Journal of Healthcare Management and Administration (JHMA)
Volume.13, Number 11; November-2022;
ISSN: 2837-3677 | Impact Factor: 6.40
https://zapjournals.com/Journals/index.php/jhma
Published By: Zendo Academic Publishing

AGILE STRATEGIES FOR SUCCESS IN THE AUTOMOTIVE MANUFACTURING LANDSCAPE

[1]Brauchle A, [2]Hanisch B and [3]Kostron A.

Article Info

Keywords: Agile, competitive advantage, product development, supply chain management, process improvement, collaboration, waste elimination, efficiency, organizational success.

Abstract

In today's highly competitive business environment, organizations are continuously striving to identify the drivers and principles that create a sustainable competitive advantage. This study focuses on the adoption of Agile principles as a means to achieve this advantage. Agile has gained significant attention due to its ability to enhance efficiency in time-to-market, align with customer demands, and increase team productivity. By adopting Agile, organizations are more likely to achieve their business objectives, as demonstrated by previous research. The Agile approach offers a wide range of benefits in product development, including fostering ongoing collaboration among stakeholders and embracing change, thereby increasing the likelihood of meeting customer needs. Additionally, Agile methodologies help organizations eliminate waste in product development by prioritizing critical requirements, resulting in cost and time reduction. An Agile supply chain exhibits characteristics such as rapid response to volume and variety changes, reduced lead times, and replenishment times to meet the demands of customers. This aligns with Christopher's viewpoint on the Agile supply chain, as cited in Basu and Wright's work. Furthermore, the Agile approach extends its benefits to process improvement by enhancing collaboration between teams and stakeholders and emphasizing process deployment over extensive documentation, as highlighted by Linders. This study aims to explore the impacts and effectiveness of Agile principles in various aspects of business operations, including product development, supply chain management, and process improvement. By conducting a comprehensive analysis of existing literature and empirical data, this research will provide valuable insights into the adoption and implementation of Agile methodologies in organizations. The findings will contribute to a deeper understanding of how agile practices can be leveraged to enhance competitiveness, improve operational efficiency, and drive organizational success.

[1] Auckland Institute of Studies, New Zealand.
[2] University of Auckland, New Zealand.
[3] Auckland Institute of Studies, New Zealand.

1. Introduction

1.1. Overview

Today we have seen an accelerating competition in the business environment; therefore, many organisations are trying hard to find out the drivers' principles creating competitive advantages to strengthen their market position. According to McDonald (2020) as businesses today seek efficiency in faster time-to-market, customer demand alignment, and team productivity increase, they adopt Agile as the most prominent rule to succeed. Pega (2018) demonstrated that organisations adopting Agile are more likely to achieve their business objectives than others. Chard and Douglass (2015) stated that the Agile approach provides a wide range of benefits in product development by encouraging ongoing collaboration among stakeholders and welcome to change; thus, the products are more likely to meet the customer needs as opposed to the traditional approach. Also, Agile can help organisations eliminate
waste in the product development stage by prioritising the most critical requirements, which will lead to cost and time reduction. According to Christopher (as cited in Basu and Wright (2008)) an Agile supply chain has some characteristics such as rapid response needs in terms of volume and variety changes, lead times, and replenish times to fill the goods meet the demand. Linders (n.d) stated that the Agile approach provides some benefits to process improvement, such as enhancing the collaboration between the team and stakeholders and focusing on process deployment rather than process documentation.

1.2. Aim of the Research

The automotive industry is growing and evolving as customer demands are more and more sophisticated. Therefore, the competition increases fiercely within automotive manufacturers to meet the customers' excellent experience, which forces the automotive businesses to innovate to solve the complex needs of customers as well as increasing the operational efficiency within organisations. As a result, adopting Agile is the best approach for automotive companies, which not only supports engineers designing breakthrough products in a shorter timescale but also helps the automotive companies manage their operational cost-efficiently (Brauchle, Hanisch, & Kostron, 2016). This research aims to explore the Agile principles and practices that may contribute to the considerable achievements in automotive product operations.

