

DECISION-MAKING IN ERP SOLUTION IN SMALL AND MEDIUM-SIZED ENTERPRISES IN BOSNIA AND HERZEGOVINA: EVALUATION CRITERIA, MARKET CONTEXT, AND THE ROLE OF LOCAL IMPLEMENTERS

Faruk Unkić*

Associate Professor, University of Zenica, Kalošević 23, 74260 Tešanj, Bosnia and Herzegovina.

*Corresponding Author

Faruk Unkić

E-mail: faruk.unkić@unze.ba.

Abstract: Small and medium-sized enterprises (SMEs) play a central role in the economy of Bosnia and Herzegovina, making the selection of an appropriate ERP solution strategically important for productivity, resource control, and managerial decision-making. According to the European Commission, SMEs in Bosnia and Herzegovina account for 62.7% of total value added and 69.1% of total employment in the non-financial business economy, while OECD and European Commission reports indicate that the country's digital transformation is progressing more slowly than the European Union average and that institutional support for business digitalization remains limited. In this context, ERP selection is not merely a technical issue, but also an organizational, financial, and developmental decision.

This paper aims to develop an academically grounded decision-making framework for ERP selection in SMEs in Bosnia and Herzegovina, with particular emphasis on the role of local implementers and on the criteria linking software functionality, project delivery, and the long-term sustainability of the system. The paper adopts a conceptual, review-based, and exploratory approach, combining a review of the relevant ERP literature, an analysis of institutional sources on SMEs and digital transformation in Bosnia and Herzegovina, and a documentary analysis of publicly available information on the domestic ERP market and its implementers.

The findings suggest that, in the Bosnian context, functional coverage is a necessary but insufficient basis for rational ERP selection. Equally important are the quality of localization, implementers' track records in similar industries, the availability of consulting support, training quality, transparent estimates of total cost of ownership, integration planning, data migration, and support for managerial reporting. On this basis, the paper proposes a decision model structured around five groups of criteria and outlines a conceptual AHP-TOPSIS framework for ranking ERP alternatives.

Keywords: ERP, small and medium enterprises, Bosnia and Herzegovina, implementers, localization, multi-criteria decision-making, AHP, TOPSIS.

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1. Introduction

Small and medium-sized enterprises are the backbone of the economy of Bosnia and Herzegovina. According to the SME Country Fact Sheet for Bosnia and Herzegovina, SMEs generated 62.7% of total value added and 69.1% of total employment in the non-financial business economy in 2018, surpassing the European Union averages by 9.8 and 4.2 percentage points, respectively. The same source states that the average productivity of SMEs in Bosnia and Herzegovina was approximately EUR 14,000 per employee, which is significantly lower than the European Union average of EUR 41,600, while the average number of employees per SME was 5.6, compared to the EU average of 3.7 (European Commission, 2021). These data point to a twofold conclusion. On the one hand, SMEs have an extremely high systemic importance for the economy of Bosnia and Herzegovina. On the other hand, there is still a lot of room for improvement in productivity, processes and information management, which gives ERP systems a special strategic potential.

The digital context of Bosnia and Herzegovina further enhances the relevance of the topic. The OECD states that the country's overall performance in the digital society dimension is below the average of the Western Balkans region, with the overall score stagnating between the previous and most recent assessment. In its 2022 report, the European Commission assesses that Bosnia and Herzegovina is at an early stage of preparedness in the field of digital transformation and media, that no progress has been made in the reporting period, and that the legislative and strategic framework is still not sufficiently aligned with the acquis of the European Union (European Commission, 2022; OECD, 2022). In such circumstances, the digitalization of a company depends not only on the internal readiness of the company, but also on broader conditions of interoperability, electronic identification, administrative harmonization and the availability of digital support.

More detailed OECD findings further illustrate the ambivalence of the situation. Bosnia and Herzegovina has not adopted a national program that would systematically support e-business and e-commerce or provide financial support for the digitalization of enterprises. At the same time, companies' engagement in online sales increased from 23.5% in 2021 to 27.0% in 2022, 88.5% of enterprises were connected at internet speeds of at least 30 Mbps, 20.7% of enterprises used cloud services, 6.6% conducted more extensive data analysis, and 5.4% used AI technologies (OECD, 2023). This shows that businesses in Bosnia and Herzegovina are exposed to growing market pressure from digitalization, but that this pressure is not accompanied by an equally strong institutional framework. That is why the choice of ERP solutions in such an environment becomes more sensitive and requires a methodologically disciplined approach.

In international literature, ERP systems are commonly described as integrated business solutions that connect finance, accounting, sales, procurement, warehousing, production, human resources and other functional units by unifying data and processes. However, ERP is not just a software product. Markus and Tanis (2000) emphasize that the success of an enterprise system should not be assessed only at the time of commissioning, but through a broader life cycle that includes adoption, project deployment, stabilization, routinization, and longer-term business impacts. Such an understanding is especially important for SMEs, where financial

and organizational resources are limited, and a failed decision often produces multi-year consequences through higher costs, technical dependency and loss of growth opportunities.

A special contribution to the understanding of ERP selection is made by the acquisition model proposed by Verville and Haltingen (2003). They do not treat the ERP procurement process as a one-time choice between multiple offers, but as a six-step process that includes planning, information search, selection, evaluation, selection and negotiation. This approach is especially relevant for SMEs, as it helps to protect ERP decision-making from ad hoc judgments, the influence of the marketing presentation, and too narrow a focus on price. In practice, SMEs often make mistakes precisely because they do not translate functional requirements into formalized criteria, underestimate the hidden cost of implementation, or choose a partner based on general reputation rather than compatibility with their own business processes.

