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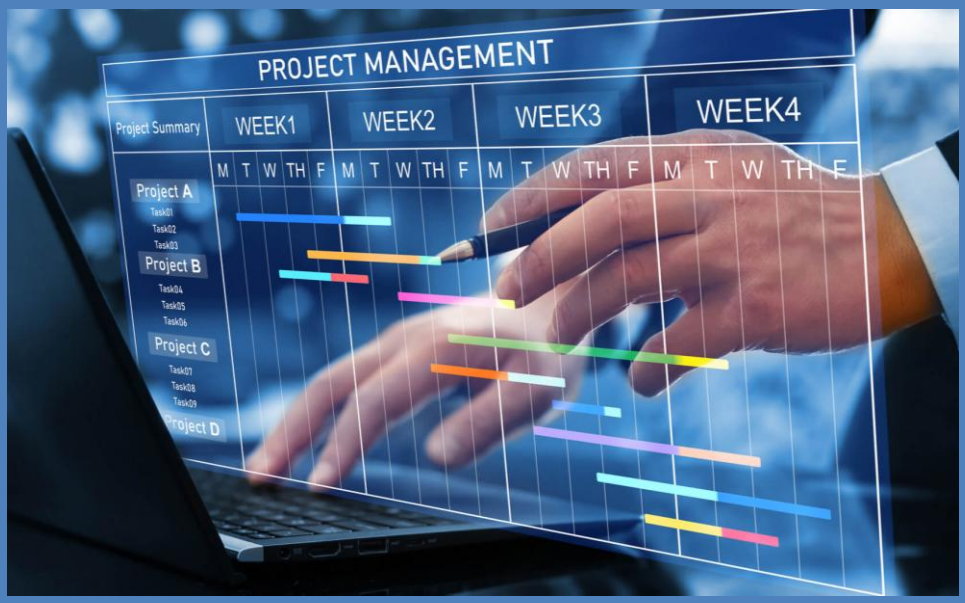

Agile vs. Waterfall Project Management in Large-Scale IT Implementations: How AI Could Enhance Success Factors and Mitigate Challenges

Alexandra Vasilaki
Academic ID: 3272023002
Email: icsdm723002@icsd.aegean.gr

Επιβλέπων: Καθηγητής, Χαραλαμπίδης Ιωάννης

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ΕΠΙΚΥΡΩΝΕΙ ΤΗ ΔΙΠΛΩΜΑΤΙΚΗ ΕΡΓΑΣΙΑ

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ΑΛΕΞΑΝΔΡΑΣ ΒΑΣΙΛΑΚΗ

Χαραλαμπίδης Ιωάννης, Επιβλέπων

Καθηγητής

Τμήμα Μηχανικών Πληροφοριακών
και Επικοινωνιακών Συστημάτων

Κοντός Γεράσιμος, Μέλος

Διδάσκων

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Abstract

This study investigates how waterfall and agile project management methodologies address issues in large-scale IT implementations, with a focus on the potential of artificial intelligence (AI) to enhance project success. Despite massive global IT project investment and high rates of failure, organizations continue to struggle with selecting and adapting the right methodology to their needs. Through case studies of Customer Relationship Management (CRM) system implementations in banking (agile) and nonprofit (waterfall) sectors, the research explores how organizational culture, industry constraints, and project complexity affect methodology choice and effectiveness.

The research covers challenges common to both methodologies, such as legacy system integration, data quality, and change management, and where AI would be most valuable—particularly in requirements gathering, resource allocation, and risk identification. While agile was more compliant to the banking sector and waterfall suited the sequential needs of the nonprofit, both would be enhanced by greater AI infusion. The research is limited, however, to CRM projects in Greece carried out on Salesforce platforms and discusses theoretical rather than real AI deployment. Ultimately, the study provides conclusions and recommendations on the use of AI to drive project management outcomes and makes recommendations on areas for additional research.

Keywords: artificial intelligence, project management, agile methodology, waterfall methodology, project efficiency

Περίληψη

Ευέλικτη (Agile) έναντι Παραδοσιακής (Waterfall) Διαχείρισης Έργων σε Μεγάλες Εφαρμογές Πληροφορικής: Πώς η Τεχνητή Νοημοσύνη Μπορεί να Ενισχύσει τους Παράγοντες Επιτυχίας και να Μειώσει τις Προκλήσεις

Η παρούσα μελέτη διερευνά πώς οι μεθοδολογίες διαχείρισης έργων παραδοσιακή (waterfall) και ευέλικτη (agile) αντιμετωπίζουν ζητήματα σε υλοποιήσεις πληροφορικής μεγάλης κλίμακας, εστιάζοντας στο δυναμικό της τεχνητής νοημοσύνης (AI) να ενισχύσει την επιτυχία των έργων. Παρά τις μαζικές παγκόσμιες επενδύσεις σε έργα πληροφορικής και τα υψηλά ποσοστά αποτυχίας, οι οργανισμοί συνεχίζουν να δυσκολεύονται στην επιλογή και προσαρμογή της κατάλληλης μεθοδολογίας στις ανάγκες τους. Μέσω μελετών περιπτώσεων υλοποίησης συστημάτων Διαχείρισης Πελατειακών Σχέσεων (CRM) στους τομείς της τραπεζικής (ευέλικτη) και των μη κερδοσκοπικών οργανισμών (παραδοσιακή), η μελέτη εξερευνά πώς η οργανωτική κουλτούρα, οι περιορισμοί του κλάδου και η πολυπλοκότητα του έργου επηρεάζουν την επιλογή και την αποτελεσματικότητα της μεθοδολογίας.

Η έρευνα καλύπτει προκλήσεις που είναι κοινές και για τις δύο μεθοδολογίες, όπως η ενσωμάτωση προϋπάρχοντων συστημάτων, η ποιότητα των δεδομένων και η διαχείριση αλλαγών, καθώς και το πού η τεχνητή νοημοσύνη θα ήταν πιο πολύτιμη—ιδιαίτερα στη συλλογή απαιτήσεων, την κατανομή πόρων και την αναγνώριση κινδύνων. Ενώ η ευέλικτη προσέγγιση ήταν πιο συμβατή στον τραπεζικό τομέα και η παραδοσιακή προσέγγιση ταίριαζε στις διαδοχικές ανάγκες του μη κερδοσκοπικού οργανισμού, και οι δύο περιπτώσεις θα ενισχύονταν με μεγαλύτερη αξιοποίηση της τεχνητής νοημοσύνης. Η έρευνα είναι περιορισμένη, ωστόσο, σε έργα CRM στην Ελλάδα που πραγματοποιούνται στην πλατφόρμα Salesforce και συζητά την

θεωρητική παρά την εμπράγματη ανάπτυξη της τεχνητής νοημοσύνης. Εν κατακλείδι, η μελέτη παρέχει συμπεράσματα και συστάσεις σχετικά με τη χρήση της τεχνητής νοημοσύνης για την επίτευξη αποτελεσμάτων στη διαχείριση έργων και προτείνει τομείς για περαιτέρω έρευνα.

Λέξεις - Κλειδιά: τεχνητή νοημοσύνη, διοίκηση έργων, ευέλικτη διοίκηση έργων, μοντέλο καταρράκτη, αποτελεσματικότητα έργου

Table of Contents

Chapter 1: Introduction

1.1 Context and Rationale

We are currently going through an era of digitalization and technological advancement, which has significantly increased the importance of implementation projects. The global information technology (IT) project spending is expected to reach $5.61 trillion by 2025 (Gartner, 2025), with failure rates of around 70% (Powney, 2024). Large-scale IT projects face challenges since they involve multiple functional areas, and conflicts are inevitable. We have observed in practice that different methodologies are employed, depending on the project's needs in terms of managing complexities and risks. The two main contrast methodologies are the traditional (waterfall) and agile, following different philosophies behind them. Organizations often struggle to select the appropriate method based on the project's specific sector, organizational culture, and project requirements.

More specifically, the challenges that project management faces in this fast-paced environment require immediate support. It has been demonstrated that major enterprise IT projects on large-scale IT installations tend to go 7% over schedule and 45% over budget (Bloch, Blumberg, & Laartz, 2012), regardless of the methodology employed. Of course, there are some commonalities between sectors, as well as differences that need to be further analysed in order to conclude accurate results. Overall, the main challenges across both project management approaches are related to integrating legacy systems, ensuring data quality, and managing change.

Given this landscape, Artificial Intelligence (AI) plays a pivotal role in enhancing the art of project management. According to research from the Project

Management Institute, only 20% of project managers report having substantial or good hands-on experience with AI tools and technology (PMI, 2023). There is undoubtedly potential for project managers to incorporate these technologies, like other professions have widely adopted. Current research suggests that AI can address significant challenges in requirements gathering and analysis, resource optimization, and risk identification. However, limited empirical studies have been conducted on sector-specific AI applications for project management, as well as on comparative analysis of each sector. This research addresses the gap through detailed case study analysis of comparable Customer Relationship Management (CRM) implementations in banking and non-profit sectors.

1.2 Purpose and Objectives

The primary purpose of this study is to analyze how agile and waterfall project management methodologies address sector-specific challenges in large-scale IT implementations and identify where AI could most effectively enhance success factors and mitigate challenges.

With this in consideration, further research objectives have been established. Those objectives encompass a wide range of project components, including the project management methodology, the project sector, and the utilization of AI capabilities. More specifically, they relate to the comparison of the effectiveness of agile and waterfall methods in the banking and nonprofit sectors for CRM implementations, as well as the identification of sector-specific constraints that influence the selection and adaptation of methodologies. Moreover, they also include an analysis of how organizational culture impacts project management approach and

success, and identify specific points in the project lifecycle where AI could enhance management effectiveness.

The research questions that have been addressed for this study are the following:

- What factors influenced the selection of agile versus waterfall methodologies in the banking and nonprofit sectors?
- How were these methodologies adopted to address sector-specific constraints?
- What common challenges arise regardless of methodology or sector?
- At what points in the project lifecycle could AI have more significantly enhanced outcomes?
- How does organizational readiness impact the potential effectiveness of AI-enhanced project management?

1.3 Scope of the Study

The scope of this study included a methodological analysis, a cross-sector comparison, and the opportunities for AI enhancements. To address the above, a case study approach was employed, involving an in-depth analysis of two comparable CRM implementations. The first project was with a banking institution, where a Salesforce Financial Services Cloud implementation was undertaken using the agile methodology, with an estimated duration of 18 months and a budget of €2.6 million. The second project involved was a nonprofit organization, where Salesforce Non-Profit Cloud and Marketing Cloud were implemented using the waterfall methodology, with an estimated duration of 8 months and a budget of €250,000. The analysis was based on project documentation, stakeholder interviews, and post-implementation assessment.

During the methodological analysis phase, a comprehensive examination was conducted to assess how agile and waterfall methodologies were implemented in IT projects, resulting in an evaluation of both methods and a comparison of their governance structures, change management practices, and technical approaches.

Moreover, a cross-sector comparison with a detailed analysis of two implementations was conducted, one in the banking sector and one in the nonprofit sector. The examination included sector-specific constraints, organizational culture, and decision-making processes. Additionally, a comparison was made of constraints related to budget, resources, and technical complexity. For both cases, this research identified and analyzed the challenges the project teams faced, which were later categorized based on their context. For each challenge, an additional analysis is provided on the resolution approach that was followed, influenced by the project management approach applied.

As a final step, this study highlights the opportunities for AI enhancements in both cases by identifying the project points where AI could have enhanced effectiveness. An essential aspect of the analysis is the AI readiness in each organizational context, which would also influence the outcome.

It is essential to briefly outline the study's limitations, which focus on CRM implementation rather than a comprehensive IT project landscape. It is limited to only two specific organizational contexts in the Greek market, and the implemented technology is solely on the Salesforce platform. Finally, the focus is primarily on theoretical AI applications rather than actual implementation in project management activities.

1.4 Structure of the Thesis

The research outline comprises seven chapters, each covering a distinct thematic unit. Chapter 2 presents a literature review, which includes the basic terminology of agile and waterfall methodologies, as well as a comparison between them. Moreover, previous research highlights how AI can improve project management, as well as the challenges and opportunities associated with it. Chapter 3 presents the research methodology, which includes the research design, data collection and analysis methods, as well as the ethical considerations of this study. Chapter 4 encompasses, for each case study, the analysis of the industry landscape, the project background and context, the project management approach followed, the key challenges faced by the teams during the project, and the lessons learned and AI opportunities. Additionally, a brief comparison of the two cases is presented, along with some initial reflections. Chapter 5 presents a detailed analysis of the findings and a comparison of both cases in terms of methodologies, AI effectiveness on success factors, and the impact on project outcomes. Later, Chapter 6 presents the discussion of the research results, where the evaluation of AI in each project management methodology is conducted, as well as the implications for practice and the limitations of this study are presented. Finally, Chapter 7 presents the conclusion and recommendations of this research, including a summary of the findings, recommendations for integrating AI in project management, and future research directions. At the end of this research, there is a reference chapter with the citations used, both academic and online articles, followed by the appendix with the supplementary material of the study.

Chapter 2: Literature Review

2.1 Conceptual Framework

2.1.1 Agile Project Management

Agile Project Management was first introduced to the world in 2001, when a document named the Agile Manifesto was published. This document includes the agile values and principles relevant to software development (Ciric et al., 2019). Since then, the necessity of agility has evolved, leading to an increasing number of companies adopting it. Consistent with the findings of Marnada et al. (2022), the adoption of agile frameworks increased by 33% in response to COVID-19, primarily due to the support they provide for faster speed to market. This is also supported by the findings of Mah (2008) and Rico et al. (2009), who noted that more than 80% of global companies and governmental organizations employ agile project management, as it is claimed to be 20 times more effective than the traditional approach.

But what is the definition of Agile Project Management, and what are the reasons behind the increasing investment in this approach by companies? According to Ciric et al. (2019), agile software development is founded on a gradual and iterative methodology. This offers flexibility, communication, change acceptance, and continuous advancement. More specifically, according to Hoda et al. (2008), the agile methodologies follow a repeating model that suits change requirements to be dynamically evaluated and adjusted. The four foundational principles of agile, as mentioned in the Agile Manifesto, are

- Prioritizing people and how they work together, over the processes and technologies used

- Delivering a meaningful solution over extensive documentation
- Involving stakeholders from the customer side over agreement negotiation
- Embracing adaptability to change instead of strictly following the initial plan

One crucial characteristic of agile development is that each iterative process is separate from the rest, covering all development activities from analysis to technical design, implementation, and testing (Salameh, 2014).

Over the years, different frameworks have been established to support agile development. Those frameworks keep the agile principles at their heart, while modifying some of the other components. Due to some inefficiencies they presented, a few of the models have almost disappeared, whereas a large number of professionals have widely accepted others. This literature review mainly focuses on Scrum, eXtreme Programming (XP), and Lean (Larman, 2004).

According to Schwaber (1997), Scrum is a method used for controlling, assessing, and maintaining existing or production prototype systems or for planning to address newly re-engineered or installed legacy systems in the future. Software product releases under Scrum are guided by several key variables, including customer requirements for system enhancements, the urgency of time to gain a competitive advantage, knowledge of competitor actions, the required level of quality, alignment with the system's vision, and available resources such as personnel and budget. The project roles involved in the activities are the Product Owner, the Scrum Master, and the project team (Hoda et al., 2008).

Extreme Programming (XP) is an agile software development process that focuses on producing quality software while making the development process easy for small, team-based groups of 20 or fewer (Shrivastava et al, 2021). It emphasizes shared

responsibility, high customer interaction, reduced documentation, and frequent releases to enable the changes to shift requirements quickly. XP encourages communication through verbal interactions, often with teams seated together to minimize delays and miscommunication (Biju, 2008). It involves customers early and along the way, with real-time feedback and updates, and test-driven development (TDD). The methodology pushes mainstream programming practices to an extreme, creating a lean and efficient process suitable for small, cross-functional teams (Biju, 2008).

Lastly, Lean Project Management is another framework that supports the agile approach. In agreement with Cruz and Alves (2020), Lean Project Management is an extension of Lean Thinking principles applied to project management, aiming to maximize value and minimize waste by treating projects as temporary production systems. Compared to conventional methodologies, Lean Project Management emphasizes eliminating delays, reducing multitasking, controlling budget blowouts, and minimizing undue bureaucracy in favor of regular environmental change adjustments. It points to the simplification of processes, the enhancement of time and resource management, and the overall improvement of project performance through the elimination of inefficiencies and a commitment to value-oriented results. In Figure 2.1.1, the agile methodology framework is visualized, including the agile manifesto values, its key characteristics, and the applications mentioned above.