2. Literature Review

2.1. Agile Manifesto and Principles

2.1.1. Agile values

According to Beedle et al. (2001), Agile is the way of thinking guided by four values and twelve principles to "uncovering better ways of developing software by doing it and helping others do it." Regarding the first core value, "Individuals and interactions over processes," (Beedle et al., 2001) stated that it is significant to deliver high value within companies if organisations value people and interactions among people, including team members, stakeholders in product development, over processes and tools. Layton (n.d) showed that the conformity of processes and tools prevents people from innovative thinking. According to Eby (2016), if the processes and tools are dominants in development, customer demands are less likely to align because the development team is not much more responsive to change.

The second core value is about "working software over comprehensive documentation" (Beedle et al., 2001). According to Eby (2016), this value does not mean that Agile eliminates documentation; however, Agile values working software more than documentation as the primary deliverable is software. Layton. (n.d) stated that working software in Agile means that the team only gets its software products truly done when they meet the definition of done. Layton (n.d) also emphasised that documentation is necessary for all projects; however, documentation only provides value when it aligns with the intended objective, such as supporting the product stage's development.

The Agile's third value is "Customer collaboration over contract negotiation" (Beedle et al., 2001). Weigel (n.d) stated that contracts protect parties; however, some significant problems happen with this approach as the requirements may change during the development stage; thus, it takes a lengthy phase for the development team to implement. According to Weigel (n.d), this agile value does not underestimate the contract but prefers another type of agreement so-called informal contract, allowing the clients to change their requirements. Layton. (n.d)

revealed that this value's focus is to make the customer part of the project. Specifically, the product or service built must be reviewed by customers at the end of every Sprint, which in turn leads to higher-value products for clients (Layton, n.d).

"Responding to change over following plan" is the fourth value, according to Beedle et al. (2001). Layton (n.d) pointed out that traditional project teams usually miss the chance to deliver higher-value products for customers once they follow the plan; in contrast, the agile project allows them to change quickly to the customer need. Hughes (2019) stated that the change permission improves the project's quality and adds value to customers.

2.1.2. Agile Principles

According to Beedle et al. (2001), twelve principles applied in an attempt to deliver the best products for customers.

- The first principle focuses on customer satisfaction (Beedle et al., 2001). Ondiek (2015) suggested that customer satisfaction in an Agile approach could achieve by delivering the products in the earlier stage so that clients can review and test. Through customer feedback, a company continually provides the new versions of the products with higher values by prioritising the most important requirements first.
- The welcome change is the second Agile principle, which indicative of the responsiveness to change compared to the tight alignment of approved plans. Therefore, no documentation required because of the simplified processes, which enhances competitive advantage for customer business as it allows rapid response to the latest change (Ondiek, 2015).
- In the third principle, so-called frequent delivery, Amerongen (2007) insisted that this principle provides many advantages in terms of frequent feedback, rapid evaluation, and the alignment of changing external environment.
- Business and developers together are the fourth principle of Agile (Beedle et al., 2001). According to Eby (2016), the alignment between technical and business teams will lead to better decisions.
- The fifth principle is motivated individuals, which means micromanagement is not encouraged in Agile as it may erode team members' morale (Landau, 2017).
- A face-to-face conversation is the sixth principle in an Agile approach (Beedle et al., 2001). Software Testing Help (2020) stated that face-to-face communication has shifted from misunderstanding to improved understanding and trust-building among various stakeholders. According to ProductPlan (n.d) the purpose of this principle is to encourage businesses and developers to communicate in real-time in terms of customer needs, product requirements, or all aspects of products.
- In the seventh principle, Beedle et al. (2001) concluded that working software is the primary objective and the critical measure of progress. This principle reminds organisations that building software is the final goal, not documentation or processes (ProductPlan, n.d).
- Sustainable development is the eighth principle, which encourages the cross-functional team to be mindful about setting out realistic and clear expectations, promoting high morale and worklife balance (ProductPlan, n.d).
- The ninth principle is "Continuous attention to technical excellence and good design enhances agility" which means organisations should stay focused on quality and keep the solution updated over time (Beedle et al., 2001; Eichhorn, 2017).
- Simplicity is the tenth Agile principle that guides the team to prioritise the most impactful requirements (ProductPlan, n.d). According to Landau (2017), keeping things simple is the best way to streamline the process, reduce the workload, and provide more control over every project's facet.
- In principle eleven, Beedle et al. (2001) suggested that self-organising teams could deliver higher-value products to customers. Landau (2017) concluded that if an organisation has a strong team, trusts them, and allows them to work independently, they can do "the best architectures, requirements, and designs.
- Finally, effectiveness is the last Agile principle that reflects continuous learning in terms of selfimprovement, process development, and skill set enhancement to work more efficiently (Eby, 2016).

