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القلعة

## Final Graduation Thesis

### Master in Entrepreneurship and Project Management

IT Project Management with an Agile "*Scrum*" Method  
Case: Mobile and Web Application for **TAYSSIR**

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## SUMMARY

In an environment where change is the rule, not the exception. Agility allows a company to survive and thrive in an increasingly complex world. In order to take advantage of the rapid reaction of the environment in continuous service. In this context, we tried to build **TAYSSIR** platform by using the best practices of Agility with a qualitative research methodology. The results show that applying the Scrum method helps ensure transparency and collective accountability throughout the development cycle.

**Keywords:** Agile methods, Agility, IT project management, Scrum

## RÉSUMÉ

Dans un environnement où le changement est la règle, pas l'exception. L'agilité permet à une entreprise de survivre et de prospérer dans un monde de plus en plus complexe. Afin de profiter de la réaction rapide de l'environnement en service continu. Dans ce contexte, nous avons essayé de construire la plateforme **TAYSSIR** en utilisant les meilleures pratiques de l'Agilité avec une méthodologie de recherche qualitative. Les résultats montrent que l'application de la méthode Scrum permet d'assurer la transparence et la responsabilité collective tout au long du cycle de développement.

**Mots clés:** Méthodes agiles, Agilité, Gestion de projet informatique, Scrum

## ملخص

في بيئة يكون التغيير فيها هو القاعدة وليس الاستثناء. تسمح أجيليتي للشركة بالبقاء والازدهار في عالم يزداد تعقيداً. من أجل الاستفادة من رد الفعل السريع للبيئة في الخدمة المستمرة. في هذا السياق ، حاولنا بناء منصة **TAYSSIR** باستخدام أفضل ممارسات أجيليتي مع منهجية بحث نوعي. تظهر النتائج أن تطبيق طريقة سكروم يساعد على ضمان الشفافية والمساءلة الجماعية طوال دورة التطوير.

**الكلمات المفتاحية:** الأساليب الرشيقية ، أجيليتي ، إدارة مشاريع تكنولوجيا المعلومات ، سكروم

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I thank Almighty God, who was always with me and who helped me along my journey. to my very dear parents, whom I thank with all my heart for their constant support, their love,

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## LIST OF ABBREVIATIONS AND ACRONYMS

- **IT:** information technologies
- **XP:** eXtreme programming
- **RAD:** rapid-application development
- **PO:** product owner
- **US:** user story
- **Si:** information system

# **GENERAL INTRODUCTION**

The Information Technology (IT) sector is currently booming all over the world and affects all spheres of our economy (Gallipoli, G & Makridis, C, 2018). In recent years, we have witnessed the appearance of new computer products (hardware such as electronic gadgets or software such as electronic platforms). Since their appearance in the 1950s, software has been the symbol of technological progress, which makes life easier for users in all fields. And that allows technology to achieve what it achieves today, taking a simple example "*a smartphone is worthless without the applications installed in it*". This development is due to the ambition and good stewardship as well as the collaboration of the contributors in the various development projects of these technological products (Vance, 2016).

However, it is well known and documented in the literature that this type of IT project is particularly difficult to plan and manage (Ahmed, Muhamed, & Wahab, 2010). The intangible aspect of the software, the difficulty in properly targeting the customer's need for functionalities, the problem of estimating the coding time, etc. all constitute major challenges, making this type of project specifically at risk (Mohamed & Ali Niazi, 2016). In order to better manage these risks, the major companies in the field have been implementing, for about twenty years, so-called "*agile*" project management methodologies. Among these methods, the best known and most widely used is the Scrum project management methodology. Scrum is a framework for the management of a project in computer science in which people can address complex and adaptive problems while delivering products (software) in an efficient and creative way with the greatest possible value (Ken & Jeff, 2017).

## **Problematic**

The question that this research tries to answer is: "***How can we implement the Scrum method in the management of a new IT project?***"

The following secondary questions arise from this fundamental question:

- What are agile approaches in IT project management, and what are their principles?
- What distinguishes the Scrum technique from other agile methods?
- What agile values does the company respect?

## **Study Objective**

- The major goal of our work is to concentrate on the Scrum method's adoption in the - Tayssir- project;
- Discover Agility, namely SCRUM, through theoretical learning and practical implementations
- Provide managers with research that will help them apply Scrum methodologies to future projects and benefit from our knowledge and experience.

## **Outline of the dissertation's research**

Our work begins with this introduction, which establishes the framework for our research. The first chapter discusses the theoretical framework, specifically the literature review and conceptual framework. Its goal is to explore many scientific works on project management and the transition to agile methodologies, as well as to present the theme's core concepts and terminologies.

The practical environment and methodological framework will be explained in the second chapter.

The organization where I interned will be highlighted first. The methodological approach and data-gathering techniques were then adopted.

In the last chapter, an application of the Scrum technique on the new project -Tayssir- will be established, which will be followed by a general conclusion.

# **CHAPTER 01: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK**

## Section 1: Literature Review

### 1. From traditional project management to agile project management:

In the classic method of project management, changes that occur after passing the initial stages of the project are limited to being completed on time and within the previously set costs. Sign a -rigid- contract with the client to specify the scope and cost of the solution in a very fixed manner. Therefore, the focus is on the planning phase, where all the requirements to be implemented are determined. The detailed plan is the common thread and essential to the project. It takes a lot of time and effort to forecast total demand and reduce potential changes. Believing that the customer can determine all their expectations for the solution from the initial phase (guesmi & charbi , 2021).

Much research has been carried out in the fields of economics, industry and management sciences, in order to clarify the concept, identify indicators for measuring agility, or deploy methodologies to support organizations in the development of their agility. However, almost all of this scientific research is based on the observation and description of procedures carried out in companies. In other words, the agile company is not a model with theoretical foundations but based on empirically constructed studies. We can also cite the study of (BARZI, 2018) which is based on a qualitative approach which aims to explore the attributes of the agility of Moroccan SMEs. The study conducted by (Patrick & Mucchielli, 2016) which implemented an instrument for measuring organizational agility in accordance with the Churchill paradigm.

And in May 2014, Marie-Michèle Lévesque proposed a study that allowed the agile approach to be applied outside of software development and the IT sector. "*This study therefore aims to acquire knowledge about the application of the agile approach outside software development projects, thanks to the experiences of Quebec organizations that have implemented agility beyond software development*" (MARIE-MICHÈLE, 2014).

### 2. Traditional project management techniques limitations:

In traditional methods of project management, changes that occur after the initial phase of the project has passed are limited in order to meet deadlines and respect predetermined costs. 'Rigid' contracts are drawn up with the customer, with the scope and cost of the solution defined in a very consistent way. Therefore, emphasis is placed on the planning

phase during which all needs to be implemented are identified. A detailed plan is the necessary common denominator for a project.

Thus a lot of time and effort is devoted to forecasting all requests and minimizing potential changes. It is believed that the client is able from the initial stage to define all his expectations regarding the solution (guesmi & charbi , 2021). However, the principles supported by these models point to different problems. A significant portion of the budget envelope is allocated to needs analysis and forecasting stages. In this logic, comprehensive planning and decisions made in initial stages take precedence over gradual integration of changes. However, when reading work on the limits of traditional approaches, there seems to be one finding common to the majority of project management professionals: it is difficult to achieve full anticipation of needs because the environment in which projects are located is constantly evolving (Morien, 2005).

Therefore, it is difficult for the manager to plan and organize the entire project development process before starting.

Other challenges associated with the rigidity of these 'classical' models include dealing with changes and responding to expressed requests. first of all, onboarding and processing changes are time-consuming and expensive. It entails returning to jobs that have already been delegated to others (Garel.G, 2003).

### **3. Agile methods for Scrum:**

Barry W. Boehm presented a new development paradigm based on shared iterative, incremental, and adaptive architecture, as well as agile methodologies, in 1986 (Julien, 2015), the common denominator of which is the division of project progress into numerous smaller portions in order. For a more certain and rapid outcome (or Minimum Vital Product - MVP). By evaluating: (Beck, 2001) established four basic values that constitute a new approach to software development in 2001:

- People and their interactions are more than just tools and processes.
- More operational software than extensive documentation;
- Customer cooperation over contractual negotiation
- Adapting to change

Agile methods respond to traditional methods, which are highly predictive and rigorous, by revealing new and more flexible principles, including anticipation, self-regulation, feedback, and collaboration (Anne & Joachim , 2016). It also enhances the learning organization's capacity for change and transformation.

Scrum is the most popular agile method (AUBRY, 2015). Created in 1996 by Ken Schwaber, it highlights the cohesive side of a self-organized team striving for a common goal. The specificity of the Scrum method is to put the end user at the heart of the team and to value the individual, the team, the steel, the application, the collaboration, and the adaptation.

Although the Scrum Method is not an acronym, the English term stands for Scrum in a Rugby Match (ARBI, 2020). It is not a method in the literal meaning of the word, but rather an approach, a process framework, and a set of ideas, nearly a philosophy focused on change, a results-oriented culture, transparency, communication, user and customer respect, and team spirit.

## **Section 2: Conceptual Framework**

### **1. Project Management Overview:**

#### **1.1 Project Definition:**

In simple terms, a project entails a sequence of tasks aimed at accomplishing a specific outcome. It can also be defined as a collection of inputs and outputs necessary to achieve a particular objective. Projects can vary in complexity and may involve individual or team management. Typically, a manager or executive assigns and communicates the project's expectations and goals, while the team assumes responsibility for coordinating logistics and ensuring timely project execution. Occasionally, deadlines are established. To enhance project productivity, teams often break it down into individual tasks to promote accountability and leverage the strengths of the team members.

