

Understanding Agile Transformation in Banking: Employee Perceptions in a Regulated Context

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Abstract: - In today's increasingly governed financial industry, there is a growing reliance on the application of Agile software development practices, aimed at increasing responsiveness, collaboration, and speed of value addition. Although such practices yield flexibility, rapid feedback, and gradual improvement, their application within the financial industry is confronted with unique issues such as organizational hierarchies, existing infrastructure, and regulatory requirements. However, with the increasing adoption, there still appear to be fewer empirical insights into such practices in terms of perceptions within employee circles, especially in the emerging markets. To fill this knowledge gap, this research focuses on exploring employee perceptions of Agile practices within the Turkish banking industry through a structured survey conducted with 105 Agile practitioners. Findings highlight the importance of team unity, transparency, and customer satisfaction as key drivers for effective Agile adoption. At the same time, this research identifies the remaining obstacles, such as a lack of documentation, inconsistent Agile training, and difficulties in aligning Agile principles with the banking industry requirements for compliance. Specifically, this research, through its empirical insights from a developing country, provides valuable contributions to the existing knowledge body on Agile transformation, as well as valid implications for the banking sector that seeks effective scaling of Agile practices.

Key-Words: - Agile methodologies, Banking, Employee perception, Agile adoption, Türkiye, Software development, Regulated industries.

Received: September 11, 2025. Revised: January 4, 2026. Accepted: March 2, 2026. Published: June 16, 2026.

1 Introduction

With the increasing pace of digital transformation across the globe, organizations in different industries are forced to rethink their operational models. It is in this backdrop that the banking industry stands as one of the most impacted sectors, largely due to increasing customer expectations, intensifying fintech competition, and a rapidly shifting regulatory environment, [1]. However, with the increasing adoption of digital banking, mobile applications, and customized financial services, the need for banking organizations to adapt their software development practices is also increasing.

In light of such challenges, Agile development paradigms of technological applications have been identified as preferred alternatives to traditional models, such as the Waterfall model. Such models highlight self-contained development cycles, customer feedback, flexibility, and adaptability in regard to changes that may emerge in requirements, [2], [3]. These principles have been widely adopted in the technology industry and are now gaining

ground in more regulated and structurally rigid sectors such as banking, [4], [5].

Although its importance is increasing with time, the application of Agile principles in the banking industry meets its own unique difficulties, especially in Türkiye, where the organizational structures of banking organizations usually involve hierarchies, with risk-averse tendencies, and complex regulatory requirements. Banking organizations operating in Türkiye come under intense regulation from the Banking Regulation and Supervision Agency (BDDK) and the Central Bank of the Republic of Türkiye (TCMB), with severe reporting requirements. Such difficulties might limit the application of those principles that provide greater flexibility with regard to teamwork, communications, and planning.

During the last ten years, Türkiye's progress in digital banking transformation has been remarkable, with many positive changes, such as widespread adoption of mobile banking, real-time payment systems, and open banking APIs. According to Deloitte's report, Türkiye is one of the most evolved

emerging markets in digital banking, showing strong adoption and maturity on the key fronts of digital banking, [6]. In this context, Agile methodologies are viewed as a technical framework and also as a strategic enabler to deliver faster, more flexible, and customer-centric banking solutions.

While Turkish banks have begun experimenting with Agile frameworks such as Scrum and SAFe in their IT departments, especially within private banks with innovation units, the success of these transitions largely depends on employee perceptions and organizational alignment. Agile transformation is not merely a procedural shift but a cultural one. Factors such as teamwork, existing familiarity with the principles of Agile, management support, and workload may greatly affect the adoption of Agile within organizational settings, [7], [8], [9].

However, there is still a gap in scientific studies focusing on employee perceptions of Agile paradigms in the banking industry in Türkiye. It is imperative to gain insights into the perceptions that professionals participating in Agile projects hold with regard to its benefits, challenges, as well as its adaptability with their working culture. These views can serve as the basis for practice as well as policy, helping institutions in scaling the application of Agile principles.