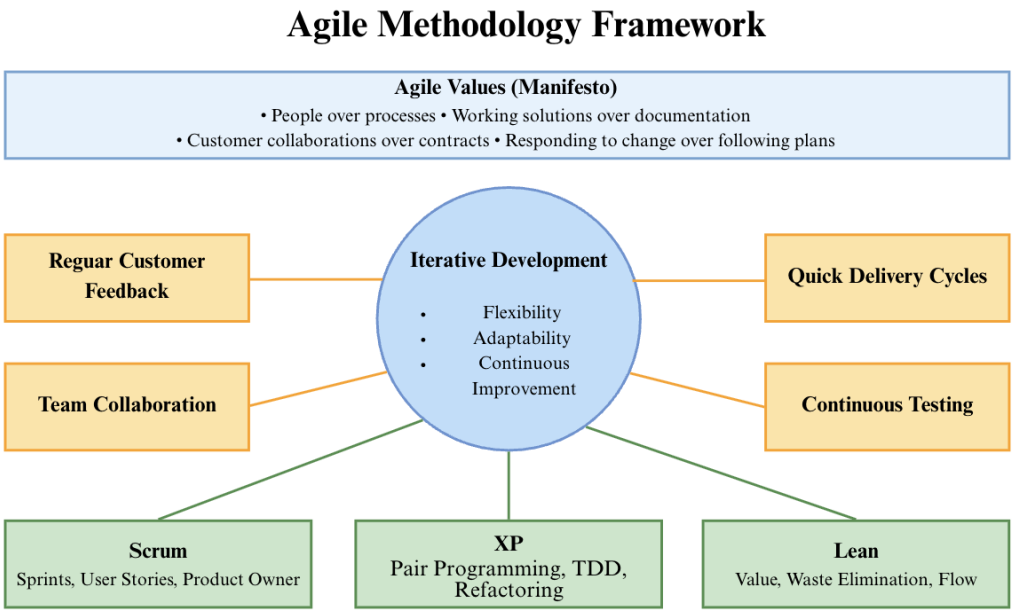

Figure 2.1.1: Agile methodology framework

Based on the above, various tools and software have been designed to assist project managers and project management offices in working with agile development. For example, software such as Atlassian JIRA, Trello, and Asana has embedded features to manage agile artifacts, including user stories, sprints, and product backlogs (Dam et al., 2019). This way, it is quite straightforward for tasks to be linked, demonstrating possible dependencies, as well as adding fields such as effort estimation, story points, assignees, and deadlines. These capabilities add another layer of support and acceptance for the agile methodology.

2.1.2 Waterfall Project Management

On the other hand, we have witnessed traditional project management approaches being followed in a variety of projects and industries. This model incorporates the Waterfall Project Management methodology, which will also be

analyzed in this research. This model was the first software development strategy to be applied, and at the time of its launch, it attempted to replicate some of the key characteristics from other domains (Andrei et al., 2019). According to Naseem and Tahir (2009), software development using the waterfall method is a sequential process that begins with requirement elicitation and analysis and progresses through design, implementation, testing, and deployment maintenance.

This strategy divides the project into five separate, fixed, and consecutive phases, where each uses the result of the previous one as input (Andrei et al., 2019). In alignment with Andrei et al. (2019), the phases consist of:

- Requirements, where all the business needs are assessed and documented, so that the solution that will be delivered includes features that are relevant and useful for the users.
- Design, where the architecture of the systems and the technologies that will be used are decided.
- Coding, where the basic logic is being developed, as well as the features that were described in the requirements phase. The coding phase also includes any enhancements and optimizations that may be applicable to the systems.
- Testing, all implemented features are being thoroughly tested during this phase, and bugs, issues, or inconsistencies are being resolved.
- Operations, where the deployment from a sandbox to a production environment happens, and the system is then fully usable.

The Waterfall methodology assumes that the expected results are precisely shared by the client as early in the project as possible, and thus the planning and execution phases are aligned with specific deadlines (Thesing et al., 2021). This way,

the projects that follow this methodology are characterized by stability and predictability, both in terms of budget and resources. The waterfall methodology framework is presented in Figure 2.1.2.

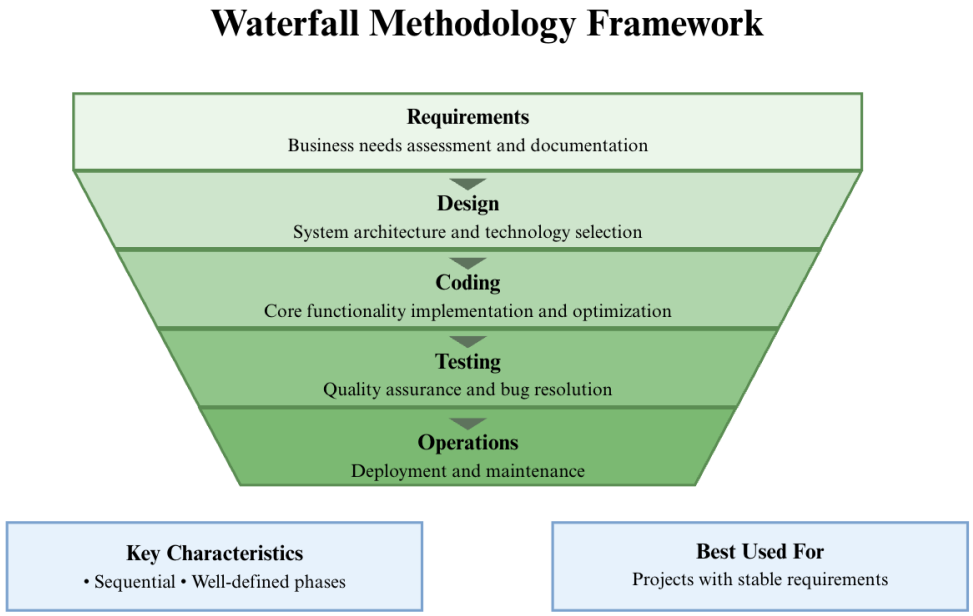

Figure 2.1.2: Agile methodology framework

However, due to the uncertainty that appears in internal and external environment, the Waterfall methodology is applied either to small projects with well-defined requirements that would not be altered during the project lifecycle (Andrei et al., 2019) or is mixed with the agile approach, resulting in a hybrid model that combines the strengths of both methodologies.

2.1.3 Artificial Intelligence in Project Management

Artificial Intelligence has made its presence felt even more aggressively over the last decade, where the need for digital transformation and optimization is higher than ever. Companies are relying on AI to improve their processes, reduce costs, and

overall amplify their performance. Similarly, it comes as no surprise that AI would also be applied in project management, and specifically in software development projects. Some examples of the applications that support such features are provided and analyzed in a later section of this study.

There are numerous areas where AI can enhance project management processes, and professionals in the field are already aware of and have begun to utilize these capabilities. A key area is automating tasks and workflows. There are AI tools available to streamline repetitive and administrative tasks that require manual effort, such as scheduling meetings and reporting on the status of projects (Karamthulla et al., 2024). With these automations, companies can save time and increase productivity for their employees involved in the project.

Moreover, another crucial dimension that can be greatly improved with the usage of AI is project planning and scheduling. In agreement with the findings of Lukasik-Stachowiak (2025), machine learning algorithms have demonstrated the ability to create optimized project timelines and manage dependencies effectively. Additionally, bottlenecks can be detected by AI at an early stage, such as the planning stage, resulting in more accurate time plans with fewer adjustments. In need of adjustment, those AI tools can also refactor the project plan based on the new baseline.

Furthermore, a core aspect of project management is related to predicting and managing risks. This set of activities can also be accelerated with the use of AI. Risk assessment via AI can anticipate delays and the probability of risks becoming issues. This can also be achieved with Natural Language Processing (NLP) models, where, by utilizing data analytics, project management offices can perform risk scanning

(Salimimoghadam et al., 2025). Moreover, on that end, AI can integrate with internal or external dashboards for proactive information and alerts.

Lastly, adequate budget and cost control are essential for a successful project management office team. AI can support all stages of budgeting, from forecasting future expenses using historical project datasets to dynamically adapting the budget based on real-time data and sources (Salimimoghadam et al., 2025). This way, companies can reduce financial waste and optimize resource allocation.

2.2 Comparative Analysis of Agile and Waterfall

2.2.1 Strengths and Weaknesses of Agile

Agile Project Management has gained traction in the last decade, particularly in the software development industry, due to its flexibility and iterative approach. Many professionals claim this to be the next big thing, and this is also supported by the increasing number of certifications being released by various well-established institutions related to agile project management. However, all methods have strengths and weaknesses that we cannot ignore.

The first and most important advantage of agile methodology is the flexibility it provides in various project aspects. For instance, according to Koi-Akrofi et al. (2019), despite the initial project schedule that should have been drafted at the beginning of the project, agile practices support modifications, depending on alterations in business needs and prioritization. It is easier for teams to add enhancements and features to the pipeline, allowing companies to stay competitive and innovative in their domain, following industry trends.

Another crucial advantage of the agile methodology is the speed of delivery of the product or solution (Wells, 2012). By splitting the delivery into partial releases, it can effectively introduce users to the new system early in the project lifecycle, allowing companies to benefit from this gradual change. This incremental approach not only accelerates deployment but also reduces the risk associated with large-scale implementations. This is why agile is widely used in software development, as it reduces the time from discovery to validation (Dame, 2019).

Moreover, customer feedback plays an important role in agile development. By demonstrating partial releases of the product, the customer is more involved in the process of evaluating and accepting the solution. Thus, their input and feedback are used to guide the development team (Koi-Akrofi et al., 2019). This continuous engagement helps align the end product more closely with the client's evolving needs and expectations. This removes potential bottlenecks in the process of signing off on the delivered solution by the client, facilitating project closure.

Furthermore, testing and quality assurance can be carried out in parallel with development, as the teams have already delivered one part of the solution and have moved on to implementing another (Koi-Akrofi et al., 2019). This iterative approach enhances collaboration between developers and testers, enabling faster resolution of issues. This way any potential mistakes, errors, or bugs can be identified early in the project and resolved accordingly, resulting in the delivery of more secure and trustworthy digital products.

Last but not least, agile development can provide teams with the motivation to cooperate more efficiently with the rest of the members (Koi-Akrofi et al., 2019). The teams have more ownership of the tasks they undertake, and a culture of responsibility

is being cultivated. This sense of ownership encourages proactive communication and mutual support among team members. This approach ensures transparency in project activities and progress, fostering trust and alignment among all stakeholders involved in the project (Wells, 2012).

In contrast, there are a few areas where the literature has shown that the agile approach lacks efficiency. Some of these disadvantages have been identified in multiple cases where the agile methodology was applied. In agreement with Koi-Akrofi et al. (2019), one of the significant challenges of agile is that it is not considered suitable for processes that require advanced decision-making. Due to its dynamic nature, agile methods are not ideal for use in industries such as construction, manufacturing, healthcare, and the military, where strict planning is required.

Another reason why agile may not be the preferred technique for a number of projects is that the initial plan discussed in the initiation phase may differ significantly from the final delivered product (Koi-Akrofi et al., 2019). This is not necessarily a bad thing, but it can impact the expectations and satisfaction of stakeholders, especially in scenarios where strict compliance with pre-specified requirements and timelines is crucial. In such scenarios, the flexibility of agile can be seen as a lack of foreseeability or control, leading some organizations to favour more traditional, plan-oriented methods (Ben-zahia et al., 2022).

In addition, Koi-Akrofi et al. (2019) claim that in cases of agile methodology application, more time and dedication are required from the people involved in the project. Developers, testers, and the clients' stakeholders are expected to be available and accessible for the majority of the project timeline, so that they can all together accurately accept and sign off on each release of the product. This daily communication

may be in favour of the actual product and its features, but it may cause the project to fall behind schedule. On that front, it is also crucial to educate the client's stakeholders on how to participate in the project and assist in product development (Koi-Akrofi et al., 2019). If those mentioned above are absent during the project, the quality of the delivered solution will be affected.

Furthermore, it has been proven that projects following an agile methodology often lack documentation. This is occurring since software requirements are explained to the technical teams just before the development starts (Koi-Akrofi et al., 2019). This is affecting the project in two ways, both equally important. Firstly, any new joiners to the team may face difficulties in understanding the product and its requirements, and knowledge transfer sessions may not have the desired effect as quickly as they would if technical documentation were in place (Koi-Akrofi et al., 2019). Additionally, due to the lack of documentation, it becomes more challenging for project management offices to assess the overall project progress (Ben-zahia et al., 2022).

2.2.2 Strengths and Weaknesses of Waterfall

On the other hand, the waterfall methodology, although considered the oldest, has had a significant impact on software development at its core. It is essential to emphasize the benefits and advantages that come with adopting this approach. Firstly, with waterfall, the projects gain a clear structure and flow, where a step-by-step approach is followed. Each phase (design, development, and testing) is only executed once and must be completed before the next one begins (Wells, 2012). This can be ideal for projects that have clear requirements and deliverables.

Another key advantage of the waterfall method is the ease of management and control it offers to project managers. Due to the clear flow in place, project managers can confidently set timelines, budgets, and milestones (Kusters et al., 2017). This offers teams predictability, foreseeability, and overall control of budget and resources more efficiently and with higher accuracy, even at the project's inception (Das, 2025). As a result, it becomes easier to monitor progress and ensure that the project stays aligned with its original scope.

Furthermore, due to the waterfall's clear structure and the advanced planning that occurs in the project's initiation phase, there is a reduced risk related to the project's scope. With agile development, new requirements may emerge as the project progresses. This is something that waterfall protects projects from, since the phases are fixed and the changes are minimized (Das, 2025). This way, stability is ensured and there is greater alignment with the rest of the stakeholders.

Finally, one strength that contrasts with agile is related to documentation. Projects that follow the waterfall methodology are typically accompanied by comprehensive documentation, which is delivered at each phase that has been completed (Kusters et al., 2017). This is pivotal for professional onboarding, knowledge transferring, project tracking, and auditing.

In contrast, projects may face specific challenges when they follow the waterfall methodology. At its core, the traditional project management approach does not require user involvement during the development phase (Ben-zahia et al., 2022). The client is mostly involved in the project during the initial stages, when business analysis and requirements gathering take place, and at the end, when the final acceptance and sign-off occur. This method does not encourage customer feedback and iterations, and is

likely to result in user dissatisfaction if the final product does not meet the expected benefits.

One additional key aspect lies in the adaptability and flexibility that the waterfall methodology offers. It is significantly less flexible than agile, as any substantial change to the initial plan may result in delays, additional costs, and possible scope changes (Ben-Zahia et al., 2022; Das, 2025). This understandably positions the waterfall approach as not suitable for dynamic projects, where the user needs evolve in parallel with the execution.

Additionally, the waterfall approach results in the late detection of problems as the project progresses through execution. In alignment with Das (2025), due to testing being so late in the flow, most errors, bugs, and requirements mismatches are typically captured at the end of the project. The following consequences may include disruptions and rework, which may need to be addressed as we approach project closure.

Finally, with waterfall, there is a risk that the client will not accept the actual deliverable. As previously mentioned, users are mostly involved in the project at its beginning and end. Understandably, the final deliverable of the digital product and solution may not be aligned with what they had in mind. Due to the waterfall model's nature, the project team experienced poor visibility related to this matter during the intermediate phases, which may lead to unforeseen disappointments (Das, 2025).

The above characteristics have been used for the comparative analysis of both methodologies, agile and waterfall, which is presented in Table 2.2.

Aspect	**Agile**	**Waterfall**
Approach	Iterative and incremental	Linear and sequential

Requirements	Evolving throughout the project	Defined at the beginning
Planning	Adaptive planning	Comprehensive initial planning
Delivery	Frequent incremental releases	Single delivery at the end
Documentation	Minimal, as needed	Comprehensive and detailed
Customer Involvement	High and continuous	Limited (primarily at the beginning and end)
Flexibility	High adaptability to changes	Low adaptability to changes
Testing	Continuous throughout development	After the development phase
Team Structure	Self-organizing, cross-functional	Often hierarchical
Risk Management	Early risk identification through iterations	Early risk planning, late risk detection
Budget Control	Variable, might change as requirements evolve	Predictable, fixed at the beginning
Ideal Use Case	Dynamic projects with evolving requirements	Projects with stable, well-understood requirements

Table 2.2: Comparative Analysis of Agile and Waterfall Methodologies

2.3 AI Applications in Project Management

It has already been made clear that Artificial Intelligence has accelerated project management and can support its activities end-to-end. On that front, project management tools in the market, to stay competitive, have developed features to leverage the extra capabilities of AI. Below, you will find some examples of these applications, divided into three main areas: decision-making and predictive analytics, resource management and optimization, and risk management and mitigation.

2.3.1 AI for Decision-Making and Predictive Analytics

AI can enhance decision-making in multiple project management instances by leveraging data insights from internal and external project factors. This allows project

managers to make any necessary adjustments that minimize disruptions to the project artifacts.

Firstly, one important application of AI is machine learning for scenario simulation. With AI, project management offices can simulate various scenarios, allowing project managers to select the most optimal one based on their specific criteria (Arora, 2007). One example of this technology in the energy sector has been introduced by Siemens, which utilizes scenario simulation to predict project outcomes, thereby improving strategic planning and minimizing risk related to unpredictability (Grealou, 2024; Siemens AG, 2025).

Another critical dimension is related to dashboards, enabling project managers to easily stay informed about what to expect during the project lifecycle. With AI-driven dashboards, teams can easily identify potential areas of delay, budget overruns, and milestones that may not be achieved on time, allowing them to address these issues proactively (Reznikov, 2025). Microsoft provides an example of such a case in the Microsoft Project application, where the input of Azure AI can provide AI-driven dashboards (Microsoft, 2024).

Furthermore, one more crucial area of AI enhancement in project management is related to NLP models and sentiment analysis. With NLP, AI can extract important information and keywords from previous project documents and communications, enabling it to implement project progress reports and status updates (Chen et al., 2021). On a similar level, sentiment analysis can be utilized to analyze internal and external communications, including chats, emails, and comments, thereby identifying conflicts early on and minimizing the likelihood of escalations (Baro et al., 2019).

AI has also altered traditional project management by streamlining administrative tasks in daily operations. With chatbots and virtual assistants automating tasks such as meeting scheduling, meeting summarizing, task updates, and reminders of upcoming deadlines, it becomes significantly more efficient for project managers to focus on more strategic activities (Joshi, 2024). Two examples of AI bots are provided by Trello and Asana (Butler Bot Vs. Automation in Trello | Trello | Atlassian Support, n.d.; Asana Help Center, n.d.), which assist with the tasks as mentioned earlier.

All of the technologies mentioned above can be used to support faster and more informed decision-making, provide real-time visibility into project performance, and reduce the administrative burden.

