Research Article

Expectations of Headquarters Employees from ERP Systems in the Turkish Construction Sector

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Abstract

Turkey's construction industry constitutes an important economic power with large projects and large-scale construction activities. Effective management of construction projects requires efficient use of workforce and resources. With today's digitalization and integration processes gaining momentum, Enterprise Resource Planning (ERP) Systems are being used effectively. These systems offer benefits such as providing quick access to information, organizing business processes, using resources more effectively and increasing coordination. In this context, the place of ERP Systems in the sector is increasing. In order for ERP systems to be used effectively, they must be able to meet users' expectations. The main purpose of this research is to thoroughly investigate the expectations of head office personnel in the Turkish construction industry regarding ERP systems and to evaluate to what extent these expectations are met after implementation. A survey was conducted to obtain information about the expectations of employees in the head offices of Turkish construction companies that use and do not use ERP systems and to evaluate the satisfaction levels of employees in the headquarters of companies that use ERP. The results of this study are expected to provide valuable information to both ERP developers and construction companies.

Keywords: *Expectations, Construction Industry, Enterprise Resource Planning*

1. Introduction

1.1. Development of Enterprise Resource Planning

The development of ERP systems resulted from the evolution of technological and software solutions aimed at meeting the needs of businesses in the field of production and resource management. The historical development of ERP systems dates back to the 1960s.

In the 1960s, ERP systems were based on Material Requirements Planning (MRP) systems, which businesses used to manage materials and plan their production processes. MRP systems have helped companies determine the materials needed in the production process, when they will be needed, and in what quantities. This system facilitated the planning of production and purchase orders [1].

In the 1970s, MRP systems were developed to cover manufacturing resources, leading to what is called Manufacturing Resource Planning (MRP II). These systems were used as tools that facilitate the effective planning and control of all resources allocated to production processes in manufacturing companies [2].

In the 1990s, MRP II systems evolved into ERP systems with the inclusion of additional business processes. Gartner Group coined the term "ERP" in the 1990s. The resulting ERP systems have become comprehensive information management solutions that combine many functions, including accounting, human resources, supply chain management and customer relations, into one cohesive framework [3].

Originally created as a software tool specifically targeting production and materials management, ERP systems have gradually expanded to include all aspects of business operations. This ongoing evolution has kept pace with the needs of organizations as they progress through their digital transformation journey.

Enterprise Resource Planning (ERP) systems can be defined as software solutions that integrate all business operations with a comprehensive approach and adopt a process-oriented perspective. These systems facilitate seamless integration between various departments, providing customized solutions based on data and information requirements in line with business objectives. ERP systems also offer strategic benefits to organizations by integrating multiple subsystems [4].

ERP systems organize, support and provide comprehensive reporting capabilities for the flow of information at every stage of a project or production process. Their primary goal is to consolidate all data, analyze it effectively and achieve the desired results [5].

ERP is a comprehensive information management platform for organizations, consisting of software packages that integrate various business functions. These software systems connect organizational processes to enable holistic management. ERP systems cover functions such as finance, production, purchasing, procurement, human resources and logistics. By integrating all these business processes on a single platform, it simplifies coordination and streamlines operations.

In complex industries like construction, ERP systems emerge as a key tool in project management. They enable all departments to share the same source codes, communicate in a unified language, and monitor all processes from a single system, even for construction projects located in different cities or countries. The adoption of ERP systems in the Turkish construction sector plays a significant role in enhancing operational efficiency.

1.2.Enterprise Resource Planning in the Construction Sector

Construction is the process of bringing together materials and fixed equipment to create a completed structure [6]. Construction project management is a professional management process that prioritizes time, cost, and control, encompassing everything from the initial concept (dreams) to the completion (delivery) of the project [7].

The construction sector faces numerous underlying challenges. Some of these include the fragmented, decentralized, and low-efficiency nature of the industry, as well as the insufficient utilization of technological advancements. More importantly, the construction sector has yet to fully implement information integration management, which negatively impacts productivity and quality. These issues have necessitated the search for new methods and solutions to enhance the sector's productivity [8].