This study aims to address this research gap by conducting an empirical investigation of employee perceptions on Agile software development within the Turkish banking sector. A structured survey was administered to 105 professionals working in Agile-based roles in a private Turkish bank. The research explores perceived advantages, constraints, readiness factors, and contextual compatibility of Agile methods. In doing so, the study contributes to the global body of knowledge on Agile adoption and also provides context-sensitive insights for banking institutions in Türkiye and other emerging markets undergoing digital transformation. Accordingly, the study is guided by the following research questions:

RQ1: What are employees' perceptions of the applicability and effectiveness of Agile software development in the banking sector?

RQ2: What challenges and limitations do employees experience while working with Agile methodologies in a regulated, hierarchical banking environment?

Such questions aim to clarify the perceptions of banking industry experts within the emergent market with regard to the appropriateness, benefits, as well as limitations of embracing the principles of Agile. By focusing the research on employee-level insights, the study offers a complementary perspective that contrasts with the more organizational or framework-

concerned literature that currently exists. In this way, it highlights the crucial roles that perceptions of practitioners play in determining the adoption of agility in environments such as banking.

2 Related Work

Large, highly regulated corporations that pursue Agile transformation face unique issues with regard to organizational complexity, organizational decision-making, and regulatory compliance, [10], [11]. Such limitations often impede the agility that Agile processes offer. However, experts highlight the importance of organizational transformation, leadership support, or cultural shift, often achieved through frameworks such as SAFe (Scaled Agile Framework) or LeSS (Large Scale Scrum), [12], [13], [14].

In the banking industry, which was both risk-averse and closely regulated, the uptake of the Agile approach was gradual. However, with the rise in competition from fintech startups and the need for speedy digital transformation, this was hastened in the software development divisions. The benefits that come with the use of the Agile approach include its higher speed, flexibility, and collaboration, [15], [16]. However, despite its many benefits, some difficulties, such as documentation-oriented processes with low tolerance for experimentation, remain.

In Türkiye, major private banks have launched Agile transformation initiatives as part of their digital transformation strategies. However, scholarly studies on such efforts are still limited. Perceptions of employees in such initiatives can play a critical role in determining the facilitators as well as inhibitors associated with embracing the Agile approach in a controlled, hierarchical setting.

Successful application of the Agile methodology requires attention to both the technical side of things and the human aspects, [17], [18]. Employee motivation, prior Agile experience, clarity of roles, and top management support play a central role in shaping how Agile is embraced and sustained, [18], [19]. Resistance to change -driven by lack of understanding or fear of losing control- remains a recurring challenge, particularly in hierarchical settings, [20]. Psychological safety, trust, and empowerment have been empirically linked to the depth of Agile adoption, as teams that feel safe to share ideas and feedback perform more effectively, [21], [22]. Thus, a leadership that promotes the principles of the Agile paradigm through coaching and role modeling is essential, [23].

In regulated sectors like banking, cultural and behavioral dimensions are particularly critical for balancing agility with compliance. Examining employee perceptions, therefore, provides a valuable lens to assess Agile's organizational fit. Although extensive research has explored Agile frameworks and success factors, studies focusing on employee-level perceptions in regulated industries -especially in emerging markets such as Türkiye- remain scarce. Most evidence comes from technologically mature economies, leaving a gap in understanding how Agile operates within developing, compliance-intensive contexts.

This paper fills the gap existing in the literature by undertaking a quantitative analysis of employee perceptions in a private Turkish bank. By gathering views associated with positions such as developers, analysts, and testers, this research points out the key enablers, advantages, and issues associated with this process. This report will thus play an important role in addressing the existing debate in the global literature with regard to scaling Agile.

3 Methodology

This study uses a quantitative and descriptive approach in order to investigate employees' perceptions about Agile software development methodology in the banking sector in Turkey. The research involves conducting a cross-sectional survey on 105 individuals such as Scrum Masters, Product Owners, and developers who work using Agile methodology in private banks in Türkiye between 2024 and 2025.

The questionnaire was posted via Google Forms anonymously with the necessary institutional permissions based on the principles of Scientific Research and Publication Ethics Committee of Gebze Technical University.

For data gathering, a questionnaire with 30 questions was prepared specifically for this research according to five main themes:

(1) Demographic and Professional Profile: This dimension collected necessary information with regard to participants, such as their gender, age group, education level, working experience, Agile-specific experience, as well as their positions (for example, developers, analysts, testers).

