

# APPLICATION OF AGILE MANAGEMENT APPROACHES IN SELECTED AUTOMOTIVE COMPANIES IN LIBEREC AND CENTRAL BOHEMIAN REGIONS

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**Abstract:** *Dramatic changes caused by the rapid spread of the COVID-19 pandemic have emphasized the strategic importance of business agility. Companies around the globe are accelerating their agile transformation to succeed within the contemporary dynamic and complex business environment. This includes both instrumental and cultural changes. It is becoming increasingly clear that agile principles and approaches are no longer exclusively used by IT companies; it is spreading across other business functions and industries. Secondary data analysis confirms a strong ambition of companies towards becoming agile. This paper examines the extent, benefits, and concerns of using agile methodologies by selected automotive companies in the Liberec and Central Bohemian regions of the Czech Republic. The in-depth interviews provide a better understanding of the lower agile maturity of the surveyed companies compared to global statistics. None of the surveyed automotive manufacturers assessed their agile maturity at a high level, nor did they consider agile transformation an urgent strategic priority. Research and Development, Program and Project management stood out as the most agile business functions. At the same time, respondents are clearly aware of the need to increase flexibility and the ability to respond quickly to market changes. Some of the surveyed companies have already successfully incorporated Lean, Kanban and Scrum into their operating models, which are the basics of agile. The primary research findings, combined with secondary data analysis, enable recommendations for those pursuing agile transformation. The paper means to stimulate further in-depth research on the agile management approaches in the manufacturing environment.*

**Keywords:** *Agility, project management, automotive, agile methodologies, COVID-19.*

**JEL Classification:** M21.

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## Introduction

The COVID-19 pandemic has had a profound and immediate impact on humanity and organizations worldwide. Companies were confronted with a challenging business environment and the growing importance of information and communication technologies (ICT). Entities of all sizes have been exposed

to the unprecedented virus-driven need to adapt their business models to rapidly changing requirements. It is already evident that the need for speed will not be temporary – digitization, globalization, automation, analytics, and other drivers of change will also accelerate. To recover and thrive in the contemporary volatile and complex world, leaders will have to quickly

adapt to the market and socio-psychological alterations.

Agile methodology is not a novelty. For decades, the ICT industry has been using it to improve productivity and motivation, enhance product quality, and shorten the time to market. The automotive industry operates in an environment of global integration, a highly demanding value chain and quality management. Under such constraints, an agile management approach can serve manufacturing companies on their path to prosperity.

Gunasekaran (1999) defined four critical criteria of agility in manufacturing: strategy, people, systems and technology. As one of the essential criteria, the approach involves innovation and the adoption of agile management methods. Long-term planning is replaced by various variable strategies validated during implementation and adapted to actual manufacturing conditions. Business leaders are responsible for acquiring and improving capabilities that support agile transformation. The concept of agile means an organisation's ability to quickly adapt to market changes productively and cost-effectively. The readiness of corporate supply chains during the COVID-19 disruption was closely linked to the level of their agile maturity. Agile organizations create an environment of continuous learning and experimentation while employees proactively pursue opportunities to acquire and apply new skills in their daily work. Agile organizations attract people motivated by an inner passion for their work and eagerness for excellence. Agile-oriented change requires a multidimensional approach. Human resources, as holders of respective knowledge and skills, are the primary ambassadors of agile transformation and a source of companies' competitiveness (Munteanu et al., 2020).

While Consulting and IT remain at the top of the industries with the highest agile maturity, the Business Agility Report (Cearns et al., 2020) pointed out that Manufacturing, Automotive and Aerospace organizations worldwide are only getting started with business agility. The secondary data analysis confirms the progress in the level of knowledge and use of agile practices in the Czech Republic over the last decade. In particular, the KPMG survey (2019) highlights the banking sector as the most agile. However, the number of relevant surveys

is limited and usually provides a high-level overview across industries. But none of the surveys found is specific enough to shed light on the extent of the use of agile methodologies in automotive companies in the industrial north of the Czech Republic. On the other hand, responding rapidly to ever-changing customer requirements and external factors, agile approaches appear to be a suitable methodology to address post-pandemic disruptions in the supply chain. Therefore, the contribution to the outlined literature research gap also has a practical benefit.

Therefore, this paper answers the research question of the situation and the use of agile methodologies in the selected automotive companies in two regions of the Czech Republic with the highest concentration of car manufacturers. The respective primary qualitative research provides a better understanding of the level of agile maturity of automotive companies in selected regions of the Czech Republic compared to global surveys. Focusing on one of the most affected industries in the context of post-pandemic transformations, this paper contributes to the literature gap and serves as a baseline for recommendations for implementing agile methodologies.

The following section presents the theoretical background of agile methodology.

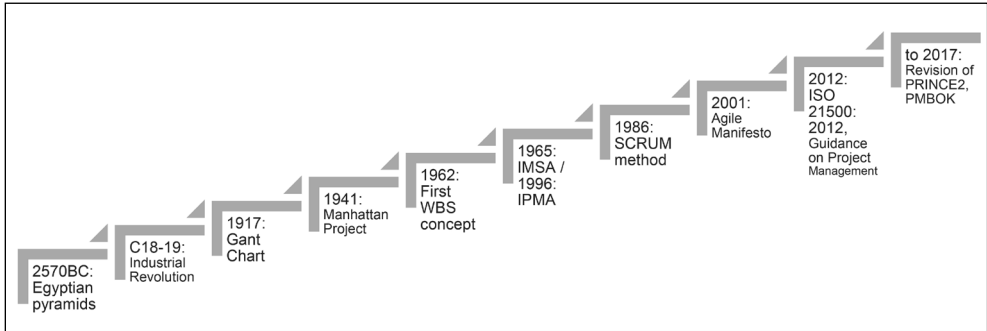
## 1. Theoretical Background and Literature Research

Agile methodology arose in the mid-1990s as a response to conventional project management, which has been criticized for its bureaucracy, rigidity and inability to react flexibly to changes (Antlová, 2015). Traditional project management has existed for thousands of years. The first significant projects often refer to the construction of the Egyptian pyramids, the construction of the Great Wall of China and the Notre Dame Cathedral in Chartres, which lasted almost 60 years (Máchal et al., 2018).