When the problem of ERP system selection is viewed from the perspective of decision-making, multi-criteria approaches become particularly useful. Wei, Chien and Wang (2005) show that the Analytic Hierarchy Process (AHP) is a suitable framework for ERP selection, because it allows simultaneous evaluation of qualitative and quantitative criteria and the inclusion of multiple stakeholders in the same decision-making model. Later literature further confirms the value of combining AHP with ranking methods such as Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), especially when the trade-off between cost, functional fit, technical characteristics, and quality of implementation support is to be more transparently shown (Wei et al., 2005).

The literature on the implementation of ERP systems in SMEs consistently warns that the technical characteristics of the system do not determine the success of the project by themselves. Ahmad and Cuenca (2013) emphasize that the implementation of ERP in SMEs depends on the interaction of organizational and operational factors, with organizational factors often having a stronger impact than narrower technical elements. Chatzoglou et al. (2016) also show that critical success factors in SMEs go beyond the mere functionality of the system and include managerial support, project organization, training, user engagement, change management, and risk control. This is of particular importance in Bosnia and Herzegovina, where most SMEs do not have well-developed in-house ERP capabilities and therefore rely heavily on the knowledge and support of an external partner.

The BiH empirical base further supports this thesis. Zaimović, Kozić and Mudrov (2020) investigated ERP solutions and end-user efficiency in Bosnia and Herzegovina, looking at compatibility, complexity, training, quality of support, adaptability to needs and perceived reliability as relevant variables. Their findings indicate that on-premises solutions are not necessarily better in all dimensions, but that in user perception they are better rated in the quality of support and adaptability to process needs, while SAP is better rated in compatibility, training and reliability. Mekić et al. (2021) further confirm that the quality of training and the competence of the project team positively affect the success of ERP implementation in BiH companies. In the domestic context, this very clearly confirms that the implementer is part of the value of the ERP alternative, and not a mere external executor.

From a theoretical point of view, an additional dimension is given to the discussion by the question of adaptation, i.e. the relationship between standard functionality and organizational specifics. Etame et al. (2018) point out that, as a rule, it is cheaper and more organizationally sustainable to adapt business processes to the logic of the ERP system than to overly adapt ERP to the specifics of each organization. At the same time, Parthasarathy (2016) warns that customization is often inevitable but risky, and that organizations try to keep it to a minimum so as not to jeopardize the project or subsequent upgrades. This issue is of particular importance for SMEs in Bosnia and Herzegovina, where resources for maintenance, further development and change management are generally limited.

The practical dimension is further enhanced by industry sources. In its 2022 report, Panorama Consulting Group states that more than half of the organizations in its sample stayed on budget, but also that for projects that broke budget, the most common cause was an unexpected demand for additional technologies. The same report shows that organizations most often implemented business intelligence as an accompanying digital initiative, with 84% of respondents stating that they introduced it significantly or moderately. At the same time, the report points to the growth of

cloud and SaaS preferences, but also to the risk that cloud implementation generates additional costs due to integrations, data warehousing solutions, security modules and other auxiliary technologies (Panorama Consulting Group, 2022).

It is in the combination of these theoretical and practical insights that the research problem of this paper arises. Bosnia and Herzegovina has an SME sector of systemic importance, a growing need for digitalization, but also an ERP implementer market that is heterogeneous and includes global vendor partners, open-source and cloud ecosystems, and regional and locally developed solutions. In such an environment, the choice of ERP system is not reduced to the choice of software. It implies the choice of a package of relationships: solutions, implementers, methodologies, support, training, localization, contractual obligations and future technological trajectory. Therefore, the main goal of the paper is to develop a structured and evidence-based decision-making framework for the selection of ERP solutions in SMEs in Bosnia and Herzegovina. The main research question is: how should SMEs in Bosnia and Herzegovina structure and weight the criteria when choosing an ERP solution and to what extent do the characteristics of the implementer affect the choice and perceived success of the implementation?