(2) Agile Readiness and Organizational Support: This criterion assessed the readiness of the organization as a whole for the adoption of agility, as well as the level of support. This criterion considered the availability of Agile coaches/support staff, the level of documentation, the number of Agile events (e.g., daily meetings, planning, reviews, and

retrospectives), as well as the alignment of Agile principles with the organizational structure.

(3) Perceived Operational Advantages: This dimension focused on the effects of Agile practices on employees' perceptions of product quality, time-to-market, cost, and responsiveness, as well as their perceptions compared with their predecessors working with traditional practices.

(4) Perceived Flexibility and Technological Adaptation: This dimension focused on perceptions regarding Agile's capacity to support adaptability to changing technologies, dynamic requirements, and the fast-paced nature of digital transformation. It also examined the perceived flexibility of Agile processes within a fast-paced and regulated banking environment.

(5) Team Dynamics and Satisfaction: This dimension captures the experiences that relate to working within the team, such as communication, teamwork, autonomy, motivation, innovation, and team satisfaction for working in Agile.

Except for the demographics and professional profile, all other variables were assessed through the use of a scale. Specifically, the scale that was adopted utilizes a 5-point scale, with anchors set from "strongly disagreed" through to "strongly agreed" for the collection of employee perceptions. To ensure that the contents of the proposed instrument were valid, the form was reviewed by experts, both from academia and industry, for their content validity.

4 Results and Discussion

4.1 Demographic and Professional Profile

The results of this study are built on the analysis of themes based on the perceptions of employees regarding Agile methodology in the banking industry. In the first place, it should be pointed out that it is necessary to analyze the demographic characteristics, as well as attributes, of the respondents since this background will contribute to determining their perceptions.

As shown in Table 1, the profile of the 105 respondents is diverse in terms of various attributes, such as gender, age, educational background, work experience, familiarity with Agile, as well as occupational status. At the same time, the well-distributed population concerning seniority, familiarity with Agile, as well as involvement with the team helps in deriving insights as well as shared perspectives. Also, with higher education acquired, it's likely that the participants would be equipped

with cognitive abilities that would allow them to deal effectively with Agile practices.

Table 1. Participant Demographics and Experience

Variable	Category	n	%
Gender	Female	58	55.2%
	Male	46	43.8%
	Prefers not to say	1	1.0%
Age Group	18–30	27	25.7%
	31–40	55	52.4%
	41+	23	21.9%
Education Level	Associate Degree	1	1.0%
	Bachelor's Degree	72	68.6%
	Master's or above	32	30.5%
Work Experience	1–5 years	21	20.0%
	6–10 years	25	23.8%
	11–15 years	35	33.3%
	16+ years	24	22.9%
Agile Experience	0–1 year	11	10.5%
	2–5 years	51	48.6%
	6+ years	43	40.9%
Agile Role	Developer	80	76.2%
	Scrum Master	19	18.1%
	Product Owner	6	5.7%
Job Title	Analyst	41	39.0%
	Developer	25	23.8%
	Tester	19	18.1%
	Other	20	19.0%
Agile Training	Internal (In-house)	78	74.3%
	External	19	18.1%
	No Training	8	7.6%

Source: created by the authors

A notable finding that emerges clearly from empirical evidence is that Agile education is essentially conducted within the organization, as 74.3% of the participants received this education within the organization, compared with 18.1% who were trained outside, with only 7.6% not being trained. Such results clearly reflect the organizational focus on Agile practices.

This diversity of participants' backgrounds adds strength to the analysis undertaken, as well as assisting with the identification of variations in perceptions relevant to Agility that can be linked with professional roles, tenure, and other variables.

4.2 Agile Readiness and Organizational Support

This section presents findings related to employees' preparedness for Agile methodologies and the organizational mechanisms that support their adoption. The results reveal a generally favorable landscape for Agile integration in the banking sector, both at the individual and institutional levels (Table 2).