2.3.2 AI for Resource Management and Optimization

Successful project delivery is highly dependent on effective resource allocation and management. Again, with data-driven insights, project managers can leverage technologies to suggest and implement improvements in this area.

Firstly, one impressive enhancement that AI has offered resource management professionals is predictive resource allocations. By leveraging tools that utilize historical data, it is now easier than ever for teams to predict in advance the resource needs they may face (Bahroun et al., 2023). Those resources may refer to material or even human capital, encompassing diverse skill sets and experiences. One example is Forecast App that helps operational leaders plan, run and track projects in one place to optimize productivity (AI Project & Resource Management Software | Forecast App, n.d.), as well as Celoxis (Best AI Project Management Software Tool in 2025 -

Celoxis®, n.d.), that allows users to access, analyze and act on project data effortlessly through natural language commands.

Additionally, real-time adjustments to resource planning are also possible thanks to AI. This provides high flexibility to project teams when the availability of the original estimated resources changes. For example, when a team member is absent from the project, AI systems can dynamically retrieve the skill sets needed for the activities this team member was involved in and reassign this workload to another suitable colleague (Bahroun et al., 2023). This minimizes disruptions during the project lifecycle, ensuring a smooth continuation.

Furthermore, one noteworthy aspect that AI can enhance in project management is related to skills matching and task optimization. AI can identify the most suitable individuals based on their skill set, past experience, and performance, thereby positioning them effectively in the project team (Bahroun et al., 2023). ClickUp, for instance, already has this feature in its core product, the ClickUp AI Assistant, which serves this purpose (Resource Allocation AI Agent | ClickUpTM, n.d.). This way, the quality of the output is being safeguarded and not compromised, as well as the overall project success.

Finally, the last area related to resource management that AI can improve concerns workload balance and capacity planning. With the recently launched tools, AI can understand how the workload is distributed among team members and recommend modifications to the current model (Bahroun et al., 2023). On that front, AI can evaluate the team's dynamics to determine whether they can handle a higher workload based on their performance, and scale resources up or down accordingly (Bahroun et al., 2023).

The key benefits of leveraging the previously mentioned capabilities in resource management can enhance the company's operations. It promotes the fair and optimal use of human and material resources, resulting in higher overall efficiency and increased team satisfaction.

2.3.3 AI for Risk Management and Mitigation

It comes as no surprise that risk management, being a core activity of project management and a crucial parameter in project success, has also been positively impacted by AI. Various tools and companies have recognized this and decided to develop models that support risk management at its core.

One of those models is related to predictive risk identification, where AI systems can analyze previous projects and extract information from patterns related to risks. Those risks are often associated with scope, cost, or time, but are not limited to these (Project Management Institute, 2019). For instance, JP Morgan has incorporated AI into their financial risk management activities in large-scale initiatives (Filipsson, 2025).

Another dimension in which AI has contributed during the last few years is risk simulation and scenario planning. In agreement with the Project Management Institute (2019), project managers can develop what-if scenarios related to risks, and simulate different responses. Based on this, risks can be minimized and hopefully mitigated, as evidenced by Siemens' similar approach (Siemens AG, 2025).

One additional helpful feature that AI offers project management offices is related to risk scoring. AI has the ability, given datasets of previous risks, historical performance, probability, and impact values, to analyze patterns and provide an AI-

powered scoring mechanism (Bahroun et al., 2023). This makes risk tracking and progress updates easier for project managers. One example of tools that support such operations is Oracle Primavera (Oracle Primavera Cloud Help, 2025).

Lastly, we have already mentioned how project, resources, time plan, and budget monitoring are enhanced with the use of AI. The same applies to risk monitoring, which has also undergone significant improvement. AI tools are keeping track of communications, emails, project metrics, and can efficiently monitor the risks associated with the project in real time (Ayeni, 2025). Such a tool is Procore, which is used in construction projects. AI is utilized to analyze images, logs, and relevant information, identifying areas that require extra attention due to quality and safety risks (Risk Report, 2025).

All of the above are proven facts that AI can indeed minimize and mitigate risks related to the project, allowing it to be successfully delivered on time and budget, while enhancing transparency and efficiency among stakeholders. A summary of the above AI applications in project management is presented in Table 2.3.

AI Application Area	Key Features	Example Tools/Companies	Benefits
Decision-Making & Predictive Analytics			
Machine Learning for Scenario Simulation	Simulates various project scenarios	Siemens	Enhanced strategic planning
AI-Driven Dashboards	Real-time project performance metrics	Microsoft Project	Early identification of project risks
NLP & Sentiment Analysis	Extracts insights from project communications	Various	Conflict identification and mitigation
Virtual Assistants	Automates administrative tasks	Trello Butler, Asana AI	Reduced administrative burden
Resource Management & Optimization			
Predictive Resource Allocation	Forecasts resource needs based on historical data	Forecast App	Optimized resource planning
Real-time Adjustments	Dynamically adjusts resource allocations	Celoxis	Minimized project disruptions

Skills Matching	Aligns team members with appropriate tasks	ClickUp AI Assistant	Enhanced output quality
Workload Balancing	Optimizes distribution of tasks among team	Various	Improved team efficiency
Risk Management & Mitigation			
Predictive Risk Identification	Analyzes patterns to identify potential risks	JP Morgan AI tools	Early risk detection
Risk Simulation	Creates what-if scenarios for risk responses	Siemens	Enhanced risk planning
AI-Powered Risk Scoring	Analyzes historical data to assess risk levels	Oracle Primavera	Improved risk prioritization
Automated Risk Monitoring	Tracks communications and metrics for risk signals	Procore	Real-time risk management

Table 2.3: AI Applications in Project Management

2.4 Challenges and Opportunities of AI Integration

It has been proven that companies are adopting AI more than ever since they realized its huge benefits early on. While opportunities are arising, it is also important to be aware of the challenges that come with such usage, so that they can be addressed.

2.4.1 Ethical and Practical Challenges

On the ethical side, most of the challenges related to the use of AI stem from biases inherent in the models themselves. These biases often arise from skewed or unbalanced training data and can lead to unfair outcomes for teams relying on AI-generated recommendations (Zadeh et al., 2024). For project managers to confidently act on these insights, they need to have trust in the algorithms they are using. That trust depends heavily on promoting transparency and accountability throughout the AI's decision-making process (Zadeh et al., 2024). It's essential to address and minimize bias

actively, especially when integrating AI into daily operations that impact every stage of a project's lifecycle.

On the practical side of challenges lies, firstly, the data that was collected and used for training the AI models. AI relies on high-quality data so that the value it provides is maximized. Low-quality data can have severe effects on the performance of models, making them less effective (Zadeh et al., 2024). In agreement with Shoushtari et al. (2024), understanding the importance of having accurate historical data is the first step towards addressing this challenge, as biases previously mentioned can be caused by the dataset itself.

Another practical barrier is the cost required for AI implementation and subsequent integration into existing systems. AI adoption encompasses multiple resources, from infrastructure and integration to training and change management (Shoushtari et al., 2024). An additional layer of complexity is introduced when attempting to integrate AI into existing project management workflows that are not planned for retirement (Zadeh et al., 2024). The teams are definitely in need of a technical expert to support in such a journey and face any technical development challenges.

Finally, an important challenge that companies typically face when trying to incorporate AI into their existing systems is related to human capital. To facilitate human-AI interaction, it is necessary to have defined steps and processes in place. According to Zadeh et al. (2024), a skills gap currently exists in the market regarding AI, making the need for training in data literacy and AI tools higher than ever. It is crucial, however, to find the balance between the AI-driven results and the expertise of the human requesting them. Project managers need to realize that AI should be used

complementarily to their critical thinking, rather than relying solely on AI to make all the decisions automatically.

While these challenges highlight the caution organizations must exercise, they are often outweighed by the transformative potential AI brings to project management.

2.4.2 Opportunities for Innovation

Artificial intelligence is transforming project management, especially for big IT projects, by making workflows more efficient. It automates repetitive tasks such as scheduling, tracking progress, and communicating updates, which not only lightens the workload for teams but also helps reduce human errors (Díaz Ferrera, 2024). One of the standout features of AI is its ability to analyze complex data. This means resources can be allocated more effectively, matching team members' skills and availability with the project's needs, which helps avoid delays and balance workloads (Hashfi et al., 2023).

Furthermore, AI enhances decision-making. By predictive analytics and real-time processing of data, project managers can simulate different scenarios and analyze potential risks at speed, allowing them to make sound decisions that guide projects to the right direction (Georgiev et al., 2024; Diaz Ferrera, 2024).

However, the benefits of integrating AI extend beyond simply streamlining operations. It also offers valuable strategic advantages. With its ability to predict outcomes, AI helps organizations manage risks proactively by analyzing past and present project data. This foresight enables project teams to identify potential delays and budget issues early, allowing them to address these issues before they escalate (Hashfi et al., 2023). AI also facilitates informed strategic planning by pulling together

data from a variety of sources, like market trends and feedback from stakeholders. This helps teams ensure that their project goals align with the broader organizational objectives and adjust plans as necessary (Vergara et al., 2025).

Ultimately, integrating AI into project management yields better results. It fosters teamwork, streamlines processes, and enables issues to be identified early, which significantly increases the likelihood of completing projects on time and within budget (Taboada et al., 2023). Organizations that harness the power of AI not only gain a competitive edge but also enhance their agility, creativity, and ability to respond to market and customer demands (Taboada et al., 2023). A collective visualisation of the challenges and opportunities of AI integration in project management and the importance of their balance are presented in Figure 2.4.

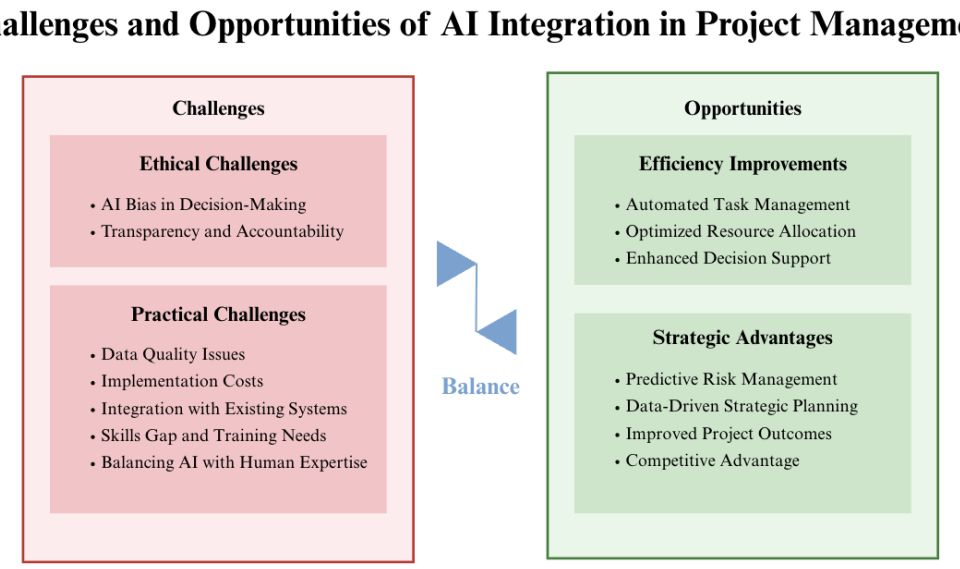

Figure 2.4: Challenges and Opportunities of AI Integration in Project Management

2.5 Conclusion

This literature review presents a comprehensive understanding of the evolving nature of project management methodologies and the revolutionary impact of artificial intelligence on modern project delivery. A comparative survey between Agile and Waterfall methodologies has revealed that both approaches possess fundamental strengths and limitations, making them suitable for use in varied project environments. Agile methodology is particularly effective in dynamic environments where flexibility, customer collaboration, and iterative development are most crucial, offering advantages such as faster delivery, continuous integration of feedback, and improved team coordination. Waterfall methodology, however, provides greater structure, predictability, and control for projects with well-defined requirements and a low likelihood of change, with a particular emphasis on complete documentation and clear milestone management.

The use of artificial intelligence in project management represents a paradigm shift that exceeds traditional methodological frameworks, offering remarkable opportunities for optimizing every stage of a project. AI applications in decision support and predictive analytics, resource management and optimization, as well as risk management and mitigation, demonstrate high potential in enhancing the success rate of projects while reducing administrative effort and human error. The ability of the technology to process complex datasets, model scenarios, and provide real-time analysis enables project managers to make more informed decisions and proactively resolve potential issues before they escalate into major concerns.

Nonetheless, the effective use of AI in project management depends on overcoming substantial ethical and practical obstacles. Organizations must contend

with issues of algorithmic bias, data quality requirements, implementation costs, and the existing lack of AI literacy among project management practitioners. The need for seamless human-AI collaboration underscores the reality that artificial intelligence must augment, rather than replace, human experience and critical judgment in project decision-making.

In the future, the junction of traditional project management techniques and AI-powered tools presents high potential for innovation and competitiveness. Organizations that strategically leverage the potential of AI while maintaining methodological discipline, whether using Agile, Waterfall, or hybrid approaches, are well-positioned to deliver superior project outcomes, enhanced stakeholder satisfaction, and increased organizational responsiveness. The key to success with AI is recognizing that technology is an enabler of better project management practices rather than a full replacement for current methodology frameworks.

Chapter 3: Research Methodology

3.1 Research Design

This research employs a qualitative multiple-case study methodology to understand and explore various project management methodologies in large-scale IT implementations. The traditional waterfall and agile methodologies are being analyzed in two separate case studies, each in a completely different sector. The reason why the qualitative approach was selected is due to its suitability for exploring complex real-world contexts. The research design incorporates both descriptive and exploratory elements. In the descriptive part, this research documents how different methodologies were implemented and adapted in various contexts, and in the exploratory aspect, the potential opportunities for AI enhancement are investigated. This provides a holistic image of the actual project environment and what could potentially enhance it.

It was essential for this research to understand the social and organizational contexts that influence the selection and implementation of project management methodologies. This understanding could provide a solid foundation for both methodologies and sectors. The main research questions addressed were:

- What factors influenced the selection of agile versus waterfall methodologies in the banking and nonprofit sectors?
- How were these methodologies adopted to address sector-specific constraints?
- What common challenges arise regardless of methodology or sector?
- At what points in the project lifecycle could AI have more significantly enhanced outcomes?

- How does organizational readiness impact the potential effectiveness of AI-enhanced project management?

3.2 Data Collection Methods

3.2.1 Case Study Selection Criteria

The selected case studies needed to fulfill certain basic requirements to ensure they met specific criteria relevant to the research questions. Both cases should have involved large-scale IT implementations that affected multiple business functions. The cases required a clear methodological approach (either agile or waterfall), as well as a comparable technology platform (both were Salesforce implementation projects). They needed to have been completed within the past 3 years in Greece, so that the social environment would be similar. The different organizational sectors of banking and nonprofit organizations were chosen intentionally, so that the diversity of the industries could also serve as a parameter for comparison. Finally, some additional project components, such as data migration, integration, and training, were common in both cases, to examine their relationship to the timeline and budget.

To provide an overview of the case profiles, Case 1 was implemented in a well-known Greek bank when this banking sector organization implemented Salesforce Financial Services Cloud. The project management methodology employed was agile, with an implementation timeline of over 18 months, a budget of €2.6 million, and the involvement of 24 core team members. The second case involved a non-profit sector organization that implemented Salesforce Non-Profit Cloud and Marketing Cloud. This project employed a traditional waterfall approach over an 8-month implementation timeline, with a budget of € 250,000, and involved 11 core team members.

The above cases provide meaningful contrasts in organizational context, while maintaining a comparable technology platform. Both implementations were of a sufficient scale and complexity to generate rich data and represent distinctly different project management approaches within defined sectors. Both projects have been completed recently enough to ensure relevance, but with sufficient time elapsed to assess the outcomes.

3.2.2 Data Sources and Tools

The primary data collection source was semi-structured interviews. More specifically, eight in-depth interviews were conducted across both organizations (four per case). The participants of those interviews included two project managers, one business stakeholder, and one technical team member per case. The interview duration was approximately 60-90 minutes, and it followed the structure mentioned in Appendix A. The interviews were conducted between March and April 2025 and were recorded with the participants' permission. The interview questions were focused on six key areas presented below:

1. Respondent's background and role
2. Project context and objectives
3. Project management methodology selection and application
4. Challenges and responses
5. Results and reflections
6. AI opportunities and future directions

As for the document analysis, there was a comprehensive review of project documentation from both cases, including the following material:

- Request for Proposal (RfP document)
- Technical and Financial proposals
- Project charter and scope documents
- Requirements documentation
- Project plans and timelines
- Status reports and meeting minutes
- Training materials

The data collection tools used for the cases included an interview guide, developed based on research questions, and audio recording equipment for capturing the participants' answers.

As for the secondary data sources, industry reports on CRM implementation best practices were analyzed, combined with academic literature on project management methodologies. Additionally, Salesforce implementation guides and documentation were reviewed to gain a deeper understanding of the context and complexity of both implementations.

The research was conducted over a four-month period, from March to June 2025. Phase 1 took place in March and focused on the literature review and development of the methodology. Phase 2 occurred in March and April, during which data were collected through interviews and document analysis. Phase 3 was carried out in May and involved data analysis and the development of preliminary findings. Phase 4, the final phase, took place in late May and early June and involved finalizing the study.

3.3 Analysis Methods

Regarding the analysis method, the overall approach that was followed was to identify patterns, commonalities, and differences across methodologies and sectors. A structured comparative matrix was then developed to analyze key dimensions across both cases. This matrix encompasses the selection factors for project management methodologies, implementation approaches, and primary drivers for the project. Multiple data sources (interviews, project documentation, secondary sources) were used to verify the findings of this study.