A project is defined as a sequence of tasks that must be completed to attain a certain outcome. According to the (project management institute, n.d.) (PMI), the term Project refers to ” *to any temporary endeavor with a definite beginning and end*”. Depending on its complexity, it can be managed by a single person or hundreds.

## **1.2 IT Project Definition:**

An IT project refers to a specific category of projects that revolve around IT infrastructure, information systems, and computer-related endeavors. It encompasses a wide range of activities such as web development, software development, mobile app development, network configuration, software implementation, hardware installation, database management, and IT emergency recovery.

IT project management (ITPM) involves the strategic planning, scheduling, execution, monitoring, and reporting of these IT projects. Unlike other industries that may have a limited IT focus, IT projects cut across diverse sectors as virtually all industries incorporate some level of IT components.

## **1.3 Project Management Definition:**

According to the (project management institute, n.d.) (PMI) (n.d.), project management is described as "the application of particular knowledge, skills, tools, and techniques to provide valuable outcomes to individuals." Put simply, project management entails guiding a team to achieve objectives or fulfill deliverables within a predefined timeframe. It encompasses activities such as project documentation, planning, tracking, and communication, all with the objective of successfully delivering work while adhering to the limitations of time, scope, and budget.

## **1.4 Why is project management important?**

### **1.4.1 Strategic Alignment:**

The significance of project management lies in its ability to guarantee the accuracy and delivery of valuable outcomes that align with the business opportunity at hand.

Each client possesses strategic objectives, and the projects we undertake for them serve to advance those goals. Project management plays a crucial role in this process by ensuring the meticulous design and integration of projects within the broader context of our client's strategic frameworks.

By closely aligning the goals of projects with the strategic objectives of the business, effective project management ensures their seamless convergence.

Project management holds significance in determining a robust business case and employing a systematic approach to calculate return on investment (ROI). Its importance lies in ensuring the delivery of the appropriate solution that generates tangible value. While projects may encounter unforeseen risks or witness changes in the business strategy, project managers play a pivotal role in realigning the project accordingly.

This emphasizes the crucial role of project management, as projects that deviate from the intended course or fail to adapt to evolving business requirements can result in unnecessary expenses and inefficiencies.

#### **1.4.2 Leadership:**

The importance of project management lies in its ability to provide leadership and guidance to projects. Without effective project management, a team can resemble a ship adrift, lacking direction, control, and purpose. Leadership plays a crucial role in enabling team members to unleash their full potential and deliver their best work.

Project management offers this leadership by providing a clear vision, motivation, and inspiration to the team, while also removing obstacles and providing guidance. Additionally, project managers ensure clear lines of accountability, eliminating any confusion regarding who holds authority and control over project activities. By enforcing processes and maintaining team alignment, project managers assume responsibility for the success or failure of the project, ensuring its smooth progression.

#### **1.4.3 Clear Focus and Objectives:**

Project management plays a crucial role in ensuring the execution of strategic goals through proper planning. When project management is neglected, teams may lack clear briefs and a defined project management methodology. As a result, projects can lack focus, have vague objectives, and leave team members uncertain about their tasks and purpose. Project managers prevent such situations by breaking down projects into manageable tasks, enabling teams to maintain focus and work towards clear objectives. This approach promotes effective risk management, as smaller steps allow for quick identification and mitigation of risks that may arise during the project.

#### **1.4.4 Realistic Project Planning:**

Effective project management is essential for setting realistic expectations regarding project deliverables, timelines, and budgets. Without proper project management and solid

planning, projects may face overly ambitious timelines or inadequate estimation based on past projects. Consequently, projects can suffer from delays and budget overruns. Skilled project managers excel in negotiating achievable deadlines and milestones among stakeholders, teams, and management. By striking a balance between available resources and required timelines, project managers develop realistic schedules. Objective planning by project managers establishes clear processes and deadlines, ensuring that the project team operates within reasonable boundaries and avoids undue pressure.

#### **1.4.5 Quality Control:**

Project management plays a critical role in maintaining consistent quality in project deliverables. Projects often face significant pressure to be completed within specific timeframes. Without dedicated project management and quality management processes, tasks may be underestimated, schedules tightened, and processes rushed, resulting in compromised output quality. Devoted project management ensures that projects have adequate time and resources for delivery and undergo quality testing at each stage. By implementing gated phases, project teams can assess output quality, applicability, and return on investment. This phased approach allows for careful examination and testing of project outputs, ensuring high-quality results.

#### **1.4.6 Risk Management:**

Effective risk management is essential for project success, making project management invaluable. Some may be tempted to ignore or downplay risks, hoping for the best outcome. However, a robust risk management process helps prevent risks from escalating into significant issues. Skilled project managers carefully analyze potential project risks, quantify them, develop mitigation plans, and create contingency plans. They proactively address potential risks early on, ensuring that projects can adapt and remain on track. Since projects rarely unfold exactly as planned, adept project management is vital in managing change and adjusting project plans for successful delivery.

#### **1.4.7 Orderly Process:**

Project management ensures that the right individuals perform their assigned tasks at the appropriate time while following a well-defined project management process throughout the project lifecycle. Reactive planning processes devoid of project management strategies can lead to projects entering survival mode. In such scenarios, teams may become fragmented, tasks duplicated, and planning reactive, resulting in inefficiency and

frustration. Proper planning and adherence to process make a significant difference as they clarify roles, streamline processes and inputs, anticipate risks, and establish checks and balances. Effective project management prevents project failure, fosters trust in business relationships, and avoids resource wastage.

#### **1.4.8 Continuous Oversight:**

Project management is crucial for tracking and reporting a project's progress accurately. Continuous project oversight, including regular status reporting, is critical in ensuring that projects remain on track. Timely identification of project deviations enables prompt course correction. Skilled project managers generate easily understandable progress or status reports, enabling stakeholders to independently track project progress. These reports provide insights into completed and planned work, hours utilized, milestone tracking, risks, assumptions, issues, dependencies, and project outputs. This data fosters trust among stakeholders and maintains regular communication to build strong client relationships.

#### **1.4.9 Subject Matter Expertise:**

Project management is vital in ensuring that team members perform their assigned tasks effectively. Experienced project managers possess comprehensive knowledge in various aspects of project delivery, technical skills, and subject matter expertise. They understand the work executed by their teams, the platforms and systems used, and common issues that may arise. This expertise enables project managers to engage in informed discussions with clients, teams, stakeholders, and suppliers. They serve as effective communicators, ensuring smooth coordination between teams and project phases, preventing oversights or neglect of project aspects. Project management maintains a balanced approach, integrating creative vision with technological limitations, and making necessary compromises for project success.

#### **1.4.10 Managing and Learning from Success and Failure:**

Project management plays a crucial role in leveraging the lessons from past successes and failures. Learning from previous experiences is essential to break ineffective patterns and avoid repeating mistakes. Project managers utilize retrospectives, lessons learned sessions, or post-project reviews to evaluate project performance, identify areas for improvement, and determine necessary changes for future projects. These practices generate valuable documentation that serves as a repository of best practices and pitfalls to guide future endeavors. By embracing a culture of learning, organizations can prevent teams from

making repetitive mistakes and instead foster continuous improvement. These retrospectives serve as valuable resources during project kickoff meetings, reminding the team of lessons learned, such as the consequences of underestimating projects and the benefits of efficient processes and timely timesheet reporting.

### 1.5 Project Development Life Cycle:

Irrespective of the nature of the project at hand, all projects typically progress through a standardized set of stages. While specific processes and tasks may vary, they generally adhere to a common framework known as the project management life cycle. This life cycle encompasses the beginning, middle, and end of a project, providing structure and enabling project managers to approach tasks in distinct phases. In the following section, we will provide an overview of each phase, equipping you with essential knowledge for effective project management.

**Figure 01:** The different phases of a project



**Source:** <https://bit.ly/3MFFFh0>

#### 1.5.1 The initiation phase:

The initiation phase marks the beginning of the project management life cycle and aims to define the project, establish a business case, and obtain approval. During this phase, the project manager may undertake various tasks, including:

- Conducting a feasibility study.
- Creating a project charter.
- Identifying key stakeholders.
- Selecting project management tools.

By the conclusion of this phase, the project manager should have a comprehensive understanding of the project's purpose, goals, requirements, and risks.

#### 1.5.2 The planning phase:

The planning phase is crucial for developing a project roadmap that guides the entire team. It involves outlining all the details and goals necessary to fulfill the organization's requirements. In this phase, project managers typically:

- Create a project plan.
- Develop a resource plan.
- Define goals and performance measures.
- Communicate roles and responsibilities to team members.
- Establish workflows.
- Anticipate risks and devise contingency plans.

The next phase, execution, usually commences with a project kickoff meeting where the project manager presents the project's objectives to all stakeholders. To prepare for this meeting, the project manager should:

1. Establish goals and deliverables.
2. Identify team members and assign tasks.
3. Develop a draft project plan.
4. Determine metrics for measuring project success.
5. Identify and address potential roadblocks.
6. Arrange logistics and schedules for team communication.
7. Choose a preferred project management methodology.
8. Ensure the team has access to and knowledge of the relevant tools.
9. Schedule the meeting.
10. Set the agenda and prepare the presentation slides.

### **1.5.3 The execution phase:**

The execution phase encompasses the majority of the project work, where deliverables are created to meet the project's requirements. This phase consumes most of the project's time, resources, and personnel. As previously mentioned, a kickoff meeting is held to signify the official start of the execution phase. A typical kickoff meeting agenda may include the following:

- **Introductions:** Introduction of team members.