Fig. 1 provides an overview of historical milestones of project management.

At the end of the 20th century, agile manufacturing was perceived as a way to achieve versatility and adaptability, with many theories emphasizing the focus on multifunctional groups, communication, participation, employee engagement and the importance of human capital for organizational success. Agility was linked to

**Fig. 1: An overview of historical milestones of project management**



Source: own according to Máchal et al. (2018)

competitiveness, shortened product life cycle, production procedures, inventory management, and the use of technology (Crocitto & Youssef, 2003). Later on, it was crucial to think and act differently to succeed in the contemporary knowledge-based, globalized and innovation-driven economy. In February 2001, the world's leading experts agreed on the Manifesto for Agile Software Development as an alternative to documentation driven, heavyweight software development processes. The authors defined agile using the following values (see Tab. 1).

Agile methods were initially used in software development (Annosi et al., 2020) and are gradually emerging in other business areas (Ramesh et al., 2012; Uludağ et al., 2019). Some previous studies provide examples of using agile approaches in innovation projects and business strategy development (Denning, 2017a, 2017b, 2019; Doz & Kosonen, 2010; Hodgkinson et al., 2017; Dziallas, 2020).

Agile means quick, active, flexible, and responsive to change. This definition accurately captures the fundamental essence

of agile project management, which is the ability to quickly respond to changing external environments, varying requirements, etc. An agile organization uses interactive project management methods to continuously deliver a product to a customer based on active cooperation with the team, which helps to ensure a quick response to any changes (Šochová & Kunc, 2014). Agile development assumes high-level project scope, multiple iterations, self-organizing teams, and extensive customer involvement, as depicted in Fig. 2.

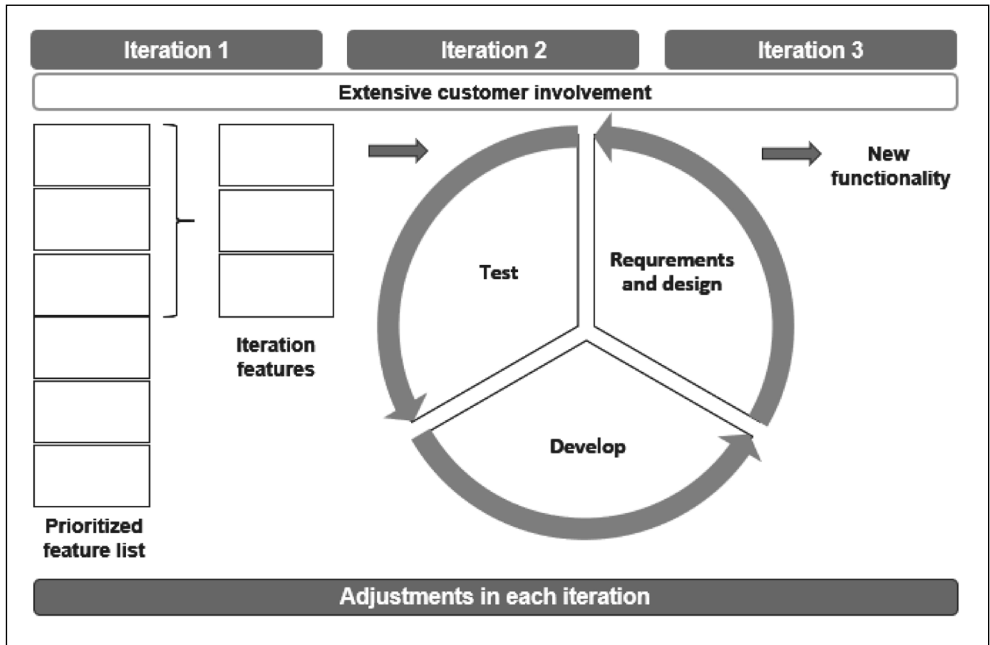
Today, the concept of agile is increasingly associated with the success of companies. As organizations adapt to the ongoing COVID-19 crisis, their agility can be a source of competitive advantage (Comella-Dorda et al., 2020). High uncertainty and change require leaders to act against agile and flexible objectives rather than fixed targets (Narayandas et al., 2020). According to Donovan (2019), the only way to create an authentic culture of flexibility is to enable variability, creativity, and agility. Consequently, flexibility results in a happier,

**Tab. 1: Elements of agile development**

Primary elements	Secondary elements
Individuals and interactions	Processes and tools
Working software	Comprehensive documentation
Customer collaboration	Contract negotiation
Responding to change	Following a plan

Source: own according to Manifesto for Agile Software Development (2001)

Fig. 2: Agile development process



Source: own according to PMI (2021)

healthier, and more productive workforce (Donovan, 2019). Agile teams are usually well equipped for periods of disruption due to their adaptability to fast-changing business priorities and good digital skills (Comella-Dorda et al., 2020). Furthermore, agile methods assist in implementing good knowledge management practices in organizations (Tenório et al., 2020).