3.4 Ethical Considerations

All ethical issues related to confidentiality, consent, and data protection have been addressed to complete this research. All interview participants have given written informed consent for their data to be processed. The participants were provided with a full explanation of the research purpose and methods, descriptions of how their data would be used, assurance regarding confidentiality and anonymity, and the right to withdraw from the study at any time. This was also proven by the introductory statement of the interview structure in Appendix A. To maintain confidentiality, the identities of the organizations discussed in this research have not been disclosed.

Chapter 4: Case Studies

4.1 Case Study 1: Agile Project Management in Large-Scale IT Implementation

4.1.1 Current Industry Landscape

The banking sector is facing extraordinary transformation driven by digital innovation, changing customer expectations, and the demand for operational excellence. As traditional banks navigate the digital transformation landscape, CRM systems have emerged as key drivers of competitive advantage and customer-centric service delivery. This transformation is witnessed in the execution of large IT projects, where the adoption of agile or waterfall approaches is most decisive in determining project success rates and business outcomes. A view of the current industry context provides the necessary background for understanding the role of project management practices in CRM success in finance, and in specific market contexts such as that of evolving financial services in Greece.

The global banking industry is halfway through experiencing an end-to-end digital revolution, which fundamentally reshapes the manner in which banks do business and interact with customers. Digital banking is the application of digital technologies and best practices in automating and simplifying business processes and developing enhanced personalized customer experiences, requiring organizations to break down data silos and reimagine the entire customer journey (Finn & Downie, 2024). This transition has become more urgent as traditional banks must compete with fintech companies and adapt to new business models that embrace digital-first approaches to financial services.

The speed and extent of this evolution reflects the exponential increase in digital banking offerings driven by advances in mobile technology, growth in internet penetration, and evolving consumer demands for immediate access to financial data and seamless transaction services (Deloitte, n.d.). Banks are responding either by increasing their existing digital offerings or forming strategic partnerships with fintech companies to integrate sophisticated technologies such as blockchain and artificial intelligence that have the potential to revolutionize transactional security and operational efficiency (IBM, 2021).

The change is not only in simple digitization of existing services but also in great business model changes and operating models. Banks are embracing omnichannel approaches with seamless user experience across touchpoints like online websites, mobile apps, and stores (Optima Partners, n.d.). This approach recognizes customers' increasing requirement to interact digitally in addition to security and trust based on existing financial institutions. The application of these future technologies such as machine learning and artificial intelligence has become so important that 80% of banks recognise the potential benefits for customer relationship through voice control, chatbots, and customized delivery of services (Optima Partners, n.d.).

Banking CRM systems are evolving rapidly to adapt to the demands of the increasingly sophisticated and digital adaptive customers. Modern bank CRM systems are characterized by their incorporation of artificial intelligence, predictive analytics, and personalization capabilities that enable financial institutions to build exceptional customer experiences and foster operating efficiency (Tech Mahindra, n.d). These systems have progressed beyond simple customer data management to be

comprehensive platforms that analyze customer behavior, predict needs, and facilitate proactive service delivery across channels.

The deployment of next-generation technology is practically revolutionizing the functions of CRM in banking. Machine learning models and artificial intelligence models enable banks to manage massive volumes of customer data in order to make them eligible for tailored products and services, while enabling predictive analytics and product personalization (Optima Partners, n.d.). These technologies power sophisticated chatbots and voice assistants to mimic human conversations, thus enhancing customer relationships while lowering operational costs. Furthermore, AI's data analysis capabilities support strategic decision-making, risk detection, fraud detection, and regulation compliance, thus CRM systems become the mean towards their business strategy in general rather than simply customer service tools (PricewaterhouseCoopers, n.d.).

Smart Automation is yet another support of modern banking CRM building, which can help automate fundamental functions that otherwise used to require a lot of manpower. With the integration of automation capabilities with AI technologies such as Natural Language Processing and Computer Vision, banks can automate core processes such as Know Your Customer (KYC) procedures, loan handling, and fraud detection (Optima Partners, n.d.). This automation raises the level of operational efficiency while optimizing customer experience through reducing processing times and encouraging consistency of service. The result is an improved responsive CRM environment that can better keep up with changing customer needs and market conditions.

Open banking initiatives are creating new opportunities for CRM development through third-party integration and API-based collaboration. Open banking opens up financial services through application programming interfaces, allowing banks to reach more customers and offer more personalized products and services (Optima Partners, n.d.). This cooperative approach enables customers to benefit from integrated views of their financial data and exposure to larger sets of products, while banks can leverage outside innovation in a way to enhance their CRM capabilities without developing every solution in-house.

The Greek banking sector boasts some unique characteristics driving digitalization as well as CRM strategy implementation. Due to the 2010-2018 financial crisis, the Greek banks have been extensively restructured and concentrated into a more unitary banking system with four systemically important banks. This emphasis has given rise to enormous investments in technology and integration of digital services and products and increased competitive force to differentiate based on customer experience excellence (Accenture, n.d.).

Greek banks have particular legacy system integration and regulatory compliance issues under the European Union model, analysis indicates**.** Implementation of European directives such as PSD2, Payment Services Directive, and GDPR, General Data Protection Regulation, has had profound technology updates and process reengineering required (European Central Bank, 2018; European Central Bank, 2024). Regulatory obligations have in fact prompted digital transformation initiatives since banks are required to ensure introduction of robust customer authentication platforms, data protection, and open banking features to remain updated and competitive.

The digital adoption patterns among Greek banking customers reflect broader European trends while maintaining some distinctive characteristics. Greek consumers demonstrate high mobile device usage rates and increasing comfort with digital banking services, particularly among younger demographics (Tefficient, 2024). However, a significant majority of customers put high value on interpersonal relationships and face-to-face human interaction, and hence omnichannel CRM solutions that integrate smooth digital and offline service channels are needed. This integration approach requires sophisticated CRM systems that can store customer context and history at each point of interaction.

The period of recovery for the economy has created scope for Greek banks to modernize their technology infrastructure along with embracing best practices observed in other economies of Europe. The majority of institutions are capitalizing on this transition phase to implement cloud-based CRM systems, AI functionalities, and sophisticated analytics platforms (Hitachi Solutions, n.d.). The relatively smaller size of the Greek market compared to the other European economies allows for more flexible implementation strategies and faster adoption of new technology with potentially competitive benefits in the broader European market.

4.1.2 Project Background and Context

The case analyzed in this study is a private bank in Greece. It was founded more than 140 years ago, and listed on the Athens Stock Exchange around 100 years ago. It is considered one of the largest banks in Greece, with its assets valued at approximately €70 billion. It operates mainly in Greece and Cyprus; however, it also has branches in other European countries. The market share they have achieved in Greece is

approximately 15%, with a network of around 300 retail outlets, including branches and ATMs, spread across Greece. Their customer base is diverse, consisting of approximately 3.5 million retail customers, 250.000 SME customers, and a few thousand corporate clients. The bank employs a total of around 8.000 employees across Greece. The bank underwent a significant restructuring following the Greek financial crisis and the acquisition of a smaller bank around the same time.

In this case study, it is essential to understand the legacy system landscape that the bank had in place before the project initiation. For the core banking system, a combination of legacy systems, including old versions of banking platforms, served as the heart of the banking functionalities. Regarding the CRM system, there were fragmented solutions in place across multiple systems, implemented at different times during the bank's operational history. Additionally, the bank lacked an all-inclusive solution that utilized the same technology for managing all activities in the sales pipeline, from lead and opportunity to customer service and support. The customer information was spread across five separate, isolated systems, and none of them could be considered the single source of truth regarding the customer data. Moreover, sales tracking systems were implemented at a branch level, but they were not cohesive with each other, creating problems in reporting and metric provision. Furthermore, the service request management system operated through a separate ticketing system, which stored all historical data related to case management. Finally, there was an additional external system for marketing automations, acting as a standalone tool with limited integration capabilities.

The bank had multiple established channel systems, which included separate systems for managing branch operations, digital banking, mobile banking, and a contact

center for phone requests. Moreover, the bank was facing problems related to its data, as approximately 25% of customer records presented duplicates across multiple systems, resulting in inconsistent customer profiling and incomplete relationships and information.

Due to the inconsistency of this chaotic system, the need for the bank's digital transformation was higher than ever. Top management had set a digital transformation strategy for the next ten years, and this was one of the main drivers for this project. Additionally, the bank aimed to achieve higher operational efficiency, reduce the cost-to-income ratio, and support cross-selling opportunities through this project. This would help the bank remain competitive during a period of emerging trends from digital banks and fintech solutions. Additionally, they had to remain compliant with regulatory areas such as the General Data Protection Regulation (GDPR) and the revised Payment Services Directive (PSD2).

To achieve this, the project’s primary goal was to implement a unified CRM system across all customer touchpoints. The agreed-upon technology was Salesforce CRM, specifically the industry solution, Financial Services Cloud, as well as Marketing Cloud for marketing campaigns, and MuleSoft for integration. More specifically, on a deeper level, the project has included in its objectives the creation of a single 360° view for customers across all the bank's channels, the reduction of customer onboarding time, as well as an increase in the sales coming from digital channels. Additionally, another goal set by the business team was to improve the first-contact resolution rate and achieve improvements in campaign conversion rates, as a result of personalized marketing. The cornerstone of this project was also the desire to achieve high customer data consistency across all impacted systems.

The team involved in the project was diverse, comprising complementary skill sets and various organizational levels. For the core implementation team, it was a total of 24 full-time team members. This team consisted of two Project Managers (one financial services oriented, and one tech-oriented), three Product Owners (from retail banking, digital channels and operations), four Business Analysts, one Salesforce Solution Architect, six Salesforce Developers, two Senior Salesforce Consultants, two Integration Specialists, two Quality Assurance Specialists and two Data Migration Experts. The extended team, working part-time on the project, consisted of 19 people and included one Compliance Officer, one Information Security Officer, twelve Business Representatives (subject matter experts from different business units who attended the sprint demo sessions), two Change Management Specialists, and three Trainers. Finally, the executive sponsors included the Chief Digital Officer, who was the main sponsor of the project, the Chief Information Officer, and the Head of Retail Banking.

Finally, the project timeline was agreed upon to have an 18-month duration for the implementation phase, which was planned into three phases. Phase 1 includes months 1-6, during which customer data consolidations and basic CRM functionality are delivered. Phase 2 encompasses months 7-12, during which the Sales and Service Cloud (part of the Financial Services Cloud) would be delivered. Lastly, Phase 3 comprises months 13-18, during which digital channel integration and marketing automation will be delivered, and the full rollout will occur. The budget for this project was estimated at €2.6 million, broken down as follows: €900,000 for Salesforce licenses and cloud infrastructure, €1.35 million for implementation, €250,000 for training and

change management, and €100,000 for support and maintenance over a six-month period.

4.1.3 Project Management Approach

The project management approach adopted for this project was a hybrid agile methodology, combining Scrum with banking governance requirements, which was also one of the vendor's (Salesforce) best practices. There were plenty of reasons why this methodology was selected. Firstly, the bank had previous experience with both waterfall and agile methodologies. The bank's waterfall implementation experience exceeded the project timelines by approximately 40%, whereas the agile methodology followed for mobile banking development was highly successful. For further context, the bank's previous CRM initiative, which employed a waterfall approach, did not meet its expectations, as the systems were abandoned by users. Moreover, the bank required incremental value delivery to demonstrate early Return on Investment (ROI) to its stakeholders.

The agile implementation adhered to a specific structure, where sprints were two weeks long with a formal demo and review at each conclusion. Three cross-functional teams worked in parallel on the implementation part. The first team focused on unified customer profiles and data integration, the second on branch and contact center functionalities, and the third on online banking integration and various customer portals. As for the meetings in place and their occurrence, there were daily 15-minute stand-ups with the core team, sprint planning sessions with the requirements review, bi-weekly demos with the client to the extended stakeholder community, monthly steering committee reviews with formal progress reporting by the project managers,

and occasional sessions before each major release. Finally, regarding the agile technique, the documentation approach included enhanced user stories, their mapping to system features, business requirement documents covering essential functions, and code repositories.

Product backlog management was a crucial part of the project, given its long duration and list of requirements. For the prioritization, a custom framework was used that evaluated the importance of each item as follows: business value (40%), regulatory requirement (25%), technical foundation (20%), and user impact (15%). The user stories were formatted in the standard way, "As a [role], I want to [need], so that [benefit]", with additional comments for compliance, data security, and integration dependencies.

Regarding the Minimum Viable Product (MVP) defined for this project, it was agreed that the initial release would focus on providing a unified customer view with all relevant information and data from the core systems, as well as the Customer 360° view for branch employees and managers. Additionally, crucial aspects to be included in the MVP were the opportunity management feature, customer contact history, customer onboarding process, service request handling, and integration with core banking systems. The release planning for the above features included six releases over 18 months, where each release was initially deployed to only a few branches before being rolled out more widely.

Different tools and platforms facilitated communication between the technical and the business teams. Regarding the project management tools, the teams were using Atlassian Jira for backlog management and sprint tracking, and Atlassian Confluence as a documentation repository and knowledge base. For daily communications,

Microsoft Teams was the preferred option, and SharePoint was used to share any relevant documents and materials. Regarding the technical environment, as mentioned before, the core Salesforce products chosen for this project were Salesforce Financial Services Cloud and Marketing Cloud, complemented by MuleSoft. For these products, there were four primary environments: Development, System Integration Testing (SIT), User Acceptance Testing (UAT), and Production.

For governance adaptation, a hybrid governance structure was followed, where traditional project Steering Committee meetings were held monthly and status updates were provided on a bi-weekly basis. Meanwhile, the agile teams worked autonomously during the sprint timeframe, following a demo of their work. The project metrics presented during the executive meetings included milestone completion and budget utilization, complemented by a risk analysis that included criticality levels and mitigation actions.

4.1.4 Key Challenges and Responses

During the 18-month duration of the project, it was expected that the teams would face challenges and problems that they would need to overcome. In this section of the study, the four main challenges will be described, along with the resolution approach the stakeholders followed.

The first challenge (Challenge 1) involved addressing the complexity of data integration. When the technical team began navigating the migration with the core banking system, it was revealed that around 30% of the customer records the bank had in its possession were incomplete or inconsistent. The impact of this issue was a delay of approximately 4 weeks in the data migration step, which put the delivery of Phase 1

at risk. The root causes of this problem were some undocumented business rules in legacy systems that were violated, resulting in data manipulation issues, multiple customer identification numbers following different patterns across the various systems, and, in some cases, missing relationship data between customers and accounts.

The team followed a very concrete resolution approach that helped them overcome this challenge. A dedicated data quality team was formed from bank employees who were experts on the legacy systems being analyzed, providing their input during this challenging exercise. This team ensured that the project's technical teams had all the necessary information for the migration, as well as assured the quality of the data after completion. From a technical perspective, a data enrichment process was implemented prior to migration, followed by an automated data reconciliation process between the old and new systems. The outcome of these activities was to achieve data consistency at an acceptable level; however, Phase 1 ultimately ended three weeks late.

A second challenge (Challenge 2) identified during the project pertained to performance and scalability. More specifically, the system response time exceeded seven seconds for key operations during load testing. The technical issue was exposed due to integration bottlenecks when accessing core banking data, as well as inefficient page layouts with multiple components, resulting in questionable performance. The impact of this issue was the failure of some of the acceptance criteria for the related user stories, which also threatened the Phase 2 deployment.

Since this problem was purely technical, the development teams were able to find a solution by optimizing the entire flow behind the business process. Firstly, the

Salesforce Solution Architect had to be further involved in this activity and work on its optimization. The teams had to implement a caching strategy for frequently accessed data, optimize the page layouts, and refactor the integration layer by utilizing asynchronous processing. The outcome of this collective attempt was to achieve a target response time of under 3 seconds. Still, Phase 2 was indeed delayed by 3 weeks, and an additional €75,000 was required for technical consulting.

Another challenge (Challenge 3) that the team faced during the project duration was in the area of change management. The traditional training approach did not seem to be efficient for the large number of staff members across the multiple Greek branches. The primary constraint on that front was that branch operations did not allow more than 30% of their staff to be simultaneously absent for training. Additionally, a wide variety of digital literacy skills was observed among the bank employees, making training even more challenging.

The resolution approach, which was followed in this case, was focused on the training sessions and material that were delivered. The change management team developed a multi-tier training strategy, which included one responsible person per branch to receive intensive training, so that they can support their unit when needed. Additionally, different training sessions were created based on user roles and types in the system for easier reference. For the self-study part, the change management team created e-learning modules that took advantage of the Trailhead platform, a gamified environment, to encourage system exploration. Finally, the technical teams established dedicated support communication channels and shared quick reference guides with bank employees to follow standard processes. Again, the outcome was successful. All

users were trained appropriately, however an additional €60,000 was required for the effort towards the training material and support.

A final challenge (Challenge 4) that the team discovered during this project was related to the scope and budget estimation. Due to the ambitious vision from multiple stakeholders regarding the delivered solution, as well as "feature creep" during the business analysis and requirements gathering activities, the actual budget managed to exceed the anticipated one by 30%. This impacted the project estimations at its core.

For resolving this challenge, the project team applied the MoSCoW prioritization method, where they analyzed the must-have, should-have, could-have, and won't-have features. This way, they provided the most value-added features that would maximize the bank's return on investment. Based on that, the team developed a phased implementation roadmap, as discussed in the initial plan. However, this time it was extending beyond the original estimated timeframe. The outcome of these actions was the delivery of core functionality within budget by deferring lower-priority features to future phases.