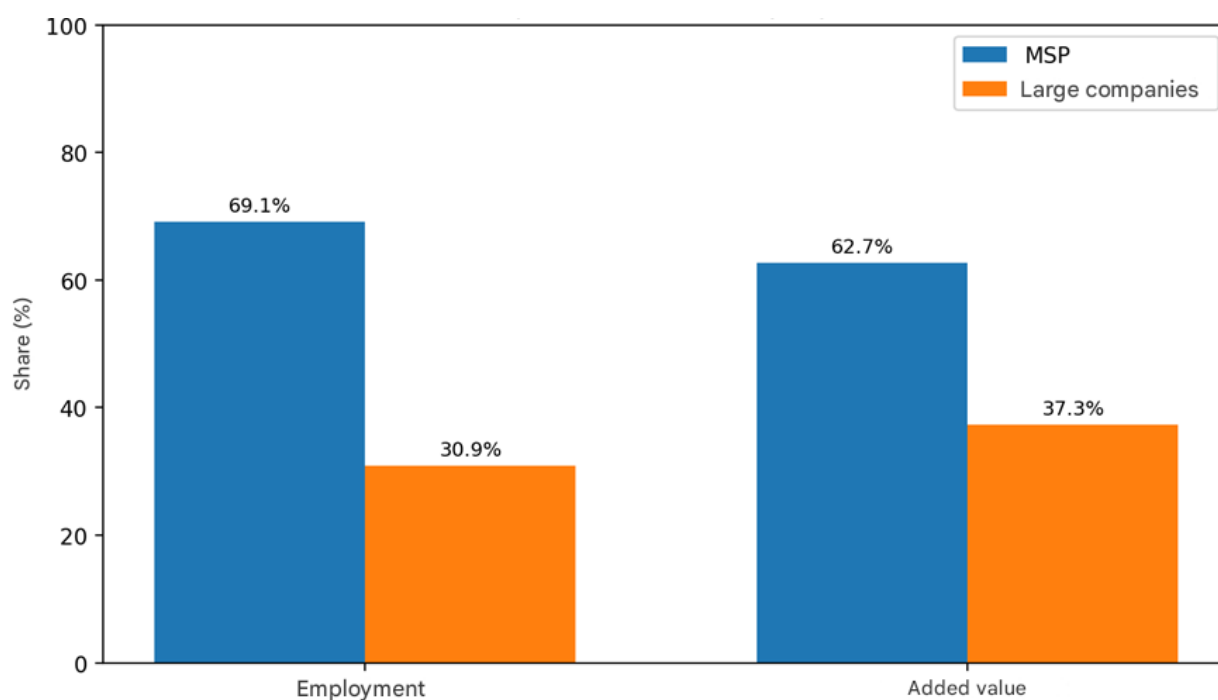


Figure 1. Share of SMEs in employment and value added in Bosnia and Herzegovina

Source: author's creation based on data from the European Commission (2021).

2. Materials and Methods

This paper adopts a conceptual, review-based, and exploratory research design. In methodological terms, a literature review, an analysis of secondary institutional sources and a documentary analysis of publicly available information on the ERP implementer market in Bosnia and Herzegovina were combined. Such an approach is appropriate for a topic whose primary goal is the development of decision models and systematization of criteria,

and not statistical testing of hypotheses on the original sample. In other words, the research has the character of a theoretically based and market-informed synthesis, intended as a basis for future empirical work.

In the first research step, a literature review was carried out in the field of enterprise systems, ERP acquisition, implementation success factors, ERP system adaptation and multi-criteria decision-making. Papers that have a direct connection to: (1) ERP selection phases, (2) selection criteria, (3) critical success factors in SMEs,

(4) the relationship between functional fit and adaptation, and (5) AHP and TOPSIS methods were used. The review also includes sources that are empirically particularly relevant for Bosnia and Herzegovina, in order to adapt the theoretical framework to local business realities, and not only to international generalizations.

The second research step included the analysis of institutional and development documents describing the place of SMEs in the economy of Bosnia and Herzegovina and the level of digital readiness of the country. In this part, the support was provided by the European Commission SME Country Fact Sheet, Bosnia and Herzegovina Report 2023 and OECD Western Balkans Competitiveness Outlook 2023. These sources were used to accurately determine the economic significance of SMEs, productivity indicators, institutional state of digital transformation, online sales dynamics, prevalence of cloud services and other indicators relevant to the framework in which ERP decisions are made.

The third research step was related to the exploratory market mapping of ERP implementers and solution providers that are publicly present on the market of Bosnia and Herzegovina. The inclusion criterion was taken as the existence of publicly available evidence that the organization offers ERP solutions, ERP implementation, localization, integration, consulting services or partnership status for Bosnia and Herzegovina. The analysis includes, as representative examples, actors from the SAP ecosystem, the Microsoft Dynamics 365 Business Central segment, the Odoo partner ecosystem and regionally present ERP platforms such as PANTHEON. This part of the research did not aim to develop an exhaustive market register, but to identify the main segments of the offer and the criteria by which they can be compared.

On the basis of literature and market mapping, working hypotheses have been formulated that can be used for future empirical testing.

H1 states that a higher perceived quality of implementer support has a positive effect on user satisfaction and perceived success of the implementation.

H2 assumes that the quality of training and the competence of the project team have a positive impact on the success of ERP implementation.

H3 assumes that a higher degree of functional alignment of systems with processes reduces the need for extensive customizations, which is associated with a lower total cost of ownership and a lower risk of missing deadlines.

H4 assumes that a formal estimate of the total cost of ownership reduces the likelihood of budget overruns.

H5 assumes that active management support and change management have a positive impact on the success of the implementation and reduce user resistance.

For the purpose of operationalization of future empirical research, the criteria are grouped into five units: strategic and process fit; functionality and industry coverage; technology and integration; implementer and project delivery; cost, risk and contract terms. Such a structure relies on classic ERP selection approaches, but is adapted to the BiH market by placing special emphasis on localization, references in a similar industry, quality of local support, ability to provide training and transparency of the Total

Cost of Ownership (TCO) assessment. This brings the model closer to the real needs of SMEs that purchase ERP in conditions of limited institutional support and asymmetric information between suppliers and users.

The methodological limitation of the work consists in the fact that the hypotheses were not tested on the original sample of SMEs and implementers, nor was a formal survey or interview analysis conducted. Nevertheless, the review-conceptual approach has a clear value: it enables the connection of dispersed theoretical and market findings into a single decision-making framework, identifies criteria that are really relevant in the domestic context, and prepares the basis for the next research step in the form of empirical ranking of specific ERP alternatives using the AHP–TOPSIS method.