2.2. Some Frameworks and Techniques for Agile

2.2.1. Scrum Framework, Methodology and Techniques

According to Scrum creators - Schwaber and Sutherland (2017), Scrum is a framework with more emphasis on addressing complex problems while delivering products with the highest value, productivity, and creativity.

Scrum's values (as shown in Figure 1) are composed of courage, focus, commitment, respect, and openness (Schwaber & Sutherland, 2017). Scrum's root came from an empirical process control framework and composed of three pillars: transparency, inspection, and adaptation (Schwaber & Sutherland, 2017). Ray (2019) stated that inspection and adaptation benefit organisations in several ways. For example, they can help the teams look back and learn from the markets and customer response, or team members can leverage their learning from the mistakes of process limitations so that they can take a course of actions to change until aligning the objectives. Transparency, on the other hand, makes Scrum framework more effective once the roles, responsibilities, Scrum processes, or standards are well-designed so that the teams fully understand how they work (Visual Paradigm, n.d).

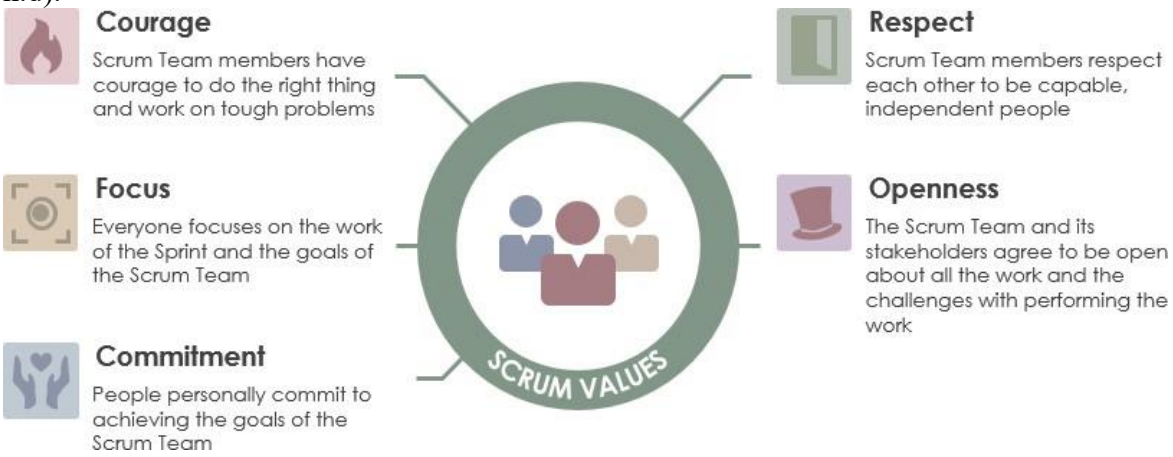

Figure-1. Scrum values.