- **Project background:** Explanation of the project's purpose and goals.
- **Project Scope:** Description of the work involved.
- **Project plan:** Overview of the project roadmap.
- **Roles:** Clarification of responsibilities for each project element.
- **Communication:** Discussion of communication channels, meetings, and status reports.
- **Tools:** Identification of project management tools and their usage.
- **Next steps:** Identification of immediate action items.
- **Q&A:** Opportunity for participants to ask questions.

#### **1.5.4 The controlling and monitoring phase:**

This phase runs concurrently with the execution phase. As the project progresses, the project manager ensures all components are on track. Adjustments to the project plan may be made in response to unforeseen circumstances or changes in direction. During the controlling and monitoring phases, project managers may perform the following tasks:

- Manage resources.
- Monitor project performance.
- Implement risk management strategies.
- Conduct status meetings and generate reports.
- Update the project schedule.
- Modify project plans.

At the conclusion of this phase, all agreed-upon project deliverables should be completed and accepted by the customer.

#### **1.5.5 Project closure:**

The project closure phase is a crucial step in the project management life cycle as it marks the official end of the project. It provides an opportunity for reflection, finalization, and organization of project materials. Project managers can undertake the following actions:

- Inventory all deliverables.
- Resolve any remaining issues.
- Hand over the project to the client or the team responsible for ongoing operations.
- Conduct a post-mortem to discuss and document lessons learned.
- Organize all project documents in a centralized location.

- Communicate the project's success to stakeholders and executives.
- Celebrate project completion and acknowledge the team's efforts.

## **2. Agile Methodology Basics:**

### **2.1 Agility Concept Definition:**

Agile is an adaptive project management approach designed to deliver products to market more flexibly and efficiently. The term "agile" signifies the ability to move quickly and easily, allowing project teams to adapt more effectively compared to traditional methodologies.

Given the increased uncertainty in many projects today, documenting requirements and adapting to changes pose challenges that agile addresses.

This approach is guided by four values and 12 principles that structure project execution.

### **2.2 Agile values:**

The Agile Manifesto is built on four fundamental values:

#### **2.2.1 individuals and interactions over processes and tools:**

The first value at the heart of Agile methodology emphasizes the importance of people. While processes and tools can support projects, their effectiveness ultimately relies on the individuals involved. Team members are the most valuable resource, and effective communication and collaboration among them lead to better product outcomes.

Jim Highsmith, one of the Agile Manifesto authors, emphasizes prioritizing people over processes, encouraging software developers to act accordingly

#### **2.2.2 Working software over comprehensive documentation:**

In traditional practices, significant time was spent on creating extensive documentation with technical specifications and requirements before development could begin. Agile philosophy aims to streamline this process by condensing information into user stories.

These stories provide developers with the necessary details to start working on the software promptly, enabling faster releases and the opportunity to iterate and improve the product in subsequent iterations.

### **2.2.3 Customer collaboration over contract negotiation:**

The third value highlights the importance of customer collaboration throughout the development process. Rather than relying solely on contract negotiations that define product requirements upfront, Agile emphasizes continuous engagement with customers.

By actively involving customers and seeking their input regularly, developers gain valuable insights to create an optimal user experience.

### **2.2.4 Responding to change over following a plan:**

Traditional methodologies aimed to minimize changes during the development process to avoid time and cost implications. Agile challenges this approach by advocating for adaptability and embracing change. Agile teams work in short, iterative cycles, allowing them to respond quickly to change and incorporate improvements continuously. This dynamic approach leads to the development of superior products.

These four values serve as the foundation for Agile software development, guiding teams to prioritize key areas and directing their efforts accordingly.

These values are further supported by the 12 principles of the Agile Manifesto.

## **2.3 The history of Agile methodology:**

The roots of Agile methodology can be traced back to different periods, depending on the source, such as the 1990s, 1975, or even as early as the 1960s. However, it is widely acknowledged that the Agile Manifesto marked a significant turning point for Agile.

The manifesto, known as the Manifesto for Agile Software Development, was introduced in February 2001 as a response to the need for a new approach to software development management. A group of prominent software developers penned the manifesto during a retreat in Utah, where they gathered to address industry challenges and explore potential solutions. Recognizing the necessity for a more efficient and timely product delivery process, their objective was to devise methodologies that would enable changes without incurring additional costs or project delays.

They identified that breaking projects into shorter iterations would facilitate faster development and testing. At the conclusion of each iteration, sprint retrospectives were conducted to review progress, allowing adjustments to be made without waiting until the

final product was completed. While initially intended for software development, the Agile Manifesto has expanded its reach to encompass a wide range of industries and businesses.

## 2.4 The 12 Agile Principles:

The Agile Software Development Manifesto presents 12 principles that serve as guidelines for all projects. These principles include:

**Figure 02:** Agile Principles



**Source:** <https://bit.ly/426Exby>

**2.4.1** The utmost priority is to satisfy the customer by continuously delivering valuable software early in the project's life cycle. Agile methodology emphasizes regular intervals of project deliverables rather than a single end product delivery.

**2.4.2** Embrace changing requirements, even in late stages of development, to leverage them for the customer's competitive advantage. Traditional project management struggles with accommodating last-minute changes, but Agile processes ensure adaptability with minimal delays.

**2.4.3** Deliver working software frequently within shorter timeframes, typically ranging from a few weeks to a couple of months. Agile projects adopt short iterations or sprints, typically lasting one to four weeks, concluding with the delivery of functional products.

**2.4.4** Foster daily collaboration between business people and developers throughout the project, emphasizing the importance of regular communication with stakeholders. This often involves brief daily meetings involving the project team and key stakeholders.

**2.4.5** Construct projects around motivated individuals, providing them with the necessary environment, support, and trust to accomplish their tasks. Agile project management emphasizes placing the right people in suitable roles based on their capabilities rather than job titles, with project managers focusing on motivation and support instead of micromanagement.

**2.4.6** Face-to-face conversation is the most efficient and effective method of conveying information within a development team. The Agile Manifesto encourages co-location of teams and stakeholders whenever possible, as face-to-face communication surpasses email or phone interactions. Alternatively, video conferencing can be employed to capture non-verbal cues if physical co-location is not feasible.

**2.4.7** Working software serves as the primary measure of progress, prioritizing complete and functional deliverables over additional requirements such as project documentation. Metrics like hours spent or time elapsed are less significant compared to delivering working products.

**2.4.8** Agile processes promote sustainable development, ensuring a consistent pace for iterative cycles or sprints throughout the project. This approach eliminates the need for overtime or schedule crashes while encouraging the frequent delivery of functional products. It establishes a repeatable cycle that the team can consistently follow as long as necessary.

**2.4.9** Continuous attention to technical excellence and good design enhances agility, emphasizing ongoing improvement of the end product and consistent advancements over time. Each iteration should build upon the previous one, and the team should continuously seek innovation.

**2.4.10** Simplicity, maximizing the amount of work not done, is essential in Agile projects. The aim is to complete the project and meet the specified requirements without unnecessary documentation, steps, processes, or work that doesn't add value to the customer or project outcomes.

**2.4.11** The best architectures, requirements, and designs emerge from self-organizing teams. Agile methodology recognizes that motivated, autonomous, and skilled teams

deliver the best results and products. Teams should have the freedom to organize, structure, collaborate, and innovate as needed without excessive oversight.

**2.4.12** The team regularly discusses ways to improve effectiveness, fine-tuning and adjusting behavior accordingly. Successful and self-motivated teams place a strong emphasis on advancing their skills and processes, conducting regular performance reviews and discussions on improvement as they progress.

## **2.5 The benefits of agile project management:**

The advantages of adopting agile project management are numerous, particularly for the following types of organizations and projects:

- Projects that undergo evolution or lack clear scope and requirements initially.
- Organizations operating in rapidly changing environments, especially those related to technology.
- Companies that require close collaboration with customers and external stakeholders throughout the project's lifespan.
- Organizations that prioritize continuous improvement of processes and products and have a strong inclination towards innovation.
- Projects with multiple interdependent tasks where frequent communication and close teamwork are vital for achieving success.
- Companies that necessitate the development of a prototype before proceeding with the final project deliverable.
- Projects that rely on prompt feedback from stakeholders for each product iteration before progressing to subsequent versions or drafts.

## **2.6 The 5 largest benefits of adopting an agile method:**

### **2.6.1 Continuous Customer Contact:**

Traditional project management approaches typically involve limited interaction between the project team and the customer, occurring only at the project's beginning and end. In such cases, if initial customer requirements were not accurately captured or changed during the project, the team would realize the issue only when it was too late. In contrast, Agile methodology ensures continuous contact throughout the entire process, enabling iterative

deliveries to keep the team aligned and deliver a product that precisely matches the customer's expectations.

### **2.6.2 Flexibility and Adaptability:**

Imagine if, midway through a project, the customer requested a change in scope.

Traditional project management methods would struggle to accommodate such modifications, often leading to substantial increases in project cost and schedule. However, Agile allows for seamless incorporation of changes, regardless of the project's progress.

### **2.6.3 Accelerated Delivery:**

Agile embraces a continuous development approach, ensuring the team consistently delivers functional products.

Instead of waiting for six to twelve months or longer for the final product, clients receive working versions at shorter intervals, typically every two to four weeks.

### **2.6.4 Reduced Project Risk:**

By breaking down projects into iterations and regularly obtaining customer feedback, Agile minimizes the risk of project failure. Identifying and addressing small issues early on is more likely, compared to discovering significant problems only during final testing before project completion. Consequently, if any challenges arise or the need to terminate the project arises, the investment of time and resources is considerably lower.

