Original article

HOW USER REQUIREMENTS AFFECT THE SUCCESS OF AN ENTERPRISE SYSTEM IMPLEMENTATION PROJECT?

Laura Fink[1], Ajda Fošner[2], Andrej Dobrovoljc[3], Tomaž Poznič[4]

[1,2,3,4]*GEA College, Ljubljana, Slovenia*

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Abstract: The paper examines the collection, preparation, and improvement of user requirements for a complex ERP case study implementation in an international organisation. The study presents a case study of the ERP system implementation project. We address the user requirements and their quality with regard to the scope of the case study on the ERP implementation project and wider as an integral aspect of successful project management within an organisational context. In the discussion, we address and support the notions that: 1.) the choice of the type of solution and the software company; 2.) strong leadership and control from the investor side; 3.) the activities prior to the start of the ERP implementation project and a clearly defined scope at the time of contract conclusion; 4.) the quality of system requirements based on well-specified user requirements; and 5.) the alignment of the scope definition and user requirements within the organisation contribute to the success of the enterprise system implementation project.

Keywords: ERP implementation project success; Enterprise system; Requirements analysis; Requirements engineering; User requirements.

1. INTRODUCTION

Organisations invest in enterprise resource planning (hereinafter ERP) systems in order to improve the efficiency of different processes and of the entire organization. The complexity of the ERP system often contributes to the challenges in project management when implementing ERP system solutions. This can often result in unfavourable outcomes and overdue, overbudget implementation projects that do not improve the efficiency of processes as expected, especially when considering the value of the substantial investments that ERP initiatives often require.

The focus of our research is the ERP system implementation project with regard to the scope and quality of user requirements (hereinafter UR). As a result, the purpose of this study is to investigate how requirement quality affects success and to identify the factors that influence the quality of UR in ERP implementation project initiatives. We based our research on an EPR case study implementation and on practical recommendations made previously by authors like Sawyer et al. (1997), Robertson and Robertson (2012), RESG (n.d.), IREB (n.d.), INCOSE (n.d.), and FAA (2009). The final solution of the ERP implementation project was a special system for a specific process in pharmacy.

The rationale for this research is grounded in observations that the root causes of problems frequently emerge from the initial phases and that the final solution is largely predetermined by the characteristics of the specific processes that it covers. The implementation of an ERP

Corresponding author. Email: laura.fink@gea-college.si
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system usually requires rich project management competences and knowledge of the specific processes that it covers. Although the project methodology in itself is not the focus of this research, it is worth mentioning that the latest literature on agile methodology suggests that software development projects based on agile approaches in practice often lack adequate requirements documentation (Theunissen et al., 2022) and that a better fit between thorough advance planning that strives to prevent as many unnecessary changes in later project phases by fixing project requirements as early as detailed as possible and flexible planning that foresees and anticipates that the requirements and with that the course of the project constantly evolves and changes throughout the software development project.

Despite the fact that the ERP implementation case study was in practice led as a project with its own requirements documentation for the final solution, budget, timeline, project team, and project manager, we need to emphasise the importance of its organisational context and pre-project and post-project activities (IPMA, 2015, 2016, 2018) rather than seeing ERP implementation as a standalone project. From the perspective of PMI's (2021) performance domains, we address the "development approach and life cycle" with a focus on the initial phases and PMI's (2017) knowledge area "project scope management" (Carton et al., 2008), which continues to be valid despite the shift in approach in the latest edition of the guide. We address the IPMA's (2016) area of "processes and resources" and, in particular, "the scope" of the implementation project. We emphasise the importance of the pre-project activities as well as the pre-defined needs and requirements that led to approval of the implementation project in the first place. We investigate the possibilities to develop and optimise the initial project processes (IPMA, 2016; Somers & Nelson, 2004), including pre-project activities and the process of requirement gathering, in order to improve the effectiveness and efficiency of the final system implementation.

2. RELATED WORK

In the overview of the related work, we address the potential success factors for ERP implementation projects and point out the quality of UR as one of the most important factors.

