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Streamlining Project Management Workflows Through Technology

Case Study : EPE DICOPA

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ABSTRACT

In the dynamic landscape of modern business, effective project management is paramount. This thesis explores the transformative impact of digital technologies on project management practices, focusing on the implementation of Monday.com, a cloud-based Work Operating System (Work OS), within a real-world project to launch a new marketplace in Algeria. Through a qualitative case study approach, encompassing document analysis and semi-structured interviews, we examine how Monday.com Work OS is utilized to streamline workflows, enhance communication, and foster data-driven decision-making. The research reveals that while digital tools like Monday.com Work OS offer significant benefits such as increased efficiency, improved collaboration, and real-time project monitoring, their successful integration requires careful planning, comprehensive training, and ongoing support. Challenges such as internet disruptions, declining user engagement, and the need for continuous learning underscore the importance of addressing the human element in technology adoption. By analyzing the implementation process and outcomes, this thesis provides valuable insights and recommendations for project managers and organizations seeking to leverage digital technologies to achieve project success in the digital age. It contributes to the growing body of knowledge on digital transformation in project management, emphasizing the need for a holistic approach that considers both the technical and human aspects of change.

Keywords: Project management, digital transformation, Monday.com, Work OS, Cloud Computing.

RÉSUMÉ

Dans le paysage dynamique du monde des affaires moderne, une gestion de projet efficace est primordiale. Cette thèse explore l'impact transformateur des technologies numériques sur les pratiques de gestion de projet, en se concentrant sur la mise en œuvre de Monday.com, un système d'exploitation de travail (Work OS) basé sur le cloud, dans un projet réel visant à lancer une nouvelle place de marché en Algérie. Grâce à une approche qualitative d'étude de cas, comprenant l'analyse de documents et des entretiens semi-structurés, nous examinons comment Monday.com Work OS est utilisé pour rationaliser les flux de travail, améliorer la

communication et favoriser la prise de décision basée sur les données. La recherche révèle que si les outils numériques comme Monday.com Work OS offrent des avantages significatifs tels qu'une efficacité accrue, une meilleure collaboration et un suivi de projet en temps réel, leur intégration réussie nécessite une planification minutieuse, une formation complète et un soutien continu. Les défis tels que les perturbations d'Internet, la baisse de l'engagement des utilisateurs et le besoin d'apprentissage continu soulignent l'importance de prendre en compte l'élément humain dans l'adoption de la technologie. En analysant le processus de mise en œuvre et les résultats, cette thèse fournit des informations précieuses et des recommandations pour les gestionnaires de projet et les organisations cherchant à tirer parti des technologies numériques pour atteindre le succès de leurs projets à l'ère numérique. Elle contribue au corpus croissant de connaissances sur la transformation numérique dans la gestion de projet, en soulignant la nécessité d'une approche holistique qui prend en compte à la fois les aspects techniques et humains du changement.

Mots-clés: Gestion de projet, transformation numérique, Monday.com, Work OS, Cloud Computing.

المخلص

في المشهد الديناميكي لعالم الأعمال الحديث، تعتبر إدارة المشاريع الفعالة أمرًا بالغ الأهمية. تستكشف هذه المذكرة التأثير التحويلي للتكنولوجيات الرقمية على ممارسات إدارة المشاريع، مع التركيز على تنفيذ Monday.com ، وهو نظام تشغيل عمل (Work OS) قائم على السحابة، في مشروع واقعي لإطلاق متجر جديد في الجزائر . من خلال نهج دراسة الحالة النوعي، الذي يشمل تحليل المستندات والمقابلات شبه المنظمة، نفحص كيف يتم استخدام نظام التشغيل Monday.com Work OS لتبسيط سير العمل، وتعزيز الاتصال، وتعزيز عملية صنع القرار القائمة على البيانات. يكشف البحث أنه في حين أن الأدوات الرقمية مثل Monday.com Work OS تقدم فوائد كبيرة مثل زيادة الكفاءة، وتحسين التعاون، ومراقبة المشاريع في الوقت الحقيقي، فإن تكاملها الناجح يتطلب تخطيطاً دقيقاً، وتدريياً شاملاً، ودعمًا مستمرًا. تؤكد التحديات مثل انقطاع الإنترنت، وانخفاض مشاركة المستخدمين، والحاجة إلى التعلم المستمر على أهمية معالجة العنصر البشري في اعتماد التكنولوجيا. من خلال تحليل عملية التنفيذ والنتائج، تقدم هذه المذكرة رؤية قيمة وتوصيات لمديري المشاريع والمنظمات التي تسعى إلى الاستفادة من التقنيات الرقمية لتحقيق نجاح المشروع في العصر الرقمي. تساهم في مجموعة المعارف المتزايدة حول التحول الرقمي في إدارة المشاريع، مع التأكيد على الحاجة إلى نهج شامل يأخذ في الاعتبار كلاً من الجوانب الفنية والبشرية للتغيير.

الكلمات المفتاحية: إدارة المشاريع، التحول الرقمي، Monday.com، نظام تشغيل العمل، الحوسبة السحابية.

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LIST OF ABBREVIATIONS AND ACRONYMS

AI : Artificial intelligence

APN : Partner Network

AWS : Amazon Web Services

BC : Blockchain

BD : Big Data

CAGR : Compound Annual Growth Rate

CCPM : Critical Chain Project Management

CPM : Critical Path Method

CRM : Customer Relationship Management

EPC : Economic Public Company

ERP : Enterprise Resource Planning

GDPR : General Data Protection Regulation

HCI : Human-Computer Interaction

HIPAA : Health Insurance Portability and Accountability Act

HR : Human Resources

IaaS : Infrastructure as a Service

ICT : Information and Communication Technologies

IEC : International Electrotechnical Commission

IoT : Internet of Things

ISO : International Organization for Standardization

IT : Information Technology

JSC : Joint Stock Company

KPI : Key Performance Indicators

ML : Machine Learning

OCT : Organizational Chang

PaaS : Platform as a Service

PERT : Program Evaluation and Review Technique

PII : Personally Identifiable Information

PIMS : Privacy Information Management System

PM : Project Management

PRINCE2 : PROjects IN Controlled Environments

Q&A : Questions and Answers

SaaS : Software as a Service

SCT : Social Cognitive Theory

SOC : Service Organization Control

TAM : Technology Acceptance Model

TTF : Task-Technology Fit

Work OS : Work Operating System

GENERAL INTRODUCTION

1. INTRODUCTION :

In the rapidly evolving landscape of modern business, where technological innovation is a constant force, the effective management of projects has become increasingly complex (Kerzner, 2017). Project managers are faced with the challenge of not only delivering projects on time and within budget but also leveraging the vast potential of digital tools and platforms to enhance efficiency, collaboration, and decision-making (PMI, 2021). This thesis explores the intersection of project management and the digital era, focusing on the implementation of Monday.com, a Cloud-Based Work Operating System (Work OS), within a real-world project.

The primary objective of this research is to examine how digital technologies, exemplified by Monday.com Work OS, are reshaping project management practices. We will delve into the specific case study of launching a new marketplace, to understand how this platform is being utilized to streamline workflows, improve communication, and foster data-driven decision-making. The goal is to provide valuable insights into the benefits and challenges associated with digital transformation in project management (Crawford, 2014).

To achieve this, a qualitative approach is being employed, combining document analysis, semi-structured interviews and meetings, and direct observation of the project implementation process. This methodology allows for a comprehensive understanding of project management in the digital age.

The selection of this research topic was motivated by the growing recognition of the importance of technology and digital tools in project management, as well as the relative scarcity of empirical studies examining their real-world application. By investigating the use of the cloud-based Work OS in a specific project, this thesis aims to contribute to the body of knowledge in this emerging field, offering valuable insights and recommendations for project managers and organizations seeking to leverage technology to enhance their project management capabilities.

The research questions that guide this study are:

- How does the integration of technology and digital tools transform project management processes, communication, and decision-making within real-world projects?

- What are the specific challenges and opportunities encountered when implementing and utilizing digital tools in project management workflows?
- How do digital technologies contribute to the evolution of project management practices and what are the broader implications for the future of the field?

The goals of this research are as follows:

- To investigate how digital technologies, particularly cloud-based Work OS, are reshaping project management practices.
- To examine a specific case study to understand how Monday.com is utilized to streamline workflows, enhance communication, and enable data-driven decision-making.
- To identify the benefits and challenges associated with the digital transformation of project management.
- To provide actionable insights and recommendations for project managers and organizations seeking to leverage technology to improve their project management capabilities.

The thesis will be structured into several parts to provide a comprehensive analysis and address the research objectives effectively. These parts will include:

- General introduction
- Chapter 1: literature review & conceptual framework
- Chapter 2: Methodological Framework & Organization
- Chapter 3: Implementation of Monday.Com Work OS & Discussion
- General Conclusion

This research seeks to bridge the gap between theory and practice in digital project management. By examining the real-world implementation of a digital platform, we aim to provide actionable insights and recommendations for practitioners, while also contributing to the growing body of academic literature on this important topic. The digital transformation of project management is a journey, not a destination, and this thesis seeks to guide that journey towards greater efficiency, collaboration, and success.

**CHAPTER I: LITERATURE REVIEW AND
CONCEPTUAL FRAMEWORK**

1. SECTION 1 : LITERATURE REVIEW

1.1 Introduction:

Project management has evolved significantly over time, mirroring the technological advancements and changing business landscape. Early approaches, rooted in industrial engineering principles, emphasized linear processes, rigid control, and top-down decision-making. However, the advent of digital technologies has revolutionized project management practices, offering new tools, techniques, and capabilities that enhance efficiency, collaboration, and decision-making.

This literature review examines the multifaceted landscape of project management, tracing its evolution, dissecting the persistent challenges that contribute to project failure, and exploring the transformative potential of emerging technologies.

Through a historical lens, this review investigates the transition from traditional project management methodologies, such as the rigid Waterfall approach, to more agile and adaptive frameworks that prioritize flexibility and iterative development.

Despite advancements in methodologies, project failures remain a stark reality. This review delves into the root causes of these failures, examining factors like inadequate planning, communication breakdowns, and unforeseen risks.

Additionally, it explores the transformative potential of emerging technologies. From artificial intelligence and machine learning to data analytics and cloud computing, these technologies are revolutionizing project management practices. By understanding the impact of these technologies, project managers can leverage their capabilities to enhance efficiency, streamline collaboration, and navigate the complexities of modern projects.

This review serves as a comprehensive exploration of the past, present, and future of project management, providing valuable insights for both practitioners and researchers alike.

1.2 The Evolution of Project Management Methodologies and Practices

The evolution of project management has been a dynamic journey, reflecting the changing technological and societal landscapes of the past century. Early approaches, rooted in the industrial era, emphasized linear processes, rigid control, and top-down decision-making. Pioneers like Henry Gantt (1910) introduced tools like the Gantt chart, revolutionizing project planning and tracking, while Frederick Taylor (1911) emphasized efficiency and standardization through his scientific management principles.

The mid-20th century saw a shift towards more structured and systematic project management with the introduction of techniques like the Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT). These methods, used in complex projects like the Apollo space program, marked a turning point towards more sophisticated scheduling and resource allocation (Kerzner, 2017).

The late 20th and early 21st centuries witnessed a paradigm shift with the rise of Agile methodologies. Driven by the need for adaptability in software development, Agile challenged traditional linear models with its iterative approach, focus on collaboration, and responsiveness to change. Research by Nerur, S., Mahapatra, R., & Mangalaraj, G. (2005) found that Agile methods often led to improved project outcomes, including increased customer satisfaction and faster time-to-market.

The digital age further accelerated the evolution, with the advent of powerful project management software and collaborative tools. Cloud-based platforms enabled real-time communication and data sharing, while artificial intelligence and machine learning started to automate tasks and provide insights. A study by Wysocki (2014) explored the impact of digital technologies on project management, highlighting the need for new skills and mindsets to navigate the complexities of the digital landscape.

This evolution demonstrates how project management has adapted and transformed in response to changing needs and technologies, from its early roots in industrial engineering to the cutting-edge practices of the digital age.

1.3 Dissecting the Dynamics Contributing to Project Failure

Project failure, a perennial concern across industries, is a multifaceted phenomenon shaped by a complex interplay of factors. These dynamics can be categorized into several key areas, each contributing to the overall risk of project derailment.

One significant factor is inadequate planning and unclear objectives. A study by Rodrigues & Bowers (1996) found that projects lacking well-defined goals, realistic timelines, and comprehensive risk assessments were more likely to experience delays, cost overruns, or outright failure. The absence of a clear vision and shared understanding among stakeholders can lead to misaligned expectations, scope creep, and a lack of focus, ultimately hindering project success.

Ineffective communication and collaboration further compound the challenges. Pindado & Sanchez (2017) emphasize the crucial role of communication in project management, stressing the need for transparent information sharing, active listening, and conflict resolution. However, the absence of modern communication and collaboration tools can impede these efforts, leading to miscommunication, delays, and a lack of cohesion within the project team.

Resource constraints, including budget limitations, inadequate staffing, and insufficient access to technology or expertise, can also contribute to project failure. A study by Williams (2005) found that resource shortages can lead to compromised quality, missed deadlines, and increased stress levels among team members. Effective resource management, involving careful planning, prioritization, and proactive risk mitigation, is crucial for project success.

External factors, such as unexpected market shifts, regulatory changes, or natural disasters, can also derail projects. While these events may be beyond the control of project teams, proactive risk management strategies, including contingency planning and scenario analysis, can help mitigate their impact. Research by Flyvbjerg, B., Bruzelius, N (2003) reveals a consistent pattern of optimism bias in project planning, highlighting the importance of realistic risk assessment and contingency planning.

While project failure stems from a complex interplay of factors, the underutilization or neglect of modern technology can significantly contribute to project derailment. By embracing technological advancements, project managers can enhance planning,

communication, resource management, and risk mitigation, thereby increasing the likelihood of successful project delivery.

1.4 The Digital Transformation of Project Management

The digital transformation of project management has revolutionized the way projects are conceived, planned, executed, and monitored. The integration of digital technologies has reshaped traditional methodologies, introducing new tools, techniques, and capabilities that enhance efficiency, collaboration, and decision-making.

One of the most significant impacts of digital transformation is the automation of routine tasks. Project management software, powered by artificial intelligence and machine learning, can now automate scheduling, resource allocation, and progress tracking. This not only frees up project managers to focus on strategic activities but also reduces the risk of human error (Meredith & Mantel, 2012). Research by Zwikael & Globerson (2006) suggests that automation can significantly improve project efficiency and reduce costs.

Digital transformation has also enhanced collaboration and communication among project teams. Cloud-based platforms, video conferencing tools, and instant messaging applications enable real-time communication, regardless of geographical location. This fosters a more collaborative environment, enabling teams to share information, brainstorm ideas, and resolve issues more effectively (Bosch-Sijtsema & Bosch, 2014). Studies by Choudrie & Dwivedi (2005) emphasize the importance of effective communication in project success, and digital tools have become indispensable in facilitating this.

Data-driven decision-making is another hallmark of the digital transformation of project management. The abundance of data generated by digital tools allows project managers to gain valuable insights into project performance, identify potential risks, and make informed decisions. Research by Peter E. D. Love, David J. Edwards, and Zahir Irani . (2016) indicates that data analytics can significantly improve project outcomes by enabling proactive risk management and identifying opportunities for optimization.

Moreover, digital transformation has facilitated the adoption of agile methodologies, which emphasize flexibility, collaboration, and iterative development. Digital tools like Kanban boards and sprint planning software have become integral to agile project management,

enabling teams to adapt quickly to changing requirements and deliver value incrementally (Conforto & Amaral, 2016).

In conclusion, the digital transformation of project management is a continuous process that has already yielded significant benefits. By automating tasks, enhancing collaboration, and enabling data-driven decision-making, digital technologies have empowered project managers to deliver projects more efficiently, effectively, and successfully. As technology continues to evolve, the future of project management promises even greater innovation and possibilities.

1.5 The Rise of Cloud computing technologies in Project Management practices

The rise of cloud computing technologies has ushered in a transformative era in project management, revolutionizing how teams collaborate, manage resources, and achieve project goals. Cloud-based project management solutions offer a range of advantages over traditional on-premise software, including enhanced accessibility, scalability, and cost-effectiveness.

One of the most significant benefits of cloud computing in project management is improved accessibility. Cloud-based platforms allow team members to access project data and tools from any location with an internet connection, fostering seamless collaboration among geographically dispersed teams. This accessibility is particularly valuable in today's increasingly remote work environment, where real-time communication and data sharing are essential (Senapati & Roy, 2013). Research by Dubey et al. (2022) suggests that cloud-based collaboration tools can significantly improve team communication and coordination.

Cloud computing also offers unparalleled scalability, allowing organizations to easily adjust resources based on project needs. This flexibility eliminates the need for upfront investments in expensive hardware and software, making project management more accessible to businesses of all sizes (Marston et al., 2011). Cloud-based solutions can be scaled up or down as needed, ensuring that projects have the necessary resources without incurring unnecessary costs.

Cost-effectiveness is another compelling advantage of cloud computing in project management. Traditional on-premise solutions often entail substantial upfront costs for software licenses, hardware, and IT infrastructure. In contrast, cloud-based models typically

operate on a subscription basis, offering predictable pricing and eliminating the need for large capital expenditures (Sultan, 2010). Research by Gupta et al. (2013) indicates that cloud computing can lead to significant cost savings in project management.

Moreover, cloud computing enhances data security and disaster recovery. Reputable cloud providers employ robust security measures to protect sensitive project data, including encryption, access controls, and regular backups. In the event of a disaster or system failure, cloud-based data can be quickly restored, minimizing downtime and ensuring business continuity (Mell & Grance, 2011).

In conclusion, the rise of cloud computing technologies has fundamentally transformed project management, offering improved accessibility, scalability, cost-effectiveness, and data security. By embracing cloud-based solutions, organizations can streamline collaboration, optimize resource utilization, and enhance project outcomes in an increasingly interconnected and dynamic business landscape.

1.6 Conclusion :

This literature review has traced the evolution of project management from its early roots in industrial engineering to the modern era of cloud computing and digital transformation. The journey has been marked by significant shifts in methodologies, tools, and practices, reflecting the changing needs of organizations and the rapid pace of technological advancement.

Early approaches, characterized by linear processes and rigid control, gradually gave way to more flexible and collaborative models like Agile. The rise of digital technologies further accelerated this transformation, enabling automation, enhancing communication, and fostering data-driven decision-making. The adoption of cloud computing, has revolutionized project development and collaboration, offering unprecedented scalability and cost-effectiveness.

Future research should delve deeper into the specific challenges and opportunities associated with the digital transformation of project management. Investigating the impact of emerging technologies like artificial intelligence, machine learning, and blockchain on project outcomes could provide valuable insights. Additionally, the rapid pace of technological change necessitates ongoing research to keep pace with emerging trends and best practices.

Overall, this review underscores the dynamic and ever-evolving nature of project management. As organizations continue to navigate the complexities of the digital age, embracing technological advancements and adapting to new ways of working will be crucial for achieving project success.

