*Integration of automation systems into ERP system in tourism enterprises: Konya province example

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Abstract

Technology is present in every sector, including tourism. Businesses in the tourism industry use automation systems to conduct their operations more easily and efficiently. Automation systems allow processes to continue automatically. In this context, the aim of this study is to determine the most used automation system in tourism enterprises. ERP systems, which are especially preferred in the fields of finance and accounting and use cloud computing technology, are also beneficial for these businesses. Another objective of this study is to provide information about the transition process to known beneficial ERP systems. The Analytical Hierarchy Process (AHP) was used in accordance with the purpose of the study. Data were obtained by face-to-face interviews with 12 general and department managers within the scope of hotel enterprises located in the central districts of Konya province. As a result of the analysis made on the obtained data, it was concluded that the most preferred automation system was Elektra.

1. Introduction

Although tourism is historically recorded as the first form of mobility, the word itself literally means the act of "turning" or "returning" (Süntar, 2023). While initial human movement was driven by fundamental needs such as sustenance and shelter, the progression of time, the shift in individual desires and requirements, and technological advancement have fostered diversity and variation within the tourism sector. Individuals often satisfy their tourism-related needs through hotel businesses. Hotel enterprises collectively fulfill the requirements for rest, entertainment, nourishment, and accommodation.

With technological development, hotel businesses widely utilize automation systems to streamline numerous processes. Automation systems are artificial intelligence (AI) based software designed to mimic operational tasks, thereby automating procedures (Karacaer, 2023). More comprehensive than standard automation systems are Enterprise Resource Planning (ERP) systems. The concept of ERP, which stands for Enterprise Resource Planning, is used across all departments within a business to facilitate communication among interconnected parties such as suppliers, customers, and

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management. Furthermore, ERP systems reduce workload and provide time savings. The ERP system is web-based and leverages cloud computing technology (Karateke, 2016).

This study aims to identify the most preferred automation system utilized by hotel businesses and to provide information regarding the transition to and implementation of the ERP system. Face-to-face interviews were conducted with department managers and general managers of 14 four- and five-star hotel businesses located in the central districts of Konya province. Due to inconsistencies detected in 2 of the collected questionnaires, they were excluded from the analysis, and the study proceeded with 12 questionnaires. The Analytical Hierarchy Process (AHP) was used, which is considered the most accurate method when the opinions of multiple experts are desired. A questionnaire was structured by defining the overall goal, specific criteria, and alternative options. Four specific alternatives were identified: Akinsoft, AmonRa, Elektra, and Opera-Fidelio. The phrase "Used Automation" was also included to account for any system currently in use by the business that might not be listed among the predetermined alternatives.

2. Literature review

This section provides a comprehensive overview of tourism, technology integration in the tourism sector, and automation systems including ERP implementations in hotel businesses.

2.1. Tourism and its economic significance

Upon examining the definition of tourism, it is evident that a variety of distinct definitions exist. Due to its interdisciplinary nature, providing a precise definition is quite challenging. The variation in service areas and how these differences change based on individuals also contributes to the difficulty of reaching a clear definition (Güçlü, 2021). Eduard Guyer-Freuler, the first to introduce the concept of tourism, defined it as "the mutual exchange of goods, information, and communication, along with the beauty of nature and art." The World Tourism Organization (UNWTO) describes it as the totality of relationships that involve temporary accommodation and do not result in material gain (Süntar, 2023). In contrast, the Ministry of Culture and Tourism sets boundaries for the definitions, stating that the duration of the tourism movement should not exceed one year (Güçlü, 2021).

The term tourism is used to express a broad spectrum, which has consequently led to the formation of its various types. A common consensus has not been reached regarding the classification of tourism types. Although certain common ideas are expressed at specific points, they differ in terms of purpose. Every type of tourism is similar to and closely connected with the others, making a clear classification difficult (Demirer & Hatırnaz, 2023).