Figure 2 represents the Scrum framework which begins with Product Backlog, a list of requirements from customers and other stakeholders collected by the Product Owner (Scrum.org, n.d). Sprint Planning is the second stage determining the time-box for the team to get the prioritised product backlog items done (Agile Alliance, n.d). Sprint Goal needs to create during the Sprint Planning meeting as "it provides guidance to the Development Team on why it is building the Increment" (Schwaber & Sutherland, 2017). After that, Sprint Backlog has resulted from the Sprint Planning meeting, which is the team members' amount of work to agree to work on to meet the defined Sprint Goal (Schwaber & Sutherland, 2017). The development team works together to deliver the value following the definition of done in the next stage. To inspect and adapt the progress toward Sprint Goal, Daily Scrum is applied, which allows the development team to meet daily up to 15 minutes discussing the achievement and impediments that hinder the progress (Scrum.org. n.d). At the end of the Sprint, the Sprint Review meeting held to share the outcomes to the external stakeholders, and the meeting's results are the revised Product Backlog for the next Sprint (Scrum.org. n.d). After the Sprint Review meeting, the team runs the Sprint Retrospective meeting to identify what they worked well and how they could improve (Scrum.org, n.d).

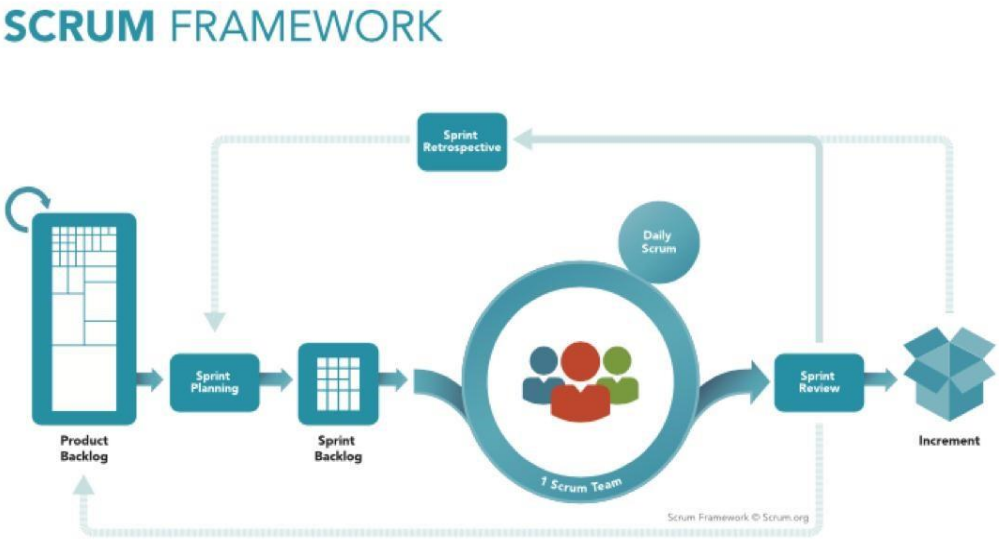

Figure-2. Scrum Framework.

2.2.2. Kanban Framework and Techniques

According to Atlassian Agile Coach (n.d), Kanban is the work management system designed to help companies visualise their work, limit working in progress, and improve the flow. Inflectra (n.d) pointed out that "Kanban is a scheduling system for lean and other Just In Time processes." Steyaert (2017) revealed that the Kanban framework's two characteristics are self-organised, cross-functional teams coupled with inspecting and adapt. Collaboration at any level of competency is encouraged to prevent the bottlenecks in the workflow in Kanban. Also, "inspect and adapt" captures the feedback loop, which drives the team more agile and predictable (Steyaert, 2017).