2. SECTION 2: CONCEPTUAL FRAMEWORK

2.1 Project Management Overview

2.1.1 Project Definition

A project is a temporary endeavor, distinct from ongoing operations, undertaken to create a unique product, service, or result. This definition, central to project management (PMBOK , 2017), encapsulates several key characteristics:

- **Definite start and end dates:** Projects have a finite lifespan, unlike the continuous nature of operations. They begin with a clear initiation and conclude with a defined closure, marking the successful delivery of the project's objectives.
- **Unique deliverables:** The output of a project is unique and not a repetitive process. This uniqueness can manifest in various forms, such as a new product, a customized service, a research finding, or a specific event. The distinctive nature of project deliverables necessitates a tailored approach to planning and execution.
- **Progressive elaboration:** Project details and understanding evolve as the project progresses. Initially, the project scope may be broadly defined, with finer details emerging as the team gathers information, conducts analysis, and makes decisions. This progressive elaboration allows for flexibility and adaptation to changing circumstances.
- **Resource constraints:** Projects operate within limitations of time, budget, and resources. These constraints require careful planning and management to ensure that the project stays on track and achieves its objectives within the allocated resources.

2.1.2 Project Management Definition

Project management is a dynamic discipline that encompasses a wide range of activities, knowledge areas, and processes aimed at achieving project success. It is defined as the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (PMBOK , 2017). This definition highlights several critical aspects of project management:

- **Integration:** Project management is not just about managing individual tasks or activities in isolation. It involves integrating all project elements – scope, time, cost, quality, resources, stakeholders, risks, etc. – into a cohesive whole to ensure that the project goals are achieved.

- **Scope:** Defining and managing the work to be done is a fundamental aspect of project management. This involves clearly articulating the project objectives, deliverables, and boundaries to ensure that everyone understands what the project is supposed to accomplish.
- **Time:** Developing and adhering to a project schedule is crucial for timely project completion. Project managers must create realistic timelines, allocate resources effectively, and track progress to ensure that the project stays on schedule.
- **Cost:** Estimating, budgeting, and controlling project expenses are essential for financial viability. Project managers must develop accurate cost estimates, secure adequate funding, and monitor spending to ensure that the project remains within budget.
- **Quality:** Ensuring the project output meets the desired standards is a key objective of project management. This involves defining quality criteria, implementing quality assurance processes, and conducting quality control activities to ensure that the project deliverables meet or exceed stakeholder expectations.
- **Resources:** Identifying, acquiring, and managing the necessary resources – including people, equipment, materials, and facilities – is critical for project success. Project managers must ensure that the right resources are available at the right time to support project activities.
- **Communication:** Effective communication with stakeholders – including the project team, sponsors, customers, and other interested parties – is essential for project success. Project managers must establish clear communication channels, provide regular updates, and address any concerns or issues that arise.
- **Risk:** Identifying, analyzing, and responding to potential project threats is a critical aspect of project management. Project managers must proactively assess risks, develop mitigation strategies, and monitor the risk environment throughout the project lifecycle.
- **Procurement:** Acquiring goods and services from external sources is often necessary for project completion. Project managers must manage procurement activities, such as vendor selection, contract negotiation, and performance monitoring, to ensure that the project receives the required goods and services on time and within budget.
- **Stakeholder:** Identifying and managing the expectations of those impacted by the project is essential for building support and minimizing resistance. Project managers must engage with stakeholders, understand their needs and concerns, and communicate effectively to build trust and foster collaboration.

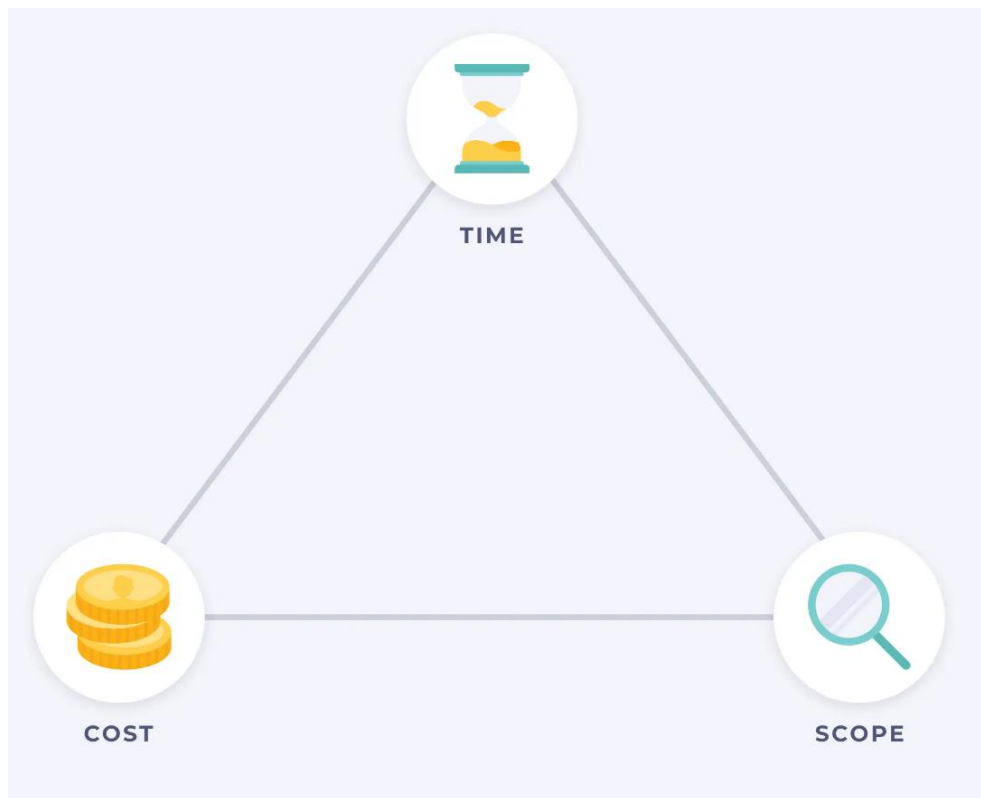
2.1.3 The Triple Constraint (Iron Triangle)

The triple constraint, a cornerstone of project management theory, elucidates the intricate relationship between three fundamental project constraints: scope, time, and cost. Visualized as a triangle, each side represents one of these constraints, and the area within the triangle symbolizes the project's quality. This model underscores the interconnectedness of these constraints, highlighting that a change in one inevitably impacts the others (Atkinson, R. 1999).

- **Scope:** The scope defines the boundaries of the project, encompassing all the work required to achieve the project objectives. It details the specific features, functions, and deliverables that the project is expected to produce. A well-defined scope is crucial for setting clear expectations and avoiding scope creep, which refers to uncontrolled changes or additions to the project's scope.
- **Time:** The time constraint refers to the project schedule, outlining the start and finish dates for each activity and the overall project duration. It involves creating a realistic timeline, identifying critical path activities, and allocating resources effectively to ensure timely project completion.
- **Cost:** The cost constraint encompasses all the financial resources allocated to the project, including labor, materials, equipment, and other expenses. Project managers must develop accurate cost estimates, secure adequate funding, and monitor spending to ensure that the project remains within budget.

This diagram below (figure 1) represents the Iron Triangle in project management, It illustrates the three fundamental constraints that every project must balance

Figure 01 : The iron triangle of Project Management



Source : <https://www.teamgantt.com/blog/triple-constraint-project-management>

The triple constraint model emphasizes that these three constraints are not independent but rather interdependent. For instance, increasing the scope of the project (adding more features or functionality) may require more time or budget to accommodate the additional work. Similarly, reducing the project timeline may necessitate cutting back on the scope or increasing the budget to expedite certain activities.

2.1.4 Quality Management

Quality management is an integral part of project management that ensures the project's outcome aligns with stakeholder expectations and requirements (PMBOK , 2017). It encompasses a structured approach that involves:

- **Quality Planning:** This initial phase involves identifying the relevant quality standards and requirements for the project. It also entails determining the processes and methods to achieve these standards, ensuring that the project's deliverables meet the desired level of quality.
- **Quality Assurance:** Quality assurance focuses on auditing and reviewing the quality requirements and the results from quality control measurements. It ensures that the

project processes are being followed correctly and the project is on track to meet the defined quality standards.

- **Quality Control:** Quality control is about monitoring and recording the results of executing quality activities. It involves inspecting deliverables, measuring performance against standards, and identifying any deviations or defects. If any discrepancies are found, corrective actions are taken to bring the project back in line with the quality requirements.

Effective quality management is essential for ensuring customer satisfaction, minimizing rework, and delivering a product or service that meets the desired level of excellence.

2.1.5 Risk Management

Risk management is a proactive process that aims to identify, analyze, and respond to potential project risks (PMBOK , 2017). It involves:

- **Risk identification:** This involves brainstorming, interviewing subject matter experts, reviewing historical data, and conducting risk workshops to identify all potential events or circumstances that could impact the project.
- **Risk analysis:** Once risks are identified, they must be analyzed to assess their probability of occurrence and potential impact on the project. This can be done through qualitative or quantitative analysis methods.
- **Risk response planning:** Based on the risk analysis, project managers develop strategies to mitigate, avoid, transfer, or accept risks. These strategies may involve implementing preventive measures, developing contingency plans, transferring risk to a third party through insurance or contracts, or accepting the risk if the potential impact is minimal.
- **Risk monitoring and control:** Risk management is not a one-time activity but an ongoing process. Project managers must continuously monitor the risk environment, track identified risks, identify new risks, and execute risk response plans as needed.

Effective risk management can significantly improve project outcomes by proactively addressing potential problems and minimizing their impact.

2.1.6 Stakeholder Management

Stakeholder management is a critical process that focuses on identifying and engaging with all individuals, groups, or organizations that can affect, be affected by, or perceive themselves to be affected by a project (PMBOK , 2017). This process involves:

- **Identification:** The first step is to identify all potential stakeholders and understand their interests, expectations, and influence on the project. This can be done through various methods, such as brainstorming, interviews, surveys, and document analysis.
- **Analysis:** Once stakeholders are identified, their power, influence, and potential impact on the project must be analyzed. This helps prioritize stakeholders and develop appropriate engagement strategies.
- **Engagement:** Stakeholder engagement involves communicating and collaborating with stakeholders throughout the project lifecycle. This can include providing regular updates, soliciting feedback, addressing concerns, and building relationships.
- **Management:** Stakeholder management is an ongoing process that involves monitoring stakeholder engagement, adjusting strategies as needed, and resolving any conflicts or issues that arise.

Effective stakeholder management is crucial for project success as it helps build support, minimize resistance, and ensure that the project outcomes meet the needs of all stakeholders.

2.1.7 Project Life Cycle

The project life cycle is a conceptual framework that divides the project into distinct phases, each marked by a set of activities and deliverables. While the specific phases may vary depending on the nature of the project and the organization's methodology, the typical phases include (Rad, P. F., & Levin, G. 2006):

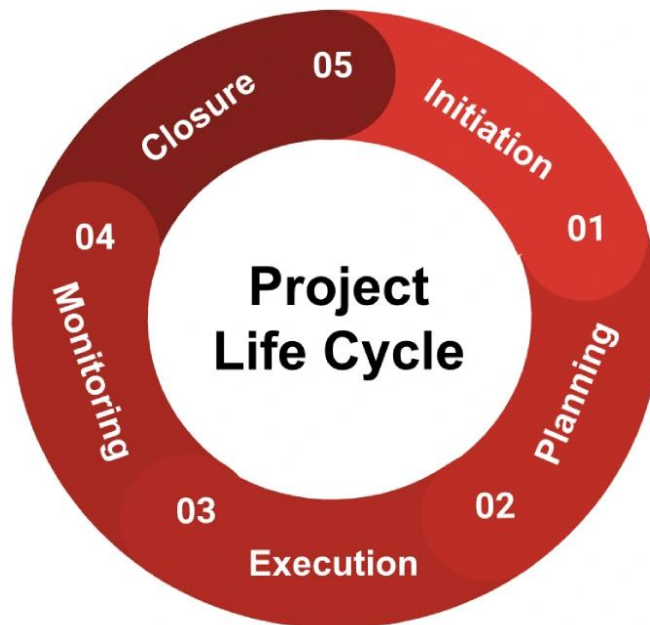
- **Initiation:** This phase involves defining the project scope, objectives, and stakeholders. It also includes developing a project charter, which formally authorizes the project and outlines its high-level goals and requirements.
- **Planning:** The planning phase is where detailed project plans are developed, including the project schedule, budget, resource allocation, and risk management plan. This phase is crucial for ensuring that the project is well-organized and has a clear roadmap for success.

- **Execution:** In this phase, the project team carries out the planned activities to produce the project deliverables. This involves coordinating resources, managing tasks, and communicating progress to stakeholders.
- **Monitoring and Controlling:** This phase runs concurrently with the execution phase and involves tracking project progress, comparing it against the plan, and taking corrective actions as needed to ensure that the project stays on track. It also includes managing risks, monitoring quality, and controlling changes to the project scope.
- **Closure:** The closure phase marks the formal end of the project. It involves finalizing all deliverables, documenting lessons learned, archiving project records, and releasing resources.

The project life cycle provides a structured approach to managing projects, ensuring that all necessary activities are performed, and the project progresses in a controlled and organized manner.

The figure below shows a circular diagram that illustrates the five phases of a typical project life cycle

Figure 2 : Project Life Cycle



Source : <https://timeular.com/blog/project-life-cycle/>

2.1.8 Project Management Methodologies

Project management methodologies are frameworks that provide a structured approach to planning, executing, and controlling projects. They offer a set of principles, processes, tools, and techniques that guide project teams in their work. The choice of methodology depends on various factors, such as the nature of the project, the organization's culture, and the team's preferences (PMBOK , 2017).

A. Waterfall Methodology:

The Waterfall methodology is a traditional, linear approach to project management. It follows a sequential flow of phases – Requirements, Design, Implementation, Verification, and Maintenance – with each phase completed before moving on to the next. This methodology is best suited for projects with well-defined requirements and minimal changes expected during the project lifecycle.

B. Agile Methodology:

Agile methodologies, such as Scrum and Kanban, are iterative and incremental approaches that prioritize flexibility and adaptability. They involve breaking down the project into smaller, manageable iterations or sprints, with each iteration delivering a working product increment. Agile methodologies are ideal for projects with evolving requirements or uncertain environments where change is expected.

C. Hybrid Methodologies:

Hybrid methodologies combine elements of both Waterfall and Agile methodologies to create a customized approach that suits the specific needs of the project. For example, a project might use a Waterfall approach for the initial planning and design phases, followed by an Agile approach for the implementation and testing phases.

D. Critical Path Method (CPM):

This methodology focuses on identifying the critical path, which is the longest sequence of dependent activities that determine the project's overall duration. By analyzing the critical path, project managers can identify potential bottlenecks and prioritize tasks to ensure timely project completion.

E. Critical Chain Project Management (CCPM):

CCPM is an approach that emphasizes managing resources and buffers to protect the project from delays. Unlike traditional methods that focus on individual task completion, CCPM focuses on ensuring that resources are available when needed, thereby reducing the risk of bottlenecks and delays.

F. PRINCE2 (Projects IN Controlled Environments):

PRINCE2 is a process-based methodology widely used for managing projects in a structured and controlled environment. It emphasizes dividing the project into manageable stages, with clear roles and responsibilities defined for each stage.

G. Six Sigma:

Six Sigma is a data-driven methodology that aims to improve quality by reducing defects and variations in processes. It utilizes statistical tools and techniques to identify and eliminate the root causes of problems, thereby improving process efficiency and customer satisfaction.

2.1.9 Choosing the Right Methodology

Selecting the most appropriate project management methodology is a critical decision that can significantly impact the project's success. Several factors should be considered, including:

- **Project complexity:** Simple projects with clear requirements may benefit from a Waterfall approach, while complex projects with evolving requirements may require an Agile methodology.
- **Organizational culture:** The chosen methodology should align with the organization's values, culture, and existing practices.
- **Team experience:** The team's familiarity and expertise with different methodologies should be taken into account.
- **Stakeholder preferences:** Stakeholder expectations and requirements should be considered when selecting a methodology.
- **Industry standards:** Certain industries may have established best practices or regulatory requirements that influence the choice of methodology.

In many cases, a hybrid approach that combines elements of different methodologies may be the most effective way to tailor the approach to the specific needs of the project.

2.1.10 Importance of Project Management

Project management is not merely a set of tools and techniques; it is a strategic discipline that plays a pivotal role in achieving organizational goals. The importance of project management stems from its ability to:

- **Effective Planning:** Project management provides a structured framework for defining clear goals, objectives, and strategies. It enables project teams to develop comprehensive plans that outline the scope of work, resource requirements, timelines, and risk mitigation strategies.
- **Efficient Execution:** By breaking down complex projects into manageable tasks and activities, project management facilitates efficient execution. It ensures that resources are allocated optimally, tasks are completed in a logical sequence, and progress is tracked against the project plan.
- **Proactive Risk Management:** Project management emphasizes the importance of identifying and addressing potential risks before they become problems. Through risk assessment, mitigation planning, and monitoring, project managers can minimize the impact of unforeseen events and keep the project on track.
- **Improved Communication:** Effective communication is the lifeblood of any project. Project management establishes clear communication channels, fosters collaboration among team members, and ensures that stakeholders are informed about project progress, challenges, and decisions.
- **Enhanced Quality Control:** Project management emphasizes the importance of delivering quality products, services, or results that meet or exceed stakeholder expectations. Through quality planning, assurance, and control processes, project managers ensure that the project output adheres to the defined quality standards.
- **Successful Project Closure:** Project management provides a structured approach to closing out projects, ensuring that all deliverables are completed, documentation is finalized, lessons learned are captured, and resources are released. This facilitates a smooth transition to the next phase or project.

2.1.11 The Future of Project Management

The future of project management promises to be dynamic and transformative. Artificial intelligence and machine learning are poised to play a significant role in project management, automating routine tasks, analyzing data for insights, and optimizing decision-making. The integration of AI and ML into project management tools and platforms is expected to enhance efficiency, accuracy, and predictability, freeing up project managers to focus on strategic activities.

Furthermore, the growing importance of data-driven decision-making will drive the adoption of advanced analytics and reporting tools in project management. These tools will enable project managers to track progress, identify risks, and make informed decisions based on real-time data. The ability to harness data and derive actionable insights will be a key differentiator for successful project managers in the future.

While traditional project management principles remain relevant, the digital era has ushered in a new wave of tools and technologies that are transforming the way projects are managed. The following part explores how digital technologies are reshaping project management practices, offering new ways to address the challenges and complexities inherent in project work..

2.2 Project Management in the Digital Era

2.2.1 Digital Technologies

Digital technologies encompass a broad spectrum of electronic tools, systems, devices, and resources that generate, store, or process data in digital formats (binary code). These technologies have fundamentally transformed the way we live, work, and interact with the world around us. Examples of digital technologies include computers, smartphones, the Internet, software applications, social media platforms, artificial intelligence, the Internet of Things, and blockchain technology.

Digital technologies offer numerous benefits, such as increased efficiency, enhanced communication, improved decision-making, and greater access to information. They have revolutionized industries, from healthcare and education to finance and entertainment, and have become an integral part of modern life. However, the rapid pace of technological

advancement also presents challenges, including concerns about data privacy, cybersecurity, and the potential for job displacement due to automation.

2.2.2 Core Digital Technologies:

2.2.2.1 Big Data Analytics

Big data analytics refers to the process of examining large and diverse datasets (big data) to uncover hidden patterns, correlations, trends, and other valuable (Davenport, T. H., & Dyché, J. 2013). These insights can be used to make informed decisions, improve business operations, and drive innovation. Big data analytics encompasses various techniques and technologies, including data mining, machine learning, statistical analysis, and data visualization

The rise of big data analytics has been fueled by the exponential growth of data generated by various sources, such as social media, sensors, mobile devices, and business transactions .Big data analytics has applications in numerous fields, including healthcare, finance, marketing, manufacturing, and government. For example, in healthcare, big data analytics can be used to identify disease outbreaks, predict patient outcomes, and personalize treatment plans (Davenport, T. H., & Dyché, J. 2013) .