2.1 The success factors of ERP implementation projects

ERP implementation projects are typically undertaken for the benefit of the company, such as increased process efficiency and long-term competitiveness. ERP implementation projects are typically complex and risky, involving the implementation of new business processes, the renovation and modernization of existing business processes, or the implementation of new IT solutions to support business processes. These initiatives are also congruent with organisational-wide, business segment-specific, or process-specific reorganisation and modernization. ERP system functionalities should support and enable the efficiency of business processes, including communication between stakeholders in modernised processes. The organisation can:

- Purchase a market-leading software solution (SAP, AX, Salesforce, etc.). Such software solutions include pre-selected best practices that can be used without many changes. However, it is suggested to tailor such systems to specific processes and that they cover up to 20% of the scope. In such cases, businesses typically choose to renovate and standardise their business processes.
- Implement an open-source software solution (Alfresco, SugarCRM, etc.). Specialised providers of open-source solutions adapt the software to the company's specific processes. Businesses use such systems when they want to reduce the cost of licences and maintenance. It is recommended that the companies have their own staff capable of maintaining the software. Businesses rarely decide to revamp their business processes.
- Develop a software solution in accordance with the company's requirements documentation. The company either hires external programmers to develop the software or develops the software internally. This approach is frequently used for company-specific requirements for which no IT solution is available on the market.

The success of ERP initiatives is not solely determined by meeting the three constraints of planned timeframe, scope (realisation of scope and quality), and budget. The adoption of the solution by users is frequently regarded as the ultimate success criterion in all ICT projects, especially in ERP implementation projects, which are typically context-specific and can hardly be considered stand-alone projects. Beyond the triple constraint, the satisfaction of users and the project team, the process efficiency, and the impact of the implementation project on the company's future growth can all play an important role (Fink, 2017).

There are a multitude of success variables that contribute to the achievement of successful ERP system implementation (Gargeya & Brady, 2005; Matende & Ogao, 2013; Lang & Müller, 2021; Sudhakar, 2012). Matende and Ogao (2013) categorise the critical success factors for successful ERP system implementation as organisational, technical, and people-related. The ERP success model developed by Gable et al. (2003) and Sedera et al. (2004), which emphasises a system's post-implementation perspective, includes system quality and information quality, as well as the impact on individuals and the organisation as a whole (Ifinedo, 2007; Ifinedo et al., 2010). Markus et al. (2000) discovered that ERP implementation projects typically experience problems in all phases when comparing the success of each phase to the final system's success. However, without intervention or correction, the root causes of problems frequently emerge from the initial phases (Markus et al., 2000). Furthermore, when comparing the success factors of ERP upgrade initiatives to new ERP implementation projects, Barth and Koch (2019) discovered that the requirements analysis is usually more detailed and complex when a new ERP system is implemented. Generally, ERP upgrade initiatives are less risky and complex (Barth and Koch, 2019). Selection of a software package, training, and user acceptance and utilisation of functionalities' potential are typically more difficult in the case of new system implementation, whereas simultaneous "multiple system landscape" testing, quality assurance, data, and code cleansing are more difficult in an upgrade ERP initiative (Barth & Koch, 2019).

2.2 Scope of the ERP implementation project and quality of user requirement documentation

User requirements are one of the most important factors for the ERP implementation project's success (Ibraigheeth & Fadzli, 2019; Teltumbde, 2000). The problems arising from the requirements analysis include unclear, insufficient, and incomplete requirements with contradictory information (Hnatchuk et al., 2021; Standish Group, 2014), changing requirements (Ewusi-Mensah, 2003), and poor requirements prioritisation (GAO, 2011). Even in agile settings, where requirements are expected to change, researchers, among them Theunissen et al. (2022), recently recommended that software development teams increase their efforts to prepare adequate requirements documentation. A lack of proper understanding of requirements and a lack of efficient change management (Sumner, 2000) regarding UR can lead to improperly developed functionalities in an ERP system. Hnatchuk et al. (2021), who applied an artificial neural network model to forecast how requirements analysis contributes to successful implementation projects, suggest that early detection and elimination of the requirements' defects reduces the number of unplanned iterations and rework in later phases, as well as change requests following completion of the system implementation.

The current system's capabilities and functionalities shouldn't limit the analysis of UR. That means requirements should be developed without regard for the system's current functionalities, whether a new solution or an improvement to an existing solution is planned. Sawyer et al. (1997) say that common problems with requirements are that they don't "reflect the real needs of the customer," that they are inconsistent and incomplete, that making changes to them is expensive, and that people on the project team (such as customers, people who analyse and document requirements, and software engineers) don't understand them.