Tourism is a constantly changing and developing sector. When the right steps are taken, it can generate high profits. Therefore, it is also a competitive sector. In addition to high profits, it leads to increased employment opportunities and infrastructure development in the region (Taşalan, 2024). Expenditures made by individuals visiting destinations directly impact the revenues of local service providers, while indirectly affecting the incomes of residents. Consequently, international visitors hold significant importance. These visits generate an inflow of resources and lead to an increase in tourism investments. This growth, in turn, boosts employment opportunities in the labor-intensive tourism sector. Tourism benefits not only businesses that directly serve visitors but also sectors like agriculture, construction, communication, and industry (Karamanoğlu, 2024).

Tourism is a sector that markets a composite product, requires high investments, experiences rapid technological advancements (Şengal & Şengal, 2024), has a continuous need for personnel (Taşalan, 2024), can significantly affect societies due to its appeal to large masses, and is constantly evolving. As an international trade segment, it accounts for 40% of service trade (Üzümcü, 2024). Turkey is positioned within this sector. Due to its natural beauty and historical structure, the country is

characterized as suitable for tourism investments and ventures and is successful in attracting visitors (Şengal & Şengal, 2024).

2.2. Technology integration in tourism

Technology is an entity that surrounds every individual and is constantly evolving. This continuous development is also applied within the service-oriented tourism sector, providing convenience for both businesses and individuals. The intermingling of technology and the tourism sector also brings about changes in individual tourism experiences and preferences (Çakırtaş & Genç, 2024). The current era, characterized by contemporary technological developments, is referred to as Tourism 4.0 or, alternatively, digital transformation. Digital transformation denotes continuous development and innovation, and the tourism industry is striving to adapt to this transition (Atar, 2020).

Digital transformation has given rise to related concepts in the tourism sector. One such concept is e-tourism, which refers to the online execution of reservations or the use of tools utilized during travel. Another contemporary term is smart tourism, which describes the integration and collaboration of objects used with technology (Hazarhun, 2022). There are businesses that use technological advancements and tools within the scope of smart tourism. One of the most frequently used technological hardware components in businesses is QR technologies (Pajo, 2024). The use of smartphones has not only led to an increase in more flexible behaviors outside of planned trips for various activities (Cabi Bilge & Kara, 2024) but has also increased the use of QR code technology (Ivanov et al., 2019).

Smart tourism requires equipping both tourists and businesses with technology. The technologies utilized in this context include mobile applications, websites, 3D printers, drones or unmanned aerial vehicles (UAVs), wearable technology, near field communication (NFC), Internet of Things (IoT), radio frequency identification (RFID), blockchain technology, virtual reality and the metaverse, artificial intelligence (AI), and cloud computing (Özgüner Kılıç, 2017; Sönmez et al., 2018; Arslan, 2023; Erçetin, 2023; Erdoğan, 2023; Eryılmaz, 2023; Gönül & Erciş, 2023; Mete, 2023; Tejaswini et al., 2024).

2.3. Automation systems and ERP in hotel businesses

Automation systems assist in accelerating and simplifying processes. Automation means the automatic execution of tasks without any human intervention in the procedures that need to be carried out. With the advancement of internet technology, there have been developments in the speed and volume of information transfer. This situation has enabled the use of smart automation systems. Smart automation systems integrate all business processes within an enterprise with artificial intelligence, equipping them with learning and decision-making capabilities. These systems possess the ability to mimic repetitive tasks within a specific set of rules (Karacaer, 2023). The largest investment in these systems is typically made in the finance and accounting departments (Karacaer, 2023).

Another type of software widely used, especially in the accounting domain, is ERP software. ERP software, also known as Enterprise Resource Planning, provides vital information as a management tool in businesses. Its availability as a complete package ensures a seamless workflow (Al-Âmin et al., 2023). ERP software facilitates the management of all processes, starting from the product procurement stage in businesses up to the point of delivery to the customer (Çopur, 2015). ERP software, derived from the abbreviation "Enterprise Resource Planning," provides information integration (Karateke, 2016), offers a unified management capability (Aydın, 2017), and consists of computer programs that bring all departments within a company together and collect comprehensive data (Tutar, 2018).