Kanban framework guided by four basic principles (Kanbanize, n.d). The first principle is "Start with what you do now," which means the conformity of the whole organisation's existing systems, processes, or workflows is not necessary for the Kanban framework (Kanbanize, n.d). Instead of implementing the sweeping changes, companies can fix their issues and continually improve over time. The second principle is "Agree to pursue incremental, evolutionary change" - an indication of continuous value creation by smaller incremental changes. Wester (n.d) stated that Kanban's second principle benefits the business as it prevents the resistance in the face of fear and uncertainty. "Respect the current process, roles, responsibilities and titles" is the third principle, which means companies can apply Kanban without changing organisational structure and process (Kanbanize, n.d; Wester, n.d). The final principle is "Encourage acts of leadership at all levels" which encourages the self-organising team. In particular, Kanban does not need to have a team lead, and everyone needs to have a continuous development mindset to deliver value, irrespective of their roles and responsibilities in an organisation (Wester, n.d).

Apart from principles, there are six practices within Kanban framework, including visualise, limit work in progress, manage flow, make policies explicit, implement feedback loops, and Improve collaboratively, evolve experimentally (Chiva, 2020). According to Chiva (2020), visualise practice covers a breadth of activities making the workflow visible by utilising physical wall or software application. The practice "limit work in progress" defines the optimal manageable amount of work in progress per stage, given the set of constraints (Kanbanize, n.d). Chiva (2020) concluded that with more emphasis on limiting work in progress will lead to Kanban's success in terms of improved lead time, quality, and delivery rate. The third practice is "manage flow," which means Kanban values workflow management over people management (Kanbanize, n.d). The flow of work focus has shifted the team from micro-managing to self-organising, which leads to higher-value delivery and faster time to market (Chiva, 2020). 'Make policies explicit" practice's purpose is to enhance the team performance by simple and well-defined policies such as backlog management, impediment handling, the definition of done (Obergfell, n.d). According to Chiva (2020) with the feedback loop practice, strategy, initiative, and delivery level within the

organisation will be aligned through daily, bi-weekly or monthly team performance meetings, delivery planning meetings, delivery review meetings. Kanban's final practice focuses on collaboration and continuous improvement implemented by shared understanding in terms of goals, workflow, process, and risks, leading to continuous value creation and sustainable change (Kanbanize, n.d).

3. Analysis and Findings

3.1. Finding 1: Higher Customer Satisfaction Level Due to the Implementation of Agile Approach and Practices in Automotive Products Operations

Customers are the heart of agile-based business once Agile manifesto and principles get customers engaged in projects as the critical stakeholders (Beedle et al., 2001; Layton, n.d; Ondiek, 2015; Software Testing Help, 2020; Weigel, n.d). With more emphasis on customer preferences, automotive manufacturers' products or services will be comparable in product features to those provided by others in the automotive industry. For instance, the Agile manifesto and principles guide the companies to think like a customer; therefore, companies only seek solutions associated with the customer's voice. Customers also can interact with the solutions during the project until the tangible value delivered to clients, which leads to excellent customer experience. Practices in the Scrum framework in a strong demonstration of the customer-centric approach as every project using Scrum begins with customer requirements called a product backlog.

Moreover, all requirements must represent the customer needs irrespective of high-level desires or detailed viewpoints (Schwaber & Sutherland, 2017; Scrum.org, n.d). The sprint review meeting showcases the Sprint's outcomes to external stakeholders to seek feedback. Based on feedback loops incorporate with the backlog management technique, product owners of automotive companies can prioritise the product backlog items to deliver the highest business value features, which results in high customer satisfaction (Schwaber & Sutherland, 2017; Scrum.org., n.d).

Faster delivery is another advantage leading to high customer satisfaction due to implementing an Agile approach and practices in automotive product operations. Faster time to market has resulted from Agile manifesto and principles deployment, which guides the agile-based companies to stay focused on the outcomes, human-centric activities, ongoing communication, and feedback (Amerongen, 2007; Beedle et al., 2001; Eby, 2016; Landau, 2017; Layton, n.d; Software Testing Help, 2020; Weigel, n.d). Therefore, based on the Agile approach, the automotive product development team works closely with stakeholders at any detail within the value chain, using a range of communication techniques such as focus group, workshop, interview, and survey. As a result, the faster-shared understanding, immediate feedback, and rapid new need uncover can achieve, driving the reduction of product development time. Delivering a high-value solution is the top priority over documentation and processes leading to timeconsuming reduction for automotive companies once they prioritise which value-added activities should be focused and which non-value-added activities should cancel.

