First Version of the Project Plan

During **Sprint 1**, the first version of the project plan was developed, covering the following topics:

1. **Motivation and Justification**
2. **Research Problem**
3. **Scope**
4. **Research Methodology**
5. **Work Schedule**
6. **Expected Results**
7. **General Observations**

This document will serve as a reference throughout the project, with a special focus on the timeline. In this document, we defined the following research question:

“How can an integrated methodology be developed for consulting firms to support requirements elicitation, aiming to reduce costs, time, and issues related to delays in SAP Business One implementation?”

Selection of Articles for Literature Review

In **Sprint 2**, we conducted the first database search for the systematic literature review. We used **Web of Science**, under the authorization and supervision of the professor, with the search string **“SAP Business One”**, which resulted in **903 articles**. We applied two additional filters:

- ➔ **Document Type**: Articles
- ➔ **Language**: English

After filtering, **165 articles** remained. These articles were exported in **.ris** format from Web of Science and imported into **Rayyan**, an AI-powered tool for systematic literature review. I classified the **165 abstracts** into three categories:

- ➔ **Excluded**: 118
- ➔ **Maybe**: 11
- ➔ **Selected**: 36

After validation with **Renato**, he helped evaluate the articles in the **“Maybe”** category, leading to the final numbers:

- ➔ **Excluded**: 125
- ➔ **Selected**: 40

The selected articles were stored in a shared folder on **Google Drive** and also exported to **GitHub** for record-keeping.

Review of Research Diary & Basic Data Analysis

During **Sprint 3**, I started reviewing the **research diary**, making it more structured to accommodate data analysis. To do this, I created a graph showing the **distribution of selected articles over the years**.

Additionally, I read the most **cited article** and conducted a **preliminary analysis**, highlighting relevant excerpts for future use in writing the project article.

Analyzed Excerpt

The article **“Putting the Enterprise into the Enterprise System”** provided important insights into ERP implementation challenges. For example, on page 2:

“The biggest problems are business problems.”

And on page 3:

“If a company rushes to install an enterprise system without first understanding its business implications, the dream of integration can quickly turn into a nightmare.”

Reading and Analysis of Additional Articles & In-Depth Data Analysis

During **Sprint 4**, I analyzed **four additional highly cited articles**, totaling **five reviewed articles**.

Putting the Enterprise into the Enterprise System

Published by **Harvard Business School Publishing Corporation (1998)**, this article examines how **enterprise systems** aim to resolve information fragmentation in companies by creating a central database. Some highlighted benefits include:

- ➔ **Increased productivity**
- ➔ **Reduced processing time**

- ➔ **Real-time information updates**

However, the article also points out challenges, such as **the standardization imposed by ERPs**, which can **limit a company's strategic flexibility**.

Reinventing Your Business Model

Published by **Harvard Business School Publishing Corporation (2008)**, this article discusses how a **well-defined business model** can drive growth. Examples include:

- ➔ **Apple (iPod)** – Revolutionized the music industry
- ➔ **Tata Nano** – Affordable car through manufacturing innovations
- ➔ **Hilti** – Transformed tool sales with a subscription model

Despite being interesting, **this article has limited direct applicability** to our study on ERPs.

Enterprise Resource Planning Systems, Management Control and the Quest for Integration

Published by **Pergamon-Elsevier Science LTD (2005)**, this article analyzed two ERP implementation cases and concluded that **integration does not happen automatically**, as ERPs bring both opportunities and limitations. The study emphasizes that ERP:

- ➔ **Does not guarantee improvements in managerial accounting**
- ➔ **Enhances collective control within companies**
- ➔ **Requires additional configuration for effective integration**

An Innovation-Diffusion View of ERP Implementation

Published by **Elsevier (2002)**, this article presents a **six-phase model for ERP implementation**:

1. **Initiation**
2. **Adoption**
3. **Adaptation**
4. **Acceptance**
5. **Routinization**
6. **Infusion**

The article highlights **benefits**, such as **organizational integration**, and **challenges**, such as **employee resistance** and **high costs**.

Issues in Implementing ERP: A Case Study

Published by **Elsevier Science BV (2003)**, this article analyzes a specific SAP implementation case by **Deloitte & Touche**, highlighting strategies such as:

- ➔ **Risk management**
- ➔ **Modular approach**
- ➔ **Employee training**

Challenges in ERP Implementation and Strategies to Overcome Them

In Sprint 5 consolidated the public report, detailing the challenges faced in ERP implementation and possible strategies to mitigate them.