3. Results and Discussion

3.1. Economic and Digital Context of ERP Decision-Making in Bosnia and Herzegovina

The first set of findings refers to the context in which BiH SMEs make decisions about ERP systems. This context is characterized, at the same time, by the high economic importance of SMEs and the relatively limited digital maturity of the environment. Since SMEs generate most of the employment and added value, any improvement of their business processes, information integration and the quality of management decision-making has a developmental significance that goes beyond the level of an individual company. ERP investment in Bosnia and Herzegovina therefore has a broader economic dimension: it is an instrument of micro-organizational rationalization, but also a potential mechanism of productivity growth in the macroeconomically dominant segment of the economy (European Commission, 2021).

At the same time, data on digital transformation show that ERP projects in Bosnia and Herzegovina do not take place in a highly standardized and digitally mature environment. On the contrary, the OECD records below-average performance in the digital society, and the European Commission confirms that no progress has been made in the field of digital transformation and media during the reporting period (European Commission, 2021; OECD, 2021). This means that SMEs do not always have an institutionally supported interoperable environment, a stable national digitalization program or uniform administrative practices that would simplify the deployment of electronic documents, data exchange and online public services when choosing ERP.

Despite such limitations, a number of indicators show that digital pressure is growing. The growth of online sales, the availability of broadband internet, the modest but visible use of cloud services, analytics and AI tools suggest that a significant number of companies are entering a phase in which fragmented information tools are becoming an obstacle to further development. It is at this point that the ERP decision makes full sense: not as an isolated software upgrade, but as an attempt to unify financial, operational, and managerial information flows. However, the fact that only a minority of companies use more advanced digital tools at the same time warns that project complexity is often underestimated. This increases the importance of a quality partner and a realistic assessment of the changes that ERP introduces into everyday business.

For SMEs in Bosnia and Herzegovina, an additional aspect is also relevant: limited managerial and professional capacities to manage complex digital projects. In smaller organizations, the owner, director, chief financial officer and operating users are often at the same time the main decision-makers, requesters and future users of

the system. That is why strategic, functional and implementation issues overlap in ERP projects. For this reason, contextual indicators are not just a description of the environment, but an input for a model of criteria that will be further developed in the paper.

Table 1. Contextual Indicators Relevant for the Selection of ERP Solutions in Bosnia and Herzegovina

Indicator	Value / Finding	Implications for ERP Choice
Share of SMEs in employment	69.1%	The ERP decisions of SMEs have a broader economic significance.
Share of SMEs in value added	62.7%	The digitalization of SMEs affects the productivity and resilience of the economy.
Productivity of SMEs	about €14,000 per employee	There is a strong incentive to improve processes and management information.
Average number of employees per SME	5.6	Limited resources require careful choice of solutions and strong partner support.
Online Sales of Businesses	23.5% (2021) → 27.0% (2022)	There is a growing need to integrate sales and back-end processes.
Businesses with internet $\geq$ 30 Mbps	88.5%	The technical prerequisites for cloud/SaaS solutions are partially present.
Companies that use cloud services.	20.7% (2022)	Cloud ERP is becoming a relevant, but not yet dominant option.
Companies that use more extensive data analysis	6.6% (2022)	The analytical and BI capabilities of ERP can have differentiating value.
Companies that use AI	5.4% (2022)	Advanced digital maturity remains in its early stages.

Source: Adapted from the European Commission (2021) and OECD (2022).

3.2. Market segmentation of ERP implementers in Bosnia and Herzegovina

Exploratory market mapping shows that the offer of ERP solutions in Bosnia and Herzegovina is not homogeneous, but can be observed through several relatively clear segments. The first segment consists of partners and integrators related to the SAP ecosystem. B-ONE Solutions publicly presents SAP Business One as a solution for small and medium-sized businesses, emphasizing finance, procurement, sales, warehousing, manufacturing, and reporting as standard functional pillars. LANACO simultaneously communicates SAP services, including consulting, greenfield and brownfield approaches, and support for more modern transformation scenarios. This segment is relevant because it shows that it is possible to choose solutions that are strongly standardized and based on the global vendor ecosystem on the BiH market, but also that these solutions practically achieve their local value through a partner who knows the domestic regulatory and business context (B-ONE Solutions, n.d.; LANACO, n.d.).

The second segment consists of providers of Microsoft Dynamics 365 Business Central solutions. Logosoft presents Business Central as a solution suitable for small and medium-sized companies with a tendency to grow, while BBS publicly emphasizes that localization for Bosnia and Herzegovina is a distinct and commercially important component of the overall offering. This detail is methodologically extremely significant: it shows that the functional adequacy of ERP in Bosnia and Herzegovina cannot be assumed solely on the basis of the global reputation of the

platform. On the contrary, localization for accounting, tax records, reporting forms, and other nationally specific requirements must be evaluated separately as a criterion. This confirms that the software and the implementer on the domestic market form an interdependent entity (BBS, n.d.; Logosoft, n.d.).

The third segment includes Odoo and other open-source-oriented partners. The official Odoo directory confirms the presence of partners for Bosnia and Herzegovina, while Inovado and Wolfinne publicly position themselves as organizations that help SMEs in digitalization through the implementation, adaptation, integration and optimization of processes on the Odoo platform. With such solutions, flexibility and modularity can be an important comparative advantage, especially for SMEs that want gradual implementation or stronger adaptation to business specifics. However, precisely because of this, the importance of implementation competencies is growing significantly: the quality of the partner here is not only product support, but an integral part of the overall value of the ERP alternative (Odoo, n.d.; Inovado, n.d.; Wolfinne, n.d.).