Agile Scrum and Kanban frameworks benefit automotive organisations in the rapid delivery of new products in the face of growing competition in the automotive industry. Instead of going from stage to stage, including analysis, requirements, design, develop, test, and release as the traditional approach does, Agile Scrum and Kanban slice vertically stages into potentially shippable product increments. As a result, agile-based companies can deliver the values faster than traditional methodology (Kanbanize, n.d; Schwaber & Sutherland, 2017; Scrum.org., n.d; Wester, n.d). Scrum values also lead the automotive companies to faster delivery as it emphasises on commitment and goal focus (Schwaber & Sutherland, 2017). While commitment is indicative of the team commitment to give their best action and effort to achieve the sprint goal, the act of "goal focus" brings faster value to customers.

3.2. Finding 2: Higher-Quality Automotive Products by Applying Continuous Improvement and Feedback Loops in Automotive Product Operations

Agile manifesto and its principles guide any agile organisation to create an environment where stakeholders can contribute higher-value products by ongoing feedback and continuous improvement. (Beedle et al., 2001; Hughes, 2019; Layton., n.d; Software Testing Help, 2020; Weigel, n.d). Feedback and learning are critical in the Agile approach due to the presence of an increase in customer requirements in the local and international markets. Feedback loops and continuous improvement should implement consistently through strategy, initiative, and

delivery horizons to deliver the best quality products for customers (International Institute of Business Analysis (IIBA), 2017). While strategy horizon refers to the products, services, and initiatives, which organisation uses resource allocation processes to ramp them up, the initiative horizon refers to the solution options that maximise the outcomes to satisfy customer needs (International Institute of Business Analysis (IIBA), 2017). The delivery horizon is the act of implementing the specific aspects of a solution based on identified outcomes (International Institute of Business Analysis (IIBA), 2017). Feedback at one horizon usually causes the changes in decisions at other horizons; as a result, the ongoing collaboration and feedback coupled with continuous learning help the team in three horizons make better decisions to achieve higher quality products.

In Agile Scrum and Kanban, inspect and adapt are the two critical pillars shifting the automotive product's value evolved over the period through feedback loops and continuous improvement (Ray, 2019; Schwaber & Sutherland, 2017). Automotive organisations can obtain feedback from diverse sources such as customers, strategic partners, investors, and competitors in the auto market. That feedback helps companies adopt the solution and concentrate on continuous value creation, which leads to higher-quality automotive products. Automotive companies can apply a mixture of practices and tools in Scrum frameworks such as daily stand-up meetings, review meetings, and retrospective meetings for feedback loops and continuous improvement (Ray, 2019; Schwaber & Sutherland, 2017). The daily meeting's purpose is to identify and address any impediment or the roadblock during the product development stage, leading to the delivery of exceptional results for customer demands in the automotive industry, given the set of constraints such as time, budget, and regulation. Retrospective meeting in Scrum is also a representation of continuous improvement as it does not only evaluate the achievements, it also captures the lesson learned from the last Sprint's challenges to identify the opportunities for improvements in the next Sprint. As a result, customers' desired outcomes in automotive product quality and frequent delivery are fulfilled (Schwaber & Sutherland, 2017; Scrum.org, n.d). If daily stand-up and retrospective meetings are the internal meetings, review meetings, on the other hand, are held at the end of Sprint, helping the automotive companies determine the most valuable work should deliver through feedback from internal and external stakeholders (Schwaber & Sutherland, 2017). In the Kanban framework, feedback loops implement from strategy horizon to delivery horizon in a range of daily Kanban meetings to discuss the tactical issues, replenishment meeting, bi-weekly, monthly team performance meeting, and delivery review meeting (Chiva, 2020).