2.2.2.2 Internet of Things (IoT)

The Internet of Things (IoT) refers to a network of interconnected physical devices, vehicles, appliances, and other objects embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to connect and exchange data (Atzori, L., Iera, A., & Morabito, G. 2010). This data can be collected, analyzed, and used to monitor and control various systems and processes, leading to improved efficiency, productivity, and decision-making.

IoT applications span across various industries, including manufacturing, healthcare, transportation, agriculture, and smart homes. In manufacturing, IoT sensors can monitor equipment performance and predict maintenance needs, while in healthcare, wearable IoT devices can track patient vitals and provide real-time alerts

2.2.2.3 Information and Communication Technologies (ICT)

Information and Communication Technologies (ICT) are a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information (Warschauer, M. 2003). These technologies include computers, the internet, broadcasting technologies (radio and television), telephony, and audio/video processing and transmission.

ICT has revolutionized communication and information sharing, enabling people to connect and collaborate across vast distances in real time. It has transformed industries, education, healthcare, and government, and has become an essential part of modern life. ICT plays a crucial role in enabling digital transformation and driving innovation across various sectors

2.2.2.4 Blockchain Technology

Blockchain technology is a decentralized, distributed ledger that records transactions across multiple computers in a secure and transparent manner. Each block in the chain contains a cryptographic hash of the previous block, a timestamp, and transaction data. This structure makes it extremely difficult to tamper with the data, as any change to a single block would invalidate all subsequent blocks.

Blockchain technology has gained widespread attention due to its potential to disrupt various industries. Its most well-known application is cryptocurrency, such as Bitcoin, which leverages blockchain for secure and transparent financial transactions. However, blockchain has potential uses beyond cryptocurrency, including supply chain management, voting systems, identity verification and smart contracts (Nakamoto, S. 2008)

2.2.2.5 Artificial Intelligence (AI)

Artificial intelligence (AI) is a branch of computer science that aims to create intelligent systems that can learn from data, reason, solve problems, perceive their environment, and interact with humans in a natural way. AI encompasses various subfields, including machine learning, natural language processing, computer vision, and robotics (Eling, Martin & Nuessle, Davide & Staubli, Julian. (2021).

Machine learning, a key component of AI, involves the development of algorithms that enable computers to learn from and make predictions or decisions based on data, without

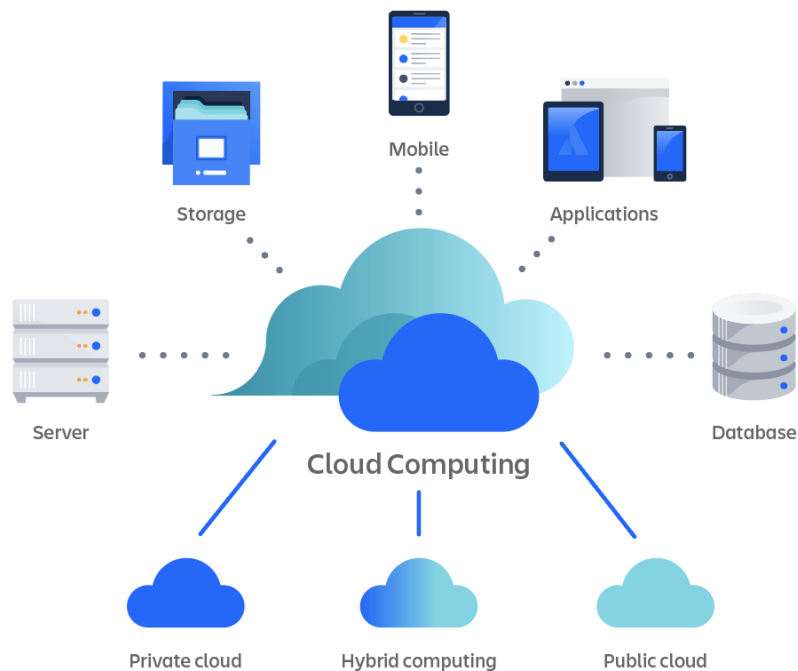
being explicitly programmed . AI has applications in a wide range of domains, including healthcare, finance, transportation, education, and entertainment. For instance, AI-powered chatbots can provide customer service, while AI-driven medical imaging tools can help diagnose diseases.

2.2.2.6 Cloud Computing

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (Mell & Grance, 2011).

The belloved figure (figure 03) illustrates the fundamental components and deployment models of cloud computing.

Figure 03 : Illustration of cloud computing



Source : <https://www.atlassian.com/microservices/cloud-computing>

Cloud computing offers several advantages over traditional on-premises IT infrastructure, including scalability, flexibility, cost-effectiveness, and accessibility. It allows businesses and individuals to access computing resources on demand, without the need for large upfront

investments in hardware and software. Cloud computing has become increasingly popular in recent years, with a wide range of cloud services available, including :

A- Infrastructure as a Service (IaaS):

- Provides virtualized computing resources over the internet.
- Users rent IT infrastructure (servers, storage, networks) from a cloud provider on a pay-as-you-go basis.
- Examples: Amazon Web Services (AWS) EC2, Microsoft Azure Virtual Machines, Google Compute Engine...

B- Platform as a Service (PaaS):

- Provides a platform for developing, running, and managing applications without the complexity of building and maintaining the infrastructure.
- Users focus on application development while the cloud provider handles underlying infrastructure.
- Examples: AWS Elastic Beanstalk, Microsoft Azure App Service, Google App Engine....

C- Software as a Service (SaaS):

- Delivers software applications over the internet on a subscription basis.
- Users access applications through a web browser or client application.
- Examples: Salesforce, Monday.com, Google Workspace...

This figure below (figure 04) shows the three fundamental service models of cloud computing SaaS, PaaS, and IaaS

Figure 04 : Cloud Service Models




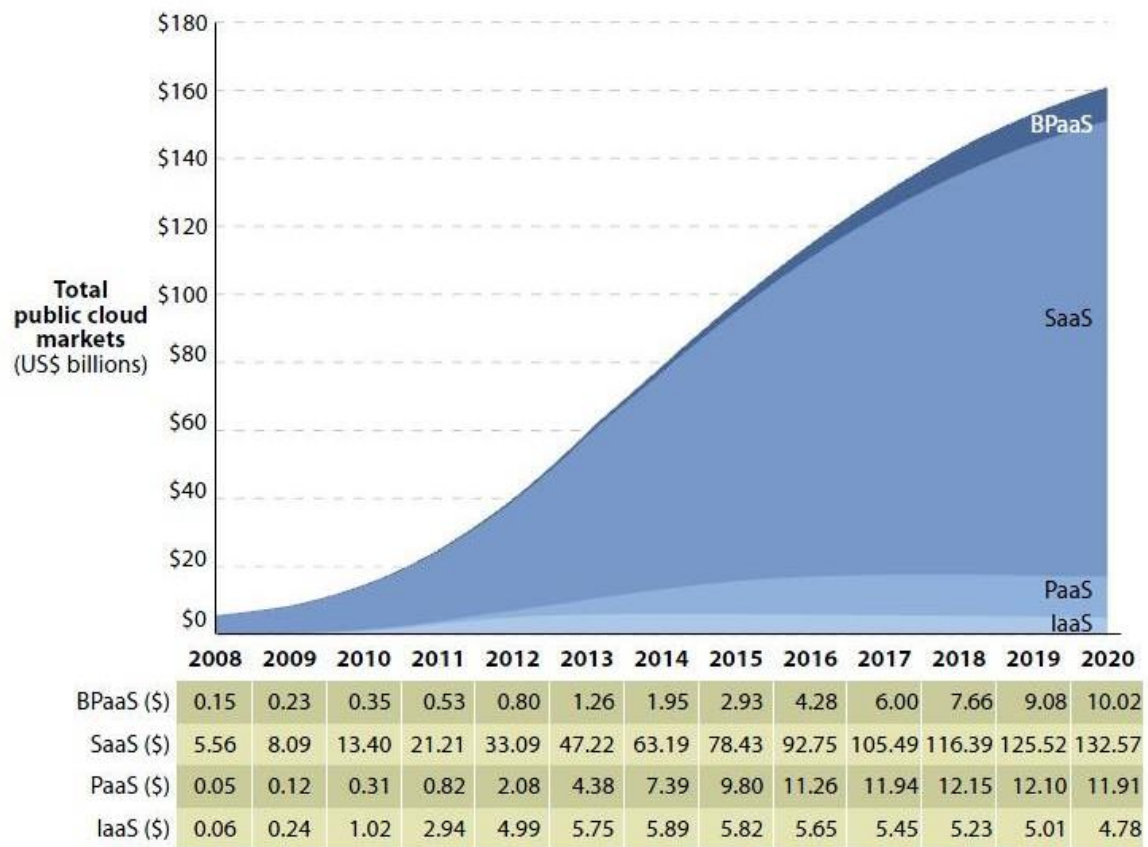
Source : <https://qualitapps.com/en/what-are-the-iaas-paas-and-saas-cloud-service-models/>

Cloud computing is revolutionizing the way project management software is accessed and utilized. Cloud-based solutions offer several advantages over traditional on-premises software. They are accessible from anywhere with an internet connection, eliminating the need for costly hardware and software installations. They are also scalable, allowing organizations to easily add or remove users as project needs evolve. Furthermore, cloud providers typically handle software updates and maintenance, reducing the burden on IT departments.

This figure below (figure 05) forecasts the global public cloud market size from 2008 to 2020

Figure 05 : Forecast : Global Public Cloud Market Size , 2008 to 2020

 The spreadsheet detailing this forecast is available online.



58161

Source: Forrester Research, Inc.

Source : Forrester Research

2.2.3 Cloud-Based Operating Systems :

Cloud-based operating systems (Cloud OS) are a new breed of operating systems designed specifically for the cloud computing environment. They are transforming the way businesses operate by offering flexibility, scalability, and cost-effectiveness.

2.2.3.1 Understanding of a Cloud OS :

In essence, a Cloud OS is a virtualized operating system that runs on a cloud infrastructure (Mell & Grance, 2011). It manages the operation of virtual machines, applications, and data stored in the cloud. Unlike traditional operating systems that run on local hardware, Cloud OS are hosted on remote servers and accessed over the internet.

Cloud OS operate on a client-server model. The client-side interface is typically a web browser, while the server-side handles the heavy lifting, such as data processing and storage. When a user interacts with the Cloud OS, the request is sent to the server, processed, and the result is sent back to the user. This architectural design is similar to that of traditional web applications (Mell & Grance, 2011).

2.2.3.2 Understanding of Cloud-Based Work Operating System

A- What is Work Operating System:

A work operating system (Work OS) is a cloud-based software platform designed to centralize and streamline work management across an entire organization (Kim, K., Lee, S., & Han, S. 2020). Unlike traditional operating systems that manage computer hardware and software, Work OS focuses on managing the flow of work, communication, and collaboration among teams.

A Work OS is geared for organizations of all sizes and across all functions of the organization. It provides the flexibility to build and adapt to any workflow, project or process.

B- Key Characteristics of Work OS:

- **Unified Platform:** Work OS provides a single interface for managing various aspects of work, including tasks, projects, communication, and knowledge sharing. This eliminates the need for multiple disparate tools and reduces context switching (Kim, K., Lee, S., & Han, S. 2020).
- **Customizable Workflows:** Work OS allows organizations to tailor workflows to their specific needs. This flexibility enables teams to automate repetitive tasks, track progress, and ensure consistent processes across the board (Kim, K., Lee, S., & Han, S. 2020).
- **Data-Driven Insights:** Work OS leverages data analytics to provide insights into team performance, project progress, and resource allocation. This helps organizations make informed decisions and optimize their workflows.
- **Integration Capabilities:** Work OS often integrates with other business tools, such as CRM, ERP, and communication platforms. This creates a seamless ecosystem where information flows smoothly between different systems (Kim, K., Lee, S., & Han, S. 2020).

- **Collaboration Features:** Work OS promotes collaboration through features like real-time messaging, document sharing, and task assignment. This fosters communication and teamwork among team members, regardless of their location.






C- Popular Work OS Platforms:

Some popular Work OS platforms include:

- **Monday.com:** Known for its visual interface and customizable workflows, monday.com is a versatile platform suitable for various use cases.
- **Teamwork:** This platform focuses on project management and team collaboration, providing tools for task management, file sharing, communication, and time tracking. Teamwork is known for its intuitive interface and ease of use, making it a good option for teams of all sizes.
- **ClickUp:** This comprehensive platform combines project management, document collaboration, and communication tools in one place.
- **Asana:** Asana is a popular choice for task management and team collaboration, offering features like timelines, calendars, and portfolio views.
- **Wrike:** Geared towards enterprise-level project management, Wrike offers advanced features for resource management, portfolio management, and reporting.

The bellowed figure (figure 06) showcases a comparison of five popular work operating systems (OS): monday.com, Teamwork, ClickUp, Asana, and Wrike. It presents a summary of each platform's starting price and average user rating.

Figure 06 : Popular Work OS Platforms

					
	monday.com	Teamwork	ClickUp	Asana	Wrike
Price From [?]	\$9/user/month	\$5.99/user/month	\$7/user/month	\$10.99/user/month	\$9.80/user/month
Score [?]	4.7 ★★★★★	4.6 ★★★★★	4.5 ★★★★★	4.5 ★★★★★	4.4 ★★★★★

Source : <https://tech.co/project-management-software/work-os>

D- Benefits of Cloud-Based Work OS :

- **Enhanced Collaboration and Communication:** Work OS platforms foster seamless collaboration among team members, regardless of their location. Features like real-time messaging, document sharing, and task assignment enhance communication and teamwork.
- **Increased Productivity and Efficiency:** Centralized workflows, automated processes, and easy access to information streamline work and boost productivity. Employees can focus on high-value tasks instead of manual, repetitive activities.
- **Data-Driven Decision Making:** Work OS platforms leverage cloud-based data analytics to provide valuable insights into team performance, project progress, and resource utilization. This data-driven approach enables informed decision-making and optimization of workflows.
- **Flexibility:** Organizations can quickly add or remove users, features, and storage capacity without significant infrastructure investments.
- **Cost Savings:** Cloud-based Work OS eliminates the need for expensive on-premise hardware and software. Subscription-based pricing models offer predictable costs and reduce upfront investment.

E- Risks of Cloud-Based Work OS:

- **Data Security and Privacy Concerns:** Storing sensitive business data in the cloud raises concerns about data security and privacy. Organizations must ensure that their chosen Work OS provider has robust security measures in place to protect against unauthorized access, data breaches, and cyberattacks (Subashini & Kavitha, 2011).
- **Internet Dependency:** Cloud-based Work OS relies on a stable internet connection. Downtime or connectivity issues can disrupt workflows and hinder productivity. Organizations should have contingency plans for internet outages.
- **Vendor Lock-In:** Switching Work OS providers can be challenging due to data migration complexities and potential compatibility issues with other systems. Organizations should carefully evaluate their long-term needs before committing to a specific platform.
- **Learning Curve and Adoption Challenges:** Implementing a new Work OS can require a learning curve for employees. Organizations should provide adequate training and support to ensure smooth adoption and maximize the benefits of the platform.

The integration of these digital technologies into project management offers numerous advantages, revolutionizing the way projects are planned, executed, and monitored. By leveraging these technologies, organizations can streamline processes, enhance collaboration. The following part delves into the specific benefits that digital technologies bring to project management.

2.3 Advantages of Digital Technologies in Project Management:

The integration of digital technologies into project management processes offers a multitude of advantages, revolutionizing the way projects are planned, executed, and monitored (Kerzner, 2017). One of the most significant benefits is the enhancement of efficiency and productivity. Digital tools automate routine tasks, such as data entry, report generation, and communication, freeing up project managers and team members to focus on strategic activities that require human judgment and creativity (Meredith & Mantel, 2011). This automation not only saves time but also reduces the risk of errors, leading to more accurate and reliable project outcomes (Kerzner, 2017).

Improved collaboration and communication are hallmarks of digital project management (Schwalbe, 2017). Cloud-based platforms, video conferencing tools, and instant messaging applications enable seamless communication and real-time collaboration among team members, regardless of their geographical location. This fosters a sense of shared purpose, enhances teamwork, and facilitates the rapid exchange of information and ideas. Project stakeholders can easily access project updates, track progress, and contribute their expertise, leading to more informed decision-making and a greater sense of ownership among team members (Schwalbe, 2017).

Data-driven decision-making is another key advantage of digital project management (Kerzner, 2017). Big data analytics tools can process vast amounts of project data, extracting valuable insights that can guide project decisions at every stage. Project managers can identify trends, patterns, and correlations that might not be apparent through traditional analysis methods. This enables them to make proactive decisions regarding resource allocation, risk mitigation, and schedule adjustments, ultimately increasing the likelihood of project success (Kerzner, 2017).

Real-time project monitoring and control are made possible by digital technologies like the IoT and cloud-based dashboards. IoT sensors embedded in project assets and equipment can transmit real-time data on their status, performance, and environmental conditions. This data can be visualized on dashboards, providing project managers with an up-to-the-minute view of project progress and potential issues. This real-time visibility enables early intervention, preventing minor issues from escalating into major problems and minimizing the impact of unforeseen events (Rose, 2011).

Increased transparency and accountability are natural outcomes of digital project management. Cloud-based platforms provide a centralized repository of project information, accessible to all authorized stakeholders. This transparency fosters trust among team members, stakeholders, and clients, as everyone has access to the same information. Additionally, digital tools can track individual contributions and responsibilities, ensuring that everyone is held accountable for their tasks and deliverables (Schwalbe, 2017).

Agile project management methodologies are facilitated by digital technologies. Agile methodologies emphasize flexibility, collaboration, and iterative development. Digital tools like Kanban boards, sprint planning tools, and backlog management software provide the necessary infrastructure to implement Agile practices effectively. These tools enable teams to break down projects into smaller, manageable tasks, track progress, and adapt to changing requirements in real time (Beck, K., Beedle, M, 2001).

The advantages of digital technologies in project management are numerous and far-reaching. However, it is important to note that their successful integration requires careful planning, adequate training, and a willingness to adapt to new ways of working.

While the advantages of digital technologies in project management are substantial, their adoption is not without challenges. The following section explores the potential drawbacks and obstacles that organizations may encounter when integrating digital tools into their project management processes.

2.4 Challenges of Digital Technologies in Project Management:

While the advantages of digital technologies in project management are undeniable, it's crucial to acknowledge and address the challenges and disadvantages that accompany their adoption (Meredith & Mantel, 2011). One of the most pressing concerns is **cybersecurity**

risks and data privacy. Digital project management relies heavily on data sharing and communication through interconnected systems, making projects vulnerable to cyberattacks, data breaches, and unauthorized access (Peltier, 2016) . Project managers must prioritize robust cybersecurity measures, such as encryption, access controls, and regular security audits, to protect sensitive project data and maintain stakeholder trust.

Technological dependence and system failures pose another challenge. As project teams become increasingly reliant on digital tools and platforms, they become vulnerable to disruptions caused by system outages, software glitches, or hardware malfunctions. Such disruptions can hinder communication, impede progress, and lead to costly delays. To mitigate these risks, project managers should have contingency plans in place, including backup systems, offline data storage, and alternative communication channels (Rose, 2011) (Meredith & Mantel, 2011).

Skill gaps and resistance to change are common hurdles in the digital transformation of project management. Not all project managers and team members may possess the necessary digital skills to effectively utilize new tools and technologies. Moreover, some individuals may resist change due to fear of the unknown or concerns about job security. To address these challenges, organizations must invest in comprehensive training programs to upskill their workforce and foster a culture that embraces innovation and continuous learning (Floridi, L., Cowls, J., 2020).