User requirements are a starting point for any ERP implementation project. Many setbacks that occur during ERP implementation projects can be traced back to insufficient UR analysis, even when requirements are evolving

throughout the development project. There are different taxonomies of requirements for software development projects.

One of the most common taxonomies (Laplante & Kassab, 2022) differentiates requirements based on their level between user requirements, system requirements, and design specifications (Sommerville, 2005). User requirements, which are vital for acceptance testing, are often based on conceptual documents, user stories, and describe user functionalities the system should provide. They describe expected system behaviour from the user's perspective in a form that is understandable to the business user. Business-specific knowledge should suffice to be able to understand the requirements outlined in the user requirements. High-quality user requirements are objective and testable, which means that when the user performs a user acceptance test, the test should easily replicate the UR and present measurable and accurate results.

> *Example: "As a procurement manager, I would like to be able to see the prices from the last ten procurement orders of material X. This could enable me to better negotiate the best order price for the new order with vendor Y."*

System requirements (also named functional specifications or technical annexes), which are vital for integration testing (Laplante & Kassab, 2022), describe the behaviour of a system, usually in relation to functions precedingly determined in user requirements. This includes not only hardware (CPU, RAM, storage, etc.) but also software (OS, database, middleware, etc.) requirements as well as technical requirements and technology that have to be installed so that the system performs flawlessly. Finally, design specifications, which are based on system requirements, are vital for unit testing (Laplante & Kassab, 2022).

Another common taxonomy differentiates requirements based on the specification types into functional, nonfunctional, and domain requirements. Functional requirements describe "the services the system should provide and how it reacts to its inputs" (Laplante & Kassab, 2022, p. 6). High-level functional requirements correspond to the user requirements, while detailed functional requirements correspond to the system requirements (Laplante & Kassab, 2022).

The system is not only characterised by what it does (functionalities), but also by how it behaves (nonfunctional behaviour). The nonfunctional requirements (Laplante & Kassab, 2022) address issues such as security, reliability, reusability, maintainability, performance, usability, testability, interoperability, and constraints. Finally, domain requirements can include new functional requirements, constraints on existing functional requirements, or specify the functionalities in a particular application domain (Laplante & Kassab, 2022).

3. RESEARCH METHODOLOGY

The study employs a case study methodology. The research questions are based on a review of the literature, which allowed us to identify research gaps and broaden our understanding of common practices, methods, and other phenomena in ERP implementation projects that contribute to higher-quality UR and overall implementation success. Then we chose an interviewee, the manager of the ERP implementation project, who works for a large international company that invested in the enterprise system, has extensive industry experience, and is the most qualified person to provide information on the ERP implementation project.

Under the oral contract, the interviewee and interviewers agreed on the terms of confidentiality. Furthermore, researchers avoided specific terminology by using well-established terminology. A short questionnaire was used to collect key data in addition to the interview.

Following the interview, we prepared and reviewed transcripts to identify and select the findings and planned a discussion about the research questions' theoretical and practical implications. To the greatest extent possible, the qualitative research is prepared in accordance with the recommendations for reporting qualitative research (O'Brien et al., 2014), as well as the recommendations for interview question preparation and qualitative

interview strategies (Harvard, n.d.). To gather detailed information, open-ended questions were used.

The qualitative analysis is based on a semi-structured interview and a short questionnaire containing information about the main characteristics of the implementation project. The interview with the manager lasted about an hour and was conducted by two researchers. All research members carefully selected and prepared the questions in advance to minimise the impact of prior experiences or assumptions of individual researchers. The research benefited from the researchers' diverse skill sets. On the one hand, the research is founded on solid theoretical foundations, and on the other, it benefited from the researchers' practical experiences. Since the enterprise system was implemented in the pharmaceutical company, it should be noted that one of the researchers has experience in the pharmaceutical industry. In the continuation of this study, we provide extensive discussion on the practical implications of this study, in addition to theoretical discussion.