Agile management methods emphasize talents and require flexibility and constant interaction of the team members. The traditional management hierarchy is being replaced by multifunctional and self-organizing teams with greater decision-making authority and focused on the dedicated project with maximum effort (Šochová, 2019). There are many benefits to using agile networks within teams instead of more structured, traditional team models: these teams are selected based on each employee's unique skill set. They can help maximize every employee's potential (Petrucci & Rivera, 2018).

The essential differences between conventional and agile methods are depicted in Tab. 2.

In 2019, KPMG surveyed more than 120 participants from 17 countries worldwide. The purpose was to understand better how organizations were changing their operating models and the extent to which organizations aimed to introduce agility across customers, products, and the entire value stream (KPMG, 2019). As the survey showed, 70% of respondents indicated an ambition to integrate business and IT-enabled agile transformation in the next 3 years (see Fig. 3).

The respondents' expectations to scale further toward enterprise-level agility indicate a strong ambition toward becoming agile. On the other side, KPMG (2019) experienced that organizations did not always fully realize the impact of such a transformation on an organization's culture and operating model.

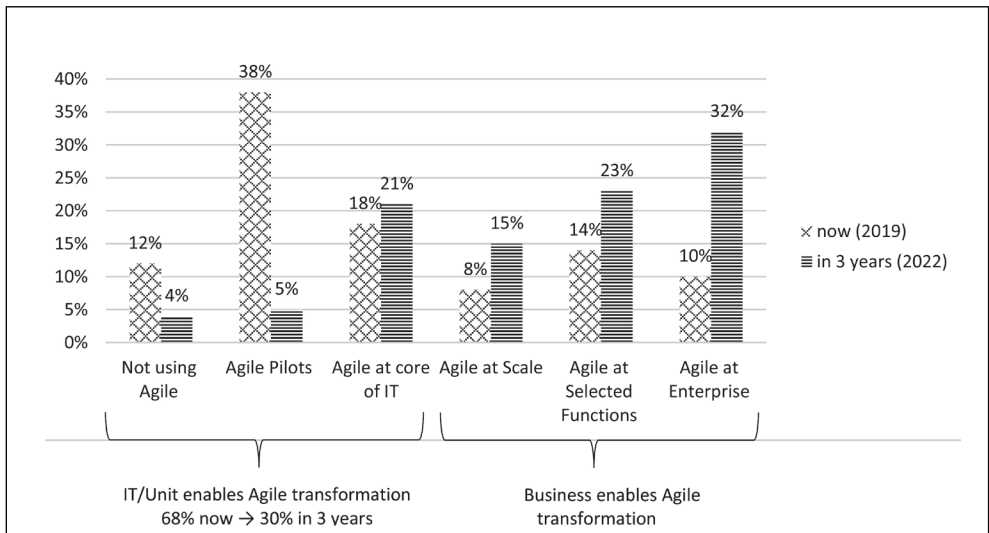
The evolution of knowledge and agile management methods in the Czech Republic is remarkable. According to a survey of agile methodologies in the Czech Republic carried out in 2005–2006, most companies do not use public methods and replace them with internal

**Tab. 2: Differences between the traditional and agile approach**

Aspect	Traditional approach	Agile approach
Fundamental assumptions	Systems are fully specifiable and predictable	Continuous product improvement and testing based on rapid feedback and change
Control	Process focus	People focus
Management style	Command and control	Leadership and collaboration
Decision-making authority	Project manager/board determined by the hierarchy	Agile development teams
Role assignment	Individual and specialized	Self-organized with role interchangeability
Knowledge management	Explicit	Tacit
Communication	Formal	Informal
Customer role	Important	Critical
Organizational structure	Bureaucratic and highly formalized	Flexible, informal, participative
Development model	Life-cycle model	Incremental, iterative
Organization	Large, mechanistic	Small, organic
Quality control	Heavy planning, late heavy testing	Continuous control of requirements, continuous testing
Visibility	High in the initiation and acceptance stage, low in the build phase	Overall project visibility is stable

Source: own according to Engelhardt (2019), Juricek (2014), McElfish (2011)

**Fig. 3: Current position of agile transformation vs. expectation**



Source: own according to KPMG (2019)

company standards or manage projects on an ad-hoc basis; 14% of respondents do not use any methodology (Buchalceková & Leitl, 2006). A 2013 survey of agile management in the Czech Republic showed a relatively low knowledge of agile methods: 19% of respondents admitted to hearing the term for the first time, 43% of respondents stated basic understanding of agile methods, and 19% boasted advanced knowledge (Agilní Asociace & Etnetera, 2013). A survey of agility approach in innovation projects (Antlová, 2015) confirmed that agile methodologies are widely used in ICT and startups and are known to managers of innovative projects in the automotive industry; in construction, logistics, and services, agile approaches are used to a lesser extent in innovation. In the results of the 2019 KPMG survey, the Czech Republic was a country that had already adopted agile on a large scale. The banking sector declared a high level of agile maturity. The challenge was detected in the human resources area: 70% of participants stated that their employees are not ready for an agile way of working; only one-third

of the participants said that agile coaches were present at all levels of the organization. At the same time, 73% of Czech respondents stated that their organization has a strategic priority to become an agile organization in the survey year (KPMG, 2019). It is worth noting that the existing reports primarily provide cross-sectoral comparisons and not an in-depth analysis of agile methodologies in the automotive industry.