### **2.6.5 Fostered Innovation:**

Agile fosters collaboration, continuous improvement, and a conducive environment for innovation and the development of new products and features.

By co-locating teams and facilitating daily meetings, Agile encourages brainstorming and idea generation. The methodology embraces an "idea meritocracy," prioritizing the best ideas regardless of their source. Through active involvement of the project team, stakeholders, and the customer, functionality and features can be collectively determined.

## **2.7 When not to use the Agile project management method:**

Despite the numerous advantages of Agile, this methodology may not be suitable for every project or organization. It is crucial to understand the circumstances in which Agile may not be the optimal choice. What are the benefits and drawbacks of adopting Agile methodology?

### **2.7.1 The outcome of your project is stable and well-understood:**

Agile methodology aims to minimize the impact of change and uncertainty by breaking down the project into iterative stages. However, if there is already limited uncertainty and a low likelihood of change, Agile may not be the most efficient approach. For instance, in industries with strict regulations or projects with well-known requirements, iterative planning and multiple drafts may not be necessary.

### **2.7.2 Your project must produce a repeatable deliverable:**

A project is typically defined as a temporary endeavor that creates a unique product, service, or result. However, there are instances where customers may request the production of identical deliverables, such as constructing five identical houses. In such cases, using Agile could result in five unique houses instead of identical ones. One of the limitations of Agile is its focus on reproducibility.

### **2.7.3 Your stakeholder doesn't want Agile:**

Agile projects require continuous engagement with stakeholders. However, some stakeholders may lack the time, capacity, or inclination to be involved throughout the project. If the project is perceived as low-value or low-risk, stakeholders may prefer a more traditional approach where they are only engaged during key phases or final delivery.

### **2.7.4 Your company cannot support Agile:**

Adopting the Agile development cycle requires readiness and support from the organization and project team. If the company or team is not adequately prepared, introducing Agile can pose risks to the project's success.

## **2.8 Agile vs. waterfall project management:**

Agile project management and waterfall project management are two widely utilized methodologies for project organization. When deciding on the approach for your next

project, it is common to compare and evaluate the suitability of agile and waterfall project management.

Waterfall represents a conventional project management approach characterized by a sequential project flow. It is most effective when dealing with projects that have clearly defined objectives, well-established timelines, and predetermined deliverables from the start. If your project constraints are thoroughly understood and documented, waterfall is often the preferred choice.

### **2.9 The fundamental principles of waterfall project management include:**

- Collecting all requirements upfront
- Executing all work in structured, sequential, predefined phases
- Performing testing only after the completion of product development or construction

On the other hand, agile methodology was specifically designed to address projects where the primary constraints are not well defined. As mentioned earlier, agile is an iterative and adaptable approach to projects. It divides a project into stages, known as "sprints," allowing it to evolve and mature as more information is gathered.

When choosing between traditional project management and agile, the decision may ultimately depend on the level of maturity of your end product and your understanding of the project's outcomes and requirements during the initiation phase.

## **3. SCRUM:**

### **3.1 What is Scrum? Definition:**

Scrum is a project management framework that offers a framework for fast-paced Agile teams to effectively prioritize, manage, and execute their work. This structured approach enables teams to deliver value to customers, foster efficient collaboration, and address critical development issues. Additionally, Scrum facilitates an enhanced product delivery process.

Through Scrum ceremonies, artifacts, and roles, agile project management is streamlined and structured. Each meeting, role, and Scrum artifact plays a vital role in enabling teams to establish priorities, ensure continuous delivery, and efficiently resolve problems.

As a result, Agile Scrum product development has gained popularity. According to a Project Management Institute report, approximately 55% of project managers confirmed that they utilize Scrum to some extent in their projects.

### **3.2 What are Scrum Principles?:**

The principles of Scrum provide valuable guidelines for implementing the Scrum methodology and fostering an understanding of its processes and dynamics. It is the responsibility of the scrum master to uphold these principles and values. Let's delve into the breakdown of the six Scrum principles:

#### **3.2.1 Empirical process control:**

Scrum relies on empirical process control to remain effective, agile, and adaptable. Transparency, inspection, and adaptation govern the entire Scrum process.

#### **3.2.2 Self-organization:**

The Scrum approach encourages self-organization within the Scrum team. By being self-organizing, teams independently manage tasks, solve problems collaboratively, and hold themselves accountable, rather than relying on external management.

#### **3.2.3 Time-boxing:**

Time-boxing involves allocating fixed time periods for specific activities or objectives. This practice ensures that activities are completed within optimal time frames, avoiding excessive delays. Time-boxing is particularly beneficial for activities such as sprint planning and retrospectives.

#### **3.2.4 Value-based prioritization:**

Value-based prioritization involves continuously updating the product backlog based on the value and importance of items to end-users and stakeholders. This ensures that the most valuable features are given priority.

#### **3.2.5 Iterative development:**

Through ongoing sprints, Scrum enables iterative development, allowing for continuous review and improvement of objectives throughout the product development process. This approach helps deliver the highest quality product.

### **3.2.6 Collaboration:**

Collaboration is a key aspect of Scrum. Scrum teams engage in frequent and extensive collaboration, utilizing daily standup meetings, sprint reviews, and retrospectives as opportunities to collaborate, problem-solve, and enhance teamwork.

### **3.3 Roles on an Agile Scrum Team:**

As previously mentioned, the primary goal of the Scrum team is to create a high-quality product for the end-user. But who are the members of the Scrum team? The Scrum team comprises three essential roles: the product owner, scrum master, and development team. Let's explore each role in detail:

#### **3.3.1 The product owner:**

The product owner is responsible for maximizing the value delivered by the product. Their role goes beyond day-to-day tasks and sprint planning. They prioritize items in the product backlog to represent the interests of stakeholders and customers. The product owner ensures that the evolving requirements are met and that the deliverables align with stakeholders' expectations.

#### **3.3.2 The Scrum Master:**

The Scrum Master guides and empowers the development team to become more self-sufficient.

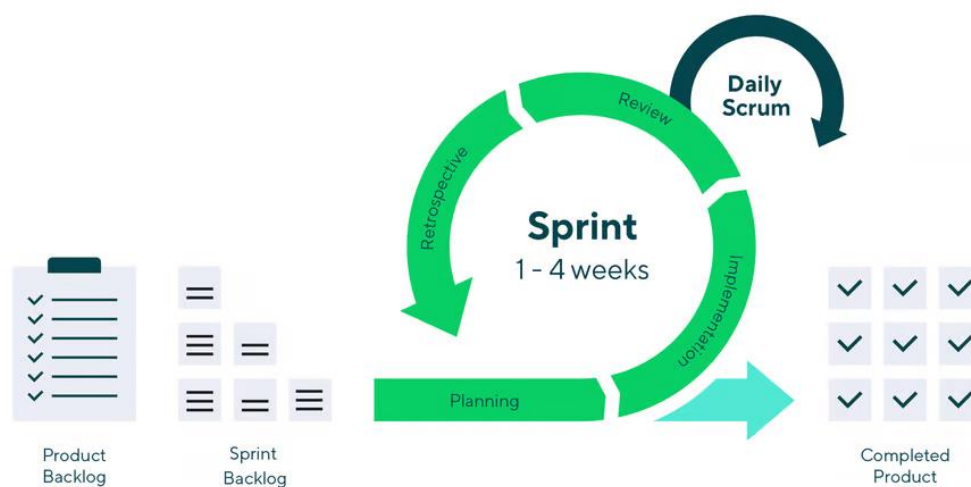
Acting as a facilitator, the Scrum Master ensures that all team members adhere to the principles and processes of the Agile Scrum methodology. By asking the right questions, the Scrum Master encourages the team to think creatively and find solutions to pressing impediments.

#### **3.3.3 The development team:**

The development team is the core of the Scrum process. While collaborating with the product owner and Scrum Master, they possess the technical skills necessary to build and deliver an excellent product. The development team ideally consists of cross-functional members, including QA testers, designers, and developers. By following Scrum's best practices and rules, the development team ensures optimal performance during the product development process.

### 3.4 Scrum methodology includes:

**Figure 03:** Life Cycle in Agile Methodology



Source: <https://bit.ly/438a8es>

#### 3.4.1 The product backlog:

The product backlog encompasses the essential features and functionalities that are to be incorporated into the software. It is the responsibility of the product owner to establish the groundwork for product development by curating and refining the backlog. The product owner adds and prioritizes items based on thorough evaluation. They delve into pertinent queries like "How does this feature contribute to the development process?" "What are the associated risks?" and "What are the costs involved?" These considerations assist in determining the inherent value of each item within the backlog.

#### 3.4.2 Sprint planning:

Once the product backlog is established, the team proceeds with sprint planning, a crucial phase in which they prioritize key objectives and avoid overextending themselves. This process provides the team with a clearer perspective on the progression of product development.

During the designated sprints, the Scrum team diligently accomplishes the predetermined goals and objectives within the specified timeframe. Ideally, each sprint should span between 1 to 4 weeks, but it should not exceed a month. Throughout the sprint, the team

engages in daily standup meetings alongside the product owner and Scrum master. These meetings serve as an opportunity to discuss their daily tasks and address any challenges or obstacles they may encounter. It is important to maintain the sprint's integrity, ensuring that no modifications are made while it is in progress, thus enabling the team to successfully achieve the sprint goal.