Due to the features they contain, ERP systems offer numerous benefits to enterprises. Among the benefits of ERP systems is the inclusion of back-office employees (Human Resources, Accounting, Sales, etc.) into the system (Aydın, 2017). These systems aid in integration by ensuring continuous communication with all departments, managers, customers (those who shop or visit), and suppliers (those who provide products). The customization feature, which allows them to be used in every sector, makes them useful in meeting specific business needs. Their flexible structure facilitates adaptation to updates, and their modular design allows for the purchase of only the necessary component when required. Since a single database is used in ERP systems, physical distance does not pose a problem (Tutar, 2018).

2.3.1. Selection and implementation of ERP systems

ERP systems provide ease and benefits to businesses in many ways. However, they require a significant investment during the implementation phase. The first step in establishing an ERP system is selecting the most appropriate system aligned with the business's goals and objectives. It is crucial to select ERP software based on the organization's existing strengths (Çopur, 2015). The implementation process of ERP systems in businesses can be evaluated in three phases: the pre-implementation phase, the implementation phase, and the post-implementation phase. Each phase comprises specific steps (Akarçay, 2020).

In the pre-implementation phase, a plan must be developed, and a project team established. Resource planning, especially human resources, is highly critical for this process. Establishing a team composed of experts within the organization facilitates both the selection and implementation stages. Consulting services are often overlooked during the pre-implementation phase. If an in-house person lacks sufficient objectivity, significant problems can arise at the very beginning of the ERP system setup.

For the implementation phase to commence, an analysis must first be conducted. This analysis allows the business to discover its strengths, weaknesses, and areas for improvement. Following the analysis, the suitability of the business infrastructure for the ERP system must be determined, and interventions should be made if necessary. Once the required infrastructure is secured, managers and employees must be provided with the necessary training. When this education and information stage is managed correctly, the system's functionality will increase. Compatibility and synchronization efforts are also critical in the implementation phase. Authorization must be granted within the scope of work for every manager and personnel who will use the system. At this stage, the ERP system becomes ready for use. In the post-implementation phase, regular maintenance and development work must be carried out (Aydın, 2017).

2.3.2. Cloud ERP

ERP systems are functional software applicable in every sector. However, with time and advancements, as internet speed and data volume increase, these traditionally known systems become inadequate. In response, cloud ERP systems, which are lower in cost and easier to implement for businesses, have been developed (Al-Âmin, 2023). Cloud ERP utilizes the cloud computing infrastructure. Cloud computing, which was first used in the 1990s, is known for the ease it provides during procurement and maintenance stages, and for automating payments. Due to these features, it is preferred as an underlying infrastructure for ERP systems. The cloud infrastructure allows businesses to achieve better adaptation (Juturi, 2023). In addition to adaptation, this infrastructure also creates diversity.

Cloud ERP systems offer businesses different cloud types. Public cloud allows the system, both software and hardware, to be used by various stakeholders. Private cloud permits only a single user,

making it more secure due to restricted access. Hybrid cloud is formed by combining public cloud and private cloud systems. This combination is entirely optional (Alper, 2021). Cloud ERP reduces IT expenditure by using an information pool. It also increases security and enhances the system's functionality (Demi & Haddara, 2018).

3. Method

ERP systems are crucial software for businesses. This significance has resulted in numerous studies about ERP systems being present in literature. An examination of these studies indicates that ERP systems have been investigated across a wide range of sectors. These researched sectors include service, logistics, hotel, textile, port, construction, food, healthcare, and airline industries (Valérie & Pierre-Alain, 2006; Avcu, 2010; Aypar Tekbaş, 2013; Karateke, 2016; Akarçay, 2020; Aladağ, 2021; Koska & Erdem, 2021; Yağar, 2021; Alparslan, 2023).

3.1. Data collection

The research population was defined as all hotel businesses. However, since the research could not be conducted on the entire population due to constraints in time and cost, particularly because businesses have different characteristics, the sample was based on four- and five-star hotel businesses located in the central district of Konya province. Face-to-face interviews were conducted with department managers and general managers of 14 four- and five-star hotel businesses. Due to inconsistencies detected in 2 of the collected questionnaires, they were excluded from the analysis, and the study proceeded with 12 questionnaires.