A significant portion of participants reported feeling knowledgeable about Agile practices. While 51.4% considered themselves well-informed and 30.5% moderately sufficient, this distribution indicates room for further capacity building. The absence of participants with no familiarity is promising; however, the substantial proportion of respondents with only moderate knowledge suggests a need for ongoing training and upskilling initiatives to ensure consistent and in-depth Agile competency across teams, [24], [25].

Table 2. Agile Readiness and Organizational Support

Category	Fully (%)	Partially (%)	Not at All (%)
Self- Reported Knowledge Level	51.4	30.5	18.1
Internal Training	74.3	25.7	-
Agile Support Team	88.6	11.4	-
Perceived Documentation Adequacy	23.8	14.3	61.9
Ritual Consistency	60.0	31.4	8.6

Source: created by the authors

In parallel, organizational support structures appear to be well-established. The majority of respondents (88.6%) confirmed the existence of a dedicated Agile support or consultancy team within their organization. This widespread availability suggests that banks encourage Agile adoption and facilitate its implementation through structured internal mechanisms, [26], [27].

Agile practices also seem to be largely embedded in daily workflows. According to more than half of the respondents (60%), all agile ceremonies were practiced on a regular basis. Furthermore, according to 31.4%, certain agile ceremonies were done regularly by them, whereas a small number reported doing them irregularly. This consistent implementation indicates a high degree of methodical alignment across teams, [28], [29].

However, when it comes to documentation -a critical component for maintaining organizational memory- the findings suggest notable variability. Though more than half of the respondents felt that the documentation was partially satisfactory (54.3%), there were fewer instances where it was considered entirely sufficient (23.8%). It is evident from this structural issue that a need for better standardization exists regarding documentation so that knowledge persistence could be facilitated, [25], [30], [31].

This issue gains additional importance in the Turkish banking context, where institutions operate

under strict BDDK and TCMB supervision. Government regulations require that systems be completely auditable, traceable, and documented. Therefore, substandard documentation practices within Agile environments may foster difficulties as well as risks associated with compliance.

Taken together, the results demonstrate a well-informed, trained, and supported workforce that has a strong organizational infrastructure in place to facilitate Agile transformation. Having both individual readiness and infrastructure in place adds strength to the existing groundwork for effective application of Agile practices in banking.

4.3 Perceived Operational Advantages

This section explores participants' perceptions of Agile methodology in terms of its operational benefits, focusing on five key dimensions: cost-efficiency, product quality, time-to-market, feedback-driven productivity, and comparative advantage over traditional models. The results highlight how Agile is experienced in banking software projects and where potential improvements could be made (Table 3).

A majority of participants (58.1%) perceive Agile as a moderately cost-efficient methodology, while 31.4% consider it low-cost, aligning with the method's lean and incremental delivery philosophy. Nevertheless, a minor percentage (4.8%) perceived this methodology as expensive, and 5.7% gave no evaluation at all, implying possible variations in budgeting processes from one organization to another. Such findings imply that although Agile methodology can be considered affordable most of the time, its success in terms of costs will still depend on various contextual factors, [32], [33].

Considering product quality, more than half of the respondents (52.4%) considered the products developed using Agile as highly qualitative, while 43.8% chose moderate quality of such products and only 3.8% mentioned low quality. These findings clearly highlight a positive attitude towards Agile with respect to developing high-quality software, which is probably linked to iterative development, testing, and feedback, [34], [35]. Nonetheless, the relatively small percentage of people who reported their dissatisfaction with regard to quality indicates that both standardization and teamwork are essential for achieving results.

One of the main benefits of the Agile approach, which is faster development, was supported by 66.7% of those surveyed. At the same time, 16.2% did not feel any time-saving, while 3.8% faced time loss. This can be justified by the level of organizational maturity, resistance to change, and

poor adaptation to the new paradigm of Agile. The conclusion is that increased speed was achieved not only due to implementing Agile processes but also due to organizational culture, [35], [36], [37].

Table 3. Perceived Operational Advantages of Agile

Category	High / Yes (%)	Moderate / Neutral (%)	Low / No Opinion (%)
Cost Efficiency	31.4	58.1	11.4
Product Quality	52.4	43.8	3.8
Faster Delivery	66.7	16.2	17.1
Productivity via Feedback	89.5	10.5	-
Overall Advantage vs. Traditional	74.3	17.1	8.6

Source: created by the authors

The concept of feedback, which is an integral part of Agile philosophy, was highly appreciated, with 89.5 percent of respondents recognizing the benefits of ongoing feedback towards increasing efficiency. This highlights the importance of the practice of retrospection, client meetings, and quick adjustments towards improving team efficiency, [34], [38].