4. RESEARCH QUESTIONS

We propose the following research questions in response to the discussion about the scope and quality of UR documentation for the ERP system implementation project:

First research question: Does the choice of the type of solution and the software company contribute to the success of an enterprise system implementation project?

Second research question: Does strong leadership and control from the investor side contribute to the success of an enterprise system implementation project?

Third research question: Do activities prior to the start of the implementation project and a clearly defined scope at the time of contract conclusion contribute to the success of an enterprise system implementation project?

Fourth research question: Is the quality of system requirements based on well-specified user requirements important for the success of an enterprise system implementation project?

Fifth research question: Does the alignment of scope definition and user requirements within the organisation contribute to the success of an enterprise system implementation project?

5. CASE STUDY

ERP systems are made up of various modules, or subsystems. As demonstrated in our case study, modernising, renovating, and reengineering significant business processes in an enterprise system is a complex endeavour with multiple stakeholders and significant investment. The specific case study was chosen because it provides numerous insights into how successful ERP implementation projects are managed as well as the challenges they face.

The estimated value of the upgrade ERP system implementation project in our specific case study was between 5 and 10 million euros. The first initial solutions went live after 18 months. Although the timeline and the use of other resources changed compared to the initial plan, the successful implementation of the system was in no way compromised. The implementation project was completed on time and within budget.

The internal core team numbered between 20 and 25 people, and the final solution impacted more than 1000 business users. Many external stakeholders were involved in the implementation project, including about five different companies and some additional individual contractors.

The main goals of the implementation project were to improve, simplify, standardise, and modernise the complex process of product release. Before making the final decision to release a product, a large amount of information and many control points must be gathered. The implementation's goal was to enable the automatic collection of information from various sources and systems and display it on a dashboard. The availability of information at a glance in one location simplifies and speeds up decision-making and product release.

It is worth mentioning that the team applied the methodology, which partially stemmed from the company’s general project management

standards, and partially developed its own specific approach to project methodology, in which it applied a combination of traditional and agile approaches.

From the standpoint of user adoption and satisfaction, the implementation project was a success. Internal team members are pleased with the software solution. The manager is generally pleased with the solution, the collaboration with external contractors, and the collaboration within the internal team, as well as with the professional competence, technical expertise, and process knowledge of internal staff, but acknowledges that there is still room for improvement.

6. DISCUSSION ON THE SCOPE OF THE ERP IMPLEMENTATION PROJECT AND THE QUALITY OF UR DOCUMENTATION

We address five research questions about scope and UR documentation quality. We discuss how the type of software solution and software company selection, strong leadership and control from the investor side, activities prior to the start of the implementation project, a clearly defined scope at the time of contract conclusion, and well-specified user requirements all contribute to the success of an enterprise system implementation project.

First research question: Does the choice of the type of solution and the software company contribute to the success of an enterprise system implementation project?

In our opinion, the activities, choices, and decisions made prior to the start of an enterprise system implementation project have a large impact on the success of the implementation project. The use of structured techniques (Aloini et al., 2007) for selecting the type of software system as well as the project partner is critical. In our case study, the new application was based on a new software development that was transformed into a standard software solution. Vendors created software solutions from scratch based on UR and active collaboration among all implementation project partners. The programme was designed with the implementation project partner in mind as a future standard solution. As a result, the customer customised the standard solution to its own system characteristics while still being able to include some customised functionalities. The partner and the standard solution were carefully chosen by the sponsors and team based on the company's previous experience, price, and current and future application landscape.

> Encouraged by a potential partner, the investor *"realised that a dashboard of information at a glance in one place is a common topic for other companies as well." "The main criteria for the selection of an external software company was, aside from other criteria like price and so on, the fact that we wanted a semistandard solution rather than a full custom solution,"* he continued. Custom development, according to the manager, is riskier and results in a reduction in post-implementation system maintenance.

Before the implementation project could begin, both the software company and the investor had to put in a lot of work to define a common scope. The software company's interest was to create a market-ready standard solution, while the investor's interest was to include as many required functionalities as possible in the standard solution. The software company's initial scope proposal covered about 50% of the investor's needs.