Ethical considerations are becoming increasingly important in the digital age. The use of AI in project management raises concerns about bias in algorithms, potential job displacement, and the ethical implications of automated decision-making. Project managers must be mindful of these concerns and ensure that AI tools are used responsibly and transparently. They should also strive to upskill their workforce to adapt to the changing landscape of work and leverage AI as a tool for augmentation rather than replacement.

The cost of implementation and maintenance can be a significant barrier to adopting digital technologies in project management (Meredith & Mantel, 2011). Acquiring new software, hardware, and infrastructure can be expensive, especially for smaller organizations. Additionally, ongoing maintenance, upgrades, and cybersecurity measures require continuous investment. Project managers must carefully assess the costs and benefits of

digital transformation, prioritizing solutions that offer the greatest value for their specific project needs (Peltier, 2016)..

While digital technologies offer numerous advantages for project management, they are not without their challenges and disadvantages. By acknowledging and proactively addressing these issues, organizations can harness the full potential of digital tools to enhance project outcomes, drive innovation, and stay ahead of the curve in an increasingly competitive landscape.

Understanding the challenges associated with digital transformation in project management is crucial for successful implementation. However, it's equally important to understand the theoretical foundations that underpin the adoption and acceptance of digital technologies in this context. The following section explores several theoretical models that offer valuable insights into the factors that influence technology adoption and the user acceptance of the digital technologies.

2.5 Theoretical Foundations of Digital Adoption in Project Management

The successful integration of digital technologies into project management practices is not solely a technical endeavor; it's deeply intertwined with human behavior and organizational dynamics. Several theoretical models offer valuable insights into the factors that influence technology adoption, user acceptance, and the overall impact of digital transformation on project management processes

2.5.1 Technology Acceptance Model (TAM) :

The Technology Acceptance Model (TAM) is a widely used theoretical framework for understanding user acceptance of technology (Davis, 1989). It posits that two primary factors influence a user's decision to adopt and use a technology: perceived usefulness (the degree to which a person believes using a system would enhance their job performance) and perceived ease of use (the degree to which a person believes using a system would be free of effort). In the context of project management, TAM can help explain why some project managers readily embrace new digital tools while others resist them. By understanding the factors that influence perceived usefulness and ease of use, organizations can design training programs and support systems to increase the likelihood of successful technology adoption.

2.5.2 Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) emphasizes the role of cognitive, behavioral, personal, and environmental factors in influencing human behavior (Bandura, 1986). SCT can help explain how project managers' beliefs, attitudes, and self-efficacy influence their willingness to adopt and utilize digital technologies. SCT also highlights the importance of observational learning and social influence in technology adoption. For example, if a project manager sees their peers successfully using a new tool, they are more likely to adopt it themselves.

2.5.3 Task-Technology Fit (TTF)

Task-Technology Fit (TTF) theory suggests that technology is more likely to be adopted and used effectively when it is well-suited to the tasks it is intended to support (Goodhue & Thompson, 1995). In project management, this means that digital tools should be selected and implemented based on their ability to address specific project needs and challenges. For instance, a project manager working on a complex project with multiple stakeholders might benefit from a collaborative project management platform that facilitates communication and coordination. On the other hand, a project manager working on a smaller, more straightforward project might find a simple task management tool sufficient.

2.5.4 Organizational Change Theory (OCT)

Organizational Change Theory (OCT) examines how organizations plan and implement change (Lewin, 1951). In the context of digital transformation in project management, OCT can provide insights into the processes and strategies needed to successfully introduce new technologies and change established workflows. OCT emphasizes the importance of leadership, communication, and employee involvement in ensuring a smooth transition to new ways of working. Resistance to change is a common challenge in technology adoption, and OCT offers strategies for overcoming this resistance and facilitating successful change.

2.5.5 Human-Computer Interaction (HCI)

Human-Computer Interaction (HCI) is a multidisciplinary field that focuses on the design and use of computer technology, with an emphasis on the interfaces between people and computers (Carroll, 2013). HCI principles can be applied to design user-friendly digital tools and interfaces that enhance user experience and promote adoption. Intuitive interfaces, clear

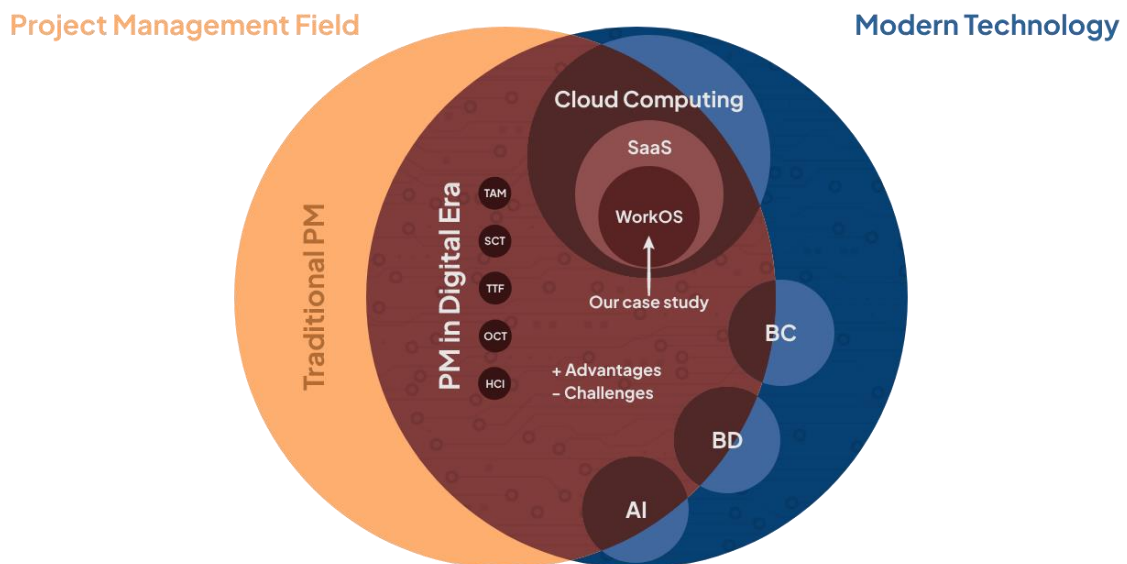
navigation, and helpful feedback mechanisms can make it easier for project managers and team members to use digital tools effectively, leading to increased productivity and improved project outcomes.

2.6 Conclusion of The Conceptual Framework .

The integration of digital technologies into project management practices is a complex process that is influenced by various factors, including individual beliefs, social influences, organizational culture, and the fit between technology and tasks. By understanding these terms, project managers and organizations can gain valuable insights into the factors that promote or hinder technology adoption. This knowledge can be leveraged to develop effective strategies for implementing digital technologies, training project teams, and maximizing the benefits of digital transformation in project management.

The figure below (figure 07) illustrate a visual interaction between the concepts above

Figure 07 : Visual Summary of the Conceptual Framework



Source : Created by the author

**CHAPTER II: METHODOLOGICAL FRAMEWORK
AND ORGANIZATION**

1. SECTION 1 : METHODOLOGICAL FRAMEWORK

1.1 Choice of internship site:

The selected internship site is a prominent organization in Algeria specializing in the distribution and packaging of basic food products by the establishment of marketplaces across the country. This specific organization was chosen due to several factors aligning with the research objectives of this thesis.

Primarily, the organization's core business activities are intrinsically project-oriented. The process of establishing marketplaces across a nation necessitates a series of complex projects, each with unique challenges and opportunities. These projects involve a wide array of tasks, from market research and feasibility studies to site selection, construction, and operational launch. The inherently project-centric nature of the organization's work aligns perfectly with the thesis focus on project management.

Secondly, the scale and complexity of these marketplace projects offer a rich environment for studying project management practices in a real-world setting. The diverse nature of tasks, the involvement of multiple stakeholders, and the need to coordinate resources across different geographical locations provide ample opportunity to examine how project management principles are applied in practice. The chosen organization's projects are not merely theoretical constructs but tangible endeavors with measurable outcomes, making them ideal for empirical research.

Furthermore, the organization's recognition of the importance of digital transformation in project management was a key factor in its selection. The firm has expressed a keen interest in integrating digital tools and methodologies into its project management processes. This commitment to digitalization aligns with the thesis's focus on exploring the impact of digital technologies on project management practices. The organization's willingness to embrace digital transformation provides a unique opportunity to study the challenges, benefits, and best practices associated with implementing digital solutions in a project-oriented environment.

In sum, the selected internship site offers a fertile ground for investigating project management in the digital era. Its project-centric nature, the scale and complexity of its

projects, and its commitment to digital transformation make it an ideal setting for this research.

1.2 Research methodology

The research methodology adopted for this thesis is qualitative in nature. Qualitative research is well-suited for exploring complex phenomena, understanding subjective experiences, and generating in-depth insights into social processes (Creswell, 2014). Given the multifaceted nature of project management in the digital era and the importance of understanding the human and organizational dimensions involved, a qualitative approach is deemed most appropriate.

This approach allows for an in-depth examination of the organization's project management practices, the adoption and utilization of digital technologies, and the challenges and opportunities they encounter.

A qualitative approach is chosen for this research due to several key reasons:

- **Exploration of Complex Phenomena:** Project management in the digital era is a complex phenomenon involving multiple interconnected factors, such as technology adoption, organizational culture, leadership styles, and individual attitudes. A qualitative approach allows for a nuanced exploration of these factors and their interactions.
- **Understanding Subjective Experiences:** The research aims to understand the experiences, perspectives, and challenges faced by project managers and team members as they navigate the digital landscape. Qualitative methods, such as interviews, enable the capture of these subjective experiences in rich detail.
- **Generating In-depth Insights:** The research seeks to generate in-depth insights into the specific ways in which digital technologies are being used in project management, the impact they have on project outcomes, and the factors that contribute to successful technology adoption. Qualitative methods are well-suited for uncovering these insights through detailed data collection and analysis.
- **Flexibility and Adaptability:** Qualitative research allows for flexibility and adaptability throughout the research process. As new insights emerge or unexpected challenges arise, the research design can be adjusted to accommodate these changes. This flexibility is

particularly important in a field like project management, which is constantly evolving in response to technological advancements and changing business needs.

1.3 Epistemological Stance

The research is grounded in an interpretivist epistemology, which emphasizes the subjective nature of reality and the importance of understanding phenomena from the perspectives of those involved (Creswell, 2014). In the context of this thesis, it means that the understanding of project management in the digital era is shaped by the experiences, interpretations, and meanings that individuals and groups attach to it. This approach recognizes that there is no single, objective truth about how digital technologies impact project management, but rather multiple perspectives and realities that are influenced by individual backgrounds, organizational cultures, and social contexts.

The interpretivist stance aligns with the qualitative methodology employed in this research. By using methods like document analysis and semi-structured interviews, the study seeks to capture the diverse perspectives and experiences of individuals involved in project management, allowing for a deeper understanding of the complex and nuanced ways in which digital technologies are shaping this field.

This epistemological stance also influences the way data is analyzed and interpreted. Rather than seeking to identify universal laws or generalizations, the research focuses on understanding the specific meanings and interpretations that individuals and groups attach to their experiences with digital project management tools and practices. This approach allows for a more nuanced and contextually grounded understanding of the phenomenon under investigation.

1.4 Data Collection Methods and Instruments

To gather rich and comprehensive data for the research, two primary data collection methods had been employed: document analysis and semi-directive interviews/meetings.

1.4.1 Document Analysis

Document analysis involves the systematic examination of various documents produced by the firm, The following table (Table 1) provides an overview of the documents and their respective purposes:

Document	Overview
Business plan	Outlines the organization's overall vision, mission, target market, competitive landscape, marketing strategies, and financial projections for the marketplace projects.
Financial Plan	Details the financial aspects of the projects, including budgets, revenue forecasts, expense projections, funding sources, and financial risk assessments.
Legal Documents	Includes contracts, agreements, permits, licenses, and other legal documentation with relevant laws and regulations.
Company Organization Files	Outlines the organization's structure, roles and responsibilities of key personnel, and communication channels.
Partnerships	Identifies and describes any alliances or partnerships the organization has formed with other entities
Global Structure of Distribution Network	Illustrates the geographical locations of depots and marketplaces across Algeria
Previous Opening Marketplaces Planning Docs	Provides historical records of planning documents from past marketplace projects, such as : Charters, Feasibility Studies , Market Research Reports, Site Selection Reports
Previous Opening Marketplaces Execution Docs	includes records of project execution from past marketplace projects such as :

	Construction Plans and Blueprints, Procurement Documents, Progress Reports
ERP Implementation Plan	Details the strategy and timeline for implementing an Enterprise Resource Planning (ERP) system within the organization, highlighting potential challenges and expected benefits.
Social Media Strategy Plan	Outlines the organization's approach to utilizing social media platforms to promote their marketplaces, engage with customers, and build brand awareness.
Website Proposals	Presents proposals and plans for the company's website development and design.

Table 1. List of documents provided by DICOPA

1.4.2 Semi-directive interviews/meetings

To gain a deeper understanding of the organization's project management practices, perspectives on digital transformation, and the potential impact of providing a project management Work OS based on cloud (platform), a series of semi-structured interviews were conducted with both employees and individuals in positions of responsibility within the organization. The semi-structured format allowed for flexibility in exploring key themes while ensuring that essential topics were covered. The following tables (Table 2, 3) summarizes the interviews conducted:

Top Management	
Role	Number of meetings
General Director	3
Project Manager (Director)	5
IT Manager (Director)	6
HR manager	4
Sales manager	4

Table 2. List of semi-directive interviews/meetings with Top Management

Employees	
Role	Number of meetings
IT Staff	4
PM Staff	6
Sales Staff	2

Table 3. List of semi-directive interviews/meetings with the simple employees

The interviews were guided by three overarching themes:

- **Current Project Management Practices and Challenges:** This theme sought to establish a baseline understanding of the organization's current project management methodologies, tools, and workflows. Questions explored the specific challenges faced by project managers and team members in their day-to-day work, with a focus on identifying pain points that could be addressed by digital solutions.
- **Attitudes Towards and Awareness of New Technologies:** This theme delved into the organization's awareness and perceptions of emerging technologies in project management, such as automation, data analytics, and collaboration platforms. Questions aimed to gauge their understanding of these technologies' potential benefits, as well as any concerns or reservations they might have. The interviews also sought to assess the level of openness to change and willingness to experiment with new approaches.
- **Envisioning a New Project Management Platform:** This theme focused on the ideal features and functionalities of a project management platform that would address the organization's specific needs and challenges. Participants were encouraged to envision how a comprehensive platform could streamline their workflows, enhance collaboration, and improve project outcomes. The interviews also explored their preferences regarding customization options, integration with existing tools, and the level of training and support required for successful adoption.

The interviews were designed to be open-ended and exploratory, allowing participants to share their experiences, insights, and perspectives in their own words. The emphasis on understanding the organization's readiness for new technologies provided valuable insights into their specific needs and preferences, informing the development of tailored recommendations for a project management platform that could optimize their project management practices in the digital era.

1.5 Data Analysis and Interpretation

The data collected through document analysis and interviews were analyzed using thematic analysis, a qualitative data analysis method that involves identifying, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2006). The analysis process involved several steps:

- Familiarization with the data: This involved reading and re-reading the transcripts and documents to gain a comprehensive understanding of the data.
- Coding: This involved systematically identifying and labeling relevant segments of the data with codes that captured their meaning and significance.
- Theme development: This involved grouping codes into broader themes that represented patterns or recurring ideas in the data.
- Theme refinement: This involved reviewing and refining the themes to ensure they accurately reflected the data and were internally consistent.
- Theme definition and naming: This involved clearly defining and naming each theme, providing a concise summary of its meaning and significance.
- Report writing: This involved presenting the findings in a clear and coherent manner, using illustrative quotes from the data to support the analysis.

The thematic analysis process was iterative and reflexive, allowing for ongoing refinement and adjustment as new insights emerged. The analysis was guided by the research questions and the theoretical framework, ensuring that the findings were relevant and meaningful.

1.6 Validity and Reliability

To ensure the validity and reliability of the research findings, several measures were taken. Triangulation, the use of multiple data sources and methods, was employed to enhance the credibility of the findings. Member checking, the process of sharing the findings with participants to verify their accuracy, was also conducted. Additionally, I maintained a reflexive journal throughout the research process to document their own biases and assumptions, ensuring transparency and rigor in the research process.

1.7 Ethical Considerations

Ethical considerations were paramount throughout the research process. Informed consent was obtained from all participants, ensuring that they understood the purpose of the research, their rights as participants, and the potential risks and benefits of participation. Confidentiality and anonymity were maintained throughout the data collection and analysis process to protect the privacy of participants. The research was conducted in accordance with the ethical guidelines of the university and the relevant professional associations.

1.8 Limitations

The research is not without limitations. The case study design focuses on a single organization and project, limiting the generalizability of the findings to other contexts. Additionally, the qualitative approach relies on the researcher's interpretation of the data, which may be subject to bias. However, the use of multiple data sources, triangulation, and member checking helped to mitigate these limitations and enhance the trustworthiness of the findings.

1.9 Overall conclusion

The data analysis revealed a strong desire among participants for a comprehensive project management platform that could streamline their workflows, enhance collaboration, and improve project outcomes. They expressed a preference for a platform with customizable options, allowing them to tailor it to their specific needs and processes. Integration with existing tools, such as email clients and file-sharing platforms, was also identified as a key requirement to avoid the need to switch between multiple applications. Additionally, participants emphasized the importance of comprehensive training and ongoing support to ensure a smooth transition to the new platform and maximize its benefits. These findings highlight the need for a user-friendly, customizable, and well-supported platform to effectively address the challenges and opportunities associated with digital transformation in project management.

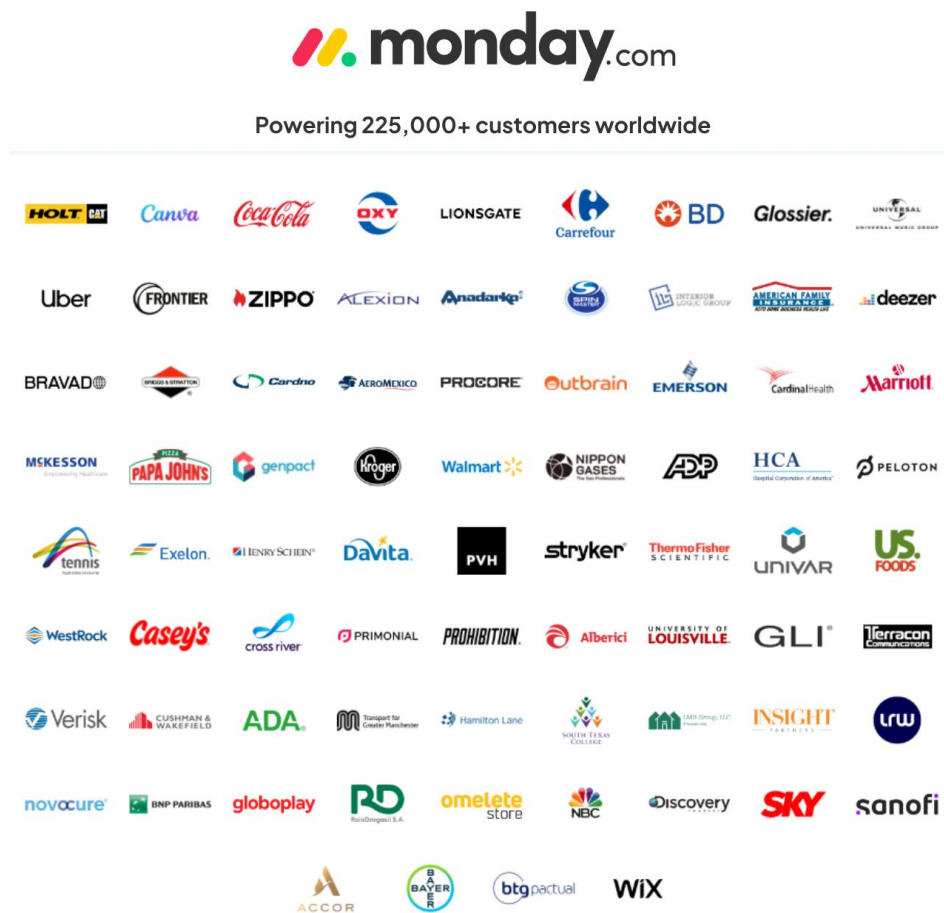
1.10 Choice of The Work OS Provider Monday.com :

In alignment with the focus on project management in the digital era, Monday.com was selected as the cloud-based Work OS to support and streamline the research process. This choice was guided by several factors:

- Industry Recognition and Trust:** Monday.com is a widely recognized and trusted platform used by numerous large enterprises and organizations across various industries, more than 225,000 firm rely on monday.com Work OS. Its adoption by industry leaders reinforces its credibility and reliability as a project management solution.