No	Challenge	Root Causes	Resolution Approach	Impact
1	Data Integration Complexity	• 30% of customer records are incomplete/inconsistent • Undocumented business rules in legacy systems • Multiple customer ID patterns across systems • Missing relationship data between customers and accounts	• Created a dedicated data quality team with legacy system experts • Implemented data enrichment process prior to migration • Automated data reconciliation between old/new systems	• Achieved an acceptable data consistency level **• Phase 1 delayed by 3 weeks** • Successfully migrated customer data
2	Performance & Scalability	• System response time >7 seconds for key operations • Integration bottlenecks with core banking data • Inefficient page layouts with poor-performing components	• Salesforce Solution Architect optimization involvement • Implemented a caching strategy for frequently accessed data • Optimized page layouts and refactored integration layer	• Achieved target <3 seconds response time **• Phase 2 delayed by 3 weeks** **• Additional €75,000 for technical consulting**

			• Utilized asynchronous processing	
3	Change Management	• Traditional training is ineffective for large staff numbers • Branch operations limited to 30% staff absence for training • Wide variety in digital literacy among employees	• Multi-tier training strategy with branch champions • Role-based training materials • E-learning modules using the gamified Trailhead platform • Dedicated support channels and quick reference guides	• All users trained successfully • **Additional €60,000 for training materials and support** • Improved user adoption
4	Scope & Budget Management	• Ambitious stakeholder vision • Feature creep during requirements gathering • Underestimation of the project	• Applied MoSCoW prioritization method • Developed phased implementation roadmap • Extended timeline beyond original estimates	• **Budget exceeded by 30%** • Core functionality delivered within revised budget • Lower priority features deferred to future phases

Table 4.1: Challenges of the banking project in an agile environment

A summary of the above challenges is presented in Table 4.1. Overall, the agile process followed to address these challenges was adjusted based on stakeholder input. The team composition was altered mid-project, as additional dedicated Quality Assurance, Integration, and Training resources were added to address the identified quality and complexity issues, as well as the training material issues. Additionally, some of the success measurements shifted, from feature completion metrics to customer impact metrics around the middle of Phase 1. Overall, by adopting a flexible approach, the teams successfully addressed most of the issues that arose while delivering a high-quality solution.

4.1.5 Lessons Learned and AI Opportunities

The completion of this intensive project resulted in a list of lessons learned for future reference and consideration. We observed the bank-specific agile adaptation, characterized by a careful balance between flexibility and regulatory compliance, as well as enhanced documentation beyond the typical agile approach. This indicates the high involvement that the teams provided to adhere to both criteria. Moreover, it is a common thing in banking CRM projects to underestimate their complexity since regulatory requirements are already written down. However, those requirements should include buffer time for mid-project changes. Furthermore, training and change management activities should require equal emphasis to technical development to ensure user adoption.

For the technical considerations and foundational aspects of data quality, we had to address the data migration and quality issues that were consistently underestimated. The teams should have established the data governance model before the technical implementation, and the legacy system knowledge holders should have been involved during the business analysis phase from the outset. Additionally, performance testing should begin earlier in the project lifecycle, and integration complexity with the existing bank systems should be of core importance. Finally, the Salesforce customization should be minimized in favor of configuration, so that we would not add a level of complexity to the project.

Given these lessons learned, it was clear that AI could have been utilized to enhance the team's work and results. A more in detail analysis of the AI capabilities will be presented in a later section, however the initial reflections were noticeable. Firstly, predictive project planning could have been used to address the challenge of

more accurate timelines and resource forecasting. Through machine learning models that analyze data from similar banking CRM implementations, AI could predict any likely timeline extensions and additional resource requirements that may be needed. The expected benefits could include more accurate project planning and a reduction in budget overruns.

Another area in which AI could have supported this project is smart resource allocation, which could have addressed resource constraints and allocation problems. The project managers could have utilized an AI resource planning mechanism to optimize team composition and allocation throughout the project, based on skill requirements and the availability of team members. This would improve resource utilization and eliminate bottlenecks that arose due to the need for additional resources.

Finally, the challenge of incomplete requirements and scope management could also have been addressed with AI, through automated user story refinement. By leveraging NPL, the algorithms can analyze user stories for completeness, compliance, and security implications. The expected benefit would be primarily a reduction in requirements and business analysis-related work. All of the above can be included in the future roadmap of the project management office, where the team can explore the AI-enhanced capabilities for ongoing project management evolution.

4.2 Case Study 2: Waterfall Project Management in Large-Scale IT Implementation

4.2.1 Current Industry Landscape

The global non-profit sector is in the middle of a profound digital shift, driven by aspirations to optimize functions, optimize donor engagement, and demonstrate

quantifiable impact. In a 2025 report by Unit4, as many as 86% of US and UK nonprofits intend to transition entirely to cloud-based ERP, finance, and HR software, reflecting on the sector's emphasis on streamlining administration and enabling data-driven decision-making (Unit4 Communications, 2025). This shift is necessitated by several factors: the pursuit of enhanced operational efficiency, the adoption of donor-centered strategies, and the necessity of scalable approaches to respond to conflicting resources and requirements. Digital technologies, including artificial intelligence and blockchain, are increasingly utilized to personalize donor interaction and improve financial transparency, while cloud computing is enabling even small organizations to access advanced IT infrastructure at reasonable prices (FundsforNGOs, 2025).

Within this broader context, Customer Relationship Management software has been a key enabler of the modernization of nonprofit work. 2025 has seen a dramatic growth in AI-powered CRM platforms exclusively designed for interactions with donors and stakeholders (Nonprofit Technology News, n.d.). The platforms now seamlessly incorporate machine learning and predictive analytics, making it easier to identify potential major donors, automatically tailor outreach efforts, and make more accurate fundraising forecasts. For example, AI-driven sentiment analysis software is helping nonprofits automate their communications by evaluating donor interests and participation trends (Helpyousponsor, 2024). In the healthcare nonprofit industry, telehealth and patient monitoring platforms are being integrated with CRMs to enhance service delivery in adherence to regulations such as the Health Insurance Portability and Accountability Act (HIPAA) (Wilson, 2025). Of particular interest is the democratization of CRM technology—cost-reduced, modular, and cloud-based technologies—allowing even the smallest nonprofits to capitalize on this technology.

Nonprofits with current CRMs experience higher donor retention and more effective fundraising, primarily due to process automation and information consolidation.

To the Greek nonprofit sector, then, the environment is a unique mix of risk and opportunity. Economic volatility and decentralized digital infrastructure have historically kept Greek nonprofit technology adoption rates low. Some evidence of positive evolution exists, however, as concerted digital efforts, such as those advocated through the Hellenic Federation of Enterprises (SEV), take hold to educate nonprofit planning and augment the implementation of digital technology (SEV, 2022). Greek NGOs also have to contend with regulatory bureaucratic challenges, such as the European Union's General Data Protection Regulation (GDPR), which can be a barrier to IT investment and data management. Consequently, most Greek NGOs are gravitating towards low-cost, open-source CRM software that is amenable to their limited budgets and donor expectations of transparency and accountability (4 Sight Cloud, 2024). Amidst all these, there is a growing realization that digitalization is the answer to the industry's efficiency and sustainability. More research should be conducted to explore how Agile practices and AI-driven CRMs can be applied to address the specific problems of Greece, particularly in the context of large-scale IT adoption, such as CRM implementations.

4.2.2 Project Background and Context

The case analyzed in this study is a non-governmental organization in Greece. It is a medium-sized national office within a global network that has been operating for over 60 years and in more than 100 countries. In Greece, they have been operating since 1990, with their primary focus on environmental conservation, sustainable development, and climate change action within the country. The organization employs

approximately 45 full-time employees across programs, communications, and fundraising. Regarding fundraising, the organization has achieved a mix of individual donors, corporate partnerships, grants, and network funding. Their annual budget is approximately €3.2 million, and their operating model combines direct conversation projects, policy advocacy, and public education.

The organization's legacy system landscape consisted of the donor database at that time, which was outdated and implemented in 2007. The organization was facing data management issues, including the separation of donor information from program data, a limited ability to segment supporters or track their engagement history, a lack of integration with digital fundraising channels, manual reporting processes that required significant staff time, and incomplete tracking of donor interaction touchpoints. The marketing team was using a basic email marketing tool with no integration to the aforementioned donor database. For donation processing, a third-party payment processor was in place for reconciling donor payments. The analytics capabilities were limited to basic spreadsheet analysis, with no real-time dashboards. Overall, there was minimal integration between the systems, resulting in the need for manual data transfer.

The business drivers for this project were multiple and diverse. Firstly, it was part of the organization's strategic plan for the next five years to increase fundraising by a significant percentage of 35%. The organization was facing donor retention challenges, with an attrition rate of 22%, which was higher than the industry average. Numerous operational inefficiencies were observed, where staff spent a significant amount of time on manual data processing and Reporting. Given the emerging technology, this was something improper that could be easily fixed. Additionally, there

was a need for multi-channel coordination, allowing engagement to be tracked across various channels. Moreover, as an organization part of a global network, it was subject to additional reporting requirements, as well as internal collaboration to facilitate its day-to-day work. Overall, the organization sought to embark on a transformation journey for the stage show, benefiting from this modernized technological infrastructure.

To achieve the above, the project had specific objectives and goals. The primary goal of the project was to implement two Salesforce products, Non-Profit Cloud and Marketing Cloud, to create a unified and consistent management platform. More specifically, part of the specific objectives were the creation of a 360° view of all members involved, from donors and volunteers to advocates. Additionally, the team aimed to expand the regular giving program while, in parallel, reducing the donor attention rate through enhanced engagement. It was also important on an internal level to decrease the administrative workload through process automations, enable advanced segmentation for targeted campaigns, and improve reporting capabilities. Finally, they wanted to integrate online and offline donation channels and strengthen their corporate partnership management capabilities.

As for the team composition, the team consisted of 11 members from both the organization and the implementation partner. From the implementation partner, there was one Salesforce Solution Architect, one Salesforce Consultant specializing in Non-Profit Cloud, and two Salesforce Developers involved. From the organization's side, there was one Project Manager (who was the Fundraising Operations Manager), two Fundraising Representatives, one Digital Communications Specialist, one Finance Representative, one Programs Representative, and one Executive Sponsor (the

Development Director). Additional resources could have been utilized during the project, such as the international Network CRM Support Team for advisory capacity, the Executive Director as the steering committee chair, and administrative support for testing and data migration.

Finally, the timeline of this project was agreed to be an 8-month implementation. with four different phases as follows: Phase 1 (months 1-2) for the business analysis, requirements gathering and solution design, Phase 2 (months 3-4) for the system configuration and customization, phase 3 (months 5-6) for the data migration and integration, and Phase 4 (months 7-8) for testing training and deployment. The project's budget was calculated at €250,000, which was divided as follows: €110,000 for Salesforce licenses over a 3-year commitment, €95,000 for implementation services, €25,000 for data cleansing and migration, €15,000 for training and staff development, and €5,000 for supporting maintenance.

4.2.3 Project Management Approach

The project management approach chosen for this project was the traditional waterfall methodology, which involves sequential phases. The reasoning behind this selection was, most importantly, that the project's requirements were well-defined and straightforward. The scope was clear and predictable, since standardized Salesforce products and functionalities would be delivered. This pre-configured solution required minimal custom development, and the teams involved followed the global network's recommendations based on their experiences with other national offices. Additionally, there was limited resource availability, resulting in a small centralized project team,

where the phases needed to be defined from the outset. One additional crucial aspect was the need to align clear deadlines with the office's annual fundraising planning cycle.

As mentioned earlier, the project consisted of four phases, each spanning a 2-month duration, and followed a rigorous structure. Phase 1 was the Requirements and Design phase. During this phase, a comprehensive business requirements document was developed, incorporating process flow maps that mapped all key organizational functions. The solution design document that was subsequently developed was approved by all stakeholders, which also defined the data mapping and migration strategy. To conclude this phase, an official sign-off was required before proceeding to Phase 2.

Phase 2 was the Build and Configure phase, during which the primary implementation activities occurred. Firstly, the system environment was set up with two main instances, the sandbox and the production environment. Additionally, the core Non-Profit Cloud configuration was implemented, along with any custom fields and page layouts requested. The roles and permissions were defined based on the user profile in the platform, and the security model was also implemented. Finally, default and custom reports and dashboard were created, which constituted the end of the Phase 2 development. At this point, a sign-off was also required before proceeding to the next phase.

Phase 3 was related to Data Migration and Integration. An extensive data cleansing process was conducted on the organization's legacy records. The migration scripts were developed, followed by the test migration to the sandbox environment. Afterwards, the teams proceeded with the validation and error collection to ensure the successful migration to the new system. Finally, the development teams worked on

integrating the website forms and payment processor, as well as configuring the Marketing Cloud and connecting it to the core CRM. For the migration phase, a sign-off was again required before proceeding to the next and final phase of the project.

Finally, the last phase was Phase 4 and concerned Testing, Training, and Deployment. During this phase, the team performed intensive system testing against the business requirements analyzed in Phase 1 and carried out user acceptance testing with all relevant departments. The users then received the scheduled training sessions, as well as the user documentation that had been created. Finally, the development teams performed the go-live preparation and cut-over planning, as well as the final deployment of the solution to the production environment, and provided the post-implementation support.

Regarding the documentation approach, during the project lifecycle, a few key documents were produced. These documents consisted of a detailed business and functional requirements document, in which all business operations were documented. Additionally, a solution design document was provided, which included the complete system architecture, as well as a data dictionary and entity relationship diagrams. Later in the project, test scripts and acceptance criteria were provided to the organization, along with training manuals and quick reference guides.

Regarding the governance structure, a project steering committee was established to conduct progress reviews on a monthly basis. This group consisted of the Executive Director, the Development Director, the IT Project Manager, and the Finance Director. A formal sign-off was required at each phase gate, and they evaluated and approved any change requests. Regarding project management tools, Microsoft Project was widely used for detailed project planning and tracking. The teams also utilized

SharePoint as a document repository and shared weekly status reports with RAG indicators (red, amber, and green). Additionally, a formal risk and issue log with mitigation strategies was kept, as well as a detailed budget tracking against the baseline.

For quality management, the two key factors considered were testing and training. For testing, a comprehensive test plan was developed that covered all requirements, comprising four distinct testing phases. First, the unit testing is performed by the developers who implemented the features. This is followed by system integration testing, then user acceptance testing with actual users, and finally, performance and security testing. For the training approach, role-based training modules were developed, with a combination of online training delivery. A train-the-trainer approach was applied for departmental support users, complemented by comprehensive here's your documentation.

4.2.4 Key Challenges and Responses

It came as no surprise that a few challenges would come up during a project like this. In this section, the five key challenges that the project team faced will be presented, along with the resolution approach followed for each one.

The first challenge (Challenge 1) that the team had to face was related to data quality issues. More specifically, the legacy database contained significant data quality problems, including duplicate records, incomplete information, and inconsistent formatting. The impact of this challenge on the project was the increase in data migration estimates from 4 weeks to 7 weeks, which threatened the Phase 3 deadline. The root causes of this fact were related to years of manual data entry without validation

rules, multiple users with varying data entry practices, and undocumented historical imports from various sources. The fact that the donor records were split across multiple systems did not help in this situation, as it doubled the effort needed for the completion of this activity.

The resolution approach followed was the addition of a data cleansing specialist to the team for a six-week duration. This resource helped in developing comprehensive data cleansing rules with validation processes, creating automated scripts for common data issues, and prioritizing the cleansing of active donors over the past three years. Following the approval of the steering committee, Phase 3 was extended by three weeks. Despite the delay in the overall project, the outcome was successful, as most of the active donor records were migrated with all complete information.

The second challenge (Challenge 2) that emerged as the team initiated the project was related to staff resource constraints, and more specifically, the key project members struggled to balance their regular duties with project responsibilities. This impacted the project timeline due to the delay of the requirements phase (Phase 1) deliverables by 2 weeks. Some of the contributing factors were that the project overlapped with the peak fundraising season (November-December) and the underestimation of time requirements by business users.

The resolution steps that were followed were multiple and parallel. First, the team had to restructure the project schedule to accommodate the fundraising calendar, so the requirements phase was extended by 2 weeks. However, to stay more in line with the initial project plan, the project management team compressed this phase with the configuration phase (Phase 2). As for the organization, they implemented “project days”, where the team members were completely dedicated to the CRM work that had

to be done, and temporarily redistributed the operational duties to the rest of their staff. The outcome of this mitigation plan was to complete the requirements with an acceptable quality. However, further adjustments were required for the following phase.

Another unforeseen problem (Challenge 3) that the project team faced had to do with integrating with the organization's international systems. There was an unexpected requirement to integrate with the organization's international global reporting platform mid-project. That would have a significant impact on increasing the scope and the budget. The complexity arose when this requirement was communicated three months into the project. After an initial analysis, it was discovered that the global system used a different data structure and terminology than the one already implemented at this stage of the project lifecycle.

The issue was addressed through a formal change request submitted to the steering committee. Since the request was not communicated in the initial project proposal and scope, it was agreed that it would be handled as a change request. Due to the time pressure situation, it was negotiated with the international office to begin with a simplified initial integration. Furthermore, some of the support and maintenance budget would be allocated to cover the additional consulting and development hours required to amend this request. The result was that the basic integration was delivered within the original timeline, albeit with reduced functionality, and the full integration was scheduled as an activity that would occur after the project's go-live.

Following this, the organization requested that the implementation partner implement numerous additional scope extensions (Challenge 4). The teams involved in the project continuously requested additional functionality beyond the original

requirements, claiming that it was part of their previous system and should be applied to Salesforce as well. Additionally, stakeholders were learning about Salesforce capabilities during the project, and their enthusiasm for the potential benefits has driven more requests. Just as the previous challenge, this one would also significantly impact the project's timeline and budget.