The vast amount of information in the construction sector and its time-sensitive nature makes it extremely difficult to manage. Additionally, various industry characteristics, such as the large number of organizations involved in projects, lack of control over project locations, and challenging working conditions on construction sites, further complicate the management of dispersed information [9].

Despite the availability of various software solutions in the market for planning, scheduling, quantity takeoff, progress payments, cost control, and accounting, the flow of information in construction projects is still predominantly managed manually. Today, different departments often use independent software programs, and the outputs from these programs are manually processed as inputs in other units of the company. However, the construction sector deeply feels the lack of standardized systems that can integrate these processes. Many construction companies have developed systems for individual departments, but these systems often provide limited solutions that work only within the respective departments, failing to achieve seamless integration with other departments or project sites.

Recently, construction companies have been conducting research and development activities to improve information transformation processes. Managers have clearly expressed the need for intelligent information integration that supports decision-making and encompasses the entire design and construction process [10].

A well-structured integration framework supports and enhances all forms of communication and collaboration processes within a project. It provides stakeholders operating in virtual environments with access to up-to-date data, tools for conducting complex analyses, and the ability to develop intelligent systems [11]. The construction industry is a process where multiple organizations work together and rely on the exchange and sharing of large volumes of complex data and information. Successful completion of a project depends on accurate, efficient and timely communication and exchange of information and data between project teams [12].

In this context, the effective use of information and technology plays a critical role in increasing the success of projects. ERP systems used in construction projects improve integration processes, reduce error rates and reduce costs.

The construction sector in Turkey is a rapidly growing and developing sector and is an important component of the country's economy. Projects, infrastructure developments and large-scale activities create an environment where competition in the sector increases and the need for constant innovation increases. Not only technical knowledge and experience, but also digital tools used in project management play a major role in the successful completion of construction projects.

With the acceleration of digitalization processes, construction companies today are turning to Enterprise Resource Planning (ERP) systems to increase operational efficiency and manage projects more effectively. ERP systems offer a vital solution to streamline

processes and carry out project management more efficiently. These systems, which integrate all business processes on a central platform, make it easier for companies to make strategic decisions by providing real-time data flow and quick access to information. However, the success of ERP systems depends not only on their implementation, but also on how effectively users adopt and use these systems.

The use of ERP systems in the Turkish construction industry is especially important for employees' head offices. Headquarters is the unit responsible for a wide range of activities, from project planning and resource allocation to cost tracking and progress reporting. Therefore, the effective use of ERP systems by headquarters employees is a critical factor in completing construction projects on time, within budget and with high quality.

In this context, determining the expectations of central employees from ERP systems in the Turkish construction industry is an important step towards successfully managing the digital transformation processes of the sector.

The main purpose of this study is to determine the expectations of head office employees from ERP systems in the Turkish construction industry. Based on the findings, the study also aims to provide suggestions for increasing the effectiveness of ERP systems. In addition, the difficulties and problems that prevent the effective use of ERP systems will be discussed and suggestions will be made to improve the digitalization process in the sector.

2. Materials and Methods

This study was carried out as a descriptive research project to examine the expectations of head office employees regarding ERP systems in construction companies in Turkey.
The sample of the research consisted of 63 head office employees working in small, medium and large-scale construction companies. A survey was conducted to compare the expectations of employees who use and do not use ERP systems. The survey comprised 14 items and utilized a 4-point Likert scale to collect data.
Participants included headquarters employees who use ERP systems (80%) and those who do not (20%). Regarding gender distribution, 66% of the participants were male, and 33% were female.
The survey questions focused on topics such as access to information, reporting and analysis capabilities, decision-making processes, project and resource management, and workload.
The data were analyzed using Microsoft Excel 2021.

3. Results

This research examines the expectations of headquarters employees in Turkey's construction sector regarding ERP systems and the relationship between these expectations and ERP usage.