3.2. Analytic hierarchy process (AHP)

The Analytic Hierarchy Process (AHP), one of the Multi-Criteria Decision Making (MCDM) methods, was employed as the methodology in this study. AHP is a method utilized when seeking the opinions of multiple experts during complex decision-making processes. The objectivity of the method increases with the inclusion of multiple expert opinions.

In the AHP method, the problem is first defined, and the overall goal is set. In line with the defined problem, criteria are established based on the experts' opinions regarding the issue, and a hierarchical structure is formed. Five main criteria were determined in line with the study objectives. These criteria were established as Integration, Workload, Cost, Satisfaction, and Efficiency. Sub-criteria were also defined for each main criterion to provide a more comprehensive evaluation framework.

A numerical scale is created to obtain data for non-numerical expressions. The core values on the scale are 1, 3, 5, 7, and 9. The values 2, 4, 6, and 8 are used to assign a lesser value than the subsequent value. For the result of the analysis to be considered consistent, the Consistency Ratio (CR) must be below the value of 0.10. Degrees of importance are determined to establish the numerical scale (Yaykaşlı & Ecemiş, 2018). The comparison is made according to the 1-9 scale presented in Table 1.

Table 1. 1-9 Significance scale.

Importance degree	Definition
1	Equally Important
2	
3	Moderately Important
4	
5	Strongly Important
6	
7	Very Strongly Important
8	
9	Extremely Important

Reference: (Saaty, 2008).

3.3. Alternatives and data analysis

A questionnaire was structured by defining the overall goal, specific criteria, and alternative options. Five alternatives were determined based on the established criteria. These alternatives were identified as: Akinsoft, AmonRa, Elektra, and Opera-Fidelio. As the final alternative, the phrase "Used Automation" was included to represent the software currently employed by the business, even though it was not listed among the predetermined options in the questionnaire. A

The analysis was conducted using the Analytic Hierarchy Process (AHP) method, consistent with the study's aim. The geometric mean of the collected questionnaire data was calculated and analyzed using the Super Decision software. Furthermore, a frequency analysis was performed to more clearly determine the demographic characteristics of the participants.

Ethical approval for this study was obtained from Selçuk University Scientific Ethics Evaluation Board (Decision date: 06.11.2023, Decision number: 190, Document registration number: 632087).

4. Results

4.1. Demographic characteristics

The demographic results are presented in Table 2. The analysis indicates that the vast majority of the individuals participating in the study are male (91.7%). Upon examining the participants' age distribution, it is observed that individuals in the 18–30 age bracket and the 41–50 age bracket are equally represented (33.3%). This result suggests that the participants are composed of both young adults and middle-aged individuals. When scrutinizing the educational status, it is seen that 58.3% of the participants hold a Bachelor's Degree. Regarding marital status, it was determined that the majority of the participants are married individuals (66.7%).

Table 2. Participants' demographic results.

Demographic results		N	%
Gender	Female	1	8,3
	Male	11	91,7
Age	18–30 years old	4	33,3
	31-40 years old	3	25,0
	41-50 years old	4	33,3
	51 years and over	1	8,3
Educational Status	High school and below	1	8,3
	Associate Degree	2	16,7

	Bachelor's Degree	7	58,3
	Graduate Degree and above	2	16,7
Marital Status	Married	8	66,7
	Single	4	33,3

When examining system knowledge levels (Table 3), it is seen that all participants have knowledge about automation systems (100%). However, when asked about ERP knowledge, this rate drops to half (50%). While a "Partially" response was identified at a rate of 16.7% regarding ERP systems, it was determined that individuals with no knowledge about the systems make up 33.3%.

Table 3. System knowledge levels.