To address this challenge and keep stakeholders satisfied, the project management team categorized the requirements as “must-have” versus “nice-to-have” to prioritize the needs that arose. Afterwards, they created the post-implementation enhancement roadmap, where those changes could be evaluated and approved by the steering committee. This established clear communication and transparency about the process that should be followed in these cases, while ensuring that users of the system could derive value from its functionalities. The overall outcome of this situation was the maintenance of the core project scope, with only three approved changes (one of which was the integration with the international office mentioned previously), and the creation of a prioritized enhancement list for future phases to address the remaining requests.

Finally, one less challenge (Challenge 5) that was faced was related to the reporting requirements. In particular, the reporting requirements proved to be more complex than initially anticipated, resulting in the development of the reporting process taking twice as long as planned. The complications came from the need to combine financial data with donor information, as well as the complex donor segmentation requirements.

The methodology that was followed to resolve this challenge was to prioritize the needed reports into “essentials” and “secondary” categories. The development team

created a phased reporting roadmap for these two categories and, using actual system data, trained internal users to create ongoing reports. The focus was on teaching stakeholders self-service reporting capabilities. The result was the delivery of core reports within the project timeline, whereas for the additional reports, they were developed in the weeks following the implementation phase. A summary of the above challenges is presented in Table 4.2.

No	Challenge	Root Causes	Resolution Approach	Impact
1	Data Quality Issues	• Years of manual data entry without validation • Multiple users with different data entry practices • Undocumented historical imports from various sources • Donor records split across multiple systems	• Added a data cleansing specialist for 6 weeks • Developed comprehensive data cleansing rules • Created automated scripts for common data issues • Prioritized active donors from the past 3 years	• **Phase 3 extended by 3 weeks** • **Data migration increased from 4 to 7 weeks** • Most active donor records migrated successfully
2	Staff Resource Constraints	• Project overlapped with peak fundraising season • Underestimated time requirements from business users • Key members struggling to balance regular duties with project	• Restructured project schedule around fundraising calendar • Extended requirements phase by 2 weeks • Compressed Phase 1 with Phase 2 • Implemented dedicated "project days" • Temporarily redistributed operational duties	• **Requirements phase delayed by 2 weeks** • Requirements completed with acceptable quality • Required further phase adjustments
3	International Systems Integration	• Unexpected mid-project requirement (month 3) • The global system used a different data structure • Different terminology than implemented system	• Formal change request to the steering committee • Negotiated simplified initial integration • Allocated support/maintenance budget for additional hours	• Basic integration delivered within the original timeline • **Reduced functionality initially** • Full integration scheduled post-go-live
4	Scope Creep	• Continuous requests for additional functionality • Claims that features were part of the previous system • Stakeholder enthusiasm driving more requests	• Categorized requirements as "must-have" vs "nice-to-have" • Created post-implementation enhancement roadmap • Established a clear change process communication	• **Core project scope maintained** • Only three approved changes • Prioritized enhancement list created for future

5	Complex Reporting Requirements	• More complex than initially scoped • Need to combine financial data with donor information • Complex donor segmentation requirements	• Prioritized reports into "essential" vs "secondary" • Created phased reporting roadmap • Trained users for self-service report creation	• **Reporting development took twice as long** • Core reports delivered within timeline • Additional reports developed post-implementation

Table 4.2: Challenges of the non-profit project in a waterfall environment

4.2.5 Lessons Learned and AI Opportunities

In reflecting on this project, several valuable lessons were identified that emerged from our experience. Higher stakeholder involvement in requirements gathering was essential, even in waterfall projects. The end users needed earlier exposure to the system capabilities and limitations, so that they could suggest and explain their needs sooner. Regarding data management, it was demonstrated that quality assessment should occur before detailed project planning. The migration complexity was underestimated, and the ownership should be clearer across the different departments.

At the project management level, the waterfall approach worked very well for implementing the discussed standard functionality. The separated phases added another layer of structure to this project when dealing with resource constraints. The stakeholders' reviews were proven to be essential for more frequent and accurate alignment between teams, while, at the same time, the flexibility provided in the support phase was critical for addressing unexpected issues. Regarding team capacity, it was observed that there were staff limitations for Non-Profil Cloud implementation. This required careful planning to accommodate existing workloads and ensure availability.

Overall, the organizational readiness of the team that was under review should have been clearer during the project. The technology and process changes should be addressed simultaneously, making clear the value that stakeholders gain from this transition. The executive support must be visible and consistent to assist the teams on this journey. Finally, post-implementation support planning is equally important as core implementation planning, as it can address any last-minute problems.

In this context, AI could have been utilized to mitigate some of these challenges. Firstly, on the requirements analysis, it was discovered that there was a need for more comprehensive requirements identification. AI could have been applied by using NLP to analyze the requirement documents produced, to identify gaps, conflicts, and inconsistencies based on patterns from similar nonprofit implementations. The expected benefit in this case would have been the reduction in missing requirements, as well as in change requests, and overall, the completion of Phase 1 on time.

Another important area where AI could enhance project success was related to resource optimization and the challenge of staff resource constraints. AI resource planning could help optimize project scheduling around seasonal fundraising activities and staff availability patterns. This would assist both the implementation and the fundraising teams. The expected benefits in this case would be the reduction in resource conflicts and associated delays.

Furthermore, AI could be utilized to perform intelligent change impact analysis, addressing the challenge of scope management security. AI can assess the impact of proposed changes by analyzing dependencies and predicting implementation complexity for each scenario. The result would also be beneficial, leading to more informed change decisions and a reduction in scope creep.

Additionally, the time-consuming documentation process could also benefit from the application of AI technologies, which could automate the generation of documentation. This way, AI tools could help generate and maintain system documentation by analyzing configuration and customizations implemented. This would lead to a reduction in documentation effort, with improved accuracy and explainability on an acceptable level for the users.

Finally, risk identification could also be enhanced in this project by leveraging AI capabilities to address reactive issue management. Predictive models could be used to identify potential risks based on patterns from similar identifications, flagging potential issues before they occur. The most significant advantage in this case is the earlier risk mitigation, which reduces the impact of project disruptions. Overall, those lessons learned can be transferred through knowledge-sharing initiatives to support other nonprofit implementations in the future. A structured approach to post-implementation enhancements can be utilized based on a prioritized roadmap, which would bring forward the most value-oriented system improvements.

4.3 Initial Comparative Reflections

After examining both cases, some initial observations have been made regarding the nature of the projects and their main differences and similarities. Firstly, there was a fundamental approach contrast, where the bank adopted an agile methodology, whereas the NGO implemented a classic waterfall approach with clear sequential phases. Its methodology reflected the organization's size, culture, and project complexity. The bank had to make a choice that reflected its need for flexibility within

a highly regulated environment, contrasting with the NGO, which was better suited to a waterfall methodology based on well-defined requirements and limited resources.

Dimension	Case Study 1: Banking CRM (Agile)	Case Study 2: NGO CRM (Waterfall)
Industry	Financial Services - Private Banking	Non-Profit - Environmental Conservation
Organization Size	Large (8,000 employees, €70B assets)	Medium (45 employees, €3.2M budget)
Customer Base	3.5M retail, 250K SME, Corporate clients	Donors, volunteers, advocates
Technology Platform	Salesforce Financial Services Cloud + Marketing Cloud + MuleSoft	Salesforce Non-Profit Cloud + Marketing Cloud
Project Duration	18 months	8 months
Total Budget	€2.6 million	€250,000
Team Size	24 members	11 members
Methodology	Agile Scrum	Traditional Waterfall
Sprint/Phase Structure	2-week sprints, 3 overlapping phases	4 sequential phases, 2 months each
Primary Drivers	Digital transformation, regulatory compliance, competitive pressure	Fundraising growth (35%), donor retention, operational efficiency

Table 4.3: Project Overview Comparison

Regarding the project structure and timeline, the bank had an 18-month implementation project with overlapping phases and iterative development. In contrast, the NGO was involved in an 8-month implementation project with distinct phases and formal sign-offs. The timeline differences reflect both scope complexity and organizational capacity. The project timeline and phase comparison are presented in Figure 4.3, along with the key features of each approach. On that front, the team composition for the bank project was larger, involving cross-functional teams, whereas the team for the NGO case was smaller and had clear role definitions.

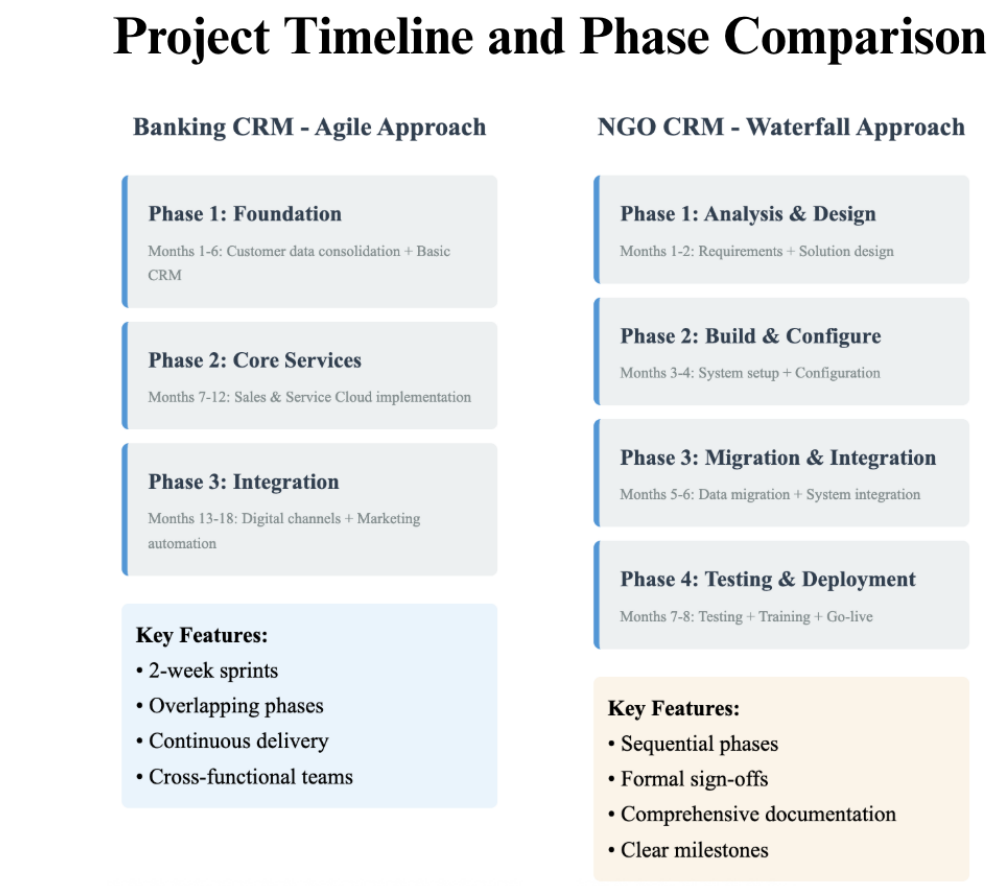

Figure 4.3: Project Timeline and Phase Comparison

In both cases, we recognized that AI could have been used to predict and prevent some of the teams' challenges. The common pain points across methodologies were that both organizations struggled with accurate estimation and resource allocation, and the data quality and migration complexity were underestimated in both cases. Additionally, the evolution of requirements and scope management challenged both projects, confirming once again the need for more advanced technologies.

Following these different approaches, some benefits and areas for enhancement have been identified for each. For the agile project, AI can enhance sprint planning and backlog prioritization, while for the waterfall approach, AI can improve initial requirements analysis. Both could benefit from predictive modelling of timeline and

resource needs. and could use machine learning to identify patterns from similar past implementations. This could automatically capture the lessons learned from previous projects, and provide suggestions to improve that are being followed or will be followed. A deeper analysis of these opportunities and their implications for project success is presented in the following chapter.

Chapter 5: Analysis and Findings

5.1 Cross-Case Comparative Analysis

5.1.1 Summary of Methodological Differences and Sector-Specific Constraints

While both case studies were related to IT implementation, it was clear that there were plenty of areas that made them distinct. Starting with the methodological approach, the bank followed an agile mode, whereas the NGO leaned towards a traditional waterfall methodology with sequential phases. The key difference was in the team size, when on the bank's project, there were 24 core members versus 11 from the other project. Additionally, the timelines of the projects were also opposing, as the bank's project was planned to last 18 months with three major phases, while the NGO's project was estimated to last 8 months with four sequential phases. Regarding the governance structure, the bank employed a hybrid governance model that combines agile autonomy with formal oversight. The NGO established a traditional steering committee with strict phase approvals.

Regarding banking sector constraints, high regulatory compliance requirements necessitate formal documentation and governance within projects. There are important considerations regarding data security and privacy, which, in terms of IT, add more complexity to projects. The legacy system integration is typically characterized by complexity, since multiple banking platforms need to exchange data. Some of these platforms are poorly maintained, with limited documentation and a lack of software community engagement. Regarding organizational size, the high number of the bank’s employees created change management challenges, which were also addressed in this

project. However, the higher budget allocation for this project allowed for a more comprehensive approach.

The non-profit sector, on the other hand, also imposed some constraints on the project team. The limited resources and budget for this project required a more focused implementation approach. The seasonal fundraising cycles created scheduling constraints, while the staff had to wear multiple hats with limited dedicated project time. In terms of requirements, the technical specifications were simpler, but there was a greater need for cost efficiency. Finally, there were external dependencies from the international network, which also added a level of complexity to the project.

5.1.2 Where AI Would Have Enhanced Project Management in Each Case

In both cases, the teams faced some challenges. Based on the above analysis of AI capabilities, a key conclusion is that AI could have been leveraged to enhance project management in each case presented. In this chapter, the opportunities of AI enhancements in project management will be presented, describing the solutions it would bring to each project.

Starting with the case of the bank, one important aspect that should have been addressed during the project lifecycle is related to scope and requirement management. AI could have analyzed the initial requirements to identify the budget overrun risk before it became an issue. Additionally, the AI capabilities could have provided objective prioritization recommendations based on business value metrics. That would have enabled more accurate feature estimation, preventing the need for scope extension.

Regarding risk identification and mitigation, AI could have predicted specific data migration risks based on the analysis of legacy isolated systems. On that front,

another risk that could have been flagged was related to branch adoption based on the stakeholder engagement patterns. Finally, AI mechanisms could have identified performance testing as a critical risk area before the Phase 2 delay. For all of the above, AI could have provided proactive strategies for mitigation, ensuring no major disruptions during the project.

Another very important area of project management that could have been improved for this project was the resource allocation and management. AI could have optimized the allocation of the 24 core members across concurrent activities. By using smart allocation tools, AI could have identified specific skill gaps requiring additional external support before they became bottlenecks. These tools could also have suggested the optimal distribution of the resource budget across project phases, depending on the project's needs.

Regarding timeline planning and management, AI could have provided more realistic estimates for the project phases, based on other banking CRM implementations. This could have identified specific activities that were likely to exceed estimates, such as the data migration from various systems. This would allow for timeline adjustments to complete the project on time, enabling dynamic critical path management even if requirements change mid-project.

Finally, in stakeholder management, AI could have analyzed communication patterns with the involved parties to identify engagement gaps, specifically with the branch staff. In this regard, AI could have detected resistance signals and recommended targeted engagement strategies for specific groups. This would benefit the overall adoption of the new system and contribute to the overall success of the project.

On the other hand, the non-profit project also faced some project management challenges, which could have been addressed with the help of AI. Firstly, in terms of project planning and phase management, AI would have been able to provide more accurate time estimates for the 8-month implementation phases and even predicted the exact impact of the fundraising season on the requirements phase timeline.

Besides, in terms of resource management limitations, AI could have analyzed the 11-person staff capacity against project needs. With AI solutions, the project management office team would have been able to predict the precise resource limitations during the November and December fundraising period and suggest the optimal deployment of available staff across project and operational responsibilities.

Furthermore, regarding change control and scope management, AI could have measured the impact of the International network's and expected integration requirements. The AI tool could have provided an objective analysis for evaluating the change request and suggested specific scope trade-offs to accommodate the integration needs. This would have maintained ongoing alignment between the approved scope and the budget constraint under which the project was.

Another crucial area of this project was related to risk management, yet AI was not utilized to address the relevant challenges. AI could have identified the data quality risk earlier, based on an automated assessment of the legacy database, and quantified the specific impact of those risks on the project timeline and budget. Overall, AI could have suggested more effective risk mitigation approaches than the limited budget remaining for the support and maintenance period.

Finally, on the communications and stakeholder management aspect, AI could have detected stakeholder alignment issues during the requirements phase and could

have suggested targeted communication strategies for the different groups. Additionally, it could have measured communication effectiveness and stakeholder sentiment throughout the project, thereby encouraging transparency and openness between the different teams.

5.1.3 Cross-Sector Reflections: Organizational Culture, Decision-Making, and AI Readiness

All of the improvements above reflected the differences between the two sectors in terms of organizational culture, decision-making, and readiness for AI. More specifically, within the organizational culture, it was evident that banking and nonprofit organizations followed distinct structures. In the banking culture, a multi-layer approval process was embedded within the agile framework. In contrast, the non-profit organization had fewer stages of the pyramid in terms of structure, and therefore lacked decision-making authority at the project level. Both organizations could benefit from AI's ability to provide detective decision support.

Regarding risk tolerance, the bank exhibited risk-averse behavior, complemented by extensive governance overlays, whereas the NGO demonstrated moderate risk tolerance but lacked sufficient resources for support and maintenance planning. In this case, AI could help quantify risks more accurately in both contexts, adjusting for sector-specific factors that may ultimately play a crucial role in the project.