### **3.4.3 Sprint review:**

Upon the completion of each sprint, the Scrum team, inclusive of the product owner and Scrum master, convenes to conduct a comprehensive review. This session entails an evaluation of the sprint's accomplishments, identifying areas of success, as well as updating the backlog accordingly. Additionally, a product demonstration may be included in the agenda. During this phase, the product owner validates the work accomplished during the sprint. Subsequently, the cycle recommences, commencing with the product backlog, followed by sprint planning, the subsequent sprint, and the development of a product increment.

**In summary**, the Scrum methodology embodies a continuous learning and disciplined approach, enabling the Scrum team to recognize opportunities for enhancement and deliver the highest quality product to the end user.

### **3.5 Agile vs. Scrum:**

The Agile methodology encompasses a set of recommended practices for project organization, based on the principles and values outlined in the Agile Manifesto, which comprises four core values and 12 principles for Agile software development. It is not uncommon to come across comparisons between Agile and Scrum. Scrum, specifically defined as "a project management framework that emphasizes teamwork, accountability, and iterative progress towards a well-defined goal," serves as a framework for implementing the Agile principles, values, and best practices. To gain a better understanding of Agile versus Scrum, it is helpful to perceive Scrum as a guide for adopting the Agile approach to project management. By providing rules, roles, events, tools, and artifacts, Scrum facilitates the successful adoption of an Agile mindset. The key distinction between Agile and Scrum lies in the fact that Agile represents the desired process, whereas Scrum serves as a tool for achieving its success.

It is common to encounter the terms Scrum and Agile being used interchangeably, as Scrum is the most popular framework for Agile. Nevertheless, it is important to note that there are alternative frameworks available for planning and executing an Agile project.

### **3.6 Benefits of the Scrum methodology:**

Scrum offers significant advantages to organizations, product development teams, and individuals. Below are some of the key benefits of Scrum:

#### **3.6.1 Accurate forecasting:**

Utilizing the Scrum framework enables teams to estimate the average pace of their work. Consequently, it becomes possible to predict when specific features in the product backlog will be delivered.

#### **3.6.2 Enhanced team morale:**

The Scrum approach fosters a collaborative environment where team members actively contribute, showcasing their innovation and focus. The presence of a scrum master is instrumental in boosting team morale as they guide the team, eliminate obstacles, and strive to enhance team performance.

#### **3.6.3 Improved product quality:**

Scrum provides a framework for continuous improvement and collaboration. Activities such as sprint retrospectives and sprint reviews allow the team to reflect on their processes and make necessary enhancements.

#### **3.6.4 Heightened customer satisfaction:**

The primary goal of the Scrum team is to deliver value to the end-user. This is achieved through:

- Maintaining open communication with stakeholders and customers throughout the project's development.
- Enlisting an experienced product owner who comprehends the project's development cycle.
- Constantly updating and reprioritizing the project backlog based on feedback received.

Within agile software development, the Scrum framework encourages better collaboration and understanding among team members. By adhering to Scrum's principles and guidelines, teams create opportunities for learning, adaptation, and increased autonomy at every stage of product development.

**CHAPTER 02: RESEARCH  
METHODOLOGY AND COMPANY  
PRESENTATION**

## **Section 1: Research Methodology Presentation**

In this section of our study, we will go over the research approach we used throughout this project as well as the instruments and data-gathering strategies we used.

### **1. The research methodology:**

In order to answer our research question, the qualitative approach is the appropriate one to apply in the context of our study.

According to (N'DA, 2015) "*Qualitative research focuses on seeking the meaning and purposes of human action and social phenomena. It is primarily interested in the values, intents, purposes, beliefs, ideologies, etc. of human beings and little in causal links. Its rather flexible and more inductive analysis is inspired by the experience of daily life and common sense, which it tries to systematize*".

A qualitative survey, according to (Patrick & Mucchielli, 2016) is "*the survey that involves personal contact with the research subjects (...). It is stated to be qualitative in two ways: first, in the sense that the equipment and procedures utilized are meant to acquire qualitative data (testimonies, field notes, etc.), and second, to analyze these data qualitatively.*" (Patrick & Mucchielli, 2016)

Qualitative research tries to understand the why and how of events in specific contexts. It seeks to describe a complicated social phenomenon (Thiétart, 2014).

### **2. Data collection instruments:**

The qualitative approach is based on several tools and techniques for analysis and data collection. In order to carry out the current work, we opted for the following two instruments:

- Documentary consultation.
- Observation.
- Interviews

#### **2.1 Documentary consultation:**

Several documents were reviewed in order to better describe the major ideas and perspectives of our research topic.

According to (N'DA, 2015) "*The documentary study (or documentary observation or study of documents) concerns objects whose observation is indirect, thanks to the traces they have left. As for documentary research, it makes it possible to gather substantial documentation on a question under study and to have the maximum amount of useful information in a field on the subject to be treated*".

We began to look into several books, articles, and doctoral theses within our school, ENSM, for the realization of our research study, but we also had access to several digital libraries and websites, such as SNDL, to complete our research on time, as well as internal documents at Moustachir, where we did our practical internship. The analysis of these enabled us to gain a complete overview of the operation and organization.

## **2.2 Observation:**

Observation is critical in our data collection method because it allows us to assess and analyze the actual status of the company and its internal and external environments, as well as grasp a lived reality. It can be accomplished in two ways:

- **Participant Observation:** This is a participant observation in which the researcher can join and closely observe the employees' daily activities, interact with them, ask questions, and even intervene.
- **Non-participating observation:** In this situation, the researcher acts as a remote observer while collecting data. He maintains his distance by following the daily lives of the employees, visiting the many functions of the internship site, and studying the events that take place there.

In our case, the observation persisted throughout the internship. It enabled us to understand the project's progress within Moustachir and to confirm the information gathered and notes taken in order to enhance our application.

## **2.3 The Interview:**

The interview method is widely used in qualitative research because it consists of asking specific questions to obtain accurate and relevant data for the study. This approach makes it possible to explore the research topic in depth based on the interpretations of the non-verbal data collected during the interviews.

(Stuckey, 2013) presents three categories of interviews based on the level of directivity of the interviewer:

- **The non-directive interview:** takes place in an open way, allowing the interviewee to express himself freely.
- **The semi-directive interview:** involves an interview guide that is used to guide the conversation.
- **The directive interview:** also known as a structured interview, uses specific and closed questions as well as a structure to follow.

In order to ensure the smooth running of the interviews, we have created an interview guide including 12 questions organized into two themes :

Software development life cycle used and client needs in order to understand clients behaviour and the way of team management during the development of the product.

As part of our study, we carried out the data collection by conducting semi-directive interviews with the managers of the company I have interned at, to be specific: the first manager of the company, the IT department director, two loyal customers, and 3 product managers.

The interviews were conducted individually in the offices of the interviewees, with an average duration of about 20-30 minutes. They were carried out over a period of 40 days(01/03/2023 – 10/04/2023).

## **Section 2: Company Presentation**

### **1. Moustachir Description:**

Moustachir is an Algerian Consulting company, created in 2022

as we all know that consulting has an important role in the success of all projects, they have made available to their clients the remote consulting platform -MOUSTACHIR-, which offers the opportunity to meet and obtain consultations from the best and active local and international Algerian specialists in their fields.

they provide consultations in business economy and finance, legal consulting, export and import, technical consulting in: websites and applications development and programming,

artificial intelligence, networks and cybersecurity, operating systems, data analysis, 3D design and printing, internet of things, robotics, cloud computing; as well as social, pedagogical and linguistic consulting, and arts and media consulting.

In addition, They have co-working spaces and a Software development agency as a part of their services, where I have interned with them to enhance this research.

## 2. Identity of Moustachir:

- a. **Slogan:** We guide you towards the best.
- b. **Logo and Cover:**

**Figure 04 :** Moustachir Logo & Cover



**Source:** We made this based on data from Moustachir.

**CHAPTER 03: SCRUM METHOD  
IMPLEMENTATION ON THE TAYSSIR  
MARKETPLACE**

## Section 01: Project description

### 1. Tayssir Description:

Tayssir is a B2B wholesale marketplace, functioning as an online platform that facilitates connections between buyers (wholesalers) and sellers (wholesale). This platform serves as a convenient hub where retailers, particularly small to medium-sized businesses, can effortlessly purchase wholesale items without the complexities associated with dealing directly with multiple suppliers. Tayssir offers an extensive selection of products across various categories, all available at competitive wholesale prices. Furthermore, you can:

- View and compare other conditions immediately.
- Buying new merchandise for your store can be daunting; our wholesale marketplace can help and make it easy for you.

### 2. Slogan:

- A simple, easy-to-use B2B platform

### 3. What it offers:

- Online Store: Get a free e-commerce storefront for your products.
- Customer Management: Keep track of all your customers in one place.
- Marketing Campaigns: Promote your brand with rich content emails
- Built-in Analytics: Get insights about how your business is doing.
- Messaging System: Connects with your retailers through the platform
- Easy Order Fulfillment: Fulfill new orders and create invoices

## Section 02: SCRUM Method Implementation on TAYSSIR Marketplace development

### 1. Distribution of roles:

The Scrum team consists of five team members. Members are divided as follows:

**Table 1:** Scrum Team Roles Breakdown

Team Members	Roles
Hamza	Product Owner
Zakaria Abdessamad	Scrum master
Houssam	Web Developer
Saif	Mobile Developer
Rahma	UI/UX Designer

**Source:** by ourselves

After the distribution of roles, the team organizes another meeting in order to evaluate the concept of agility and the Scrum method of the team members.

The scrum master shares the scrum guide with the team, explaining the basic principles and making sure everyone understands.