The fourth segment consists of regionally present and locally tailored ERP solutions, among which PANTHEON occupies a prominent place. Datalab in Bosnia and Herzegovina promotes PANTHEON as a business program with cloud models, local adaptations and a focus on SMEs, which confirms that regional solutions have a specific market niche between global enterprise platforms and locally developed systems. Their value often rests on a combination of linguistic and legal adaptation, a wider regional

experience and relative proximity to the user. In practice, this means that BiH SMEs do not only choose between "stronger" and "weaker" software, but between different combinations of standardization, flexibility, partnership, localization and long-term vendor dependency (Datalab BiH, n.d.).

In the analytical sense, this market picture leads to an important conclusion: the choice of ERP solutions in Bosnia and Herzegovina is not a comparison of abstract software packages, but a comparison of complete delivery configurations. In each

alternative, there is a different relationship between standard software, local customization, training, implementation methodology, consultant availability, and support model. That is why it is more rational for SMEs to analyze the market by segment rather than through a vendor-centric lens. Segmental observation makes it possible to first determine which type of solution corresponds to the level of organizational maturity and type of process, and only then to select specific bidders within the appropriate segment.

Table 2. Exploratory segmentation of ERP offerings relevant to the market of Bosnia and Herzegovina

Market Segment	Examples of publicly visible actors	Dominant characteristics
SAP / SAP Business One	B-ONE Solutions; LANACO	A higher degree of standardization, wider functional coverage, a strong role of the local partner in implementation and support.
Microsoft Dynamics 365 Business Central	BBS; Logosoft	SME orientation, cloud/SaaS options, and an emphasis on localization for BiH.
Odoo / open-source partners	Inovado; Wolfinne	Flexibility and modularity, greater importance of the development capabilities of partners, more frequent adaptation to processes.
Regional and locally tailored solutions	Datalab PANTHEON	Regional experience, local and linguistic adaptation, proximity to the SME segment and a combination of standardization and practical adaptation.

Note: The table is an illustrative market mapping based on publicly available sources and does not pretend to be completely exhaustive of all market actors.

3.3. Decision-making criteria when choosing an ERP solution

Based on the literature review and market analysis, it can be concluded that the decision-making criteria when choosing an ERP solution in Bosnia and Herzegovina must include both the characteristics of the software and the characteristics of the implementer. Classic selection approaches usually start from functionality, technical characteristics, flexibility and cost, but domestic findings and market practice show that support, training, localization and partner references are equally important components of the real value of the system. This means that it is more rational for SMEs to view an ERP alternative as a delivery package, rather than just as a licensed software product.

The first group of criteria is strategic and process fit. Here, it is crucial to assess the extent to which ERP supports the company's core business processes, how clearly it contributes to the defined business goals, and whether it is aligned with planned growth, expansion of sales channels, multi-location operations, or internationalization. This criterion also includes fit-gap analysis, i.e. the assessment of the difference between the standard logic of the ERP system and the actual processes of the organization. The larger this gap, the greater the likelihood of additional customization, longer project duration and cost growth. In this sense, strategic and process fit represents an input criterion without which the subsequent technical assessment loses a large part of its meaning (Verville and Haltingen, 2003; Parthasarathy, 2016).

The second group of criteria consists of functionality and industry coverage. For SMEs in Bosnia and Herzegovina, this includes assessing the quality of modules for finance, accounting, procurement, sales, warehousing, production, service, human

resources and reporting, as well as assessing industry specificities. A manufacturing firm, for example, may particularly value production planning, batches and lots, technological operations, or integration with machines, while a trading firm places greater importance on pricing, stocks, more warehouses, and fast reporting. In modern conditions, this group of criteria also includes support for managerial reporting, dashboards and BI analytics. Increasingly, ERP users are assessing the value of a system through the system's ability to support decisions, not just transactions.

The third group of criteria is technology and integration. Here, the architecture of the solution (cloud, SaaS, on-premises or hybrid model), the ability to integrate with existing applications, the quality of the API layer, the data migration plan, the scalability and the long-term technological viability of the solution are evaluated. Cloud and SaaS models are undoubtedly gaining in importance, but their convenience cannot be taken for granted. Additional technologies and integration needs are a common cause of budget overruns, especially in cloud implementations. For SMEs in Bosnia and Herzegovina, this means that the attractiveness of the cloud model must be weighed against the actual integration requirements, security needs, quality of the internet infrastructure and the availability of internal or external knowledge to manage such a solution.

The fourth group of criteria consists of the implementer and the project delivery. In the BiH context, this criterion has special weight, as local empirical research shows that the quality of support, training and adaptation to needs strongly affects the user's perception of the effectiveness of the ERP system (Zaimović et al., 2020; Mekić et al., 2021). Here it is necessary to assess the

references of implementers in a similar industry, the composition and experience of the project team, the availability of consultants, the method of project management, the quality and structure of training, post-go-live support, Service Level Agreement (SLA) arrangements and the willingness of the partner to ensure the transfer of knowledge to the client. For SMEs, which often do not have in-house ERP experts, this criterion can be just as important as the quality of the software itself.