3.3. Finding 3: Higher Productivity and Efficiency by Utilising Agile Practices in Automotive Operations

Agile approach and practices benefit automotive manufacturers in terms of productivity and efficiency in many ways. Traditionally, the waterfall-based team focuses on a diverse range of aspects at the same time. In contrast, the agile organisation tends to deliver value incrementally to complete a short-term iteration, which is much more realistic and productive than the traditional approach (Kanbanize, n.d; Schwaber & Sutherland, 2017; Wester, n.d). Working as a cross-functional perspective is one of the factors leading to higher productivity in an Agile approach. In particular, experienced team members from different departments contribute to shared understanding and knowledge in terms of the automotive market, competition, customer demands, or problem-solving skills; thus, the team members can leverage their learning to work more productive. Face-to-face conversation principle in Agile also increases team productivity as it helps the team to work in harmony with related internal and external stakeholders. As a result, better and faster decisions in light of shared understanding, easier conflict management are achieved (Beedle et al., 2001; Chiva, 2020; Software Testing Help, 2020). Instead of being directed and managed by many leaders in traditional methodology, Agile approach treats each agile team member as a leader by giving them clear responsibility and authority to make decisions. This principle helps the team to have a quick decision because they do not need to present their proposal in front of many management levels and wait for their approval as the traditional approach does. By avoid creating unnecessary documentation and frequently prioritising non-value-added items and value-added items to work on, productivity increases. Efficiency resulted from higher productivity because it simultaneously helps automotive companies launch their high-quality products faster and reduce operational costs.

In Scrum and Kanban frameworks, there are many techniques that automotive organisations can utilise to enhance productivity and efficiency. Kanban board can help the agile organisation acknowledge the status of various items and the bottlenecks occurring throughout the project to limit work progress to increase team productivity. As lead

time and cycle time are the two key metrics in Kanban practices, automotive companies can use them to identify the bottleneck within the processes to make some adjustments to improve overall processes. In the Scrum framework, the Scrum team's apparent role and responsibility contribute to increased productivity because the team members know their responsibilities and how they work on their assigned tasks (Schwaber & Sutherland, 2017; Scrum.org., n.d; Visual Paradigm., n.d). The presence of Scrum Master, who works as a team facilitator, helps the team enhance their productivity by coaching and addressing the problems during the processes. The clear Definition of Done and Definition of Ready in Scrum also lead to the increased productivity for automotive companies because team members are on the same page of what "Done" and "Ready" mean to make the Product Increment releasable.

3.4. Finding 4: Agile Approach and Practices Profoundly Change the Whole Aspects across the Automotive Organization

Agile implementation affects every organisation's facet, leading to a radical transformation in strategy, organizational structure, management methodology, people, processes, and technology. As inspecting and adapting are the two critical elements of the Agile approach, the practices of feedback loops, and continuous improvement need to spread from strategy horizon to initiative and delivery horizon (Beedle et al., 2001; International Institute of Business Analysis (IIBA), 2017; Schwaber & Sutherland, 2017; Steyaert, 2017). As a result, the automotive organisation needs to share the company's purpose and vision to provide the link between the top management level to the bottom management level contributing to creativity, rapid learning, and experimentation environment. An Agile approach requires fast decision-making in response to customers' needs; thus, the agile-based organisation needs to implement an accelerating replacement of traditional, hierarchical structure by flat structure. An agile organisational structure is modelled around end-to-end accountability to encourage the teams to focus on value creation, which leads to collaboration within cross-functional teams. As the team's morale is critical in agility, leaders need to shift their management methods from direction-based management to authority and self-organising mechanisms.

People are among the core values contributing to successful agile companies; therefore, the Human Resource department in the automotive organisation needs to change their working ways. Traditionally, recruiters look for candidates that fit with the job description and related specific tasks; however, the Agile approach requires Human Resource to recruit dynamic and passionate candidates. The job description is designed toward objective and outcome to support the organisation's mission and value directly, not a single task. Reward scheme to incentivise employees is far different from the traditional approach as it must help people enhance their values, self-motivation, and collaboration apart from financial compensation. The processes are re-engineered, focusing on oriented performance to enhance the agility level of an automotive organisation. Compared to the traditional approach, agile requires the processes that need to be standardised in terms of format, working and information transparency.