Regarding technology adoption readiness, the bank had greater technical resources but more complex legacy systems, which added an extra layer of complexity to the projects. On the other side, the NGO had a simpler technical landscape but more limited specialized expertise at its disposal.

Regarding decision-making patterns, we observed the bank measuring its benefits using quantitative metrics and ROI projections, whereas the NGO was primarily influenced by stakeholder satisfaction. As for the decision-making authority, the bank maintained a centralized committee despite following an agile methodology; the NGO, however, struggled with unclear decision rights between functions. In both cases, AI systems could adapt by targeting appropriate decision-makers.

Finally, regarding the AI readiness factors, three main areas of dissimilarity were observed: data infrastructure, skills and capabilities, and cultural acceptance. On the data infrastructure, the bank had in place a more advanced application landscape, but with greater complexity, whereas the NGO had simpler data needs but poorer data quality. In terms of skills and capabilities, the bank had deeper technical expertise, but systems that required more specialization, whereas the NGO had versatile staff but limited technical expertise, as their systems were outdated. Lastly, regarding cultural acceptance, the banking organization showed openness to technology but resistance to changing established processes, while the NGO demonstrated adaptability but had concerns about the new technologies being transitioned to. For all the above, AI could have been used for data preparation, user training, and change management activities.

5.2 AI's Effectiveness in Enhancing Success Factors

Overall, AI can support projects by enhancing their success factors related to decision-making, resource management, and risk mitigation. In this chapter, each of these categories will be analyzed and provide examples of how each of them can be applied.

5.2.1 Decision-Making Support

Firstly, the decision-making support concerns the calculated solution approach that project managers should follow. The more data and insights the project management office has, the better the decisions it makes. In this regard, AI can facilitate evidence-based decisions by providing objective decision support, drawing on historical patterns from similar past projects. This way, any biases that might affect critical choices will be mitigated, ensuring transparency and clarity. Following this line, AI algorithms that run multiple scenarios can be used to evaluate potential decision outcomes, allowing project managers to be more confident in their decisions. In the banking organization scenario, AI analysis would have provided objective data to justify architecture changes, preventing performance issues that delayed Phase 2 by 3 weeks (Challenge 2). At the NGO, AI could have determined optimal donor record prioritization for cleansing, potentially reducing the 3-week delay caused by data quality issues (Challenge 1).

Moreover, timing optimization is also crucial in decision-making, as understanding when to act in specific areas can be of the highest importance. In this instance, AI could identify optimal decision points to maximize impact while minimizing disruption. This translates to recognizing when decisions should be made immediately or delayed, as well as measuring the cost of each in real-time. In our cases, AI would have identified the need for earlier performance testing at the bank, preventing the late discovery of issues that delayed Phase 2 deployment (Challenge 2). For the NGO, AI would have prompted project timeline restructuring around fundraising seasons, thereby avoiding resource constraints that became problematic, and preventing the 2-week requirements phase delay (Challenge 2).

AI can also support decision-making by ensuring stakeholder alignment in projects. By utilizing AI technologies, it is possible to analyze stakeholders' perspectives and identify areas of misalignment. Instead of only applying reactive support, AI can act proactively by predicting stakeholders' reactions to proposed changes and minimizing escalation levels. In our examples, AI analysis would have detected misalignment between the bank's stakeholders earlier, enabling effective scope management before requirements exceeded budget by 30% (Challenge 4). For the NGO, AI would have identified competing reporting needs across stakeholder groups, enabling alignment before reporting development time doubled (Challenge 5).

5.2.2 Resource Management

On resource management, with the help of AI, project teams can leverage dynamic resource allocation. Essentially, this involves continuously optimizing resource allocation in response to shifting project needs. The benefit of this feature is that it will enable project managers to identify resource bottlenecks before they impact project timelines. Additionally, given a specific set of resources, AI can suggest the optimal skill combination for specific project phases. For the banking institution, AI could have reallocated resources to form the data quality team earlier, potentially preventing the 3-week extension to Phase 1 (Challenge 1). For the NGO, AI would have adjusted resource allocations around fundraising peaks, preventing inconsistent workshop attendance and requirements delays (Challenge 2).

More specifically, this skills-matching activity can be achieved through AI tools that analyze task requirements and match them to the available skill profiles. This way, it becomes easier to identify the optimal team composition for different project phases,

and project managers can receive recommendations on targeted upskilling activities tailored to specific project needs. In our case, AI would have identified the bank's need for legacy system experts earlier, enabling faster formation of the data quality team (Challenge 1). At the NGO, AI would have recognized the reporting skills gap sooner, recommending the specialized Salesforce reporting consultant before development delays occurred (Challenge 5).

Another important area of resource management is related to capacity planning and the ability of AI to model the capacity requirements with accuracy. This is crucial for project managers, as they can take into account productivity variations across team members and over time, and also predict capacity shortfalls weeks or months in advance. AI modeling would have accurately forecasted the bank's data migration effort compared to the planned one, enabling proper staffing for integration challenges (Challenge 1). For the NGO, AI would have predicted the fundraising season's impact on staff availability, allowing proactive adjustments to prevent requirement delays (Challenge 2).

Furthermore, algorithms can support workload balancing by monitoring team workloads and suggesting strategies to prevent burnout. This could optimize allocation across parallel projects and encourage operational responsibilities. This way, teams can become more satisfied with their day-to-day operation, as well as enhance productivity to the maximum levels. For our scenario, AI monitoring would have identified excessive workload on the bank’s integration teams, recommending technical architect engagement before performance issues threatened Phase 2 (Challenge 2). For the NGO, AI analysis would have highlighted the unsustainable balance between project and

regular duties, prompting earlier implementation of dedicated "project days" (Challenge 2).

Finally, AI can also provide support on resource forecasting by dynamically adjusting forecasts based on emerging project realities. This could also consider organizational constraints, like budgets and availability, to provide actionable recommendations. AI-powered forecasting would have predicted the bank's need for additional technical consulting (€75,000) before performance issues became critical (Challenge 2). For the NGO, AI would have forecasted the temporary data cleansing specialist requirement before migration estimates increased from 4 to 7 weeks (Challenge 1).

5.2.3 Risk Mitigation

One fundamental aspect of project management that impacts project sucess is related to risk identification and mitigation. AI can support project managers in these tasks by proactively identifying risks. Essentially, AI can identify potential risks before they transform into issues as it continuously scans risk patterns based on specific project characteristics. These models can detect risk indicators that humans may not observe naturally. In our scenarios, AI would have identified the bank's data quality issues earlier, flagging that a high percentage of customer records contained incomplete data before delaying migration by 4 weeks (Challenge 1). For the NGO, AI would have detected the severe data problems (incomplete information, duplicates) during initial assessment, enabling earlier intervention (Challenge 1).

Typically, when project managers identify a risk, they plan a mitigation strategy. This is an area where AI can assist by suggesting tailored mitigation

approaches based on specific risk characteristics. By utilizing this method, algorithms can continuously evaluate the effectiveness of mitigation and adjust strategies as risks evolve. The adaptive mitigation strategy in the analyzed projects finds that AI would have suggested more effective approaches for addressing the bank's performance issues, potentially avoiding the 3-week Phase 2 delay through earlier optimization (Challenge 2). For the NGO, AI could have recommended more efficient data cleansing, focusing on active donor prioritization, which would have reduced the 2-week project delay (Challenge 1).

Additionally, AI can serve as an alerting mechanism when risks arise. This refers to an early warning system that provides real-time alerts when risk indicators reach critical levels. This way, AI systems can identify emerging risks that may not be initially captured in the traditional risk register, while also predicting the effects of seemingly unrelated events. For instance, AI would have alerted the bank to integration bottlenecks before they caused 7-second response times during load testing (Challenge 2), and for the NGO, AI would have flagged reporting complexity issues before development took twice as long as planned (Challenge 5).

5.3 Impact on Project Outcomes

Based on the above, it is essential to recognize that these factors may influence the project's outcomes in terms of timelines, budget, and overall success. At this stage, we will understand how the AI intervention influences each of these dimensions.

5.3.1 Timelines

In terms of timelines, AI can improve timeline accuracy, predict delays along the way, adapt scheduling depending on reliability, and manage both internal and external dependencies.

Regarding timeline accuracy, AI can enhance initial project estimates by identifying and refining patterns. Additionally, AI tools have developed features that could reduce the estimation errors by analyzing similar phases from historical projects. This can also consider factors that are specific to each organization, which can ultimately affect the timeline performance. In our case, AI would have provided the bank with realistic estimates for data migration complexity, preventing the 4-week delay (Challenge 1). For the NGO, AI would have accurately forecasted the extended migration timeline from 4 to 7 weeks based on similar nonprofit implementations (Challenge 1).

Delay prediction is also a valuable tool that can assist project managers, especially when dealing with interdependencies. Nowadays, AI tools can identify potential delay factors before they impact schedules and formulate strategies to resolve their causes. By recommending Actions to prevent those delays, project management teams can ensure that they remain on the initial project baseline. In our scenarios, AI would have predicted the bank's performance testing delays before impacting Phase 2, enabling proactive measures to avoid the 3-week extension (Challenge 2). At the NGO, AI would have quantified delay probabilities due to staff constraints during the fundraising season, enabling earlier mitigation (Challenge 2).

As for the adaptive scheduling feature, AI algorithms can dynamically adjust schedules based on actual project progress data. Their suggestion can then serve as the

initiator of optimizing critical path activities to maintain the overall timeline. Following the same logic, it can suggest parallel activities to recover from potential previous delays. AI could have dynamically adjusted the bank's schedule when data integration issues emerged, reducing the 3-week extension to Phase 1 (Challenge 1). For the NGO, AI would have restructured the timeline around fundraising constraints, preventing the 2-week requirements phase delay (Challenge 2).

Finally, in terms of dependency management, AI can identify potential, less obvious dependencies that would often be overlooked in traditional planning. This can prevent problems from arising concerning predecessor activities. Additionally, the algorithm can track the project's progress along with the dependency relationships that have been formulated as they evolve, and suggest restructuring some of them to reduce timeline vulnerability. AI would have identified critical dependencies between the bank's core banking systems earlier, highlighting the need for data enrichment before migration (Challenge 1). For the NGO, AI would have revealed hidden relationships between the unexpected WWF International integration and other project components (Challenge 3).

5.3.2 Budgets

Following the same model, the AI features mentioned before can also positively impact the budgeting activities, in terms of accuracy, cost variance prediction, research utilization optimization, and budget reforecasting.

To delve deeper into each area, for budget accuracy, AI can significantly improve the initial budget estimates through comparative analysis with other similar projects and phases. The algorithms can identify the budget categories that are

frequently underestimated, such as data migration in both cases above. AI analysis would have provided the banking institution with more accurate initial budget estimates, preventing the requirements excess that necessitated feature deferral (Challenge 4). For the non-profit organization, AI would provide better estimates of data cleansing and reporting complexity costs, allowing for proper resource allocation (Challenges 1 and 5).

On the cost variance prediction, AI machines can predict potential budget variances before they occur and identify specific cost drivers that require additional attention. AI would have predicted the bank's €75,000 additional technical consulting costs early enough to incorporate into planning (Challenge 2). For the NGO, AI would have forecast the need for temporary data cleansing specialists and reporting consultants before these unexpected costs emerged (Challenges 1 and 5).

Furthermore, in terms of resource utilization optimization, these new emerging technologies can identify resource allocation inefficiencies that may negatively impact the budget. Given this information, they can also suggest adjustments on resources that would be cost-effective, as well as optimizing the balance between internal and external resources. In our case, AI could have optimized the financial institution’s training approach for 8,000 staff across 325 branches, thereby avoiding an additional €60,000 investment in training resources (Challenge 3). At the NGO, AI would have suggested more efficient utilization of limited staff resources during peak fundraising season (Challenge 2).

Finally, AI algorithms can provide more accurate reforecasts as the project progresses by utilizing and integrating actual performance data into future projections. This would result in modeling multiple budget scenarios based on potential project

paths, allowing project managers to select the optimal one. In our projects, AI would have provided the bank with accurate budget reforecasts once the data integration complexity was identified, thereby better managing the €75,000 technical consulting costs (Challenge 2). For the NGO, AI would have given earlier visibility into the financial impact of the unexpected international integration (Challenge 3).

5.3.3 Overall Success

Overall, it is undeniable that AI can support project management if used correctly and consistently. This can benefit projects at their core by ensuring alignment on project activities and success criteria, stakeholder satisfaction, and change readiness.

The alignment of project activities and success criteria can be determined using AI by tracking progress towards success criteria in real-time, and by comparing the results of the project activities with predefined success or acceptance criteria. AI would have kept the bank's activities aligned with core functionality priorities, strengthening the MoSCoW prioritization to deliver within budget constraints (Challenge 4). For the NGO, AI would have maintained tighter alignment between implemented features and the formal change control process, reducing scope creep pressure (Challenge 4).

Regarding the stakeholders' satisfaction, AI can predict such a result based on project progress and business needs. Any risks related to stakeholder satisfaction can be identified early on, before they have a chance to impact project perception. By identifying and mitigating those risks, AI can suggest targeted interventions for specific concerns. AI would have predicted potential issues with the bank's training approach, enabling proactive adjustments to the multi-tier strategy before additional investment was required (Challenge 3). For the NGO, AI would have identified stakeholder

dissatisfaction with reporting capabilities early enough to prevent doubled development time (Challenge 5).

Change readiness is also something that impacts project success, and it ranks very high; AI is here to assist once again. AI solutions can assess an organization's readiness for implemented changes, identify adoption risks before they impact performance, and recommend targeted change management interventions for individuals. For the bank, AI would have assessed the branch staff's readiness for CRM adoption, enabling more targeted training based on digital literacy variations among 8,000 employees (Challenge 3). However, for the NGO, this capability does not apply, as there were no interferences with the change adoption.

Finally, it is also important to capture and maintain all this knowledge that has been produced during the implementation. AI can automatically document lessons learned throughout the project lifecycle and identify patterns across projects to improve future performance. Afterwards, these technologies can translate those insights into actionable recommendations for future initiatives, serving additional benefits and value to the organizations involved. AI would have documented the financial institution’s lessons about banking-specific adaptation, creating valuable assets for future phases, as well as for the nonprofit organization and its knowledge base.

5.4 Summary of Analysis

The integration of artificial intelligence could have significantly enhanced the success of both projects. By employing multiple AI features concurrently, the project management team could have maximized their effectiveness throughout the project lifecycle. Tables 5.4.1 and 5.4.2 outline the challenges encountered in each project,

along with their respective impacts, as well as potential AI enhancement solutions that could have been implemented, including the anticipated benefits of each. By leveraging these advanced capabilities, the likelihood of project success increases dramatically, resulting in positive outcomes and greater satisfaction among stakeholders.

No	Challenge	Impact	AI Enhancement Solution	Expected Benefit
1	Data Integration Complexity	30% of customer records incomplete/inconsistent. 4-week delay in migration, Phase 1 delayed by 3 weeks	AI-powered data quality assessment and automated data enrichment process with ML-based record matching	Early identification of data issues, automated cleansing, reduced delay to 1-2 weeks
2	Performance & Scalability	7-second response times during load testing. Phase 2 delayed by 3 weeks, €75K additional consulting	AI-driven performance prediction modeling and automated optimization recommendations	Proactive performance tuning, prevention of delays, cost savings of €50-60K
3	Change Management	Training inefficiencies across 325 branches, 8,000 staff. Additional €60K training costs	AI-powered personalized training paths and adaptive learning systems based on user profiles	Optimized training delivery, reduced costs by 40%, improved adoption rates
4	Scope & Budget Management	Budget exceeded by 30% due to feature creep and ambitious stakeholder expectations	AI-based requirements analysis and priority scoring with scope impact prediction	Better scope control, budget variance reduced to 10-15%, improved ROI focus

Table 5.4.1: Banking Project Challenges with AI Enhancement Opportunities

No	Challenge	Impact	AI Enhancement Solution	Expected Benefit
1	Data Quality Issues	Legacy database with duplicates and incomplete records. Migration extended from 4 to 7 weeks, Phase 3 delayed by 3 weeks	AI-driven data profiling and intelligent deduplication algorithms with donor prioritization	Automated data cleansing, migration time reduced to 5 weeks, and earlier issue detection
2	Staff Resource Constraints	Key staff balancing regular duties with project work. Requirements phase delayed by 2 weeks during fundraising season	AI-powered resource allocation optimization considering seasonal workload patterns	Optimal scheduling around fundraising cycles, elimination of requirements delay
3	Integration Requirements	Unexpected international system integration mid-project, scope, and budget increase	AI-based requirements gap analysis and change impact assessment	Early identification of integration needs, proactive planning, and

				reduced change request impact
4	Scope Creep	Continuous additional functionality requests beyond the original requirements	Intelligent requirements analysis with priority scoring and ROI impact modeling	Objective scope prioritization, better stakeholder alignment, and controlled scope expansion
5	Complex Reporting Requirements	Reporting development took twice as long as planned due to complex donor segmentation needs	AI-powered report complexity assessment and automated report generation capabilities	Accurate reporting effort estimation, faster development, and self-service capabilities

Table 5.4.2: NGO Project Challenges with AI Enhancement Opportunities

Table 5.4.3 illustrates how AI can enhance timeline management, budget control, quality delivery, and stakeholder satisfaction across both projects. The table highlights key success factors that impact banking and NGO projects, while also identifying potential areas for AI improvement. Significant delays and budget overruns are common issues. However, predictive analytics and early forecasting show promise in reducing these challenges. Additionally, early quality assessments and personalized engagement strategies can enhance overall project delivery and stakeholder satisfaction.