The fifth group of criteria consists of cost, risk and contractual terms. It is crucial that the cost is not reduced to the license or subscription and the initial implementation. A rational estimate must include the total cost of ownership: licenses or subscriptions, implementation, localization, training, support, upgrades, infrastructure, data migration, integrations, internal man-hours, and the cost of switching from old procedures to a new system. This group also includes risks related to over-adaptation, technological

dependence on partners, unclear contractual obligations, and an insufficiently defined plan for exiting or transferring knowledge. Since SMEs are more sensitive to unforeseen costs and delays, it is this group of criteria that often decides whether a project will be perceived as a success or as a permanent organizational burden.

In theoretical and practical terms, these five groups of criteria can be seen as interdependent. A poorly fit process reinforces the need for adaptation, which increases cost and risk. A weak partner reduces the quality of training and support, which negatively affects the acceptance of the system. Inadequate technology assessment and integration increases the likelihood of subsequent costs and additional projects. Therefore, ERP selection should not be organized as a linear list of desirable functionalities, but as an interconnected set of business, technical, financial, and implementation decisions.

Table 3. Proposed Framework of Criteria and Illustrative Initial Weights for the AHP Model

Criteria group	Illustrative weight	Examples of sub-criteria
Strategic and process fit	0,25	Clarity of goals; process coverage; need for BPR; support for future growth.
Functionality and industry coverage	0,25	The quality of the modules; industrial specifics; BI and dashboards; localization.
Implementer and project delivery	0,20	References; methodology; SLA; availability of consultants; training; transfer of knowledge.
Cost, risk and contract terms	0,20	TCO; hidden costs; exit plan; contractual mechanisms; Customization risk.
Technology and integrations	0,10	Cloud/on-premises; API and connectors; data migration; scalability; security.

Note: The weights are conceptual and intended as a starting point for future empirical calibration on a sample of SMEs and implementers in Bosnia and Herzegovina.

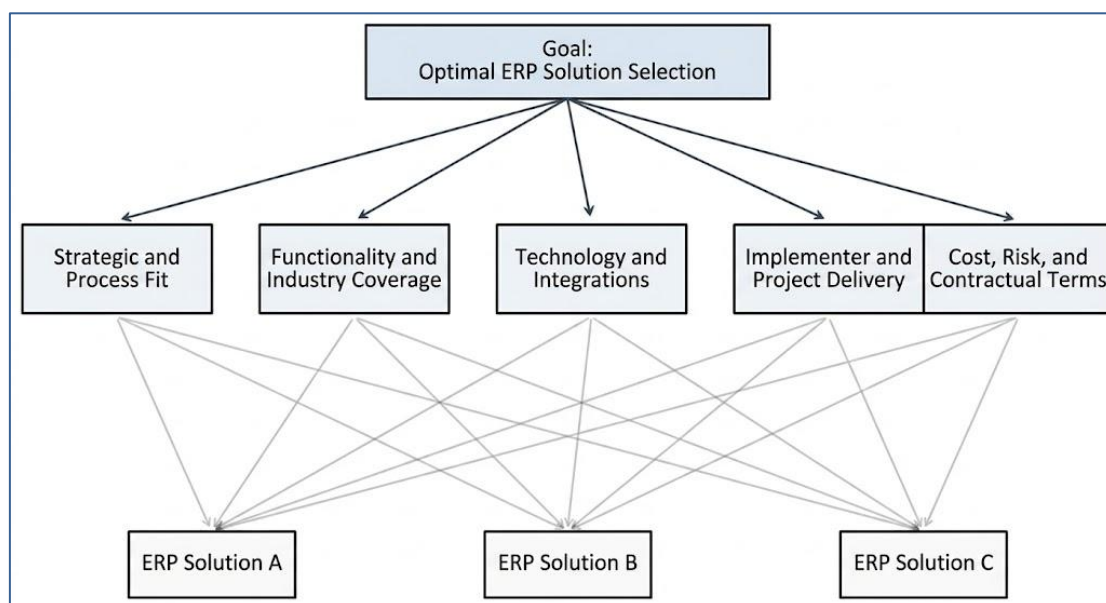


Figure 2. Hierarchy of criteria for the AHP model of ERP solution selection

Source: author's elaboration according to Wei, Chien and Wang (2005), adapted for the context of SMEs in Bosnia and Herzegovina.

3.4. The role of local implementers and discussion of working hypotheses

One of the central findings of the paper is that in the BiH context, the role of the implementer cannot be treated as secondary to the software. On the contrary, the local partner is often the main intermediary between the standard logic of the ERP system and the specific business needs of the SME. The implementer translates business processes into configurations, participates in defining the scope of the project, shapes the data migration plan, conducts training, resolves initial incidents, and lays the groundwork for subsequent system stabilization. Therefore, the quality of the implementer should be understood as part of the overall value of the ERP alternative, and not as a service that comes "after" the choice of the system.

This understanding is strongly supported by H1, according to which the higher perceived quality of implementer support has a positive effect on user satisfaction and perceived implementation success. Zaimović et al. (2020) show that the quality of support and adaptability to needs are among the important dimensions of the end user perception of ERP efficiency. Their finding that on-premises solutions are better perceived in the quality of support than SAP should not be interpreted as a general technological advantage of on-premises solutions, but as a confirmation that the availability and responsiveness of support in an SME environment have a distinct practical value. For small and medium-sized businesses, which often do not have internal ERP administrators, the quality of support directly affects the continuity of work and the level of trust in the system.