Techniques in Agile also encourage people involved in the processes must collaborate to deliver the outcomes, and outcome quality is one of the critical indicators to evaluate the employees' performance, not the number of tasks done. Technology transformation is another component that enhances the competitive advantages of automotive companies in the digital age, coupled with an Agile context. Briefly, being Agile and doing Agile requires automotive organisations to embrace Agile principles and choose scaled Agile practices leading to the profound change across the organization.

3.5. Finding 5: Agile Implementation is Much Easier for Start-Up Companies; However, it is Challenging for the Existing Organisations

In light of the intense competition in the automotive industry, Agile approach and practices become more prevalent; however, there are diverse challenges for the existing organisation in the Agile transformation journey (Yampolskiy, 2018). As mentioned in Finding 4, the Agile approach requires a holistic redesign across the organisation to ensure the alignment from the strategic level to delivery level, which creates many problems regarding the changes of culture, leadership mindset, employees' buy-in, and technology. Culture is critical in Agile transformation because it shapes the employees' mindset; however, Agile culture cannot create overnight but also lengthy. Agile approach also deletes many jobs and changes the ways of working; thus, resistance to adopt Agile in employees is one of the obstacles that automotive organisations encounter. Even if companies

successfully create buy-in; however, the skill set of existing people does not fit with Agile requirements leading to failure in achieving the company objectives. The focus of value creation in Agile has also shifted the leaders from being siloed decision-makers to become the trainers and vision providers, which takes time to change and adapt. Technology is another challenge if the existing information technology infrastructure cannot interface between new Agile systems. Also, the out-of-date information technology system cannot speed up the agile-based processes; however, the existing company does not have stable finance to obliterate its existing information technology system in its Agile transformation journey.

For automotive start-up companies, it is easier for them to adopt Agile as they can build their agileoriented operating model at the beginning. Specifically, leaders initially figure out the Agile practices that suit their strategy, company size, and products. After finalising the Agile framework choice, the new automotive companies start implementing the operating model, including organisational structure, process, people, and technology. Regarding organisational structure and people, start-up companies can create a flat structure with transparent, accountable roles and responsibilities, and recruit the people who are fit with the company's vision and mission. Processes build in the standardised ways of working and outcome-based processes; thus, no confusion occurs. Technology investment considered to support the Agile context at the starting point; therefore, the new automotive companies do not need to concern about the gap between the agile-based operational strategy and invested technology system.

4. Conclusion and Recommendation

In conclusion, the Agile approach and practices bring many substantial benefits to the automotive organisation in light of the customers' growing requirements. As the study's findings suggest, Agile methodology enhances customer satisfaction once its principles and practices value the strong sense of customer desires and market needs. Also, Agile concepts promise the increased product quality because feedback loops and continuous improvement are some of the critical elements of an Agile mindset, which ensures the optimal solutions evolved over the period by test-and-learn activities. The research also finds that Agile implementation helps the automotive organisation achieve increased productivity and efficiency. Agile transformation impacts the whole automotive organisation because it requires many new habit establishments from strategy level to delivery level. Therefore, an automotive organisation should change its strategy, organisational structure, management methodology, people's skillsets, processes, and technology to match with Agile transformation. Agile development generates challenges for the existing organisation because there is an enormous gap between the traditional approach and the Agile approach. Thus, the existing company may deal with confusion, employee resistance, out-of-date technology infrastructure, unmatched skill sets, and management methodology during the Agile transformation journey. As a result, it takes time for an existing organisation to adapt and implement, and leaders should acknowledge that their commitment plays a critical role in Agile transformation journey. By contrast, a start-up company is likely more successful in Agile deployment than an existing company because it can set up the culture, communication style, people, and technology that align with Agile requirements at the beginning without destroying anything.

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