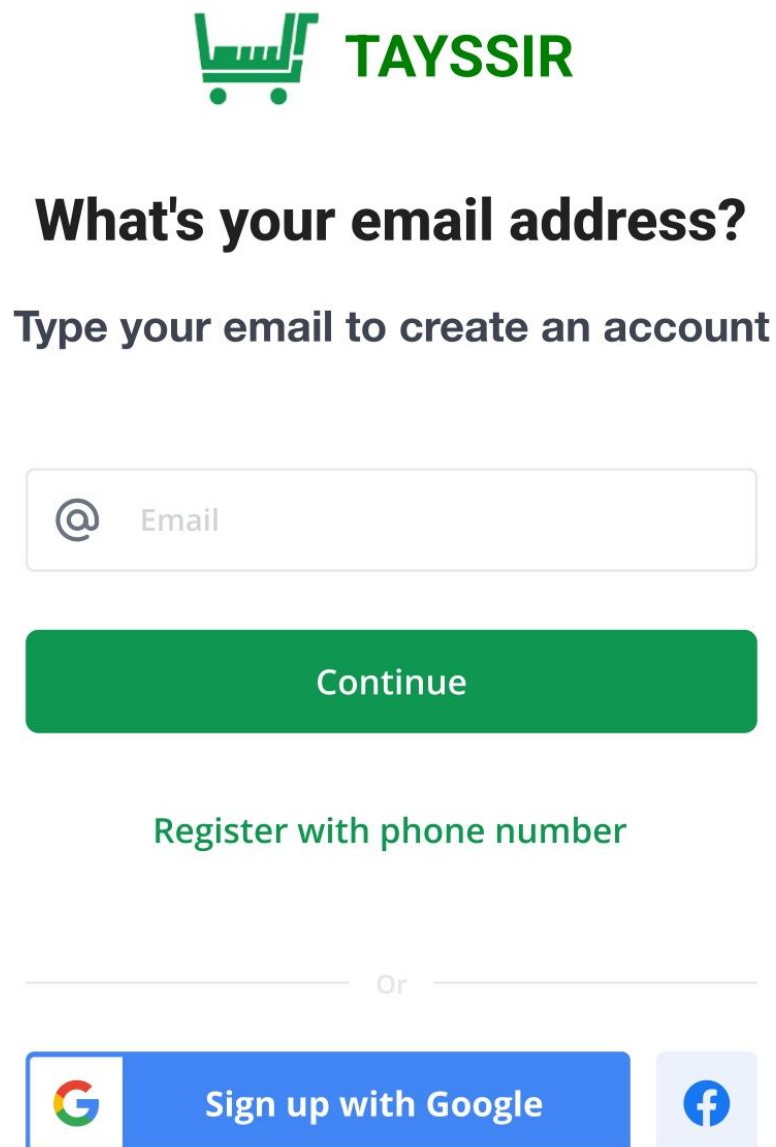
### 2. The technology required for building the app:

- **Design Tools:** Figma and Photoshop
- **Team Management Tool:** Notion
- **Programming languages:** Python, JavaScript
- **Backend Framework:** Django Rest Framework

- **JavaScript Framework:** React.js
- **CSS Framework:** Tailwind CSS
- **SQL data storage:** PostgreSQL or SQLite
- **Hosting:** Heroku.

### 3. Platform Interface (Design):

**Figure 05:** Login & Signup page



**TAYSSIR**



## What's your email address?

Type your email to create an account

**Continue**

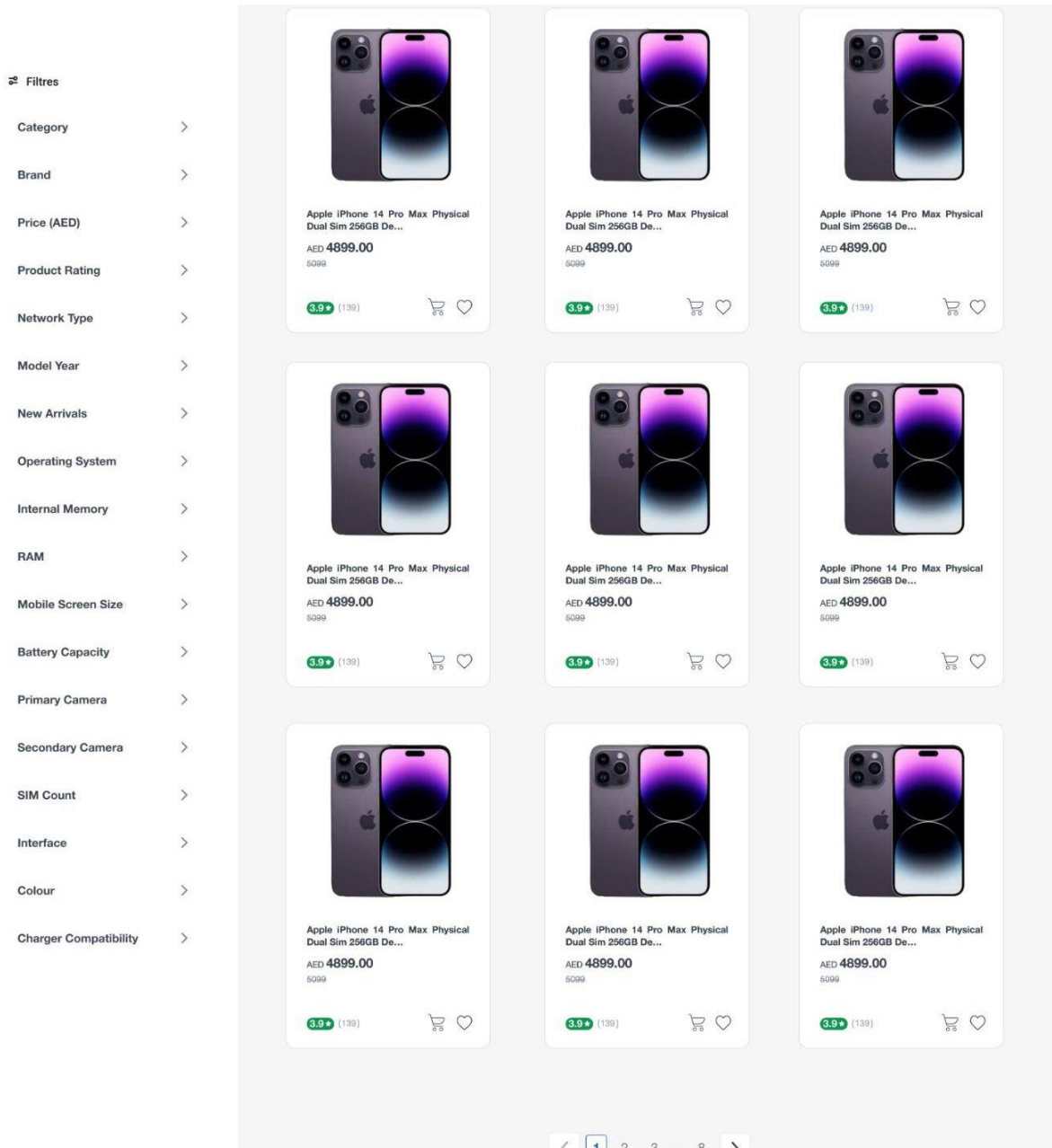
Register with phone number

Or

 **Sign up with Google** 

**Source:** By ourselves

Figure 06: The home page



Source: By ourselves

**Figure 07: Product Details page**

**Best Seller**

**iPhone 14 Pro Max Physical Dual Sim 256GB  
Deep Purple 5G With FaceTime** ♡

Quantity:

**OVERVIEW**   SPECIFICATIONS   REVIEWS

**Overview**

"The iPhone 14 Pro models are much more feature rich than the iPhone 14 models, offering camera technology improvements, better display capabilities, a faster A16 chip, and more. The 6.7 iPhone 14 Pro models features flat edges, stainless steel enclosure, a textured matte glass back, IP68 water resistance, and a Ceramic Shield-protected display. The 48-megapixel lens also enables a 2x Telephoto mode that uses the middle 12 megapixels for full-resolution photos with no digital zoom. This joins the existing 3x zoom enabled by the dedicated Telephoto lens, which has also been improved. The iPhone 14 Pro models support 5G connectivity and uses a new Qualcomm X65 modem"