System knowledge levels		N	%
	Yes	6	50,0
ERP Knowledge	No	4	33,3
	Partially	2	16,7
Hotel Automation Knowledge	Yes	12	100,0

When examining Table 3, it is seen that all participants have knowledge about Automation Systems (100%). However, when asked about ERP knowledge, this rate drops to half (50%). While a "Partially" response was identified at a rate of 16.7% regarding ERP systems, it was determined that individuals with no knowledge about the systems make up 33.3%.

4.2. Normalization analyses of main and sub-criteria

The normalization analysis of main criteria is presented in Table 4. The results of the analysis of the data obtained from the participants indicate that Integration is the criterion with the highest importance (0.268). Integration is subsequently followed by Efficiency (0.249) and Satisfaction (0.216). Workload received a value of 0.165, while participants assigned the lowest value to the Cost criterion (0.099), demonstrating that they consider the Satisfaction and Efficiency criteria to be more important. The determined Consistency Ratio (0.016) signifies that the responses are reliable.

Table 4. Normalization analysis of main criteria.

Main criteria normalization analysis	
Integration	0.268
Workload	0.165
Cost	0.099
Satisfaction	0.216
Efficiency	0.249
Consistency Ratio	**0.016**

The normalization analysis of sub-criteria for the Satisfaction main criterion is presented in Table 5. The results indicate that Customer Satisfaction is the most important factor for the participants (0.633). Personnel Satisfaction (0.174) and Manager Satisfaction (0.191) were found to have less importance. The Consistency Ratio shown in the table (0.008) confirms that the responses are reliable.

Table 5. Normalization analysis of sub-criteria for the satisfaction main criterion.

Sub-criteria	Normalization analysis

Customer Satisfaction	0.633
Personnel Satisfaction	0.174
Manager Satisfaction	0.191
Consistency Ratio	**0.008**

The results of the Normalization Analysis for the Satisfaction main criterion indicate that Customer Satisfaction is the most important factor for the participants (0.633). Personnel Satisfaction (0.174) and Manager Satisfaction (0.191) were found to have less importance. The Consistency Ratio shown in the table (0.008) confirms that the responses are reliable.

4.3. Analysis of criteria with software companies

The analysis of Integration sub-criteria with software companies is presented in Table 6. The sub-criteria for the Integration main criterion were determined as Inter-Unit Integration and Inter-Departmental Integration. In both sub-criteria, the Elektra software obtained the highest value (0.383 and 0.474, respectively). This result leads to the conclusion that the Elektra software holds high importance for Integration. Upon examining the Consistency Ratio in both sub-criteria, the responses were determined to be reliable.

Table 6. Analysis of integration sub-criteria with software companies

Analysis of integration sub-criteria		
Software companies	**Inter-unit integration**	**Inter-departmental integration**
Akinsoft	0.077	0.070
AmonRa	0.087	0.059
Elektra	0.383	0.474
Opera-Fidelio	0.225	0.245
Used Automation	0.225	0.149
Consistency Ratio	**0.011**	**0.005**

The analysis of Workload sub-criteria with software companies is presented in Table 7. The sub-criteria for the Workload main criterion were determined as Personnel Workload and Manager Workload. The results of the analysis show that Opera-Fidelio (0.290) has the highest importance in the Personnel Workload sub-criterion. The Elektra software follows Opera-Fidelio with a close value (0.285). In the Manager Workload sub-criterion, the Elektra software obtained the highest value (0.401), identifying it as the software that reduces the managerial workload the most. An examination of the Consistency Ratios for both criteria determined that the ratios are consistent and reliable.

Table 7. Analysis of workload sub-criteria with software companies.

Analysis of integration sub-criteria		
Software companies	**Personnel workload**	**Manager workload**
Akinsoft	0.086	0.080
AmonRa	0.072	0.066
Elektra	0.285	0.401
Opera-Fidelio	0.290	0.264
Used Automation	0.266	0.186
Consistency Ratio	**0.049**	**0.019**

The analysis of Çost sub-criteria with software companies is presented in Table 8. The sub-criteria for the Cost main criterion were determined as Operating Expenses and Service Cost. The analysis indicates that the Elektra software received the highest degree of importance in both sub-criteria

(0.322 and 0.405). The Elektra software was identified as providing the most assistance to users regarding the Operating Expenses and Service Cost criteria. The Consistency Ratios of the analyses confirm that the responses are reliable.