The figure below (figure 08) showcases a diverse range of companies from various industries and global markets that utilize monday.com

Figure 08 : Monday.com's Customers worldwide



Source : <https://monday.com/customers>

- Educational Accessibility:** Monday.com offers a generous premium trial with full features for educational purposes, which was accessible through my institutional email address (ensmanagement.edu.dz). This provided an opportunity to thoroughly test and utilize the platform's capabilities without incurring additional costs, making it a financially viable choice for the research project.

- **Comprehensive Functionality:** Monday.com offers a robust suite of project management features, including task management, timeline views, customizable dashboards, automation, and integrations with other popular tools. This comprehensive functionality caters to the diverse needs of the research project, from data collection and analysis to communication and collaboration.
- **Intuitive User Interface:** Monday.com's user interface is designed for clarity and ease of use, enabling efficient navigation and minimizing the learning curve associated with adopting a new platform. This is particularly beneficial for a research project, as it allows the researcher to focus on the research itself rather than grappling with complex software.
- **Collaborative Features:** Monday.com's collaborative features, such as real-time updates, shared boards, and communication tools, foster seamless collaboration between the researcher and supervisor. This promotes transparency, facilitates feedback, and enhances the overall efficiency of the research process.
- **Customization:** Monday.com's highly customizable platform empowers the researcher to tailor the workspace to their specific research needs. This includes creating custom workflows, automations, and integrations that streamline data collection, analysis, and reporting processes. The ability to personalize the platform ensures that it aligns with the unique requirements of the research project.
- **Cost-Effectiveness:** While Monday.com offers a premium trial for educational purposes, its pricing plans are also competitively priced, offering a range of options to suit different budgets. This cost-effectiveness is an important consideration for research projects with limited financial resources.

By selecting Monday.com as the cloud-based Work OS, this research not only leverages a powerful and versatile tool for project management but also aligns with the broader theme of exploring digital transformation in the context of project management practices. The platform's features and functionalities will be instrumental in facilitating the efficient and effective execution of the research project, ultimately contributing to the quality and rigor of the findings.

1.10.1 Overview of Monday.com Work OS:

Monday.com is a cloud-based Work Operating System (Work OS) that allows teams and organizations to manage projects, workflows, and everyday work in a collaborative and

visually intuitive way It's designed to be a central hub for all work-related activities, helping teams to streamline communication, track progress, and achieve their goals more efficiently.

The figure below (figure 09) illustrates monday.com's impressive fiscal year 2023, showcasing significant growth across multiple key performance indicators, including annual recurring revenue, active users, customer base, and employee count. It also highlights the company's robust financial health, with substantial cash reserves and positive operating and free cash flow margins.

Figure 09 : Monday.com's Fiscal Year 2023



Source : Monday.com's Investor Pitch Deck 2023

The figure below (figure 10) illustrates the rapid growth of monday.com's customer base from 2019 to 2023. Notably, the customer base experienced a compound annual growth rate (CAGR) of 26% during this period, reaching approximately 225,000 customers by 2023. This significant growth underscores the widespread adoption and increasing popularity of monday.com's platform across diverse industries and markets.

Figure 10 : the growth in Monday.com's customer base from 2019 to 2023



Source : Monday.com's Investor Pitch Deck 2023

This figure below (figure 11) illustrates the diverse range of industries that utilize monday.com. Spanning over 200 industries, monday.com caters to various sectors including construction, consulting, design, education, legal, finance, healthcare, HR, industrials, energy, marketing, real estate, retail, publishing, media, technology, telecoms, and many more. This demonstrates the platform's adaptability and widespread adoption across different business needs and verticals.

Figure 11 : The wide range of industries that Monday.com serves with its Work OS platform



Source : Monday.com's Investor Pitch Deck 2023

This figure below (figure 12) reveals the global distribution of monday.com's revenue by region in Q3 2023. North America is the primary revenue source, generating 54% of the company's revenue, followed by Europe with 26%. The remaining regions, APAC (9%), MEA (6%), and LatAm (6%), contribute smaller but still noteworthy portions of the revenue. This breakdown highlights monday.com's global reach while emphasizing the concentration of its revenue generation in North America and Europe.

Figure 12 : The percentage of revenue by geographic region for Monday.com in Q3 2023



Source : Monday.com 's Investor Pitch Deck 2023

1.10.2 Key Features & Benefits:

- **Visual Work Management:** Monday.com utilizes boards, timelines, calendars, and Gantt charts to visualize project progress, making it easy to understand where things stand at a glance.
- **Customizable Workflows:** Users can create customized workflows to match their unique processes, automate repetitive tasks, and ensure that work moves smoothly through the system .
- **Collaboration Tools:** The platform offers a variety of collaboration tools, including real-time updates, comments, file sharing, and integrations with popular communication apps like Slack and Zoom .
- **Integrations:** Monday.com integrates with a wide range of other tools and platforms, such as Google Drive, Dropbox, Zapier, and many more, allowing teams to centralize their work and avoid switching between different applications.
- **Reporting & Analytics:** Monday.com provides customizable dashboards and reporting tools to track key metrics, identify bottlenecks, and make data-driven decisions to improve project outcomes .

- **Mobile App:** The platform offers a mobile app for iOS and Android, allowing users to access their work and collaborate with team members on the go .
- **Templates:** Monday.com offers a vast library of templates for various use cases, such as project management, marketing campaigns, CRM, software development, and more. These templates can be easily customized to fit specific needs.

1.10.3 Monday.com Products :

Monday.com evolved to offer specialized products tailored to specific use cases, all built on top of its core Work OS.

A- Monday Work Management

This is the core product of Monday.com, a highly customizable workflow management tool that allows you to manage any type of task, project, or process. It's designed to enhance team collaboration and productivity at scale.

B- Monday Sales CRM

The all-in-one CRM product that enables sales teams to manage their entire sales cycle and customer data in one centralized place. It aims to boost sales productivity and improve customer relationships.

C- Monday Dev

This product is specifically designed for software development teams to collaborate on product roadmaps, sprints, releases, customer feedback, and backlogs. It also facilitates communication with other departments.

D- Monday Service

This product is designed for IT and customer support teams to manage and track customer requests, incidents, and issues. It aims to streamline service operations and enhance customer satisfaction.

1.10.4 Monday.com Compliance & Certifications : Security Frameworks and Standards

Monday.com demonstrates a strong commitment to security and privacy through adherence to a comprehensive suite of international standards and certifications , the table below (table 4) shows the list of Compliance & Certifications gained by Monday.com inc

Framework/Standard/Certification	Description
International Organization for Standardization / International Electrotechnical Commission (ISO/IEC) 27001:2013	International standard for Information Security Management Systems (ISMS), ensuring systematic management of sensitive information and risk mitigation.
ISO/IEC 27018:2014	Guidelines for protecting Personally Identifiable Information (PII) in public clouds acting as PII processors.
ISO/IEC 27017:2015	Guidelines for information security controls specific to cloud services.
ISO/IEC 27032:2012	Guidance on addressing cybersecurity risks and coordinating security activities across different domains.
ISO/IEC 27701:2019	Requirements for establishing, implementing, maintaining, and improving a Privacy Information Management System (PIMS).
The Health Insurance Portability and Accountability Act (HIPAA)	Compliance with the US Health Insurance Portability and Accountability Act, ensuring the protection of sensitive patient health information.
Service Organization Control (SOC 1, SOC 2, SOC 3)	Reports providing independent assessments of Monday.com's internal controls over financial reporting (SOC 1), security, availability, processing integrity, confidentiality, and privacy (SOC 2 & 3).
The General Data Protection Regulation (GDPR)	Compliance with the EU's General Data Protection Regulation, ensuring the protection of user privacy and lawful processing of personal data.

<p>Amazon Web Services (AWS) Partner Network (APN) Advanced Technology Partner</p>	<p>Recognition as a trusted partner within the Amazon Web Services (AWS) Partner Network, highlighting integration capabilities and expertise in leveraging AWS cloud infrastructure.</p>
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Table 4. List of Compliance & Certifications gained by Monday.com inc

2. SECTION 2 : HOST ORGANIZATION

2.1 Overview of DICOPA (subsidiary of the holding company AGRODIV)

EPC DICOPA JSC (Economic Public Company DICOPA Joint Stock Company) is a leading player in the Algerian agro-industrial sector. As a subsidiary of AGRODIV Holding Company, DICOPA specializes in the distribution, packaging, and logistics of essential food products. The company boasts a nationwide presence, with marketing, storage, roasting, and packaging facilities strategically located across Algeria.

2.1.1 Overview of AGRODIV

The agro-industrial group AGRODIV JSC was born from the restructuring of the state-owned commercial sector in February 2015. Its corporate purpose covers agro-industry in all its diversity, and its strategy is based on a logic of sector integration.

2.1.2 AGRODIV Group Activities:

- 1st and 2nd cereal processing and derivatives
- Production of juices, beverages, and canned goods from the processing and packaging of fruits and vegetables,
- Date palm cultivation and processing,
- Packaging of coffee, sugar, dried vegetables, and rice,
- Storage, packaging, and marketing of various food products.

2.2 Key Facts of DICOPA :

Founded: Formed by merging existing entities within the AGRODIV group

Headquarters: 48, Rue Boudjema Moghni, Hussein Dey, Algiers, Algeria

Employees: 350

Core Business:

- Distribution and packaging of food staples (coffee, pulses, flour, etc.)
- Logistics services (storage, transport, export)

Distribution Channels: Wholesale, retail, and proprietary stores

2.3 Mission & Objectives:

DICOPA's mission is to ensure the reliable supply of high-quality food products to the Algerian market. The company aims to achieve this through:

- **Efficient Distribution:** Leveraging its extensive logistics network to reach consumers across the country
- **Market Regulation:** Participating in national efforts to stabilize food prices and supply
- **Value-Added Services:** Offering coffee roasting and food packaging to enhance product quality and convenience
- **Expansion:** Developing new distribution channels and logistics hubs to meet growing demand

2.4 DICOPA's units Across Algeria:

DICOPA's operations are spread across Algeria to maximize its reach and efficiency:

Algiers: Marketing and storage unit

Oran: Marketing and storage unit

Skikda: Marketing and storage unit

Boufarik: Roasting and packaging unit

Relizane: Roasting and packaging unit

Annaba: Roasting and packaging unit

Additionally, DICOPA is planning to expand its footprint by establishing international-standard logistics platforms for fruits and vegetables in strategic locations like Corso, Mostaganem, Skikda, and Ouargla.

2.5 Competition:

DICOPA operates in a competitive landscape, with several major players in the Algerian agro-industrial sector. Key competitors include:

Cevital: A large private conglomerate with diverse interests in food processing, agribusiness, and retail.

SAFPI (Société Algérienne de Fabrication de Pâtes Alimentaires): A leading pasta manufacturer with a significant market share.

Amor Benamor: Benamor Group also known as Amor Benamor is an agri-food group specialized in the manufacture of pasta and couscous.

These companies, along with other private and public entities, compete with DICOPA in various segments of the food distribution and processing market. DICOPA's ability to differentiate itself through efficient logistics, quality products, and a strong distribution network is crucial for maintaining its competitive edge.

2.6 Future Outlook of DICOPA :

DICOPA envisions a future where it plays an even more significant role in the Algerian food industry. The company's strategic goals include:

- **Expanding Retail Presence:** Opening more " DICOPA MARKET" stores and entering mass distribution channels
- **Enhancing Logistics Infrastructure:** Developing state-of-the-art logistics hubs to optimize supply chain operations
- **Strengthening Market Position:** Becoming a recognized leader in the distribution and packaging of essential food products

2.7 Contribution to the National Economy:

DICOPA's activities contribute to Algeria's economic development in several ways:

Employment: Providing jobs for 350 employees directly, and many more indirectly through its supply chain

Food Security: Ensuring a stable and reliable supply of essential food products to the population

Market Stability: Participating in efforts to regulate food prices and prevent shortages

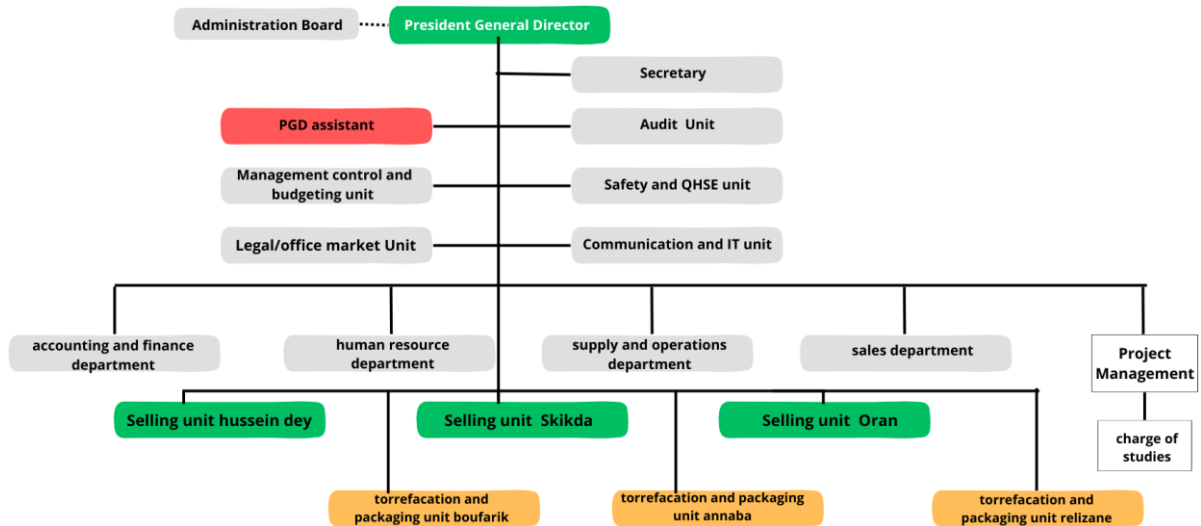
Export Potential: Exploring opportunities to export Algerian food products to international markets

Infrastructure Development: Investing in modern logistics facilities that benefit the entire economy

2.8 DICOPA's Organization Chart :

The figure below (Figure 13) illustrates the organizational structure of DiCOPA

Figure 13 : Organizational Chart of DICOPA(Source :Document provided by the company)



Source : created by the author

- President General Director (PGD): The highest-ranking executive in the company, responsible for leading the company's operations and implementing the board's decisions.
- Communication and IT Unit: Manages internal and external communications, technology infrastructure, and IT systems.
- Project Management: Responsible for planning, executing, and monitoring projects to ensure they are completed on time, within budget, and meet quality standards.

DICOPA is a vital player in Algeria's food industry. Through its comprehensive range of services and commitment to quality, DICOPA is well-positioned to continue its growth and contribute to the nation's economic prosperity.

**CHAPTER III: IMPLEMENTATION OF MONDAY.COM
WORK OS & DISCUSSION**

1. SECTION 1 : IMPLEMENTATION OF MONDAY.COM WORK OS

1.1 Introduction

In this chapter. We explore the implementation of Monday.com Work Operating System (Work OS), within a real-world enterprise project. This case study focuses on launching a new marketplace in Bouira, Algeria, and serves as a lens through which we examine how digital tools and platforms are reshaping traditional project management approaches. We will detail the step-by-step implementation of Monday.com and we will address the challenges encountered during implementation, offering insights into the complexities and considerations involved in integrating digital tools into existing workflows.

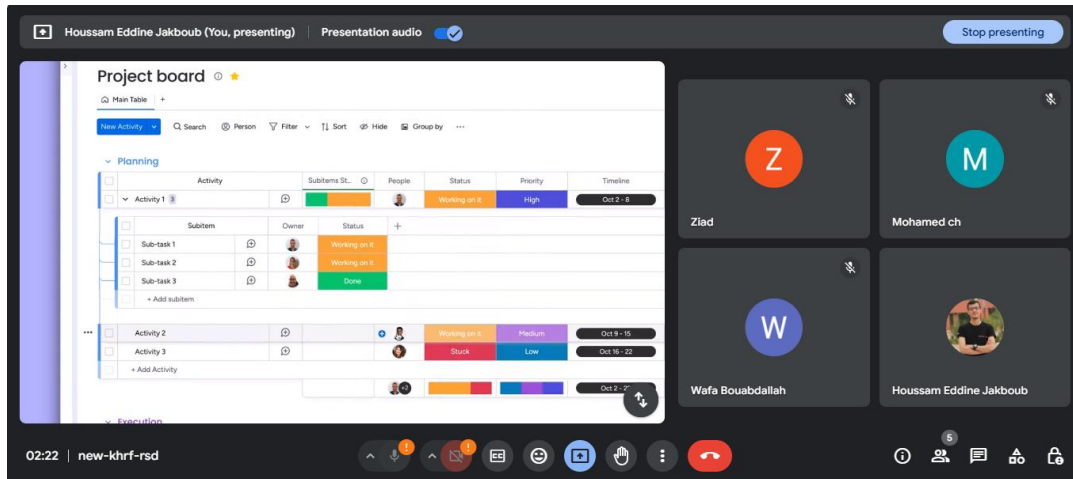
This case study serves as a testament to the potential of digital technologies to revolutionize project management. By examining the specific application of Monday.com, we aim to illuminate the broader trends and implications of digitalization for the field, providing valuable lessons for project managers and organizations seeking to leverage technology to achieve project success in the digital age.

1.2 Introducing Monday.com to the Organization

The initial step in integrating Monday.com involved familiarizing the enterprise's staff with the platform. On February 4th, 2024, a 15-minute presentation was given to the HR director, providing an overview of the platform's capabilities and potential benefits for project management. This was followed by a more comprehensive 30-minute presentation with a Q&A session on February 6th, 2024, attended by the project director, sales staff, and IT staff. This second presentation delved deeper into Monday.com's features and functionalities, addressing specific questions and concerns from the attendees.

Figure below (figure 14) shows a screenshot taken from a presentation about monday.com showing the platform's project board feature.