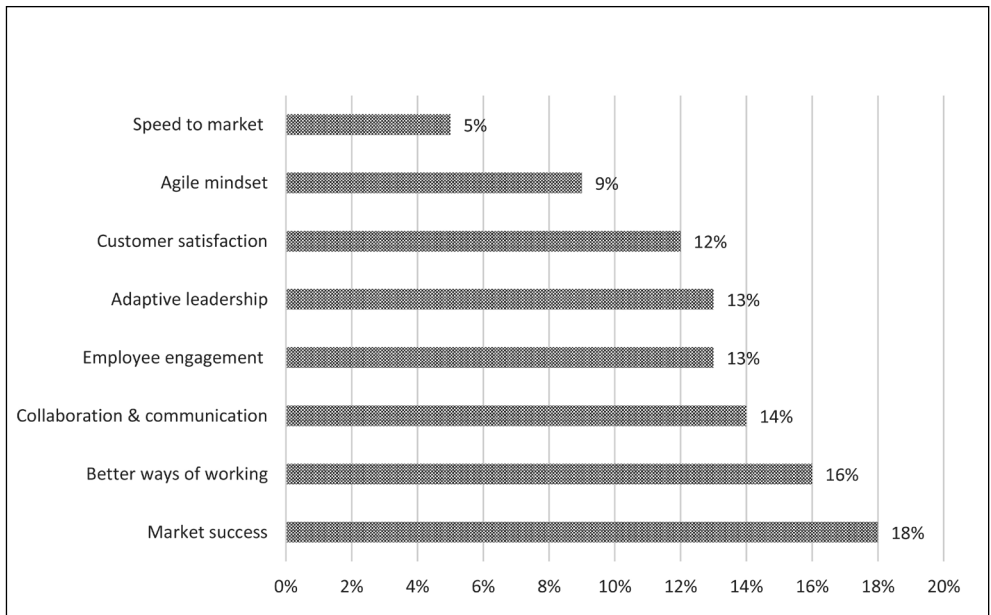
In 2018, the Business Agility Institute surveyed 394 respondents from 166 companies across 29 countries and 24 industries (Leybourn, 2018). Respondents were asked to describe the biggest impact that business agility has brought to their organizations. Fig. 4 depicts the most significant benefits.

A survey of agile project management use in and beyond the IT sector (Ciric et al., 2021) revealed the reasons for introducing agile management (see Tab. 3).

Organizations face various challenges as they introduce agile methodologies, techniques, and practices. The most significant barriers to adopting and scaling agile practices include:

- inconsistent processes and practices;

**Fig. 4: Most significant organizational benefit of business agility**



Source: own according to Leybourn (2018)

**Tab. 3: Reasons for introducing agile project management**

In software development		Beyond software development	
Accelerate project/product delivery	17.3%	Enhance ability to manage changing priorities	14.1%
Enhance ability to manage changing priorities	12.7%	Accelerate project/product delivery	12.9%
Better focus on client	10.2%	Better focus on client	10.0%
Reduce project risk	9.1%	Increase productivity	9.1%

Source: own according to Ciric et al. (2021)

- organizational culture at odds with agile values;
- general organizational resistance to change;
- lack of skills and experience;
- insufficient leadership participation;
- inadequate management support;
- prevalence of traditional development methods (Digital.ai, 2021).

It is worth noting that the COVID-19 pandemic acted as a driving force for agile transformation. In 2020, 433 respondents from 359 organizations worldwide rated their agile maturity while facing an unprecedented impact of the COVID-19 pandemic. Survey data before and during the onset of the lockdown confirmed a significant 15% increase in average maturity post-COVID-19. Increases were concentrated in the areas of customer and quality focus, supporting functions (especially Human Resources and Finance), engagement policies, supply chain, adaptability, value streams, and other maturity measures (Cearns et al., 2020).

## 2. Research Methodology and Data

The applied scientific research method was qualitative research, where data were collected through in-depth interviews. The authors gathered information on current project management techniques and awareness or use of agile methodologies, as well as on the reasons leading to the choice. Semi-structured interviews covered the following types of questions:

- basic characteristics of the researched company;
- project management tools and techniques used in the company;
- knowledge and use of agile methodologies; possible advantages or disadvantages; reasons for introduction if applicable;

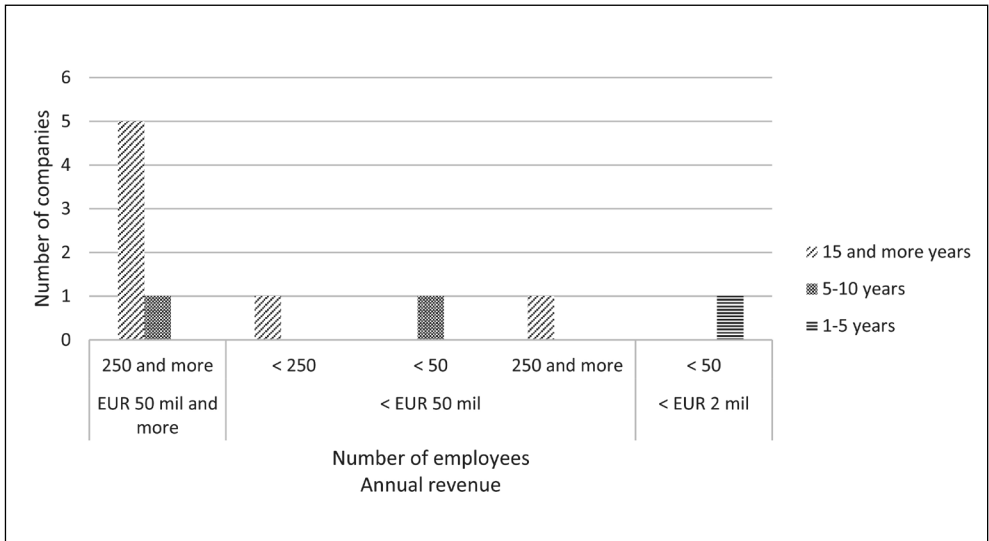
- strategic priorities related to project management and post-COVID transformation.