Table 8. Analysis of cost sub-criteria with software companies.

Analysis of integration sub-criteria		
Software companies	**Operating expenses**	**Service cost**
Akinsoft	0.098	0.075
AmonRa	0.079	0.071
Elektra	0.322	0.405
Opera-Fidelio	0.233	0.217
Used Automation	0.265	0.231
Consistency Ratio	**0.027**	**0.004**

The analysis of Satisfaction sub-criteria with software companies is presented in Table 9. The sub-criteria for the Satisfaction main criterion were determined as Customer Satisfaction, Personnel Satisfaction, and Manager Satisfaction. The Elektra software received the highest value across all determined sub-criteria. This result demonstrates that the Elektra software is considered the most important by participants regarding satisfaction (0.434, 0.410, and 0.473). An examination of the Consistency Ratios indicates that the ratios are reliable and consistent.

Table 9. Analysis of satisfaction sub-criteria with software companies.

Satisfaction sub-criteria analyses with software companies			
Software companies	**Customer satisfaction**	**Personnel satisfaction**	**Manager satisfaction**
Akinsoft	0.080	0.081	0.101
AmonRa	0.076	0.077	0.071
Elektra	0.434	0.410	0.473
Opera-Fidelio	0.262	0.268	0.183
Used Automation	0.146	0.162	0.169
Consistency Ratio	**0.005**	**0.008**	**0.014**

The analysis of Efficiency sub-criteria with software companies is presented in Table 10. The sub-criteria for the Efficiency main criterion were determined as Service Efficiency and Employee Efficiency. The analysis indicates that the Elektra software obtained the highest value in both sub-criteria (0.353 and 0.405). The Consistency Ratios of the analyses are deemed sufficient and reliable.

Table 10. Analysis of efficiency sub-criteria with software companies.

Analysis of productivity sub-criteria with software companies		
Software companies	**Service efficiency**	**Employee efficiency**
Akinsoft	0.082	0.081
AmonRa	0.068	0.070
Elektra	0.353	0.405
Opera-Fidelio	0.320	0.266
Used Automation	0.175	0.175
Consistency Ratio	**0.007**	**0.011**

4.4. Degrees of importance

The degrees of importance of main criteria are presented in Table 11. The analysis result indicates that the Integration main criterion is the most important among the main criteria formed based on the data obtained from the participants (0.268). The next highest value was determined to be the Efficiency main criterion (0.249). Conversely, the Cost main criterion received the lowest value in terms of importance (0.099). The table result suggests that harmony and integration within the businesses are more important than the other criteria.

Table 11. Degrees of importance of main criteria.

Main criteria degree of importance	
Integration Main Criterion	0.268
Efficiency Main Criterion	0.249
Satisfaction Main Criterion	0.216
Workload Main Criterion	0.165
Cost Main Criterion	0.099

The degrees of importance of sub-criteria are presented in Table 12. The analysis results show that the sub-criteria of the Integration main criterion were determined to be equally important (0.500 each for Inter-Unit Integration and Inter-Departmental Integration). Examining the analysis values for the sub-criteria of the Workload main criterion, participants gave greater importance to Manager Workload (0.666) compared to Personnel Workload (0.333). The sub-criteria of the Cost main criterion were shown to have equal importance by the participants (0.500 each for Operating Expenses and Service Cost). When examining the sub-criteria of the Satisfaction main criterion, the Customer Satisfaction sub-criterion was found to have the highest value (0.633), followed by Manager Satisfaction (0.191) and Personnel Satisfaction (0.174). Looking at the sub-criteria of the Efficiency main criterion, Service Efficiency was determined to be more important (0.750) than Employee Efficiency (0.250).

A holistic review of the sub-criteria reveals that the highest values determined by the participants are Service Efficiency (0.750) and Customer Satisfaction (0.633). This result suggests that participants are more customer-focused in their services. The lowest value was obtained by the Personnel Satisfaction sub-criterion (0.174), indicating that the other criteria are considered more important than the efficient work of the personnel.