Figure 14 : Google Meet Screenshot from the Monday.com Platform Presentation



Source : taken by the author

1.3 Project Scoping and Planning Meetings

To tailor the Monday.com workspace to the specific needs of the project, several in-depth meetings were conducted. These meetings aimed to gain a deep understanding of the project's scope, phases, tasks, dependencies, and overall timeline. The meetings went as follows:

Date	Duration	Attendees	Discussion Topics
February 7 th , 2024	1 hour	General Director, Project Director	Project overview, objectives, timeline, budget, and resource allocation.
February 8 th , 2024	2.5 hours	Project Director, Sales Manager, IT Staff	Detailed discussion of project phases, tasks, dependencies, and resource requirements.
February 11 th ,2024	1.5 hour	Project Director	Refinement of project scope, identification of potential risks, and mitigation strategies.

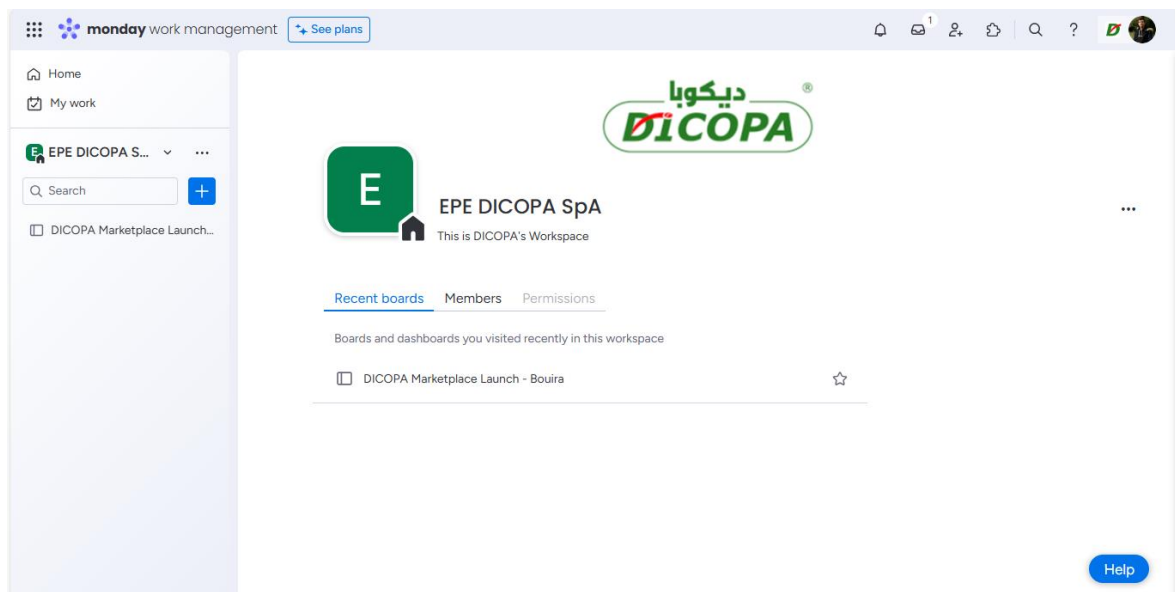
Table 5. List of meetings held during the Project Scoping and Planning

1.4 Designing the Monday.com Workspace

1.4.1 Initial configuration and setup process

Workspace Creation: A dedicated workspace was created within Monday.com specifically for DICOPA. This provided a contained environment for all marketplace-related projects and data, separate from any other company initiatives that might be managed on the platform.

Figure 15 : DICOPA's Workspace from Monday.com Work OS

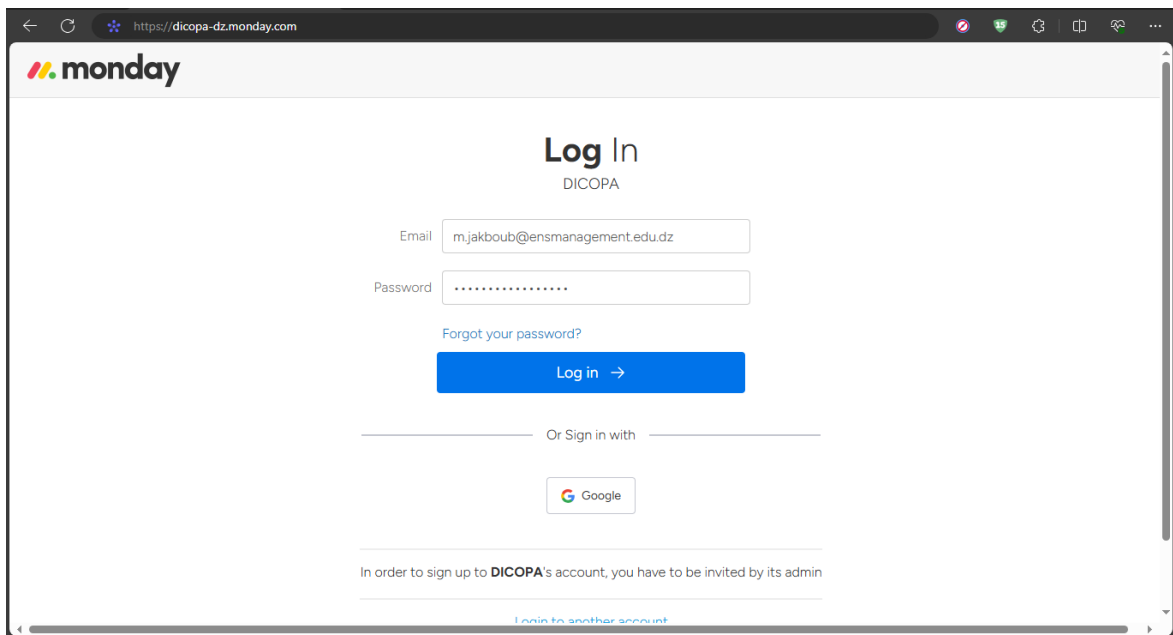


Source : taken by the author

Subdomain Creation: A custom subdomain (dicopa-dz.monday.com) was created to provide a branded entry point for the workspace, enhancing the organization's identity within the platform.

Figure below (figure 16) shows the login web page for DICOPA's Workspace

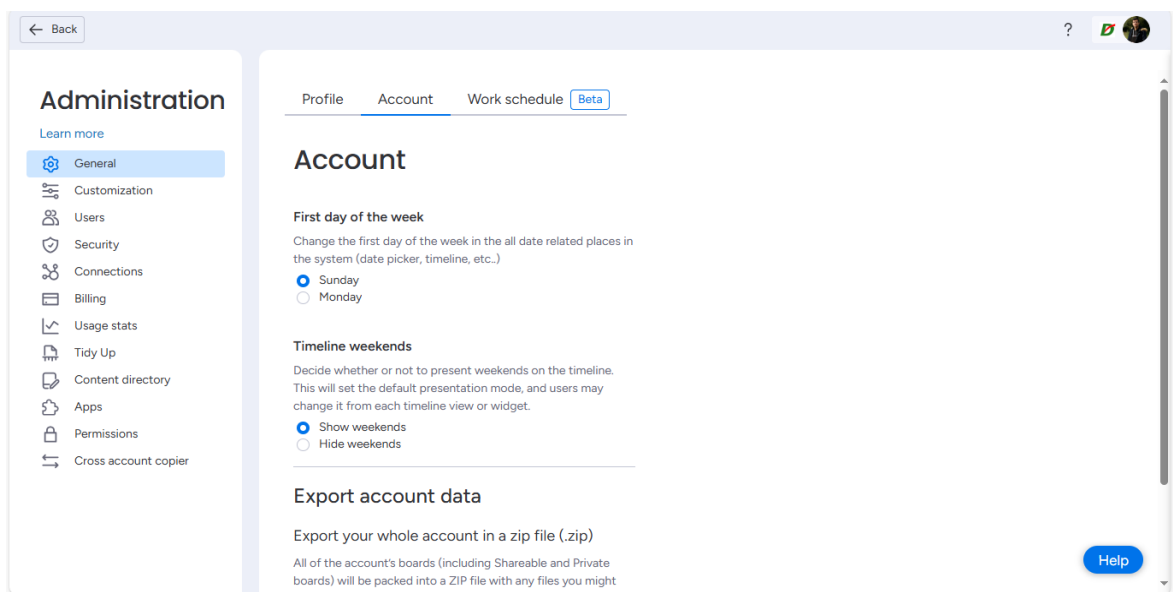
Figure 16 : DICOPA's workspace web login page



Source : Taken by the author

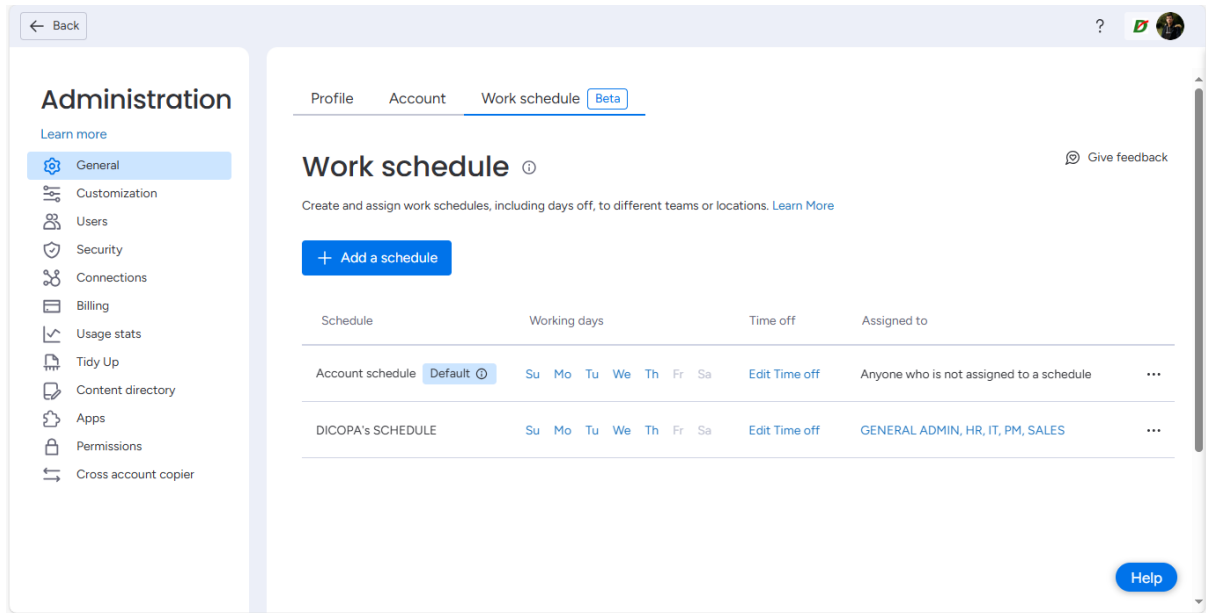
Settings Customization: Monday.com's settings were modified to align with DICOPA's work schedule, time zone, and date formats. This ensured that all deadline notifications, calendar events, and project timelines were accurate and relevant to the team.

Figure 17 : Customization of Monday.com Settings for DICOPA's work days and weekends



Source: created by the author

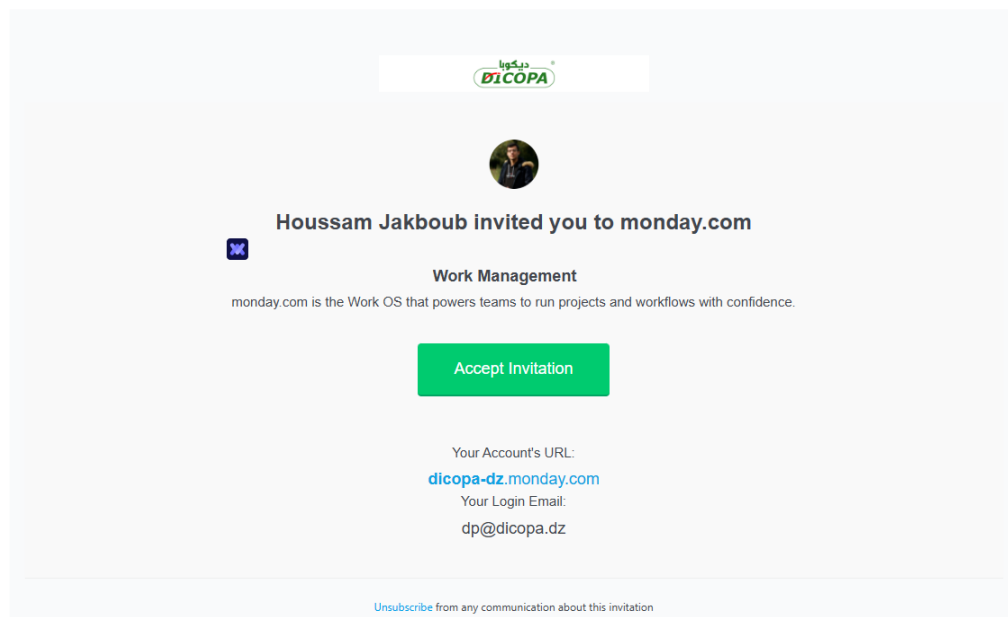
Figure 18 : Customization of Monday.com Settings for DICOPA's Work Schedule and Locale



Source: created by the author

Invitations and Permissions: All team members involved in the marketplace launch were invited to join the workspace. Permissions were carefully assigned based on roles and responsibilities, ensuring that each individual had access to the appropriate boards, dashboards, and data while maintaining data security.

Figure 19 : Email Invitation to Join DICOPA's Workspace (Source : taken from Project director's email)



1.4.2 Phase-Specific Templates:

Templates were created for each of the three project phases:

- **Phase 1: Contractor Selection & Place Renovation**

Figure 20 : Project Template for Phase 1: Contractor Selection & Place Renovation

Task	Assignees	Status	Priority	Date	Timeline	Files
Define Renovation Scope 4	ME MA	Done	High	11 Feb, 9:00 AM	11 - 15 Feb	
Vendor Selection 4	ME	Done	Medium	15 Feb, 9:00 AM	18 - 21 Feb	
Contract Negotiation 4	ME D	Done	High	18 Feb, 9:00 AM	21 - 22 Feb	
+ Add task						7 files

Source : taken by the author

This phase include the following main tasks :

- Define Renovation Scope
- Vendor Selection
- Contract Negotiation

Phase duration : 12 days

The set of the bellowed figures show the Subtasks of the Phase 1

Task	Assignees	Status	Priority	Date	Timeline	Files
Define Renovation Scope 4	ME MA	Done	High	11 Feb, 9:00 AM	11 - 15 Feb	
Subitem						
Subitem	Owner	Status	Date	+		
Assess current condition of the space		Done	11 Feb			
Get the Blueprint of the place		Done	11 Feb			
Create detailed list of renovations needed		Done	13 Feb			
Set budget for renovations		Done	14 Feb			
+ Add subitem						
Vendor Selection 4						
Subitem						
Subitem	Owner	Status	Date	+		
Get the names of common Contractors in Boui...		Done				
Research potential contractors		Done				
Review bids and select finalists		Done				
Conduct interviews		Done				
+ Add subitem						

Contract Negotiation 4					
Subitem	Owner	Status	Date	+	
<input type="checkbox"/> Negotiate contract terms		Done			
<input type="checkbox"/> Sign contract		Done			
<input type="checkbox"/> Obtain necessary permits		Done			
<input type="checkbox"/> Schedule renovation start date		Done			
<input type="checkbox"/> + Add subitem					

- **Phase 2: Renovation Oversight & Management**

Figure 21 : Project Template for Phase 2: Renovation Oversight & Management

Renovation Oversight & Management							
Task	Assignees	Status	Priority	Date	Timeline	Files	
<input type="checkbox"/> > Regular Site Inspections 3		Done	High	25 Feb, 9:00 AM	25 Feb - 10 Mar		
<input type="checkbox"/> > Manage Change Orders 3		Done	Medium	3 Mar, 9:00 AM	25 Feb - 10 Mar		
<input type="checkbox"/> > Ensure Quality Control 3		Done	High	10 Mar, 9:00 AM	25 Feb - 10 Mar		
<input type="checkbox"/> + Add task							

Source : taken by the author

This phase include the following main tasks :

- Regular Site Inspections
- Manage Change Orders
- Ensure Quality Control

Phase duration : 15 days

The set of the bellowed figures show the Subtasks of the Phase 2

Renovation Oversight & Management							
Task	Assignees	Status	Priority	Date	Timeline	Files	
<input type="checkbox"/> > Regular Site Inspections 3		Done	High	25 Feb, 9:00 AM	25 Feb - 10 Mar		
Subitem	Owner	Status	Date	+			
<input type="checkbox"/> Conduct site visits		Done					
<input type="checkbox"/> Document progress and issues		Done					
<input type="checkbox"/> Communicate with contractor		Done					
<input type="checkbox"/> + Add subitem							

The first screenshot shows a subitem list for 'Manage Change Orders' with a status of 'Done' and a priority of 'Medium'. The subitems are:

Subitem	Owner	Status	Date
Assess change requests	[User Icon]	Done	
Approve/deny change orders	[User Icon]	Done	
Adjust budget & timeline as needed	[User Icon]	Done	
+ Add subitem			

The second screenshot shows a subitem list for 'Ensure Quality Control' with a status of 'Done' and a priority of 'High'. The subitems are:

Subitem	Owner	Status	Date
Verify materials meet specifications	[User Icon]	Done	
Review workmanship	[User Icon]	Done	
Address any deficiencies	[User Icon]	Done	
+ Add subitem			

- **Phase 3: Marketplace Setup & Launch**

Figure 22 : Project Template for Phase 3: Marketplace Setup & Launch

The screenshot shows a task list for 'Marketplace Setup & Launch' with the following tasks:

Task	Assignees	Status	Priority	Date	Timeline	Files
> Layout & Design Marketplace 3	ME, D	Done	Medium	11 Mar	11 - 15 Mar	
> Procure Equipment & Supplies 3	ME, D	Done	High	3 Mar	3 - 13 Mar	
> Marketing & Launch Event 3	D	Done	Low	10 Mar	10 - 14 Mar	
The Launch day	MA, MB	Done		17 Mar	17 Mar	
+ Add task						

Source : taken by the author

This phase include the following main tasks :

- Layout & Design Marketplace
- Procure Equipment & Supplies
- Marketing & Launch Event

Phase duration : 15 days

The set of the bellowed figures show the Subtasks of the Phase 3

Marketplace Setup & Launch						
Task	Assignees	Status	Priority	Date	Ti	
Layout & Design Marketplace 3	ME D	Done	Medium	11 Mar	11	
Subitem	Owner	Status	Date	+		
Design store layout		Done				
Plan signage and displays		Done				
Install fixtures		Done				
+ Add subitem						

Procure Equipment & Supplies 3						
Task	Assignees	Status	Priority	Date	Ti	
Procure Equipment & Supplies 3	ME D	Done	High	3 Mar	3	
Subitem	Owner	Status	Date	+		
Create inventory list		Done				
Get the list of products from DICOPA warehou...		Done				
Contact Mrs.Chaabna for Recruitment		Done				
+ Add subitem						

Marketing & Launch Event 3						
Task	Assignees	Status	Priority	Date	Ti	
Marketing & Launch Event 3	D	Done	Low	10 Mar	10	
Subitem	Owner	Status	Date	+		
Develop marketing strategy		Done				
Plan grand opening event		Done				
Invite local officials and media		Done				
+ Add subitem						

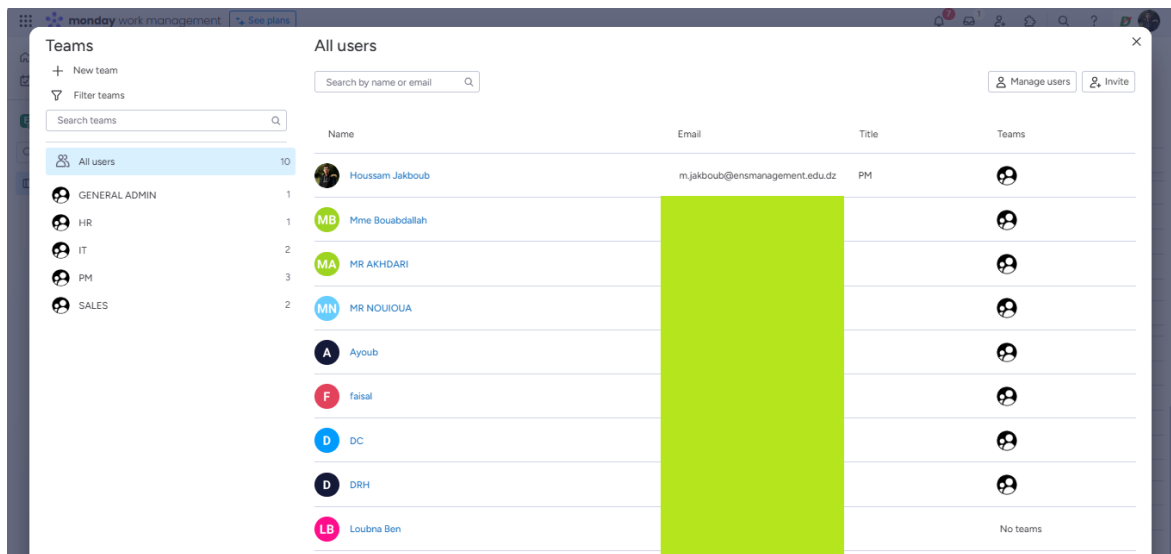
These templates included task lists, timelines, and relevant documents for each phase, providing a structured framework for project execution.