Challenges in ERP Implementation

Challenges in Implementing an ERP System	Impacts on Companies	Reasons for the Impacts
High implementation cost	Expensive financial exercise for manufacturing SMEs	Nature of software functions and configuration process to meet different business needs
Nature of software functions	Difficult investment to justify	Need for customization to meet the needs of different business organizations
Complex configuration process	Difficult investment to justify	Need for customization to meet the needs of different business organizations
Need to adapt to different business organizations	Can make implementation expensive	The generic nature of ERP software requires adaptation to specific business processes
Employee resistance to change	Potentially negatively impacts productivity and creativity	Discomfort with changing established ways of doing things and perception of loss of autonomy with standardized processes

Standardization of work processes	May undermine employee autonomy	ERP systems impose a set of standard information, leaving no room for non-standardized approaches
Increased visibility of employee performance	May be perceived as tighter management control	If the organizational climate deteriorates during implementation, information sharing may be seen as surveillance
Potential loss of employee autonomy	May hinder the company's creative potential	Feeling of being subjected to a culture of instant accountability
Complexity and large scale of systems	Long-term investments can be very expensive	The comprehensiveness of ERP systems requires a significant investment of time and resources
Overdependence on ERP vendors	Vulnerability to vendor decisions and support	The company becomes dependent on the vendor's knowledge and assistance
Difficulty in changing and modifying the system	Lack of flexibility to adapt to business changes	The integrated and standardized nature of ERPs can make customization or modification difficult
Elusive gains for some organizations	Return on investment may not be achieved within expected deadlines	Successful implementation depends on various factors, and complexity can lead to below-expected results
Need to reinvent the organization	Significant changes in business processes and routines are required	Integrating operations across the organization is not trivial and requires reconsideration of existing practices
ERP systems do not easily fit into every organization	Requires adaptations and modifications	The generic nature of ERP systems requires customization to meet specific business requirements
Incorrect data entry	Can cause serious problems	ERP systems are data-driven and inflexible with errors
Large amount of time dedicated to correct data entry	Impacts people's work practices	The internal logic of ERP systems requires data entry precision

Restriction of creativity due to predefined dropdown menus	Potential to limit innovation in certain areas	Available options may be prescribed by the system instead of being fully exploratory
Lack of alignment with long-term strategic direction	Implementation efforts may not generate desired strategic benefits	ERP implementation, often driven by efficiency, must be linked to the organization's strategic objectives
Underestimation of potential harmful effects	Unexpected negative impact on operations and organizational culture	Literature may not sufficiently emphasize the challenges and negative consequences of ERP implementation
Lack of consideration of indirect effects	Problems in areas such as team skills, budgets, and performance measurement procedures	ERP systems have cascading effects on various parts of the organization that need to be managed
Difficulty in defining areas of change within the company	Slow and expensive implementation	Aligning the company's structure, readiness, and business processes with the ERP system's capabilities is challenging
ERP reference models often do not include information on what can be modified and how modifications will appear	Difficulty in customization and adaptation	Lack of transparency regarding possible choices and modification consequences makes adapting reference models challenging
Difficult configuration of reference models	Requires specialized knowledge and may lead to errors	Lack of clarity on configuration options hinders the effective use of reference models
Uncertain relationship between different processes and their consequences in reference models	Difficulty in understanding the impact of changes across the system	Lack of clarity in process interdependencies makes assessing modification impacts difficult
Using software reference models may neglect some unique characteristics of business practices	Potential loss of competitive advantage or inadequate fit to existing processes	Generic models may not capture the specificities of a company's business processes

Table 1: Challenges in Implementing an ERP System

Strategies to overcome them

Barrier	How to Overcome
High Customer Base Complexity	Implement strategies for customer segmentation, tailored offerings, and streamlined processes for different segments.
Unreliable Suppliers	Implement supplier relationship management, diversify the supplier base, invest in supplier competence building.
Lack of Visibility/Information Sharing in Supply Chain	Utilize technology for enhanced visibility, implement information-sharing initiatives with partners.
Complexity of Collaborative Business Processes	Employ high-level languages like Evie to explicitly connect business models and execution infrastructures.
Difficulty in Translating Business Models to Execution	Use tools and languages designed to bridge the gap between business analysis and software development teams (e.g., Evie).
Violations of Business Process Constraints	Redesign the business process to align with constraints or reconsider/modify the constraints. Implement methods to check constraint satisfaction during design time.
Managing Non-Deterministic Actions in Planning	Utilize planning frameworks (like SAM) that support non-deterministic actions and employ appropriate planning algorithms (strong and weak planning) with heuristic functions to navigate different outcomes.
Scaling Planning Across Multiple Business Objects	Optimize planning algorithms for handling a larger number of interacting components or explore ways to decompose planning problems into smaller, more manageable parts.
Conflicts Between Logical Choices in Configuration	Use systems like ATMS to calculate minimal logical supports for facts, aiding in identifying conflicting choices and guiding conflict resolution.
Complexity of ERP System Selection and Implementation	Conduct careful planning, clearly define selection criteria (considering product,

	project, and provider factors), thoroughly evaluate potential ERP systems, and choose experienced and suitable implementation partners.
Ensuring ERP Data Quality and Consistency	Implement robust master data management strategies, establish clear data governance policies, and perform ongoing “boundary work” to integrate data across different levels and ensure consistent access to reliable information.
Resistance to ERP System Changes	Involve users throughout the implementation process, provide comprehensive training on the new system and processes, and clearly communicate the benefits and rationale behind the changes.

Table 2: Strategies to overcome them