Table 12. Degrees of importance of sub-criteria.

Importance levels of sub-criteria	
Integration main criterion	
Inter-Unit Integration	0.500
Inter-Departmental Integration	0.500
Workload main criterion	
Personnel Workload	0.333
Manager Workload	0.666
Cost main criterion	
Operating Expenses	0.500
Service Cost	0.500
Satisfaction main criterion	
Customer Satisfaction	0.633
Personnel Satisfaction	0.174
Manager Satisfaction	0.191
Efficiency main criterion	

Service Efficiency	0.750
Employee Efficiency	0.250

The degrees of importance of software companies are presented in Table 13. The analysis shows that the Elektra software received the highest value (0.397) according to the degrees of importance determined by the participants. Consequently, Elektra is the most successful company according to the participants. This is followed by the Opera-Fidelio software (0.261) and the Used Automation option (0.187). The Akinsoft (0.072) and AmonRa (0.081) software, which received the lowest values from the analysis, were the least preferred by the participants.

Table 13. Degrees of importance of software companies.

Software companies degree of importance	
Akinsoft	0.072
AmonRa	0.081
Elektra	0.397
Opera-Fidelio	0.261
Used Automation	0.187

5. Discussion and Conclusion

5.1. Discussion

Technology maintains its characteristic of being an indispensable part of every era. As in many sectors, the tourism industry is also expected to adapt to this continuously evolving technology. In this context, hotel businesses utilize automation systems to automate their operations and ensure organizational order. With smart automation systems, businesses take steps toward differentiation, while simultaneously becoming proficient and competent in their business processes (Aggarwal & Mittal, 2024; Goyal & Singh, 2021). Although smart automation systems increase service quality and speed, ERP systems are known to encompass a broader spectrum of services.

When ERP systems were reviewed in the literature, studies across various sectors were identified. Studies similar to the current research were observed (Yağar, 2021; Alsharari, 2022; Kunduru, 2023; Alparslan, 2023). Studies utilizing the AHP method regarding ERP systems were also detected (Koska & Erdem, 2021; Kankavı & Kocaoğlu, 2022; Büyükipekci & Topkara, 2024). Studies employing different methods regarding ERP systems were also determined (Şenyiğit et al., 2021; Tekin & Atabay, 2022).

The present study was developed by gathering the opinions of multiple experts in accordance with the AHP method. The objective, main criteria, and sub-criteria were defined as required by the AHP method. Among the determined main criteria, the most preferred criterion by the participants was identified as "Integration" (0.268). This finding indicates that hotel businesses prioritize system integration and harmony within their operations. Integration is subsequently followed by Efficiency (0.249) and Satisfaction (0.216), demonstrating that participants value operational effectiveness and stakeholder satisfaction. Workload received a moderate importance value (0.165), while the Cost criterion received the lowest value (0.099). This result suggests that hotel managers are willing to invest in quality systems rather than focusing primarily on cost reduction.

Among the sub-criteria, "Service Efficiency" (0.750) was determined to be the most important, followed by "Customer Satisfaction" (0.633). This result suggests that participants are more customer-focused in their services, which aligns with the service-oriented nature of the hospitality

industry. The emphasis on customer satisfaction reflects the competitive environment in which hotel businesses operate, where guest experience plays a crucial role in business success.

Four alternatives—Akinsoft, AmonRa, Elektra, and Opera-Fidelio—were defined for comparison. The phrase "Used Automation" was included among the alternatives to denote the automation systems preferred by businesses that were not explicitly listed in the questionnaire. The result derived from the obtained data and conducted analysis is that participants most frequently preferred the Elektra software (0.397). This preference was consistent across all analyzed criteria, including Integration, Workload, Cost, Satisfaction, and Efficiency. Elektra software demonstrated superior performance particularly in Inter-Departmental Integration (0.474), Manager Workload reduction (0.401), Service Cost efficiency (0.405), Manager Satisfaction (0.473), and Employee Efficiency (0.405). The Opera-Fidelio software followed as the second preference (0.261), while Akinsoft (0.072) and AmonRa (0.081) received the lowest preference rates.