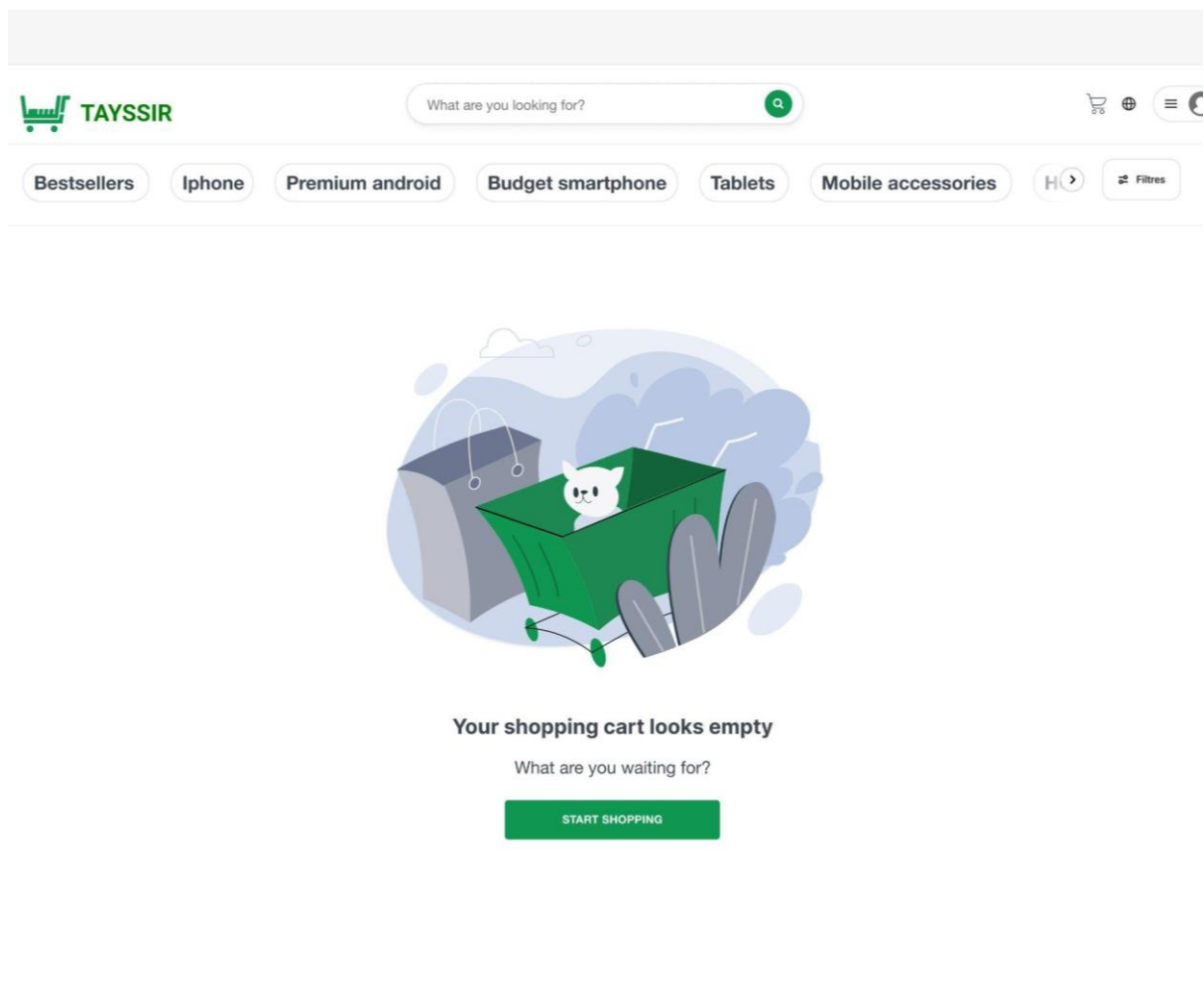
**Specifications**

Expandable Memory Type	No Expandable Memory	Connection Type	Wifi+Cellular
Secondary Camera Resolution	12 MP	SIM Count	Dual SIM
Charging Type	Lightning Port	Operating System	iOS
SIM Type	Nano SIM	Secondary Camera	12 - 15.9 MP

[View Full Specifications](#)

More from Apple

Source: By ourselves

**Figure 08: Empty Shopping Cart**

Here You Can Use Rows And Columns To Organize Your Footer Content. Lorem Ipsum Dolor Sit Amet, Consectetur Adipiscing Elit.

#### PRODUCTS

Mobiles  
Tablets  
Mobile Accessories

#### CONTACT

✉ zakaria@gmail.com  
☎ +213 665 91 54 11

#### SOCIAL MEDIA



**Source:** By ourselves

#### 4. Product Backlog Creation:

Before starting the first iteration (sprint), the SCRUM approach requires the product owner to create the product backlog based on his vision of the work on the set of tasks and user suggestions (a list of software requirements) via the question sheet.

The product manager will have to prioritize his requests based on criteria that respect the purpose and mission of his software.

**Table 2:** Product Backlog

User story	Task	Priority
<p><b>As a shopper,</b> I want to be able to browse a wide variety of products from different categories, so that I can easily find what I'm looking for and compare options before making a purchase.</p>	<p><b>Task 1:</b> Develop a category navigation menu that organizes products into relevant categories (e.g., electronics, home decor, clothing, etc.).</p>	Medium
	<p><b>Task 2:</b> Implement a search bar feature that allows users to search for products by keyword or phrase.</p>	Medium
	<p><b>Task 3:</b> Create filters and sorting options for products based on various criteria (e.g., price, popularity, rating, etc.).</p>	High
<p><b>As a shopper,</b> I want to be able to see detailed product descriptions and images, including reviews and ratings from other buyers, so that I can make an informed decision about whether to buy the product.</p>	<p><b>Task 1:</b> Design and develop product pages that include high-quality images, detailed descriptions, and reviews from other buyers.</p>	High
	<p><b>Task 2:</b> Implement a rating and review system that allows users to rate and leave feedback on products they've purchased.</p>	Normal
	<p><b>Task 3:</b> Develop a product comparison feature that allows users to compare multiple products side by side based on various criteria (e.g., price, specifications, etc.).</p>	High

<p><b>As a shopper,</b> I want to be able to add items to my cart and checkout quickly and easily, with secure payment options and transparent shipping costs, so that I can complete my purchase with confidence.</p>	<p><b>Task 1:</b> Develop a shopping cart feature that allows users to add multiple products and adjust quantities before proceeding to checkout.</p>	normal
	<p><b>Task 2:</b> Implement a secure payment gateway that supports various payment methods (e.g., credit card, PayPal, etc.).</p>	Hight
	<p><b>Task 3:</b> Provide a transparent and clear shipping cost breakdown that calculates the cost of shipping based on the user's location and the products they've selected.</p>	Normal
<p><b>As a seller,</b> I want to be able to create and manage my own store page, including uploading product images and descriptions, setting prices and discounts, and responding to customer questions and feedback.</p>	<p><b>Task 1:</b> Develop a seller registration and verification process that ensures all sellers are legitimate and authorized to sell products on the platform.</p>	Normal
	<p><b>Task 2:</b> Create a store management dashboard that allows sellers to upload product images and descriptions, set prices and discounts, and track sales and revenue.</p>	Medium
	<p><b>Task 3:</b> Implement a messaging and feedback system that allows sellers to communicate with customers and respond to inquiries and feedback.</p>	Medium
<p><b>As a customer service representative,</b> I want to be able to view and respond to customer</p>	<p><b>Task 1:</b> Develop a customer support ticketing system that allows users to submit inquiries and complaints and receive timely responses from customer service representatives.</p>	Hight

inquiries and complaints, including managing returns and refunds, so that I can provide high-quality support to all users of the platform.	<b>Task 2:</b> Implement a returns and refunds management system that allows customer service representatives to process returns and refunds and track the status of each request.	Medium
	<b>Task 3:</b> Provide training and resources for customer service representatives to ensure they are knowledgeable and equipped to handle a wide range of customer inquiries and issues.	Hight
<b>As a mobile user,</b> I want to be able to browse and shop on the AliExpress app, so that I can easily access the platform on-the-go.	<b>Task 1:</b> Design and develop a mobile app for iOS and Android devices that replicates the functionality of the website.	Normal
	<b>Task 2:</b> Ensure that the mobile app is optimized for performance and user experience on a variety of devices and network conditions.	Normal
	<b>Task 3:</b> Implement push notifications and other mobile-specific features to enhance engagement and encourage repeat usage.	Medium
<b>As a frequent shopper,</b> I want to be able to earn rewards and loyalty points for my purchases, so that I can save money and feel appreciated for my loyalty.	<b>Task 1:</b> Develop a rewards and loyalty program that tracks users' purchases and awards points based on various criteria (e.g. amount spent, frequency of purchases, etc.).	Medium
	<b>Task 2:</b> Create a rewards dashboard that allows users to view their current rewards balance, redeem points for discounts or other benefits, and track their progress toward higher tiers of rewards.	Hight

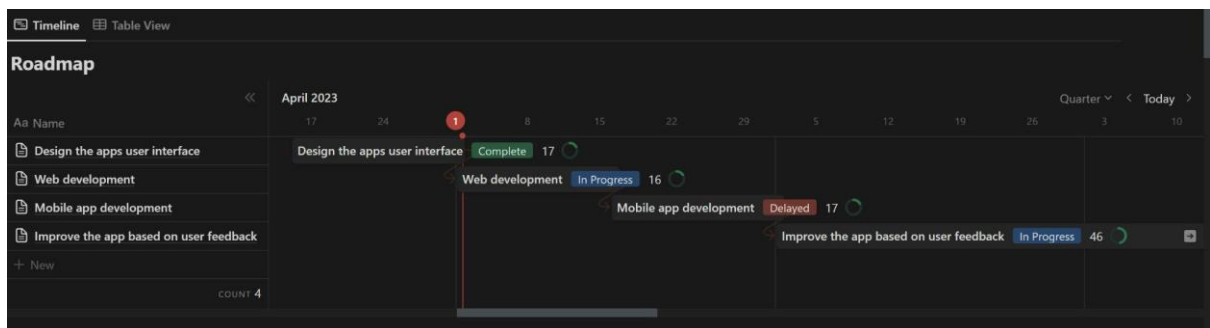
	<b>Task 3:</b> Implement email and push notification campaigns to notify users of special promotions, sales, or other opportunities to earn rewards.	Normal
<b>As a shopper in a non-English speaking country,</b> I want to be able to browse and shop on AliExpress in my native language, so that I can more easily understand product descriptions and other important information.	<b>Task 1:</b> Develop a translation feature that allows users to switch between languages on the website or app.	Normal
	<b>Task 2:</b> Hire and manage a team of translators to ensure that all product descriptions, reviews, and other content are accurately translated into a variety of languages.	Hight
	<b>Task 3:</b> Implement a language detection system that automatically detects the user's preferred language based on their browser settings or other criteria.	Hight