The questions were based on theoretical concepts of agile management and previous research on this phenomenon. The interviews varied according to the respondents' level of knowledge and the agile maturity of the surveyed companies. The content was analyzed and coded by keywords or phrases for further data processing.

The primary research targeted respondents from automotive companies in Liberec and Central Bohemian regions. The economic prosperity of these regions is highly dependent on the densely concentrated car manufacturers and related suppliers. The pandemic revealed significant problems in their value chains caused, among other things, by rigidity and a slow response to market changes. A thorough analysis of the management of these companies should serve as a basis for recommendations for implementing agile methodologies.

Given that agile management is still a relatively new phenomenon in terms of its application in Czech companies, respondents were selected primarily from the management ranks, respectively, project management of companies. The authors assumed that these respondents had the most significant awareness of agile management methodologies in companies, so they would be able to provide relevant information for research. The surveyed companies were either directly car manufacturers or suppliers of products and services for the automotive sector (so-called Tier 1 or Tier 2 suppliers). In-depth interviews took place in August–September 2021, either in personal or virtual meetings. During this period, interviews were conducted with representatives of 10 companies, while in some companies, more than one person

**Fig. 5:** Basic characteristics of surveyed companies



Source: own

attended the meeting. The participation of several knowledgeable respondents from one company increased the answers' quality, accuracy, and versatility. One meeting with the company was always considered as one research interview, regardless of the number of respondents present at the meeting. One interview lasted from 1 hour to 1.5 hours. Respondents wished to remain anonymous.

Fig. 5 depicts the basic characteristics of the surveyed companies, i.e., the length of operation, annual revenue, and the number of employees.

In-depth interviews were conducted with general managers (5 persons), management team members (4 persons), project managers (2 persons), and external consultants (1 person).

The semi-structured interviews found out to what extent the selected automotive companies use agile methodologies, whether they perceive agile transformation as a strategic priority and what advantages or concerns they have regarding the implementation of the new management method. The findings confirmed the assumption that the agile management approach is increasingly entering the automotive environment and can facilitate

the transformation of the entire value chain in response to post-pandemic disruptions.

### 3. Research Results

Eighty per cent of respondents answered in the affirmative as to whether they know the concept of agile management. Some respondents demonstrated a basic knowledge of the concept, while a few defined agile methodologies very precisely. A common attribute of all definitions formulated by respondents was a speedy and flexible response to changing conditions or customer requirements. Most respondents got acquainted with the term at work.

As the interviews showed, the knowledge of agile management methodologies was instead on a theoretical level. Only three of the ten companies surveyed use individual elements of agile management methodologies, namely Kanban, Lean, or Scrum. Most companies use project management methodologies adapted to their own business conditions. More than half of the respondents stated they used Failure Mode and Effects Analysis (FMEA), lessons learned, risk analysis, responsibility matrixes, and formal communication plans. The reference to Work Breakdown Structure, Logical Framework