The dominance of Elektra across multiple criteria suggests that this system offers comprehensive solutions that address the diverse needs of hotel businesses. The high consistency ratios observed throughout the analysis (all below 0.10) confirm the reliability of the participants' evaluations and the robustness of the findings.

5.2. Limitations

Several limitations should be acknowledged in interpreting the findings of this study. First, the research was limited to four- and five-star hotel businesses located in the central districts of Konya province. This geographical and categorical limitation may affect the generalizability of the results to other regions or different types of accommodation facilities. Second, the sample size consisted of 12 participants, which, although appropriate for the AHP methodology, represents a relatively small number of decision-makers. Third, the study focused on four predetermined software alternatives plus the "Used Automation" option, which may not capture the full spectrum of automation systems available in the market. Fourth, the research was conducted at a specific point in time, and given the rapid pace of technological advancement, the preferences and evaluations may change over time. Finally, the study did not include detailed cost-benefit analyses or long-term performance evaluations of the implemented systems, which could provide additional insights into the effectiveness of different automation solutions.

5.3. Future research directions

Based on the findings and limitations of this study, several directions for future research can be suggested. First, the geographical scope of the study can be expanded by increasing the number of hotel businesses across different regions and countries to enable cross-cultural comparisons and enhance generalizability. Second, the research can be extended to include hotels of different star ratings, including budget and boutique hotels, to understand how automation system preferences vary across different market segments. Third, the number of automation system alternatives can be increased to provide a more comprehensive evaluation of available options in the market. Fourth, the scope of the main criteria and sub-criteria can be broadened to include additional factors such as data security, scalability, user-friendliness, and environmental sustainability.

Fifth, different methodological approaches can be employed to complement the AHP findings. For instance, longitudinal studies could track the actual implementation and performance outcomes of selected systems over time. Case study approaches could provide in-depth insights into the transition processes and challenges faced by specific organizations. Sixth, detailed cost-benefit analyses utilizing actual financial data from businesses could provide more concrete evidence regarding the economic advantages of different automation systems. Seventh, research could focus on the

infrastructures of the automation systems utilized by businesses and how they can be adapted to ERP systems, providing practical guidance for businesses planning system upgrades or transitions.

Eighth, studies could investigate the specific developments needed in automation software to facilitate smoother transition processes to ERP systems. Ninth, research could explore the human factors associated with automation system adoption, including employee training needs, resistance to change, and the impact on job satisfaction and performance. Finally, comparative studies examining the integration of artificial intelligence and machine learning capabilities into different automation and ERP systems could provide valuable insights into the future evolution of hotel management technology.

5.4. Conclusion

This study aimed to identify the most preferred automation system utilized by hotel businesses and to discuss the transition processes to ERP systems. Using the Analytic Hierarchy Process methodology, data were collected from department and general managers of four- and five-star hotel businesses. The findings revealed that Integration was the most important criterion for hotel managers, followed by Efficiency and Satisfaction. Among the evaluated automation systems, Elektra emerged as the most preferred option, demonstrating superior performance across all analyzed dimensions.

The results indicate that hotel businesses prioritize systems that offer comprehensive integration capabilities, enhance operational efficiency, and contribute to customer satisfaction. The relatively low importance assigned to the Cost criterion suggests that decision-makers in the hospitality sector recognize the value of investing in quality automation systems that deliver long-term benefits rather than focusing solely on initial investment costs.

The study contributes to the existing literature by providing empirical evidence on automation system preferences in the Turkish hospitality sector and by demonstrating the applicability of the AHP method in technology selection decisions. The findings offer practical implications for hotel managers seeking to implement or upgrade their automation systems, as well as for software developers aiming to meet the specific needs of the hospitality industry. As technology continues to evolve, the transition from standalone automation systems to comprehensive ERP solutions represents a significant opportunity for hotel businesses to enhance their competitive advantage through improved operational efficiency, better decision-making capabilities, and superior service delivery.

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