1.4.3 Permission and Team Management:

Access permissions were configured to ensure that team members had appropriate levels of access to project data based on their roles and responsibilities. Teams were created for each phase, allowing for efficient communication and collaboration within specific groups.

The figure below (figure 23) shows the team users management inside DICOPA's Workspace

Figure 23 : User and Team Management for Controlled Access to Project Data



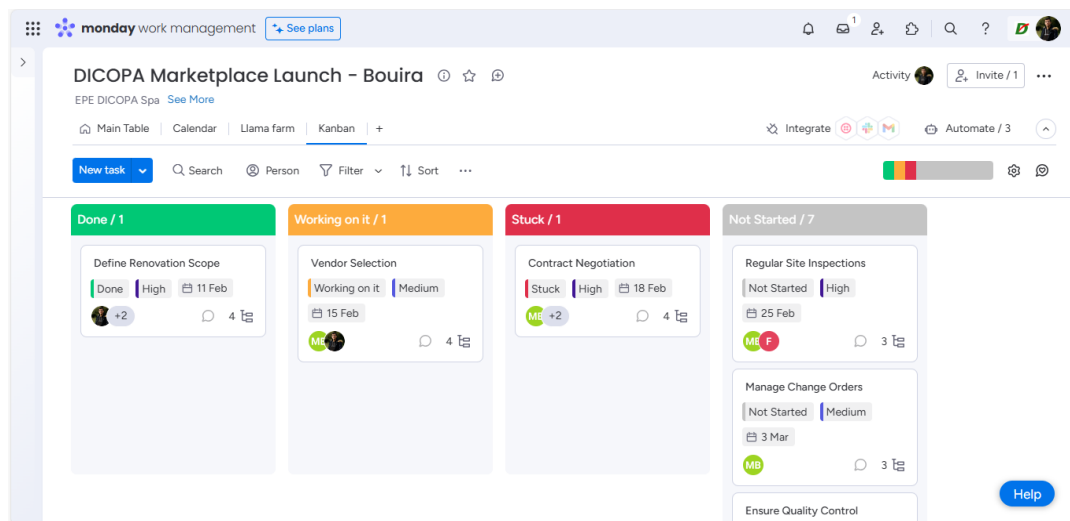
Source : taken by the author

1.4.4 Kanban, and Timeline Views:

Multiple views were incorporated to cater to different working styles and preferences. Kanban boards facilitated task management and workflow visualization, and timeline views offered a chronological overview of project activities.

The belloved figure (figure 24) shows the Kanban borad view from DICOPA’s Workspace

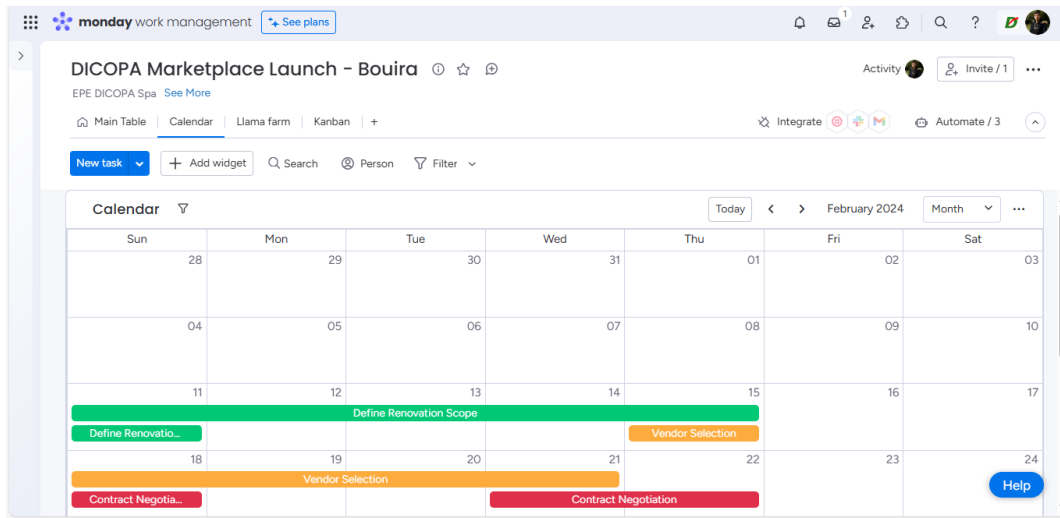
Figure 24 : Kanban Boards View



Source : taken by the author

The bellowed figure (figure 25) shows the Timeline view from DICOPA’s Workspace

Figure 25 : Timeline View



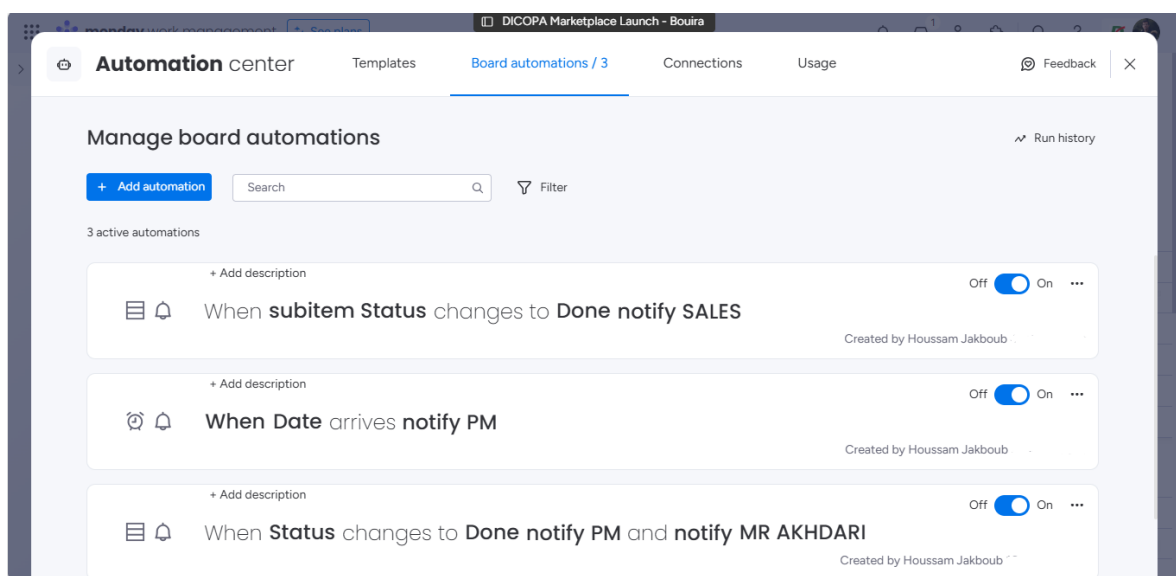
Source : taken by the author

1.4.5 Automations:

Automations were implemented to streamline repetitive tasks, such as sending notifications for upcoming deadlines, updating task statuses based on progress, and generating reports. This automation not only saved time but also reduced the risk of human error.

The figure below (figure 26) shows the automation center from DICOPA’s Workspace

Figure 26 : Automation center



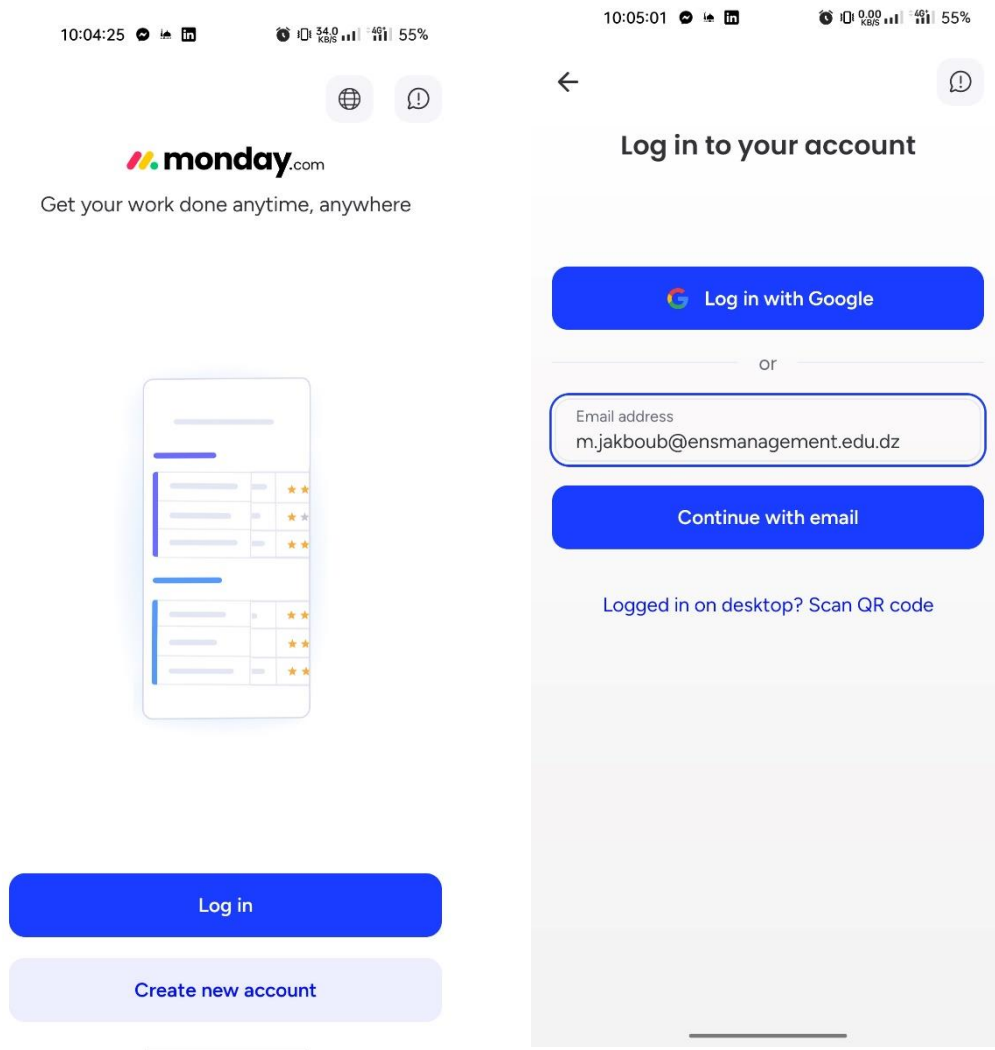
Source : taken by the author

1.4.6 Mobile Access :

implementation of Monday.com included a focus on mobile access and collaboration. The platform's mobile app allowed team members to access project information, update tasks, and communicate with colleagues from anywhere, at any time.

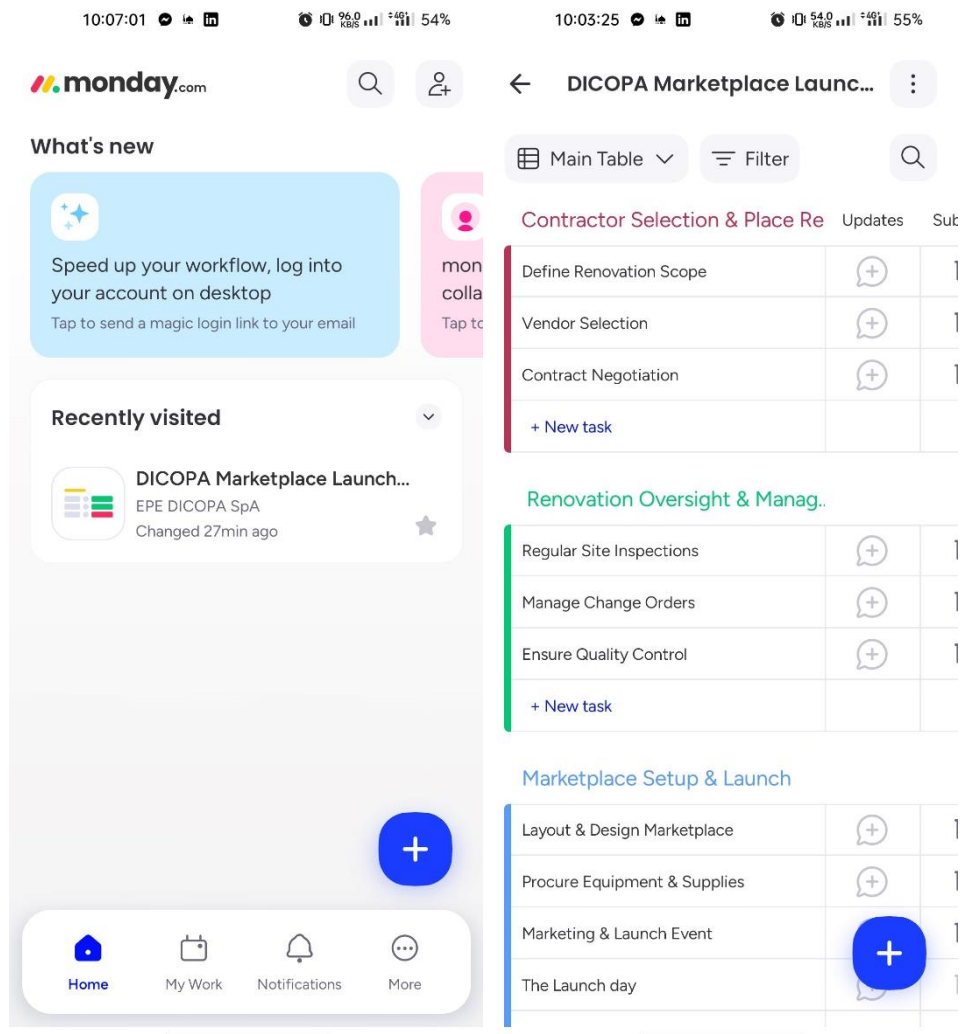
The figures below (figure 27 , 28 , 29) show screenshots inside Monday.com Android Application , how to login into DICOPA's Workspace and how to navigate through the Application

Figure 27 : Monday's android app Login page



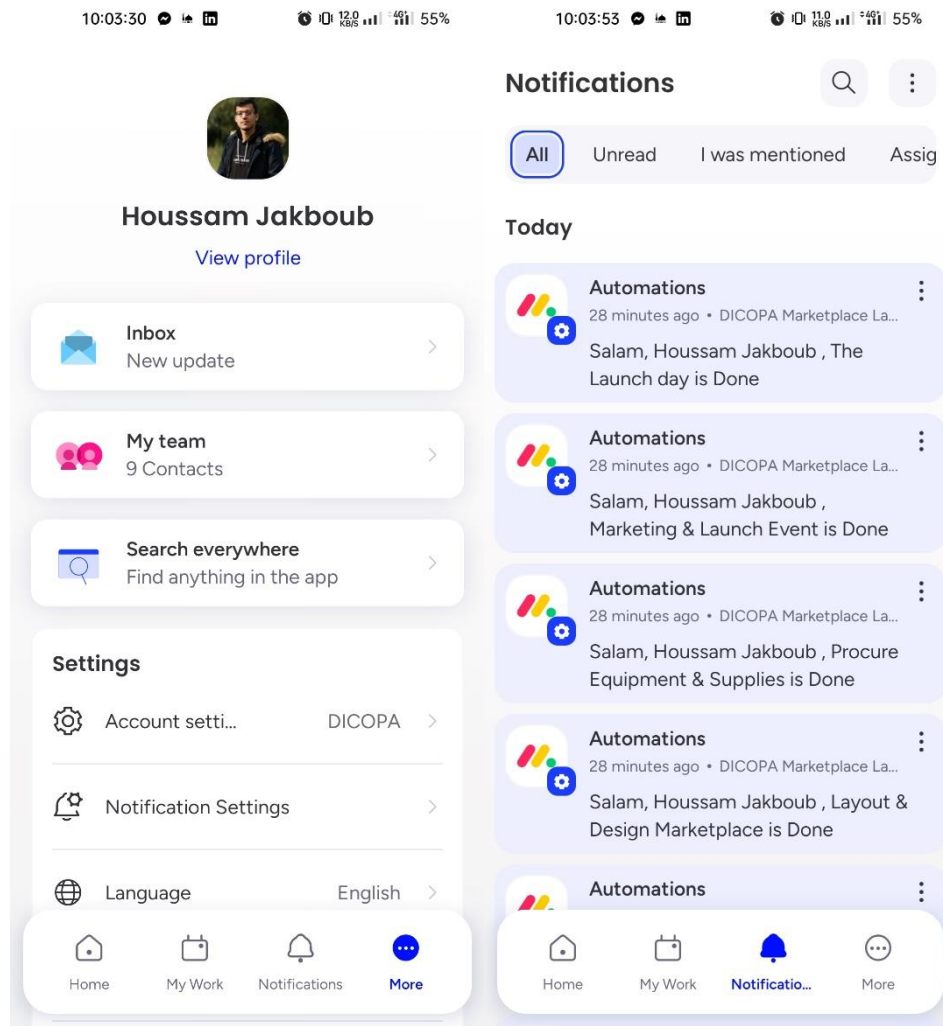
Source : taken by the author

Figure 28 : Monday's android app Dicopa's Dashbroad



Source : taken by the author

Figure 29 : Monday's android app Dicopa's User settings & Notification center



Source : taken by the author

1.4.7 Training and Onboarding

To ensure the successful adoption of Monday.com Work OS, training sessions were conducted for the staff. These sessions covered the platform's basic functionalities, navigation, task management, communication tools, and the use of different views. Hands-on exercises and Q&A sessions were included to address any questions or concerns that staff members might have.

1.5 Risk Assessment and Mitigation: Proactively Addressing Potential Issues

In any project, unforeseen challenges and risks can arise, potentially derailing progress and impacting outcomes. The implementation of Monday.com Work OS included a proactive approach to risk assessment and mitigation, aligning with established project management principles and leveraging the platform's capabilities.