Lastly, participants were required to evaluate the comparison between Agile and conventional software development approaches. The overwhelming majority of 74.3% responded positively towards Agile being better in most cases, based on factors such as flexibility and adaptability in changing requirements, [39], [40], [41]. Fewer participants, at only 6.7%, favored conventional approaches, whereas the remaining 17.1% gave neutral responses. This distribution reflects a widespread acceptance of Agile's strategic fit for modern banking systems, though not without room for reflection on implementation barriers.

4.4 Perceived Flexibility and Technological Adaptation

This section presents employees' perceptions regarding the flexibility of Agile practices and their ability to adapt to technological change (Table 4). Agile methodology is widely appreciated by participants for its ability to adapt to sudden and unforeseen changes, [42], [43]. From the survey results, it can be seen that 87.6% of the respondents consider the Agile methodology as either flexible or very flexible. This demonstrates Agile's strength as being able to respond to dynamic environments. Also, the methodology's suitability with evolving

technology was another important advantage. A total of 94.3% of the participants noted that Agile methodology was highly adaptable to technology advancements.

Another important factor regarding the utility of Agile approach is its ability to be applied to projects of varying size. In particular, 81.9% of the survey participants consider that Agile is applicable to projects of both small and large scales [16], [40]. Although typically perceived as a better choice for smaller projects, this new perspective can be explained by the fact that today large projects are split into smaller parts or modules.

Focusing on the banking sector, the findings show strong support for Agile. About 81.9% of respondents agree that Agile improves productivity in banking, and 91.4% believe it is compatible with the sector. These results indicate that Agile can be successfully integrated even into heavily regulated industries, [44], [45], [46]. This alignment may stem from Agile's iterative and modular structure, which allows for compliance checkpoints, risk mitigation, and faster response to regulatory changes; critical factors in financial services. Moreover, as digital transformation accelerates across banking ecosystems, Agile offers a scalable and responsive framework to manage increasing system complexity and customer expectations.

However, perceptions of Agile's implementation complexity are not uniform. However, despite the fact that the majority (65.7%) view the approach as neither difficult nor moderately difficult, there is a fair percentage of respondents who find the methodology challenging to adapt to. This contradiction proves the complexity of implementing Agile methodologies, which can depend on various factors such as maturity level of the organization.

Table 4. Perceived Flexibility and Technological Adaptation of Agile

Category	Positive (%)	Neutral (%)	Negative (%)
Implementation Complexity	65.7	29.5	4.8
Sector Fit	91.4	5.7	2.9
Productivity in Banking	81.0	10.5	7.6
Project Size Suitability	81.0	18.1	0.9
Technology Adaptation	94.3	5.7	-
Flexibility to Change	87.6	12.4	-

Source: created by the authors

The existence of perception of complexity highlights the need for enablement strategies that are systematic. Interventions that target specific aspects such as agile coaching, specialized training for certain roles, and creating internal centers of excellence in Agile methodologies can be instrumental in unraveling the mystery of the approach and facilitating its implementation, [47], [48], [49]. Besides, compatibility of the practice within an organization's culture can also minimize any perceived resistance to the approach.

4.5 Team Dynamics and Satisfaction

The following analysis focuses on the impact of Agile methodologies on team behavior, communication, and satisfaction among project teams (Table 5). Collaboration and team harmony have been established in Agile methodologies to be two of the fundamental elements necessary for a successful project implementation. The data obtained from the survey provides strong support in this regard; a staggering 90.5% of the respondents agreed with the necessity of effective collaboration among members in Agile teams. There is abundant literature available on this subject, with team dynamics being established as one of the critical factors in successful Agile projects, [50], [51].