> The software company in the end agreed to include some functionalities in the standard solution, but the manager said that *"not all UR from our side were accepted from the side of the software company. We reached a compromise about the common scope of delivery that would satisfy our needs, which was approved by the software company after many discussions and meetings. Finally, we could include some custom-developed functionalities."*
>
> *"The software development represented about half of the system implementation project; the other half was to embed and connect the interfaces in the entire system landscape,"* according to the manager.

The software company intended to build a standard solution without specific customer

requirements. Although high-level scope was defined by the contract, compromises regarding the functional scope of the implementation project were also raised during the course of the implementation project.

The selection of a software company: As previously stated, the selection of a software company is linked to the investor's preference for the type of solution. Finally, the main criterion for selecting a software company was a standard type of solution. However, it should be noted that the long-term strategic business relationship between the investor and the software company is, in our opinion, critical for the success of a system implementation project as well. Fitting the developed software into the organisation's application landscape was also a critical selection factor in selecting the vendor.

> *"The collaboration was not always easy, but overall it was good, and I believe we can declare it a success,"* said the manager.

The manager emphasised that their role, as well as the role of the software company, was clear from the start. This is critical, in our opinion, not only for this implementation project but also for other implementation projects. The software company's role was to create a cloud solution (SaaS), and the investor's role was to provide *"the right inputs in the design phase and also throughout the course of the entire ERP implementation project to precisely explain what we expect."*

Second research question: Does strong leadership and control from the investor side contribute to the success of an enterprise system implementation project?

In our opinion, the success of an enterprise system implementation project is heavily reliant on business management and users' awareness of their critical roles and the effort required to build an effective system. One of the most serious issues on the business side stems from the fact that users and business management do not participate as much as they should or become more involved only after problems occur. Businesses that lack experience would blindly trust process redesign to a third party, in this case a software company, not realising that successful modernization necessitates extensive process knowledge, which only internal colleagues truly possess. They pay insufficient attention to the fact that they should retain responsibility and control and that they are outsourcing only software development and not more. Furthermore, inexperienced investors fail to base their software company selection on solid analysis and arguments. Furthermore, they may overlook various types of available solutions and, unaware of other options, blindly choose a contractor.

In our specific case, the investor was very experienced and well aware that strong leadership and high involvement from their own side were required. The investor obtained oversight, control over the implementation project's progress, and coordination of the internal and external teams throughout the implementation project. Regular communication between the investor and software company, as well as control over the project deliveries from both sides, is essential for high-quality delivery.

Software companies under pressure from competitors, on the other hand, are eager to sign the contract without fully understanding the vision, scope, and high-level requirements of the implementation project. These companies' management frequently rushes to complete the contract with potential investors without questioning the competence of their own team or referring to previous experiences with similar implementation projects.

Our case study shows that the investor signed the contract with the software company with high-level project management skills and experiences, as well as a high level of knowledge of business processes and the way they were implemented into the standard software solution.

As a result, it is critical that the investors first have clarity about the scope of ERP implementation projects, provide a list of business user requirements, and check the references and experiences of the software company with similar system implementations. We can assert that if an investor is unsure of how the system implementation project will evolve at the time of contract conclusion, the

implementation project is very likely to encounter difficulties that will be difficult to overcome.

As previously mentioned, compromises concerning the functional scope of the implementation project were also raised during the implementation project, necessitating strong leadership and management on the part of the investor. The negotiation skills of the customer's representatives on one side and the software company on the other were also critical to the success of the implementation project. A sustainable, long-term solution acceptable to all involved partners was essential for the successful implementation of the software solution.

Third research question: Do activities prior to the start of the implementation project and a clearly defined scope at the time of contract conclusion contribute to the success of an enterprise system implementation project?

URs require special attention in all initiatives, but requirements analysis in ERP system implementation projects with a large number of high-level requirements is especially difficult. High-level requirements are intertwined with the company's strategic orientations and serve as the impetus for the implementation project's inception. Typically, high-level requirements are gathered even before the new ERP system is launched.

The requirements issues include: 1.) the challenge of preparing the requirements analysis to just the right precision depending on where and which phase of the implementation project we are in (including before the system launch); 2.) the challenge of adequately defining all requirements due to the complexity of the system, the number of different modules, the number of stakeholders involved, and possibly due to the number of different processes (Aloini et al., 2012).

