvements and increased employee engagement.
This study fills in the gap in large-scale agile scientific studies. It benefits the academia in providing an empirical insight into one firm's specifics carrying out solely virtual scaled agile adoption. Furthermore, the studied company can incorporate the strategy proposal into its actual strategy. Additionally, other companies are invited to take lessons learned from a scaled agile journey provided in this study.

For future research, the author suggests following the same company over longer time horizon to see how well the proposed strategy fitted the company's actual strategy planning activities. Furthermore, it is possible to extend the research into other companies to gain more general outcomes. Since the empirical research on virtual agile adoptions in scarce (Dikert, et al. 2016; Paasivaara et al., 2018), the author encourages other researchers to provide their scientific perspectives on the remote scaled agile journeys following different frameworks, such as LeSS, SAFe, or the Spotify model.

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