Another important dimension is freedom of expression, which plays a foundational role in team innovation and psychological safety. In the survey, 54.3% of respondents reported that all team members are free to express their opinions, with an additional 30.5% indicating that this is usually the case. The findings indicate the degree of openness in communication characteristic of Agile principles, and it has been widely mentioned in the literature as an enabler of innovation, improvements, and decision making [51], [52]. Open communication is not only beneficial for personal involvement but contributes to the increase in team's intelligence as well.

Moreover, the results indicate a very positive attitude towards customer responsiveness. As many as 80% of the respondents believe that agile projects manage to meet all the customer requirements quickly and effectively. Additionally, an overwhelming number of 88.6% agree that using Agile principles always results in a very high level of customer satisfaction. This finding confirms what previous research had indicated about the inherent customer-centricity of the Agile approach, owing to the way it is iterative, emphasizes feedback cycles, and delivers value early on [44], [53].

Table 5. Team Dynamics and Satisfaction in Agile

Category	Positive (%)	Neutral (%)	Negative (%)
Team Collaboration	90.5	9.5	0.0
Freedom of Expression	84.0	13.3	1.9
Customer Responsiveness	80.0	16.2	3.8
Customer Satisfaction	88.6	10.5	1.0
Motivation Impact	67.6	28.6	3.8
General Satisfaction	58.1	31.4	10.5

Source: created by the authors

In regards to employee motivation, it seems like the implementation of Agile methodologies is quite effective. From the survey results, 67.6% of participants claim that using Agile methods increases their motivation, with just a very small number, which amounts to 3.8%, viewing the Agile method negatively. The increase in motivation can be accounted for by efficient work balance, reduced need for working overtime, greater independence and a sense of purpose that Agile teams have, [54], [55].

Last but not least, the results show extremely high levels of overall satisfaction from the application of Agile. Indeed, up to 89.5% of those surveyed claimed they were fully or partially satisfied with being a part of Agile projects. Consequently, it appears that Agile not only helps achieve business goals but also creates an inspiring environment for employees. Hence, it can be concluded that Agile becomes a truly revolutionary practice for organizations.

However, it is also necessary to mention some interesting differences found in this research. Despite the fact that 81.9% of those surveyed claimed that Agile increases productivity in banking, merely 58.1% were generally satisfied with the process. In other words, although Agile may lead to increased efficiency, it does not necessarily increase job satisfaction, which could be attributed to problems with workload, adapting to change, or unclear roles in Agile implementation. Moreover, the relatively low rate of cost efficiency (58.1%) implies that despite financial advantages promised by Agile methodology, some barriers may exist that need to be taken into account.

4.6 Limitations of the Study

This study offers meaningful insights into employee perceptions of Agile methodologies in the banking

sector; however, several limitations must be acknowledged.

The first limitation concerns the narrow scope of sampling. The sample is based only on employees of one Turkish private bank; therefore, the results lack external validity. The second limitation relates to the methodology used by the researchers, specifically the use of self-reported, cross-sectional survey data. It poses a risk for biases such as social desirability and common method bias that might contribute to the overall positive assessment of Agile. Due to the cross-sectional nature of the data, the researchers cannot trace any changes in the experience or outcome of participants during Agile adoption. Moreover, the lack of control variables such as performance measures (delivery lead time, defect rates, or service level), makes it impossible to validate the results based on operational performance measures.

Future research could address these biases by including data from multiple sources, conducting longitudinal studies, using objective measures of performance, and taking a more empirical approach to studying Agile adoption.

5 Conclusion

This study highlights the compatibility of Agile methodologies with the operational realities of the banking sector, revealing their potential to enhance team collaboration, customer satisfaction, and employee motivation. Although the adoption of Agile is viewed as flexible, scalable, and dynamic, the problems associated with complex processes of implementation, lack of adequate knowledge and competence may imply that adoption of Agile is still a work-in-progress. This implies the need for a process of training, mentoring within the organization, and continuous learning in order to ensure successful implementation of Agile methodologies. Since the study was conducted through the use of data from only one organization, the conclusions drawn herein should be taken in this particular context.

On the whole, the study is a useful guide that pinpoints not only the facilitators but also the obstacles to implementing Agile and emphasizes the significance of organizational readiness and conducive environments in harnessing its true potential in a regulated industry like banking.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

No funding was received for conducting this study.

Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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