Table 1: Comparison of Expectations Between ERP Users and Non-ERP Users

	Non-ERP Users		ERP Users	
Survey Question	Mean	Standart Deviation	Mean	Standart Deviation
Quick Access to Information	3,750	0,452	3,588	0,668
Reporting and Analysis Capability	3,416	0668	3,509	0,578
Acceleration of Decision-Making	3,666	0,492	3,392	0,665
Project Management and Tracking	3,833	0,389	3,647	0,626
Procurement Management	3,750	0,452	3,549	0,642
Financial Management and Tracking	3,666	0,492	3,549	0,672
Improvement of Resource Management	3,583	0,793	3,392	0,750
Standardization of Business Processes	3,500	0,674	3,470	0,730
Reduction of Manual Tasks	3,666	0,651	3,352	0,912
Reduction in Need for Phone and Email	3,333	0,984	3,078	0,934
Reduction in Communication Barriers	3,333	0,651	3,058	1,027
More Balanced Workload	3,166	0,937	3,098	0,877
Increase in Work Performance	3,583	0,668	3,217	0,826
Data Security and Consistency	3,666	0,492	3,549	0,729

The data obtained shows that those who do not use ERP systems generally believe that ERP systems will provide greater benefits and have higher expectations. This indicates that they think the advantages provided by ERP systems will be more significant.

The expectations of headquarters employees using ERP systems focus on functions that support the effective use of the system. Expectations are particularly high in "Project Management and Tracking." However, expectations in areas such as "Fast Access to Information," "Supply Chain Management," and "Financial Control" show similar results.

Some survey results reflect different user experiences. Specifically, there are noticeable differences among participants regarding "Acceleration of Decision-Making Processes," "Reduction of Manual Tasks," and "Improvement in Communication." High standard

deviations suggest that these features of ERP systems may not be equally efficient for every user. This indicates that ERP systems may perform differently depending on the organizational structure or usage style.

While headquarters employees using ERP systems generally have expectations from the system, the varied experiences with each feature indicate that ERP systems can have different effects across organizations and even departments within the same organization.

Headquarters employees who do not use ERP systems have higher expectations on average. This suggests that individuals who have not yet experienced ERP systems expect to gain broader benefits from the technology. One of the prominent areas is "Project Management and Tracking". Those who do not use ERP systems see the effective management of functions such as planning, progress tracking, and process control at all stages of a project as their primary expectation. The high expectations in this area reflect the optimistic perspective on the potential contributions of ERP systems to project processes.

Likewise, "Quick Access to Information" and "Supply Chain Management" are also important for those who do not use the ERP system. Lower standard deviations indicate that this group of employees has more consistent expectations and seeks clearly defined improvements from the system.

Overall, expectations overlap between ERP users and non-users, but there are noticeable differences between the two groups. Head office employees who use ERP systems have a more realistic and experience-based perspective because they are aware of the functions offered by the system. On the other hand, non-users have expectations based on a theoretical and more optimistic approach.

4. Discussion and Conclusion

The findings of this study reveal that there are significant differences in expectations regarding the use of ERP systems between employees who use the systems and those who do not. Headquarters employees who did not use ERP systems reported higher expectations regarding the potential benefits of these systems, while employees who used ERP systems generally had more moderate expectations. This suggests that as ERP users experience the real benefits of the systems, their expectations become more measured.

It is seen that expectations regarding ERP usage are shaped according to the system usage level, company experience and organizational processes. The higher expectations of non-

users may be due to the expectation of obtaining more benefits from these systems. It is also important to emphasize that ERP systems are not just technological tools, they must work in harmony with organizational processes.

Customization to meet specific needs is a critical factor for the success of ERP systems. Considering that each company has its own unique business processes and organizational requirements, ERP systems must go beyond generalized solutions and be tailored to meet specific expectations. Adapting systems to meet the needs of the institution will increase efficiency and accelerate the adaptation process. The customization process should cover not only the technical aspects of the system, but also its alignment with users' workflows and corporate goals.

As a result, successful implementation of ERP systems requires effective expectation management and customization to meet organizational needs. ERP users' expectations are shaped by their experience with the implementation process, while non-users' expectations tend to be higher due to their lack of direct experience. This highlights the need to view ERP systems as both technological and organizational tools. For companies switching to ERP systems, clarifying expectations and focusing on personalization during the implementation process will significantly increase the success of the system.

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