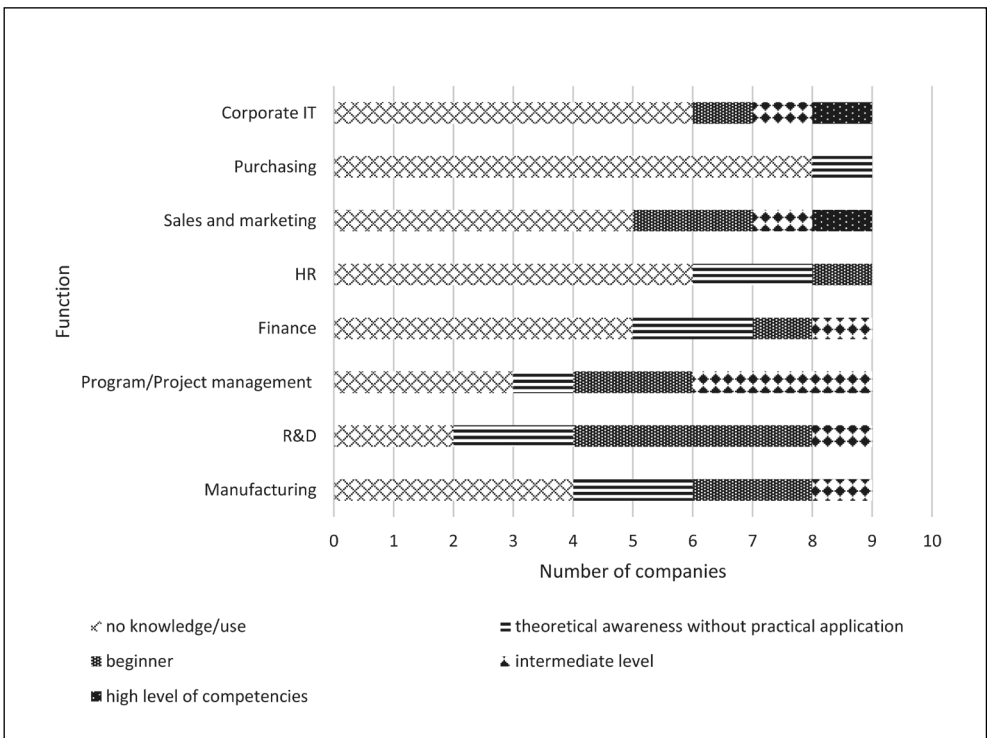


**Tab. 4: Current and foreseeable use of agile methodologies**

Agile transformation strategy	Degree of current use of agile methodologies				
	Do not use or consider	Consider the introduction	Experimenting/introducing	Using, but still learning	High level of competencies
Emphasis on greater flexibility	1	1		1	None of the companies
Long-term priority				1	
Not a priority	2	1	1	1	
Partially introduced			1		

Source: own

**Fig. 6: Knowledge and use of agile methodologies by individual company functions**



Source: own

Approach, Critical Path Method, Earned Value Analysis, or Project Charter have occurred rarely during the interviews.

Tab. 4 demonstrates the current degree of use of agile methodologies by the interviewed companies about a possible

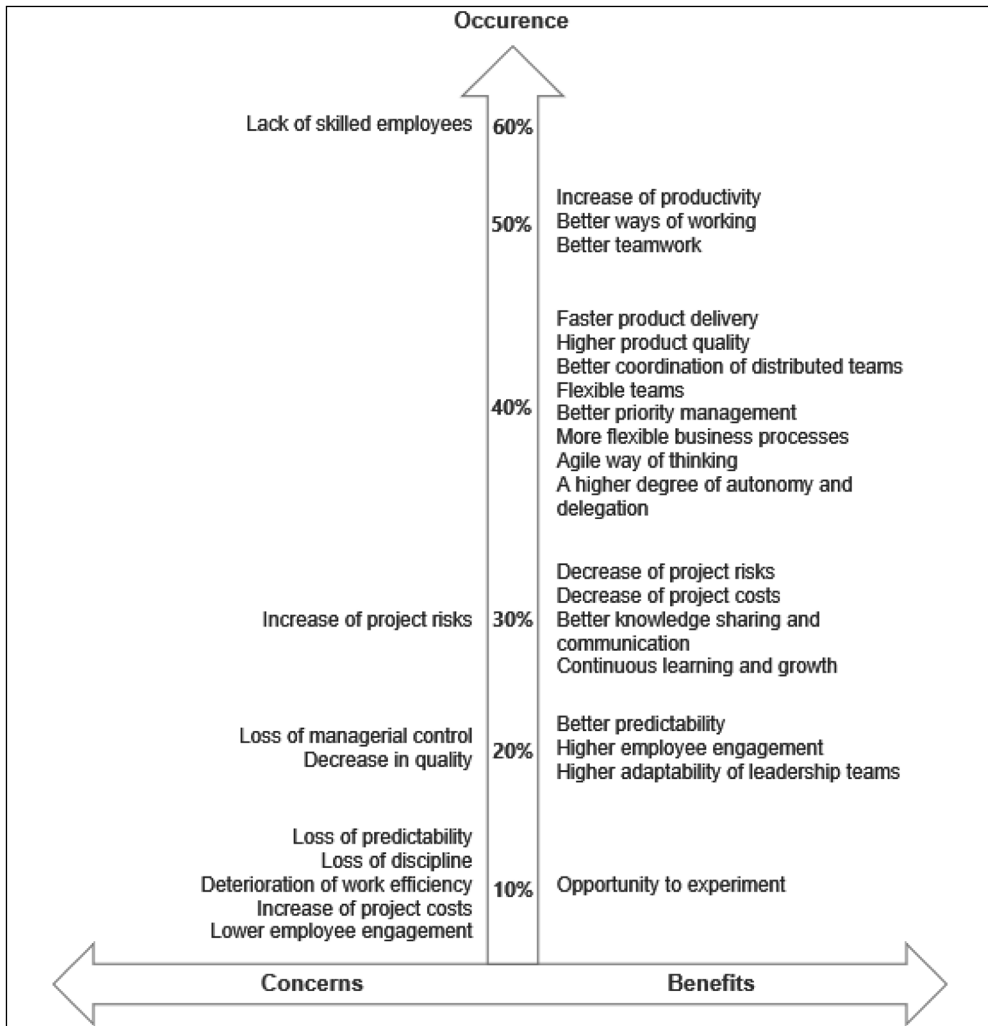
agile transformation strategy. None of the respondents assessed the level of knowledge of agile approaches in their companies at a high level. At the same time, none of the companies perceived agile transformation as an urgent strategic priority. However, a third of companies

consider the continuous increase in flexibility and faster response to the market and customer requirements a priority. All respondents also stated that they responded flexibly to changes in customer requirements in the pre-production phases; for various financial and operational reasons, adapting to changing conditions after the series production launch is very problematic.

Half of the respondents either failed to assess what percentage of projects in the

company are managed agilely or stated that no projects are managed agilely. An insignificant part of projects managed agilely (1–25%) does not concern the main subject of business operations but support functions. IT projects in finance and central purchasing were mentioned as examples. Respondents conditioned the success of these projects with a smaller number of project team members, namely up to 10 individuals.

**Fig. 7: Concerns and benefits of agile approaches**



Source: own

A significant part of the in-depth interviews was devoted to the question of knowledge and the use of agile methodologies by individual company functions (see Fig. 6).