Success Factor	Banking Project Impact	NGO Project Impact	Potential AI Improvement
Timeline Management	6+ weeks of delays across phases	5+ weeks of cumulative delays	50-70% reduction in unexpected delays through predictive analytics
Budget Control	30% budget overrun (€780K)	Minimal overrun with scope deferrals	Budget variance reduced to 10-15% through early forecasting
Quality Delivery	Performance issues discovered late	Data quality issues extended migration	Early quality assessment preventing 80% of late-stage issues
Stakeholder Satisfaction	Training challenges with 8K users	Scope alignment difficulties	Personalized engagement strategies improving adoption by 40%

Table 5.4.3: AI Impact on Success Factors

Overall, the common AI enhancement opportunities across the two projects are mostly related to predictive planning, smart resource allocation, automated requirement analysis, early risk detection, budget prediction and stakeholder analysis. Those are briefly presented in Figure 5.4.

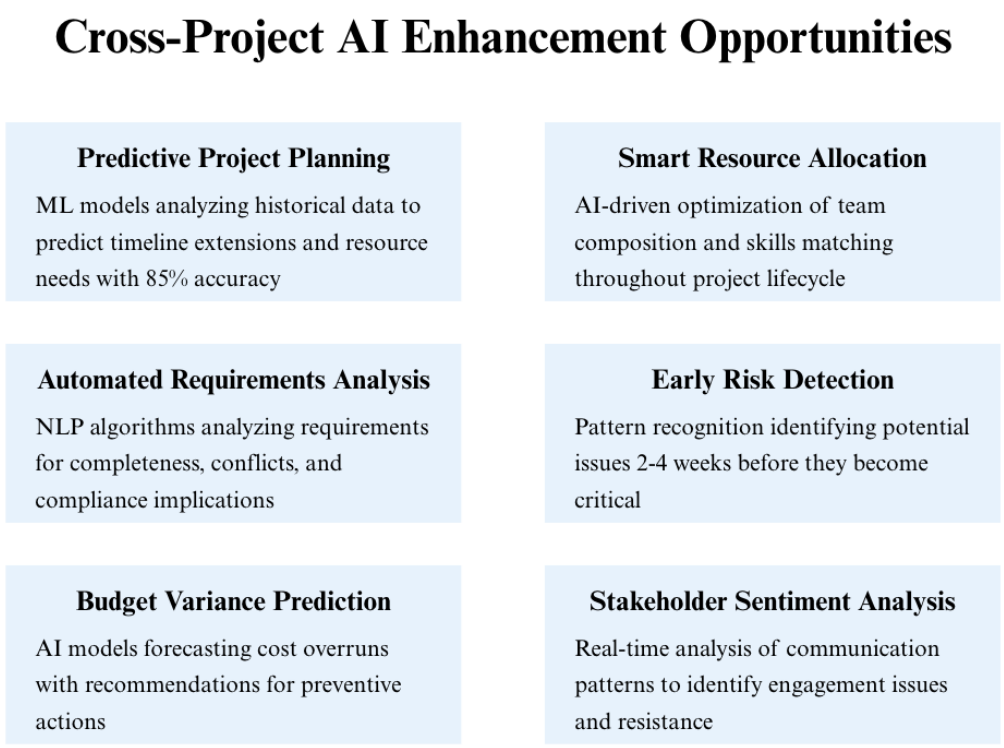

Figure 5.4: Cross-Project AI Enhancement Opportunities

Chapter 6: Discussion

6.1 Evaluation of AI in Agile and Waterfall Project Management

It has become clear that AI offers effectiveness on multiple levels across both methodologies. Agile implementations can benefit most from AI applied in iterative planning, continuous risk assessment, and adaptive resource allocation. In contrast, waterfall implementations can benefit most by using AI in initial planning, phase transition management, and upfront risk identification. Nonetheless, both methodologies can leverage AI-enhanced data quality management and knowledge transfer capabilities.

Regarding the agile-specific benefits, it is worth noting that the sprint optimization and dynamic backlog prioritization capabilities are significantly enhancing the project, as well as the continuous refinement of user stories, which reduces requirements related to work. By leveraging these capabilities, project teams can achieve considerable efficiency improvements in their project tasks and overall project completion.

Some waterfall-specific benefits were also identified through the analysis, which were mostly related to enhanced requirements completeness at project initiation, thereby reducing the number of change requests. Moreover, AI can support and provide more accurate face duration forecasting, which would reduce the need for timeline extensions. All of these can benefit the critical path by optimizing its sequential phases.

One of the most critical findings of this study is that the availability and quality of historical data directly influence the effectiveness of AI in project management. Most of the AI enhancements that project teams can apply involve machine learning

algorithms that have been trained on previous similar projects and can now produce predictions. Organizations with limited historical data will face significant challenges that can lead to reduced prediction accuracy. One effective approach that companies should adopt is establishing systematic project data collection processes prior to implementing any AI. The data itself should adhere to certain requirements, which include recent years of comparable project records, standardized metrics across projects, documentation of challenges and resolution approaches, and patterns of resource allocation and utilization.

Finally, contextual factors also play a pivotal role in influencing AI effectiveness, including organizational size and culture, project complexity, and technology ecosystems. Larger organizations can benefit from AI resource optimization, while smaller organizations can greatly benefit from knowledge management. Regarding project complexity, AI benefits can exponentially increase project success when applied to more complex projects, particularly those with multi-phase implementations. To conclude, the technology ecosystem also affects the advantages provided by AI applications, since the integration complexity with legacy systems can become more manageable, and risks can be identified before they become issues.

6.2 Implications for Practice

It is essential to note that an AI readiness assessment is necessary before applying any AI features to a project. This assessment will determine whether the historical data available can be utilized and its relevance to the project. Additionally, this assessment will determine if the technical infrastructure is suitable for proceeding

with such an AI integration. In the implementation side, a phased approach is recommended, starting with the highest ROI applications, depending on the project's nature. It is also suggested to leverage the integration capabilities of existing project management tools to minimize the effort required for any customizations. Finally, teams considering the implementation of project management in their activities need to also take into consideration change management and training for it to be effective.

The actionable recommendations provided by this research are categorized according to the project management approach the organization chooses to follow. For those using agile, it is recommended to start with sprint optimization and backlog prioritization tools, as these ceremonies are at the core of agile development. Additionally, it would be advisable to integrate AI tools into meetings, such as daily stand-ups and retrospectives, where NLP models can analyze the results and produce insightful outcomes for project managers. For organizations using the waterfall method, it is essential to begin with a requirements completeness analysis, ensuring that the requirements gathering phase is fully completed and does not hinder the progress of the subsequent phases. Moreover, it would be beneficial to also leverage AI to implement predictive timeline modeling as the project moves forward.

It comes as no surprise that the AI application might pose some risks related to its adoption and usage. Project managers and teams should not over-rely on AI predictions when the historical data from which the results are derived is insufficient. Furthermore, this overreliance on AI may reinforce biases that emanate from historical project data. AI is a technology that can be used to support the existing resources (human or material), and not completely replace them. Thus, project teams should not

have unrealistic expectations of AI capabilities and should always consider the human factor when making critical decisions.

For an AI application to be effectively accepted by an organization, executive management needs to provide ways to cultivate it from a top-down approach. The executive management needs to prioritize AI adoption on a strategic level by securing the necessary investments for a successful AI integration. The organizational culture around AI acceptance needs to be considered and cultivated, as well as have a long-term vision for evolving project management capabilities through AI.

Overall, all of the above can be applied to multiple projects. However, it is important to note that no "one size fits all" exists in this context. The project managers should leverage their critical thinking based on the project characteristics and decide which of the AI capabilities would most benefit each case separately. This way, they can ensure that the teams can maximize the benefits of those applications, ultimately driving innovation and achieving exceptional results.

6.3 Limitations of the Study

This research was conducted in the Greek business environment, encompassing two distinct industries. Despite the diverse set of information seized during the analysis and examination phase, the research has some limitations. Firstly, it would be beneficial to examine similar case studies in different countries, both European and non-European, as dissimilar results are likely to be extracted. This will provide us with a more comprehensive and holistic view of the industrial landscape.

Additionally, another limitation of this study is the data that was used. The information collected has only been captured by interviews with relevant project teams,

and thus, no quantitative data has been selected for this purpose. Due to the unavailability of data, there is a belief that if the research included additional quantitative data, we would be able to derive arithmetic insights about project performance and measurable enhancement KPIs using AI.

Moreover, this research was limited to CRM implementation for both case studies, specifically focusing on Salesforce, with integrations to external systems and applications. There is a likelihood that the research results could have been different if a more complex system or technology had been implemented, for instance, an Enterprise Resource Planning (ERP) system. This would increase the project's complexity; thus, the use of AI would have exponentially assisted the project management offices.

Chapter 7: Conclusion and Recommendations

7.1 Summary of Findings

This research has analyzed the two leading project management approaches — agile and waterfall — in comparison to how they address sector-specific challenges in large-scale IT implementations. One of the study's objectives was to identify specific points in the project lifecycle where AI could enhance project management effectiveness. On that front, a framework was developed to select the AI capabilities based on the organizational context of each organization.

In the methodology comparison, it was observed that the banking institution selected the agile approach to reflect its need for adaptability and flexibility. On the other hand, the non-profit organization followed the traditional approach, since the project had resource constraints and well-defined requirements. Both organizations adapted to the methodologies, taking into account their specific contexts, while sector-specific constraints played a significant role in shaping those decisions. Regarding the effectiveness of the methodology, it was demonstrated that agile exhibited a high level of adaptability to changing requirements, while the waterfall approach provided a clearer structure but struggled when mid-project changes were requested.

Furthermore, this study identified several opportunities for AI enhancement, some of which are common to both cases, while others are differentiated. The common AI opportunity areas, particularly in project planning and estimation, emerged as the highest-potential AI application area. Additionally, the resource optimization area showed that it can benefit from AI integration across both methodologies, as well as

data quality management. Finally, supplementary value could be added to the knowledge capture and transfer between the project teams.

Separately for each project management approach and organizational context, AI enhancement areas were discovered. Specifically for agile projects, the project teams would benefit from tools that focus on continuous adaptation. In contrast, for predictive project management, the teams would seek tools that support initial planning, as well as optimization for resource constraints.

Summarizing the cross-sector insights, banking and non-profit organizations revealed both common and unique opportunities for AI enhancement. In the banking institution, flexibility and adaptability in handling change requests were addressed more easily by following an agile approach, whereas in the non-profit organization, resource constraints and clear requirements demanded a traditional project management methodology. Both sectors would benefit from enhancements in knowledge management and data quality, while the organizational size influences the scope and complexity of potential AI implementations.

7.2 Recommendations for AI Integration in Project Management

Generally, companies considering AI integration in project management should be aware of some fundamental activities that need to be undertaken to prepare for such a move. The first consideration is related to the foundation of data collection. The companies need to implement standardized project metrics collection across all projects, so that the challenges, resolutions, and lessons learnt are documented systematically. The organizations need to maintain historical archives of estimates versus actuals, as well as standardize resource allocation and utilization tracking. This

way, the AI tools that will analyze this data have all the information accurately and readily available for comparison. Once this is finalized, it is recommended to start with the highest ROI AI applications, such as data quality and migration assistance tools, resource optimization algorithms, and predictive risk identification.

The implementation strategy should include both the approach for the technical AI adoption and the change management considerations for the project team members. For the technical approach, it is suggested to follow a phased implementation, which consists of four stages; first, the data collection and standardization, then the basic AI applications with the highest ROI areas, then the expanded AI applications across the project lifecycle, and finally, the advanced AI integration with continuous learning. On the change management aspect, it is essential to engage project managers in the AI tool selection process and provide a transparent explanation of the AI recommendation rationales. It is crucial to establish clear human override protocols and to demonstrate early wins to build trust within the organization.

Finally, regarding the technical infrastructure, there should be some data integration requirements in place prior to implementing the AI capabilities offered by the various tools. It is essential to integrate project management tools with organizational data repositories, allowing for the later utilization of this information to benefit the organization. Following this, an appropriate data governance for AI training should be implemented, as well as continuously ensuring data security and privacy compliance. For the selection criteria of AI tools, they should be compatible with existing project management platforms and have customizable capabilities that align with the organizational context.

7.3 Future Research Directions

This study yields important insights into both project management applications and the capabilities of AI enhancement. It also triggers further research in various areas that can complement and expand upon it. Firstly, in terms of methodological extension, additional practical studies can be conducted to track AI's impact on project outcomes over multiple years. This can be used for a qualitative analysis of AI's contribution to specific project success metrics.

Furthermore, expansion can be applied across various industries and sectors, encompassing diverse projects and needs. It would be beneficial to investigate AI applications in various sectors, including healthcare IT implementations, public sector digital transformation, manufacturing systems integration, and retail and e-commerce platforms. All of the above industries and projects are emerging, and there is currently a limited amount of theoretical and practical research. Cross-industry comparative analysis of AI effectiveness patterns can be evaluated, so that project management professionals can be more prepared for this new era of digitalization.

Additionally, one research direction that would complement this study concerns the organizational and human factors when dealing with AI. It would be beneficial to investigate the team's adaptation to AI-enhanced project management and further elaborate on the development of trust between project managers and AI systems. On top of that, additional insights can be produced by analysing the organizational culture impact on AI adoption success, as well as exploring the skills evolution of project managers in AI-enhanced environments. Such research would put the human factor in the center, while adapting the technological environment in which they are surrounded.

In conclusion, this research lays a foundation for understanding the differentiated impact of AI across various project management methodologies. Organizations need to strike a balance between enthusiasm for AI and realistic preparation requirements, while ensuring that human judgment remains essential when AI serves as a powerful enhancement tool. As a result, the evolution of project management practices will increasingly incorporate AI while maintaining core methodological principles. This will equip project managers with the skills needed to stay competitive in such a digital transformation landscape, while also driving project success.

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Appendix

Appendix A – Interview Structure

Introduction for Interviewees

Thank you for agreeing to participate in this research study on CRM implementation approaches in different organizational contexts. This interview aims to gather insights about your experience managing the banking/nonprofit CRM implementation project. Your perspectives will contribute to a comparative analysis of Agile and Waterfall methodologies in CRM implementations across different sectors.

The interview will take approximately 60-90 minutes and will cover the project background, methodology selection, challenges faced, and lessons learned. With your permission, I would like to record this conversation to ensure accuracy in my notes. All information will be used solely for academic purposes, and you may request anonymization of specific details if needed.

Section 1: Respondent Background

1. Please describe your role in the banking/nonprofit CRM implementation project.
2. How long have you been with the organization, and what was your previous experience with CRM implementations?
3. What was the composition of the project team you managed, and how were responsibilities distributed?

Section 2: Project Context and Objectives

1. Could you provide an overview of the business drivers behind the CRM implementation?
2. What were the specific objectives and success metrics defined for this project?
3. How would you describe the organization's previous experience with similar technology projects?
4. What was the initial timeline and budget allocated for the implementation?
5. How was the decision made to implement Salesforce Financial Services Cloud/Salesforce Non-Profit Cloud specifically?

Section 3: Methodology Selection and Application

For the banking project (Agile):

1. Why was an Agile approach selected for this implementation rather than traditional Waterfall?
2. How did you adapt Agile principles to fit within a banking regulatory environment?
3. How was the product backlog structured and prioritized throughout the project?
4. What specific Agile meetings did you implement, and how were they modified for your context?
5. How did you balance the need for documentation and compliance with Agile's emphasis on working software?
6. How did you structure your sprints and releases throughout the 18-month implementation?

For the nonprofit project (Waterfall):

1. Why was a Waterfall approach selected for this implementation rather than an Agile methodology?
2. How were requirements gathered and validated before moving to the design phase?
3. What milestones and phases were established throughout the project?
4. How did you manage changes to requirements that emerged after the initial documentation phase?
5. What specific documentation was produced at each phase of the project?
6. How did you ensure stakeholder alignment throughout the sequential phases?

Section 4: Challenges and Responses

1. What were the most significant challenges you encountered during the implementation?
2. Could you describe in detail how you addressed the data integration/data quality challenges?
3. What specific issues did you face regarding user adoption, and how were they mitigated?
4. How did you manage competing priorities between the project and ongoing operations?
5. What unexpected technical challenges emerged during implementation, and how did they impact the project?
6. How did you adapt your Agile/Waterfall approach when facing these challenges?

7. Were there moments when you considered changing your methodological approach? Why or why not?

Section 5: Results and Reflections

1. To what extent did the project meet its original objectives in terms of functionality, timeline, and budget?
2. How would you assess the strengths and weaknesses of the Agile/Waterfall approach in this specific context?
3. What metrics or indicators did you use to measure project success?
4. If you could restart the project, what aspects of your approach would you change?
5. What were the key lessons learned about CRM implementation in banking/nonprofit environments?
6. How did the Agile/Waterfall methodology specifically contribute to or hinder project success?

Section 6: AI and Future Opportunities

1. What aspects of the project do you believe could have benefited from AI-enabled tools or approaches?
2. How might AI have helped better predict or address the challenges you encountered?
3. What areas of project management in banking/nonprofit CRM implementations do you see as most promising for AI enhancement?
4. What constraints might limit the application of AI in banking/nonprofit project management contexts?

5. How has the organization's approach to technology projects evolved since this implementation?

Closing

1. Is there anything else about the project or your approach that you think would be valuable for this research?
2. Would you be willing to review a draft of the case study based on this interview for accuracy?
3. May I contact you with any follow-up questions that might arise during analysis?

Thank you for your time and valuable insights. Your experience will contribute significantly to understanding effective CRM implementation approaches across different organizational contexts.