The fact that the investor prepared a list of requirements before signing the contract demonstrates a systematic approach to the ERP implementation project from the start. When asked how precisely the UR were defined when the contract was signed, the manager replied:

> *"A solid understanding of the business demands is a good starting point. You need to understand the requirements, or you will be unable to plan anything."* He goes on to say that they knew what to expect from the tool and what data should be available, and that *"that is also the basis for calculating the benefits of the implementation project before it is approved."* Furthermore, the requirements list was critical so that the external software company *"could come with their proposal and a price"* and know exactly *"what is expected from them."* It took the investor about two months to develop the high-level requirements based on which the timeline and resources were calculated. According to the manager, *"it is impossible to estimate anything without high-level requirements."*

Finally, the contract was signed with reference to the lengthy list of high-level requirements. These requirements descriptions were, of course, modified once the implementation project began. Before the implementation project began, an excel file with individual UR items was compiled, reviewed, and signed off on, while the detailed description of UR was prepared in a Word document throughout the duration of the implementation project. Many of the user stories gathered contributed significantly to the final system's quality. Finally, a user acceptance test was conducted to ensure that the solution met the user's requirements. Individual requirements were reviewed and signed off on in a separate document with a reference to higher-level documents and a requirements list.

As a result, we believe that activities that occur prior to the launch of the implementation project have an impact on system implementation success. Requirement gathering might be executed differently from company to company. However, before formally starting the implementation project, the company shall be well aware of the business user requirements that are crucial for implementation project success. Stakeholders can decide on key parameters that represent key success factors, such as project methodology, organisation, vendor selection process, technical solution, and others, based on the requirements of an implementation

project. Collecting business user requirements after the implementation project starts demonstrates the company's lack of maturity in understanding both the project methodology and the business user requirements themselves. Such an approach is likely to result in scope constraints, delays, and additional costs. Hence, organisations may undertake independent initiatives aimed at comprehending the operational demands and prerequisites prior to approving the ERP implementation project initiatives.

Fourth research question 4: Is the quality of system requirements based on well-specified user requirements important for the success of an enterprise system implementation project?

In our opinion, it is critical for the success of an enterprise system implementation project that the business part of the team, consisting of experts who know the processes, clearly states exactly what it wants.

> According to the manager, *"it all starts with what the business wants to have."* He goes on to say that the company should communicate *"that they want to have release checks, actual data on their dashboard, electronic records, electronic signatures, multi-factor authentication, a real-time traffic light control system, and so on."* According to the manager, the business team should provide *"this kind of detail."*

Lack of user involvement from the beginning of an ERP system implementation project and even during its development can lead to dissatisfaction and low user adoption rates. The creation of user and system requirements is a process in itself. It necessitates collaboration among users and managers who possess business-oriented process-specific knowledge, business analysts who have process- and technical-knowledge, and IT specialists who possess specialised IT knowledge.

Business functions are the primary drivers and initiators of user stories and user requirements. IT experts are only involved to a limited extent. A review and, finally, frequent discussion about possible updates ensure the quality of the requirements documentation. In our specific case study, quality and compliance managers were reviewing user and system requirements from a compliance standpoint. Furthermore, users from multiple sites were involved in the project from the start. The value of user participation cannot be overstated. Regular and continuous communication between business and IT needs to start with the collection of business user requirements. IT could assist the business in writing business user requirements in a structured manner so that translation into technical language is possible.

Fifth research question: Does the alignment of scope definition and user requirements within the organisation contribute to the success of an enterprise system implementation project?

In the case that URs documentation is not aligned and coordinated among business users within an organisation, deviations in the understanding of how business process functionalities should function may occur during the ERP system implementation project. With proper user requirements documentation and technical documentation, unnecessary changes in later phases can be avoided. Even in the case of agile methodologies that are based on anticipating changes to requirements (when these cannot be avoided), there is, in our opinion, no indication that teams should not timely and adequately address issues that might, in later phases, lead to a flood of changes to the initial system design and requirements documentation. Theunissen et al. (2022) recommended that even agile-led software development teams increase their efforts to prepare adequate requirements documentation.