1.5.1 Identifying and Categorizing Risks

A comprehensive risk assessment was conducted during the initial planning stages of the marketplace launch project. Potential risks were identified through brainstorming sessions, historical data analysis, and expert consultations. These risks were then categorized based on their likelihood and potential impact, allowing the project team to prioritize their mitigation efforts.

1.5.2 Developing Mitigation Strategies

For each identified risk, specific mitigation strategies were developed. These strategies outlined the actions to be taken in the event the risk materialized, the resources required, and the individuals responsible for implementation. Monday.com's task management and communication features were instrumental in documenting and tracking these strategies, ensuring that everyone on the team was aware of their roles and responsibilities in risk mitigation.

1.5.3 Implementing Risk Monitoring and Control

Monday.com's real-time dashboards and reporting capabilities were leveraged to monitor project progress and identify any early warning signs of potential risks. Key performance indicators (KPIs) were established to track critical aspects of the project, such as budget adherence, timeline milestones, and stakeholder satisfaction. Deviations from these KPIs triggered alerts, prompting the project team to investigate and take corrective action.

1.5.4 Contingency Planning

In addition to risk mitigation strategies, contingency plans were developed for high-impact risks. These plans outlined alternative courses of action to be taken if the original plan became unfeasible due to unforeseen circumstances. Monday.com's document storage and

collaboration features facilitated the creation and sharing of these plans, ensuring that all team members had access to the latest information and could respond effectively in a crisis.

1.5.5 Continuous Risk Assessment and Adaptation

Risk assessment and mitigation were not viewed as one-time activities but as ongoing processes throughout the project lifecycle. The project team regularly reviewed and updated the risk register, incorporating new information and insights as they became available. This iterative approach allowed for continuous adaptation and improvement of risk management strategies, ensuring that the project remained on track despite unforeseen challenges.

The table below (Table 6) show the summary of Risk Assessment and Mitigation

Risk Category	Potential Risk	Likelihood	Impact	Mitigation Strategy	Contingency Plan
Technical	Internet Disruption	Medium	High	Implement offline access options and alternative communication channels.	Establish backup internet service provider and mobile hotspot capabilities.
Organizational	Declining User Engagement	High	Medium	Provide ongoing training and support. Encourage feedback and continuous improvement.	Develop incentives for platform usage and gamification elements.
Operational	Steep Learning Curve	Medium	Medium	Offer personalized training sessions and create user-friendly guides and tutorials.	provide ongoing support.

Security	Data Security and Confidentiality Concerns	Low	High	Increase team awareness of security and confidentiality protocols. Clearly communicate platform's security features.	Implement additional security measures, such as two-factor authentication and data encryption.
----------	--	-----	------	--	--

Table 6. The summary of Risk Assessment and Mitigation

The proactive approach to risk assessment and mitigation, facilitated by Monday.com Work OS, proved to be invaluable in ensuring the successful launch of the marketplace. By identifying and addressing potential risks early on, the project team was able to minimize disruptions, maintain progress, and ultimately achieve their objectives. This case study aligns with the literature's emphasis on the importance of risk management in project success and demonstrates how digital tools can enhance risk assessment, monitoring, and mitigation efforts.

1.6 Conclusion :

The implementation of Monday.com Work OS within DICOPA for the Bouira marketplace launch project involved a systematic approach, encompassing the introduction of the platform to the organization, comprehensive project scoping and planning meetings, and meticulous design of the workspace. The process included creating a dedicated workspace, customizing settings, inviting team members, and establishing permissions to ensure a secure and tailored environment. Phase-specific templates were developed to provide a structured framework for project execution, incorporating task lists, timelines, and relevant documents. Additionally, permission and team management were configured to control access to project data based on roles and responsibilities. The platform's diverse views, including Kanban boards and timeline views, catered to different working styles and preferences, while automations streamlined repetitive tasks, enhancing efficiency and reducing manual effort. The implementation also emphasized mobile access and collaboration, enabling team members to stay connected and updated on project progress from anywhere. To ensure

successful adoption, training sessions were conducted to familiarize staff with the platform's functionalities and address any questions or concerns.

2. SECTION 2 : DISCUSSION , EVALUATING THE IMPLEMENTATION AND OUTCOMES

2.1 Monday.com as a Work OS: Facilitating Project Flow and Visibility

The implementation of Monday.com as the Work OS for the marketplace launch project yielded several notable benefits.

- The platform's intuitive interface and visual project boards facilitated a seamless flow of work, allowing team members to easily track tasks, deadlines, and dependencies.
- Real-time updates and notifications ensured that everyone was informed about project progress and any potential bottlenecks.
- The automation feature proved particularly valuable, saving time and reducing manual effort by automating repetitive tasks like sending reminders and updating task statuses.

The following table (Table 7) illustrates the quantitative improvements achieved after implementing Monday.com in various project management aspects. It compares baseline metrics (before Monday.com) with the results observed after implementation

Metric	Baseline (Before Monday.com)	After Monday.com Implementation	Improvement
Task Completion Rate	80%	89%	+9%
Average Task Completion Time	5 days	4 days	-1 days
Project Schedule Adherence	80%	90%	+10%
Team Collaboration Score (1-5)	3.2	4.5	+1.3
Automation Feature Usage (Hours/Week)	0	6	+6 Hours/Week

Table 7. Key Performance Indicators (KPIs) Before and After Monday.com Implementation

As depicted in the table above, the adoption of Monday.com led to significant improvements across various project metrics. The task completion rate increased by 9%, while the average task completion time decreased by a day . Project schedule adherence also saw a notable improvement of 10%. Additionally, team collaboration scores increased, and the automation feature usage rose significantly, indicating a more positive, efficient, and productive project environment.

2.2 Challenges Encountered and Lessons Learned

While Monday.com significantly streamlined project management, the implementation process was not without its Challenges.

2.2.1 Internet Connection :

One notable issue was the platform's reliance on a stable internet connection. In the organization site , occasional internet disruptions hindered access to the platform and caused delays in updates and communication. This highlighted the importance of having contingency plans in place, such as offline access options or alternative communication channels, for situations where internet connectivity is unreliable.

The table (Table 8) below illustrates the instances of internet disruptions that occurred during the project, along with their duration, the number of tasks affected

Date	Duration of Disruption	Number of Impacted Tasks
February 27, 2024	1.5 hours	3
March 3, 2024	45 minutes	2
March 6, 2024	1 hour	2
march 11, 2024	30 minutes	1

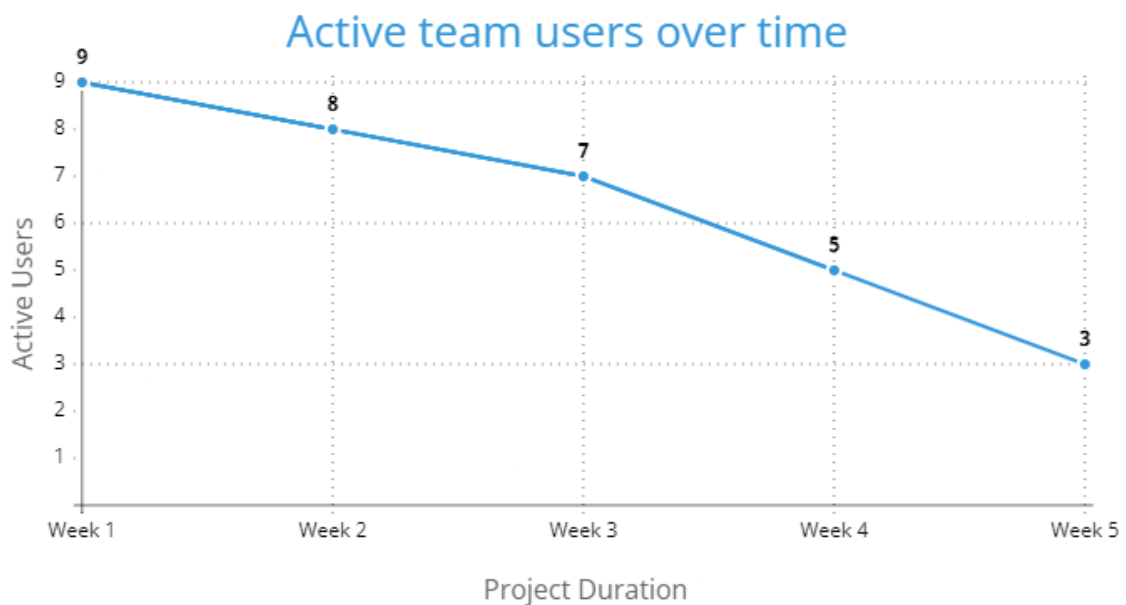
Table 8. Instances and Impact of Internet Disruptions on Project Activities

2.2.2 Declining User Engagement :

Another challenge was the gradual decline in platform usage by the crew after the initial enthusiasm. While the team actively used Monday.com for the first 20 days, their engagement gradually dwindled as they reverted to their familiar methods of work. This underscored the importance of ongoing training and reinforcement to ensure that new tools and processes are fully integrated into daily workflows.

The graph below illustrates the decline in active users over time

Figure (30) : Active users of the platform over time



Source : created by the author

This graph demonstrates a decline in the number of active team users on a platform over a five-week period. Starting with nine active users in week one, the number steadily decreases to three active users by week five. This suggests a potential trend of reduced user engagement or participation over time.

2.2.3 Steep Learning Curve and Staff Overwhelm :

The initial learning curve for Monday.com Work OS proved to be steep for some staff members. The platform's extensive features and functionalities, while powerful, could be overwhelming for those accustomed to simpler tools or traditional methods.

The table below (Table 9) illustrates the perceived difficulty level of various features and functionalities and the number of support requests received for each,

Feature/Functionality	Difficulty Level (1-5)	Number of Support Requests
Add new task in its relative group	3	5
Navigate through Kanban Boards	4	9
Add files & manage mobile notifications	2	3
Add new automations	5	13
Overall navigating in the platform	4	8

Table 9. Perceived Difficulty and Support Needs for Work OS Features

2.2.4 Security Concerns and Confidential Information:

Some staff members expressed hesitation in uploading sensitive documents like financial papers and signed contracts due to concerns about data security and confidentiality.

The table (Table 10) below illustrates the percentage of staff members who expressed concerns about uploading various types of sensitive documents to the platform , along with the number of security incidents related to each document type

Document Type	Percent of Staff Expressing Concerns	Number of Incidents (Unauthorized Access, Data Leaks, etc.)
Financial Documents	60%	0
Signed Contracts	55%	0

User Data (full name , email, mobile number ...)	40%	0
--	-----	---

Table 10. the percentage of staff members who expressed concerns about uploading various types of sensitive documents

2.3 Overall Assessment and Recommendations

Despite these challenges, the implementation of Monday.com proved to be a valuable learning experience. It underscored the importance of careful planning, comprehensive training, and ongoing support to ensure the successful adoption of new technologies in project management. Additionally, it highlighted the need for flexibility and adaptability in choosing and implementing digital tools, considering the specific context and constraints of the project and the organization.

To further optimize the use of Monday.com, the following recommendations are proposed:

- **Provide Ongoing Training and Support:** Regular training sessions and refresher courses can help reinforce the platform's benefits and address any questions or challenges that team members may encounter.
- **Encourage Feedback and Continuous Improvement:** Actively seek feedback from team members about their experiences with Monday.com and use this feedback to identify areas for improvement and optimize the platform's configuration.
- **Integrate with Other Tools:** Explore integrations with other tools that the team already uses, such as email clients or file-sharing platforms, to streamline workflows and reduce the need to switch between multiple applications.
- **Increase Team Awareness of Security and Confidentiality:** Provide comprehensive training and resources to educate team members about the importance of data security and confidentiality. Clearly communicate the platform's security features and protocols, and establish guidelines for handling sensitive information. This can help alleviate concerns and encourage the use of the platform for all types of project data.

By implementing these recommendations, organizations can maximize the benefits of Monday.com Work OS and overcome the challenges associated with its adoption, ultimately leading to improved project outcomes and increased efficiency in project management.

2.4 Conclusion of the case study

The case study presented in this thesis serves as a practical illustration of the theoretical concepts and trends discussed in the literature review, providing a concrete example of how digital transformation is reshaping project management practices (Kerzner, 2017). The implementation of Monday.com, a cloud-based Work OS, in a real-world project aligns with the literature's emphasis on the shift towards agile methodologies (Nerur, S., Mahapatra, R., & Mangalaraj, G., 2005), the adoption of digital tools, and the increasing importance of cloud computing in project management (Marston, S., Li, Z., Bandyopadhyay, S, 2011). The platform's features, such as real-time updates, visual project boards, and automation, enabled the project team to enhance collaboration, streamline workflows, and make data-driven decisions, echoing the benefits highlighted in the literature.

However, the case study also sheds light on the challenges and complexities associated with digital transformation in project management. Issues such as internet disruptions, declining user engagement, and the steep learning curve for some team members underscore the importance of addressing the human element in technology adoption. This aligns with the literature's findings on the common pitfalls of project management and the need for comprehensive training, ongoing support, and proactive risk management to ensure successful project outcomes (Williams, 2005). The case study's emphasis on these factors reinforces the literature's assertion that effective project management in the digital age requires a holistic approach that considers both the technical and human aspects of change.

Furthermore, the case study's exploration of the challenges related to data security and confidentiality echoes the literature's discussion of potential risks associated with digital tools (Mell & Grance, 2011). By addressing these concerns and implementing appropriate security measures, the project team was able to mitigate potential risks and ensure the successful adoption of the platform. This highlights the importance of proactive risk management and continuous improvement, as emphasized in the literature (Flyvbjerg, B., Bruzelius, N 2003).

In conclusion, the case study not only validates the theoretical concepts and trends discussed in the literature review but also provides valuable insights into the practical application of digital tools and agile methodologies in real-world project scenarios. It demonstrates the transformative potential of digital technologies in project management while also highlighting the importance of addressing the human element, managing risks, and

continuously adapting to the evolving digital landscape. By integrating the findings of the case study with the theoretical framework of the literature review, this thesis contributes to a deeper understanding of the complexities and opportunities associated with digital transformation in project management. It offers valuable lessons for practitioners and researchers alike, emphasizing the need for a holistic and adaptable approach to navigate the ever-changing landscape of project management in the digital age.

GENERAL CONCLUSION

1. CONCLUSION

The digital transformation of project management is an undeniable reality, driven by the rapid advancement and adoption of technologies like big data, AI, IoT, blockchain, and cloud computing. This transformation has profound implications for the way projects are conceived, planned, executed, and managed.

Our exploration of theoretical models like TAM, SCT, TTF, OCT, and HCI highlighted the complex interplay of individual, social, and organizational factors that influence technology adoption in project management. These theories underscore the importance of understanding user perceptions, addressing resistance to change, and ensuring that technology solutions are well-suited to the specific tasks they aim to support.

The case study of implementing Monday.com a Works OS based on cloud in a real-world project provided valuable insights into both the potential benefits and the challenges of digital transformation. The platform streamlined workflows, enhanced collaboration, and facilitated real-time project monitoring. However, challenges such as connectivity issues, declining user engagement, and the need for ongoing training were also encountered. These challenges underscore the importance of careful planning, comprehensive training, and ongoing support to ensure the successful integration of digital tools into project management practices.

Overall, this study reaffirms the transformative power of digital technologies in project management. While challenges exist, the potential benefits in terms of efficiency, collaboration, data-driven decision-making, and project success are undeniable.

To fully realize these benefits, organizations must adopt a holistic approach to digital transformation, addressing both the technical and human aspects of change. This includes investing in training and development, fostering a culture of innovation and continuous learning, and carefully selecting and implementing technologies that align with the specific needs and goals of their projects.

As the digital landscape continues to evolve, project managers must remain adaptable, embracing new technologies and approaches that can enhance project outcomes and drive organizational success. By leveraging the insights gained from this study, project managers can navigate the complexities of digital transformation and position themselves as leaders in the ever-changing world of project management.

To enhance this study, future research could delve deeper into the following areas:

- **Longitudinal Studies:** Conduct longitudinal studies to track the long-term impact of digital tools on project performance and team dynamics.
- **Comparative Analysis:** Compare the effectiveness of different digital project management tools across various industries and project types.
- **User-Centered Design:** Involve project managers and team members in the design and development of digital tools to ensure they meet their specific needs and preferences.
- **Scalability and Sustainability:** Investigate how digital project management practices can be scaled up to larger projects and sustained over time.
- **Ethical Considerations:** Explore the ethical implications of using AI and automation in project management, particularly concerning job displacement and bias.

By addressing these areas, future research can contribute to a more comprehensive understanding of digital transformation in project management and provide actionable insights for practitioners and organizations.

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APPENDIX

**APPENDIX A : SEMI-DIRECTIVE INTERVIEW
GUIDE FOR TOP MANAGEMENT**

Interview Guide A: Top Management (General Director, Project Director, IT Manager)

Introduction

Good morning, I'm Houssam , second year Master's student at the Higher National School of Management. I'm conducting my graduating research on the role of technology in project management. Thank you for taking the time to share your insights with me.

I. General Information about the Company

1. Could you provide an overview of your company?
2. What industries or sectors does your company operate?
3. What is your company's vision and what are its key goals?

II. Current Project Management Practices & Technology

4. Could you describe your current process for managing projects?
5. What technologies, if any, are currently used to support project management in your company? (specify software, platforms, ...)
6. How satisfied are you with your current project management tools and processes? What works well, and what could be improved?

III. Opinions on New Technologies in Project Management

7. What are your general thoughts on the use of new technologies to enhance project management?
8. Have you or your company ever considered adopting a new project management platform? If so, what factors influenced your decision?
9. What potential benefits do you see in using a new platform for project management in your company?

IV. Providing A Project Management Platform

10. If you were provided with a new platform designed to streamline project management, what specific features would you find most valuable?
11. What are your biggest concerns or reservations about adopting such a platform? (e.g., data security, learning curve, cost, integration with existing systems ...)
12. What positive outcomes would you expect to see if your company implemented this new project management platform? How would it impact efficiency, collaboration, planning & scheduling ?

Conclusion

Thank you so much for sharing your valuable time and insights with me today. Your perspective on project management and the potential role of new technologies is extremely helpful for my research. I truly appreciate your willingness to participate in this interview. If you have any further questions or thoughts on this topic, please feel free to reach me out

**APPENDIX B : SEMI-DIRECTIVE INTERVIEW
GUIDE FOR THE EMPLOYEES**

Interview Guide B: Employees

Introduction

Good morning, I'm Houssam , second year Master's student at the Higher National School of Management. I'm conducting my graduating research on the role of technology in project management. Thank you for taking the time to share your insights with me.

I. Your Role in Projects

1. Could you briefly describe your role and responsibilities in the projects you work on?
2. What are the main tasks you typically perform in a project?
3. What are the biggest challenges you personally face in your day-to-day project work?

II. Current Project Management Experience

4. Could you describe how projects are currently managed in your team?
5. What tools or technologies do you currently use to support your project work?
6. What do you like or dislike about the current tools and processes? What could be improved to make your work easier or more efficient?

III. Providing A Project Management Platform

7. If you were provided with a new platform to help you manage your projects, what features would be most useful to you? (e.g., task tracking, communication, file sharing ...)
8. What concerns or questions would you have about using a new platform? (e.g., ease of use, learning curve, impact on your current workflow ...)

9. How do you think a new platform could potentially benefit you and your team? (e.g., save time, improve communication, better organization ...)

Conclusion

Thank you so much for taking the time to talk with me today. Your feedback on your current experiences with project management and your thoughts on potential new technologies are incredibly valuable for my research. I really appreciate your openness and willingness to share your perspective. If you have any other comments or questions that come to mind later, please don't hesitate to contact me.