From the above overview, it is evident that the most advanced functions in using agile management methodologies are research and development (R&D) and program or project management. However, the parts either do not know agile methodologies or have theoretical awareness without practical application. The question was not discussed with one of the surveyed companies due to its smaller size.

Respondents were asked to list the benefits and challenges of applying the agile methodologies, either out of their practical experience or theoretical background. Multiple responses are grouped according to the frequency of their occurrence, as shown in Fig. 7.

Fig. 7 points to higher variability of potential benefits than concerns about introducing agile methodologies. However, most respondents do not apply agile methods or apply them to a lesser extent. Logically, the subject of in-depth interviews was also why companies did not use or did not even plan to introduce agile management methods. The reasons below explain the behavior of companies in this regard.

1. Organizational culture is not in line with agile principles and values

This reason is contradictory. On the one hand, most respondents claim that their organizations, especially the headquarters, support agile transformation. On the other hand, a detailed look at the corporate environment versus agile principles demonstrates the opposite. Only one respondent boasted an informal corporate culture. Seventy per cent of companies are hierarchically organized. While most respondents say they are more results-oriented, they also state the need to comply with processes, customer requirements, and regulations. In six out of ten companies, formal or rather formal communication in the form of meetings or official correspondence prevails. Frequent, transparent personal communication was declared by only one of ten interviewees.

2. Resistance to change

Respondents stated that individual employees, groups, or even workplaces were reluctant to adapt to changed

circumstances if it affected their work or not involved in decision-making. Individuals often oppose or struggle with adjustments or transformations that change the status quo because they see no reason to change. It is a frequent reaction to any change. Respondents are therefore concerned that the resistance of employees or managers can be a significant threat to the success of implementing agile management approaches. Some respondents also raised concerns about unfavourable client reactions.

3. Financial aspects

Implementing changes requires resource allocation. Respondents expressed concern that the introduction of agile management methodologies would have a negative impact on companies' financial indicators, either on the cost side or on the revenue side, due to the reduction of customer demand.

4. Inappropriate organization design

Seven of the ten companies interviewed have a multi-level hierarchical organizational structure. The environment of half of them is formal and relatively stable, where changes are not welcome. Seven out of ten teams work on several long-term projects simultaneously. The distribution of tasks and subsequent control is the responsibility of the immediate manager. Only one company answered in the affirmative to the question of the possible self-organization of teams. Decisions are being made based on hierarchical authority. Only two respondents declared a high or relatively high level of autonomy and delegation.

5. Inappropriate nature of projects

Seven out of ten interviewed companies work on long-term or relatively long-term projects, and only one company deals with short-term contracts. Eighty per cent of them work on several projects simultaneously. Most companies respond flexibly to changing customer requirements, but only in the pre-production phases of projects. Once series production is launched, changes are not welcome. The additional costs caused by such changes are shared between the manufacturer and the customer according to the degree of forcing the change.

6. Time deficit

The automotive industry operates in turbulent market conditions. Executives

often describe their daily overload using the term ‘firefighting’. Time constraints often negatively affect strategic initiatives.

- 7. Lack of knowledge, skills, talent  
The lack of a skilled workforce was the most frequently mentioned concern. Respondents claim that the employees’ awareness of agile management methodologies is relatively low. The survey showed that employees of 70% of companies were not ready for agile transformation, 20% of respondents took a neutral position, and only one company was optimistic about the relative readiness of the employees for a new management style. Organizations also lack change managers. Given that agile management emphasizes talent and the self-organization of autonomous teams, this reason has a central place among the reasons preventing transformation.

- 8. Reluctance to cooperate and share knowledge  
Many employees still work on their individual goals and are responsible for their own work results. Insufficient teamwork collaboration results in a reluctance to share know-how.

The above results of in-depth interviews confirm that representatives of automotive companies in the Liberec and Central Bohemian regions still perceive several significant obstacles or concerns about introducing agile management methodologies. However, they are also aware of the potential benefits of agile strategies for business.

### 3.1 Agile Transformation: Recommendations

Primary research has shown a rather lower level of knowledge and use of agile methodologies at the functional level. The most agile functions are R&D, program, and project management. None of the surveyed companies assessed their agile maturity at a high level, nor did they consider agile transformation to be an urgent strategic priority. However, a third of companies see greater flexibility and a faster response to market and customer requirements as a priority. This can be achieved by implementing agile methodologies.

Agile transformation is a complex process accompanied by systematic change management. To successfully realize an agile transformation, organizations need to start with implementing the basics – Lean, Scrum and Kanban (KPMG, 2019). Following a thorough analysis of the current business environment, organizations that scale agile often tailor existing frameworks or develop their own agile framework to capture the specifics of their operating models. However, it is essential to realize that agile transformation is not purely instrumental.

Tab. 5 brings the general recommendations for those who want to shift to an agile way of working.