Based on their understanding of URs, IT experts prepare system requirements. Therefore, a good understanding of URs by IT technical experts, who preferably understand specific business processes and are familiar with ERP system operation, contributes to high-quality system requirements and technical documentation. When the URs are not specified adequately during the early phases, preferably by using verified procedures for the preparation of URs that ensure the alignment of URs within an organisation, numerous deviations might be observed during the user testing phase.

Many deviations that are discovered during the testing phase and the associated need to introduce changes in later phases could be avoided if URs documentation is aligned and coordinated among business users during the early stages. When many deviations are recognised only during the testing phase of an ERP system implementation project, users may realise that the UR documentation is insufficient, not aligned, or even false, and it needs to be changed or corrected together with the subsequent changing of the settings, configuration, and technical implementation of the ERP system. This can result in a deadline extension and higher costs.

7. FINDINGS

The ERP system implementation project is generally complex. It involves multiple stakeholders and requires significant investment. The study employs a case study methodology and focuses on reviewing and comprehending the scope and user requirements for an ERP system implementation project being carried out in a complex international organisation with many different stakeholders, including business and IT experts, as well as the involvement of various external companies. The ERP implementation case study provides insights into how to successfully manage them and the challenges they face. In an interview with the manager, we focused on how the collection, preparation, and improvement of user requirements influence ERP implementation project performance.

Initial user requirements are drivers of change and are important for the approval of the implementation project in the first place. They are collected before the company decides what kind of solution to implement. Therefore, we assume that user requirements are one of the most significant elements for the success of an ERP system implementation project.

In our case study, the implementation project sponsors and team carefully picked the implementation project partner and the standard solution based on the company's past experience, the price, and the current and future application landscape. Both the software company and the investor defined a common scope, and the software company agreed to include some but not all functionalities in the standard solution. We conclude that the use of structured techniques for selecting the type of software system as well as the implementation project partner is critical for the success of an enterprise systems implementation project **(RQ 1).**

We also acknowledge that ERP system implementation projects require quality leadership responsible for scope execution, user requirement implementation projects, deadline compliance, budget control, and much more **(RQ 2).** A successful enterprise system implementation project is heavily reliant on business management and users' awareness of their roles and efforts. Businesses that lack experience may blindly trust process redesign to a third party, not realising that successful modernization requires extensive process knowledge. Experienced investors should retain responsibility and control and base their software company selection on solid analysis and arguments. Regular communication between the investor and the software company is essential for high-quality delivery.

Further, we emphasise the importance of the prior activities that began before contractors were selected and a contract was signed. The investor prepared a list of requirements before signing the contract, which was critical so that the external software company could come with their proposal and a price and know exactly “what is expected from them.” After all, the implementation project team calculates the timeline and resources based on high-level requirements. We conclude that prior activities initiated by the implementation project team are critical to the achievement of the expected results **(RQ 3).** Collecting business user requirements after the implementation project starts demonstrates the company's lack of maturity in understanding both the project methodology and the business user requirements themselves. Therefore, companies may rightfully create projects to understand business needs and requirements before approving ERP implementation projects.

The manager and the research team say that good user requirements are a must for a successful enterprise system implementation project **(RQ 4).** They bring clarity, even in an

agile setting. The creation of requirements documentation is a process of collaboration among users, managers, business analysts, and IT specialists. Business functions are the primary drivers or initiators of user stories and user requirements, while IT experts are only involved to a limited extent. Regular and continuous communication between business and IT needs to start with the collection of business user requirements. IT could assist the business in writing business user requirements in a structured manner so that translation into technical language is possible.

When the URs are not aligned during the early phases, preferably by using verified procedures for the preparation of URs that ensure the alignment of URs within an organisation (**RQ5**), numerous deviations might be observed during the user testing phase. As presented in our case study, deviations in the ERP system implementation project can be avoided by aligning and coordinating URs among business users in the early phases. It is therefore recommended, even in an agile setting, to ensure alignment of scope and URs within the organisation to avoid unnecessary changes, delays, and budget overruns in system implementation projects.

Lastly, when it comes to real-world effects, we suggest that ERP implementation project teams pay close attention to adequate requirements analysis. The project teams should evaluate the advantages and disadvantages of detailed requirements documentation versus the costs of changes that might occur when requirements remain flexible. The general scope, however, should have clarity prior to the approval and start of the ERP system implementation project.

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