**Source:** by ourselves

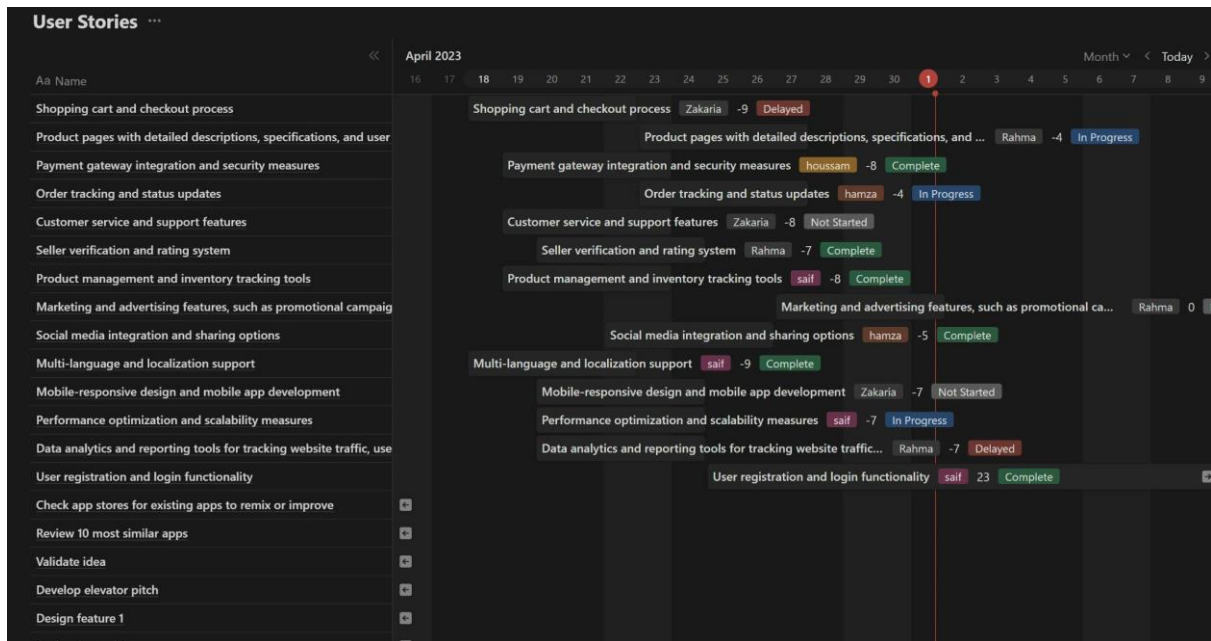
Due to the to-do list, the team stays focused on the work to be done.

However, with a set of stories, they focus only on solving the problems faced by real users.

**Figure 09:** Product Roadmap on Notion



**Source:** by ourselves

**Figure 10: Product Backlog Representation**

**Source:** by ourselves

## 5. Sprint Planning 1:

From the product backlog tasks, we choose a few based on their priority, time estimate, and the community around the sprint.

Once the product backlog is progressing at a satisfactory rate, we move on to planning a planning poker, which is a meeting around the Scrum master, who will make sure to facilitate the various exchanges that may take place between the participants. Around the features studied, the progress of the poker schedule is done in the five stages shown in this table:

The first sprint has a time constraint of sixteen days

**Table 3: First Sprint**

Task	Developer	Estimated time
Create filters and sorting options for products based on various criteria (e.g., price, popularity, rating, etc.).	H.Rahma	18
Design and develop product pages that include high-quality images, detailed descriptions, and reviews from other buyers.		
Create a rewards dashboard that allows users to view their current rewards balance, redeem points for discounts or other benefits, and track their progress toward higher tiers of rewards.	B. Zakaria	11
Design and develop product pages that include high-quality images, detailed descriptions, and reviews from other buyers.		
provides training and resources for customer service representatives to ensure they are knowledgeable and equipped to handle a wide range of customer inquiries and issues.	D. Houssam	12
Develop a customer support ticketing system that allows users to submit inquiries and complaints and receive timely responses from customer service representatives.	M. Saif	19
Implement a secure payment gateway that supports various payment methods (e.g., credit card, PayPal, etc.).		

Develop a product comparison feature that allows users to compare multiple products side by side based on various criteria (e.g., price, specifications, etc.).	B. Hamza	11
Create filters and sorting options for products based on various criteria (e.g., price, popularity, rating, etc.).		

**Source:** by ourselves

Daily Scrum meetings are scheduled for 15 minutes each day during the first sprint to review each member's work progress and ask questions about what we're going to accomplish tomorrow and whether we need help removing obstructions.

### **6. Sprint 1 Retrospective:**

At the end of the sprint, the team tests the new features with a test guide, and we clearly have questions regarding the progress of this initial phase of the application's development.

At the end of the sprint, the team delivers the tasks completed and assesses the work completed.

### **7. Sprint Planning 2:**

In this step, we review the remaining items in the product backlog to continue development and launch a new sprint.

The sprint is limited to a duration of 10 days.

**Table 4:** Second Sprint

Task	Developer	estimated time
Implement push notifications and other mobile-specific features to enhance engagement and encourage repeat usage.	H.Rahma	04
Develop a rewards and loyalty program that tracks users' purchases and awards points based on various criteria (e.g., amount spent, frequency of purchases, etc.).		
Implement a return and refund management system that allows customer service representatives to process returns and refunds and track the status of each request.	B. Zakaria	06
Create a store management dashboard that allows sellers to upload product images and descriptions, set prices and discounts, and track sales and revenue.		
Implement a messaging and feedback system that allows sellers to communicate with customers and respond to inquiries and feedback.	D. Houssam	06
Develop a category navigation menu that organizes products into relevant categories (e.g., electronics, home decor, clothing, etc.).	M. Saif	08
Implement a search bar feature that allows users to search for products by keyword or phrase.	B. Hamza	10

**Source:** by ourselves

**8-Sprint 2 Retrospective:**

After evaluating the new features, the team again finds itself at a round table to modify team members and distribute roles after the member quits in full development.

We felt that summoning an external member was unnecessary for the remaining tasks and that the Scrum Master could play two roles in this last iteration.

**9. Sprint Planning 3:** This last sprint is limited by a duration of 19 days.

**Table 5:** The Last Sprint

Task	Developer	estimated time
Implement email and push notification campaigns to notify users of special promotions, sales, or other opportunities to earn rewards.	B. Zakaria	06
Develop a translation feature that allows users to switch between languages on the website or app.		
Implement a rating and review system that allows users to rate and leave feedback on products they've purchased.	D. Houssam	06
Design and develop a mobile app for iOS and Android devices that replicates the functionality of the website.	M. Saif	08
Ensure that the mobile app is optimized for performance and user experience on a variety of devices and network conditions.		
Provide a transparent and clear shipping cost breakdown that calculates the cost of shipping based on the user's location and the products they've selected.		

Develop a seller registration and verification process that ensures all sellers are legitimate and authorized to sell products on the platform.	B. Hamza	10
Develop a shopping cart feature that allows users to add multiple products and adjust quantities before proceeding to checkout.		

**Source:** by ourselves

### **10.Sprint 3 Retrospective:**

The iterations we have done since the first sprint have given us a true connection in the team's understanding of the need, which ultimately is based on customer satisfaction, which is our top priority.

Technically, the project is quite feasible and does not require much time to complete.

### **Section 3: Discussion**

We were able to demonstrate one of the agile approaches to follow for the implementation of an IT project in the creation of a mobile application through our research.

We experienced favorable changes among team members and project development over the duration of this project's implementation. Managers also notice:

- an increase in development speed because only the necessary specifications are used.
- Because team members are at the core of project choices, there is an alignment of individual and company objectives.
- A company culture shifts to a performance-managed culture in which individuals work to fulfill their commitments and deliver the product by the deadlines of each iteration.
- Improved communication and collaboration among members and interested parties as a result of the frequency and transparency of daily scrums
- The professional evolution of team members is facilitated by decompartmentalization and knowledge sharing among members.

We've also discovered that the initial iteration of a new SCRUM team can be demanding, so make sure to follow the SCRUM rules to the letter.

For example:

- during the daily scrum, team members must answer questions one after the other within 15 minutes.
- specifications must be established, without the developer's initiative, and if in doubt, the developer must consult with the product manager.
- Create a team dynamic that is based on mutual respect among members.

## **CONCLUSION**

Our engagement in Tayssir project's implementation gave us a strong connection and communication with the development team, as well as involvement in the agile concept and the attempt to adapt it, because this way allows us to react to change. and to control risks, as well as to provide a deliverable to the client very quickly and to make the development team more efficient.

We arrived at the following key conclusions:

- The use of the Scrum technique in Tayssir project helps to provide transparency and common ownership throughout the development cycle.
- On-time delivery keeps the staff engaged and the users satisfied.
- The team at this organization recognizes the value of agility, which allows for continual adaptation in the face of a continuously changing environment, and they recognize the value of the human component.
- The ideals of agility are upheld in the implementation of this project.
- Learning Scrum takes time and effort.

However, our work, unfortunately, has several limitations:

- Lack of real-world experience among the team members
- as well as a very limited budget for building the project, which is why we are currently seeking funding to start promoting the product to real-world users and then gain feedback to react to changes quickly.

**In conclusion**, we emphasize the significance of the Scrum technique.

Many developers regard it as a radical shift in mindset. Transparency in interactions with the product manager is required, as is collaboration among team members, and people must constantly adapt to new team norms.

**As a result**, we propose the following in addition:

- Attempting to adapt the agile technique to a different type of project
- Instead of relying only on one agile method, which in our case is scrum, we can compare various agile methods in a pilot study.

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