The above recommendations address most of the concerns of the surveyed companies regarding introducing agile methodologies. This can serve as a good guide for companies

**Tab. 5: Recommendations for successful adoption of business agility – Part 1**

Challenge	Recommendation
Traditional leadership style	<ul style="list-style-type: none"> <li>■ Promote new leadership styles and behaviors that are consistent with the organization’s goals for transformation;</li> <li>■ Coach leaders in servant leadership techniques.</li> </ul>
Insufficient sponsorship	<ul style="list-style-type: none"> <li>■ Foresee and budget for a multi-year agile transformation;</li> <li>■ Communicate what business agility means for the organization.</li> </ul>
Setting vision & Empowering teams	<ul style="list-style-type: none"> <li>■ Have a transparent process to set and communicate the business agility vision to the entire organization;</li> <li>■ Support teams to make sure they are equipped to achieve their goals but also trust in their execution.</li> </ul>
Command and control mindset & Organizational culture	<ul style="list-style-type: none"> <li>■ Provide coaching and mentoring on the agile mindset associated with growth, market experimentation, psychological safety, and continuous delivery of value;</li> <li>■ Change organizational KPIs to promote agility;</li> <li>■ Promote transparency and focus on working together.</li> </ul>

**Tab. 5: Recommendations for successful adoption of business agility – Part 2**

Challenge	Recommendation
Lack of buy-in	<ul style="list-style-type: none"> <li>▪ Demonstrate leadership total commitment;</li> <li>▪ Identify and resolve pitfalls to get early wins and teams' buy-in;</li> <li>▪ Continue investment in the transformation team and improvement initiatives to realize ongoing benefits after initial wins;</li> <li>▪ Develop local business agility champions in each team;</li> <li>▪ Do not link headcount reduction targets with agile transformation.</li> </ul>
Inappropriate organizational design	<ul style="list-style-type: none"> <li>▪ Align the organization's structure towards business outcomes;</li> <li>▪ Reduce handoffs across time zones and geographies;</li> <li>▪ Where possible, ensure that an entire customer value stream is contained within a single team;</li> <li>▪ Promote the 'Goal over Process' principle;</li> <li>▪ Introduce common ways of working and increase team ownership of business outcomes.</li> </ul>
Supporting functions	<ul style="list-style-type: none"> <li>▪ Focus sufficient transformational efforts on supporting functions (HR, Finance, Compliance);</li> <li>▪ Minimize functional silos that reinforce organizational barriers and detract from the collective accountability.</li> </ul>
The complexity of agile transformation	<ul style="list-style-type: none"> <li>▪ Start with implementing the basics – Lean, Scrum, and Kanban;</li> <li>▪ Consider Value Stream Management implementation.</li> </ul>

Source: own according to KPMG (2019), Leybourn (2018), Cearns et al. (2020), Digital.ai (2020)

developing agile frameworks that capture their operating models.

## Conclusions

Agile is today one of the most popular projects management methods due to its flexibility and evolutionary nature. This iterative and incremental approach empowers self-organized teams to deliver a high-quality product to customers through continuous interaction and ongoing response to changing requirements. As confirmed by the recent pandemic disruption, a company's agility can be a significant source of competitive advantage. Companies worldwide are accelerating the adoption of agile methodologies to succeed within the contemporary dynamic and complex business environment.

The Czech Republic has already embraced agile on a large scale. Domestic firms expect to scale their agile efforts even more. However, the level of agile maturity differs across industries, with IT and Consulting still having the highest average scores. Manufacturing, automotive, and aerospace organizations are starting with business agility yet facing instrumental and cultural constraints on their transformational journey. An agile transformation does not happen overnight. The entire operational model

changes, including structure, governance, capabilities, processes, technology, people, and culture. In return, appropriately implemented optimizations increase customer satisfaction, speed, and flexibility, reduce costs through efficiency, and boost employee engagement. Management sponsorship and teams' involvement play an essential role in the successful adoption of agile methodologies.

Secondary data analysis confirmed the progress in knowledge and application of agile practices in the Czech Republic over the last decade. Qualitative research in selected automotive companies in the Liberec and Central Bohemian regions conducted in August-September 2021 pointed to a theoretical awareness of agile management methodologies rather than practical application. None of the surveyed companies assessed their agile maturity at a high level, nor did they consider agile transformation an urgent strategic priority. The R&D, program, and project management stood out as the most agile functional areas. At the same time, a third of companies prioritize greater flexibility and faster response to market changes. Some of the surveyed companies have already successfully incorporated Lean, Kanban and Scrum into their operating models,

which is the basis of agile transformation. Similarly, the 15th State of Agile Report (2021) points to a disproportion in the adoption of agile principles and practices in various areas of business: while 86% of software development companies using agile methodologies, Operations, HR, and Finance lagging behind (29%, 16%, 10% respectively). The Business Agility Report (2021) also demonstrates lower agility in manufacturing compared to consulting and IT; however, over 87% of organizations reported increases in business agility throughout the COVID-19 disruption – and this improvement is likely to be sustained. This evidence reinforces that COVID-19 has been an accelerator for increasing organizational agility.

The in-depth interviews were conducted with the representatives of 10 car manufacturers in the north of the Czech Republic. The primary research has revealed selected companies' extent, benefits, and concerns of using agile methodologies.

The authors continue semi-structured interviews with seasoned managers in automotive producers in the Liberec and Central Bohemian regions for a more robust data analysis. The target group is currently limited to 30 respondents from the automotive sector; however, may be extended to other sectors of the supply and demand chain in the future.

The key research findings confirmed the assumption that the agile management approach is gradually entering the automotive environment. Although most respondents still do not declare agile transformation a strategic priority for the next few years, car manufacturers recognize the need for a rapid and flexible response to change, especially with regard to post-pandemic disruptions.

The research findings, combined with secondary data analysis, enabled recommendations for the successful adoption of business agility. The authors are aware of the research limitations given by a limited number of respondents in only two regions with a high concentration of automotive companies. Yet the authors believe this paper will contribute to a gap in the literature and provide insight for future in-depth analysis of agile management in the manufacturing environment.

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