H2, which assumes a positive impact of the quality of training and the competence of the project team on the success of the implementation, also finds direct support in local evidence. Mekić et al. (2021) show that the quality of training and team competencies have a statistically significant contribution to the success of ERP implementation in companies in Bosnia and Herzegovina. This finding is especially important for SMEs, because knowledge about the system is concentrated in a small number of people, and any error in understanding the business logic of the system produces a wider effect on processes. In practical terms, this means that SMEs should not only assess the number of trainings or the total scope of training, but also its role-specific structure, the quality of documentation, the willingness of partners to provide hands-on training using real data and support to users in the period after the system is put into operation.

H3, which associates a higher functional fit with less need for extensive customizations, is theoretically supported by broad consensus in the ERP literature. Etame et al. (2018) state that in the long run it is cheaper to adapt processes to ERP logic than to infinitely adapt ERP to the specifics of each organization, while Parthasarathy (2016) warns that adaptation is both inevitable and risky, and that organizations try to reduce it to a reasonable measure. In Bosnia and Herzegovina, this hypothesis takes on additional importance because SMEs often do not have the resources to maintain extensive custom code in the long term, nor the institutional certainty that the partner who has implemented the adaptation will always remain available. This is why a high functional fit has a double value: it reduces the initial risk of the project and makes future upgrades and changes more manageable.

H4, according to which a formal estimate of the total cost of ownership reduces the likelihood of budget overruns, is theoretically and practically very convincing. Panorama (2022) shows that for organizations that went significantly over budget, the most common reasons were unexpected demands for additional technology, especially in the context of cloud deployments and additional integration needs. If an SME in Bosnia and Herzegovina reduces the TCO assessment to the license and initial implementation, it is highly likely that they will overlook the costs of localization, data migration, analytics, additional connectors, training, internal employee hours, and post-production stabilization. TCO analysis should therefore not be treated as a financial add-on to the project, but a central part of the selection methodology.

H5, which refers to management support and change management, has not been tested separately in this paper, but it is strongly grounded in international literature and in the logic of the SME environment. Ahmad and Cuenca (2013) emphasize that organizational factors have a particularly strong impact on the implementation of ERP in SMEs, and one of the reasons is the fact that ERP requires discipline of data entry, standardization of procedures and readiness to change the way of working. In smaller companies, the owner or director often personally influences the tone and dynamics of the project. If management treats ERP as "accounting software" rather than as an organizational change, the likelihood of superficial use of the system and user resistance increases significantly. That is why management support remains one of the critical, though often underestimated, success factors.

In a broader sense, the discussion of hypotheses shows that domestic and international sources lead to a similar conclusion: the choice of ERP in an SME is more successful when the focus shifts from the product itself to the overall capacity of the organization and the implementer to jointly carry out the change. In the BiH context, this is even more pronounced due to the combination of lower institutional digital maturity, a heterogeneous supplier market and limited in-house expertise resources in most SMEs. That is why the local implementer in this paper is treated as a key analytical category, and not just as a market actor.

3.5. Conceptual AHP–TOPSIS framework and operationalization proposal

Based on the previously developed criteria and discussion of hypotheses, a conceptual AHP–TOPSIS framework can be proposed for the future empirical ranking of ERP alternatives in SMEs in Bosnia and Herzegovina. In this framework, AHP would have the function of determining the weights of the criteria through paired comparisons, while TOPSIS would be used to finally rank the alternatives according to their proximity to the ideal solution. The advantage of such an approach lies in the fact that it allows the inclusion of multiple stakeholders in the same decision-making model: management, finance, accounting, operations, IT support and external consultants. This reduces the space for intuitive or vendor-driven decision-making and increases the transparency of the process.

The proposed application logic can be described through several steps. First, the company defines the goal and confirms the list of alternatives that are realistically available on the market. Then, a hierarchy of criteria and sub-criteria is developed, with special attention paid to localization, quality of implementers and TCO

assessment. Subsequently, decision-makers conduct paired comparisons of criteria and sub-criteria to calculate weights and check the consistency of judgments. Only after the weighting is determined is the evaluation of alternatives according to each criterion based on evidence: demonstrations, documentation, references, responses to the Request for Proposal (RFP), contractual proposals and possible pilot trials. Finally, the TOPSIS procedure calculates the relative proximity to the ideal alternative, and the result is additionally verified through sensitivity analysis.

Operationalization of variables for empirical research can combine subjective and more objective measures. Subjective measures, mainly in the form of Likert scales from 1 to 5, may include the importance of the criteria at the time of selection, the quality of the implementer's support, the quality of the training, the clarity of the methodology, user satisfaction, and the perceived success of the implementation. More objective measures may include the percentage of processes covered without additional adjustments, the number of critical adjustments, the duration of the project relative to the plan, the deviation of the cost from the budget, the number of integrations with existing systems, and the time required to stabilize the system after the go-live phase. Combining these two types of measures increases the chance of avoiding over-reliance on respondents' general subjective impression.

An additional advantage of the AHP–TOPSIS approach is the ability to perform what-if and sensitivity analyses. In practice, this

means that it can be tested, for example, what happens to the ranking of ERP alternatives if the difficulty of localization increases, if cost is given higher priority, or if implementer support is evaluated as a criterion crucial for business continuity. This analysis is especially useful in an SME environment, where different actors in the company often have different priorities: finance wants cost control, operations want fit processes, management wants faster implementation, and users want quality support. The MCDA framework allows these priorities to be aligned in a structured way, rather than remaining implicit and later producing conflict in the project.

For the BiH context, it is particularly important to include criteria that are sometimes only implicitly present in the international literature. These are: (1) the quality of localization for BiH, (2) demonstrable references of the implementer in the domestic or related market, (3) the availability of support in Bosnian/Croatian/Serbian, (4) the willingness of the partner to provide knowledge transfer, not just dependency outsourcing, and (5) the clarity of the future technology trajectory, including upgrades, cloud migration and integrations with analytics solutions. By including these criteria, the model becomes more credible for domestic SMEs and at the same time retains a theoretical link with international MCDA approaches to ERP selection.

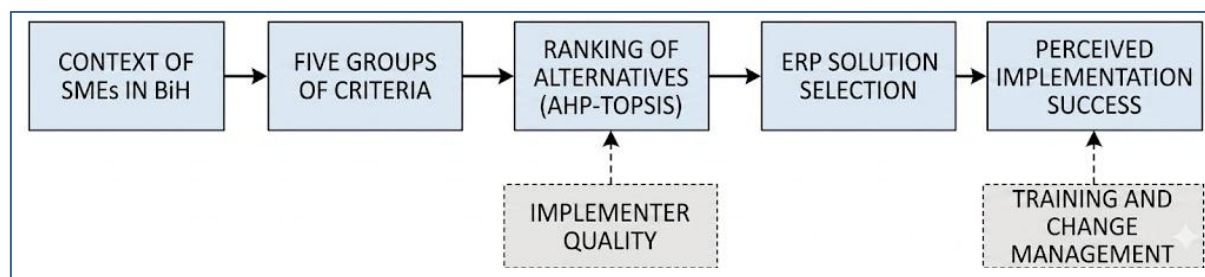


Figure 3. Conceptual model of the relationship between selection criteria and perceived implementation success

Source: author's work based on Zaimović, Kozić and Mudrov (2020), Mekić et al. (2021), Ahmad and Cuenca (2013) and Wei, Chien and Wang (2005).

3.6. Practical implications for SMEs and recommended decision sequence

Based on all the previous findings, it is possible to propose a practical sequence of decisions that SMEs in Bosnia and Herzegovina can use when choosing an ERP solution. The first step should not be to contact the supplier, but to prepare the company internally. This includes identifying the key business issues that the ERP needs to solve, defining the processes that need to be supported, determining the reports and indicators that management needs, and assessing the organization's readiness to change procedures. Without this preparation, the supplier most often imposes its own project logic, and the user remains in a passive position of evaluating other people's proposals instead of actively defining their own requirements.

The second step should be to narrow the market through segmentation. Instead of SMEs considering a large number of very different solutions in parallel, it is more rational to first determine

which market segment suits them best: a more standardized global ecosystem, a cloud/SaaS solution with strong localization, a more flexible open-source approach or a regionally adapted platform. Only when the dominant logic of the solution is established, it makes sense to compare individual providers and partners. This approach reduces the risk that the company will make a decision under the influence of an attractive presentation of a system that actually belongs to a segment that is not aligned with its processes and capacities.

The third step is a formal evidence-based evaluation. The SME should ask for a demonstration on its own scenarios, an overview of responses to an RFP or a list of requirements, insight into references from a similar industry, a description of the implementation methodology, a training structure, a draft migration plan and an example of support after the system is up and running. Only after collecting such evidence does it make sense to score alternatives according to the criteria. In this way, the

evaluation ceases to be based on the general impression of the brand and moves into the sphere of comparable facts.

The fourth step is to link selection with contractual and financial discipline. In domestic practice, ERP projects often suffer because the scope of the project is not precisely defined enough or because the key elements of the TCO are not taken into account in time. Therefore, SMEs should insist on the separation of the minimum initial volume and possible later phases, on a transparent presentation of localization and integration costs, on a defined SLA regime and on a clear plan for the transfer of knowledge and responsibility between partners and users. Otherwise, the project ambiguity can easily turn into a subsequent increase in costs and dependencies.

The fifth step relates to the implementation reality after the ERP has been selected. Making a decision on ERP does not mean that the project is practically solved. Markus and Tanis (2000) warn that the actual results of an enterprise system become visible only after commissioning and going through a period of stabilization. It is therefore particularly important for SMEs to assess at the selection stage how the partner plans to support the early operational period, how incidents will be handled, who is responsible for data quality and how users will adopt the new work routine. In other words, the selection must anticipate the implementation, and the implementation must anticipate the stabilization and subsequent use of the system.

If this sequence of decisions is adopted, an ERP project in an SME can become much more predictable. The solution is then chosen not because it is "the most famous" or "cheapest", but because it has the best relationship between processes, functionality, partners, cost and organizational readiness. This is the key message of the practical part of this paper: a rational choice of ERP in Bosnia and Herzegovina does not begin with a comparison of software menus, but with clarification of business logic, market segment and implementation capacity.

4. Conclusion

The choice of ERP solutions in small and medium-sized enterprises in Bosnia and Herzegovina represents a complex multi-criteria decision-making problem in which the software platform, localization quality, implementer, project approach, cost, risk and organizational readiness for change are simultaneously assessed. Due to the extremely high economic importance of SMEs and at the same time the limited digital maturity of the environment, this decision is far more important than the acquisition of business software. It affects an enterprise's ability to integrate processes, control resources, improve the quality of management information, and reduce organizational fragmentation.

The paper has shown that in the BiH context, the choice of ERP solution cannot be rationally performed if the focus is kept only on functional modules and the initial price. Local empirical research shows that the quality of support, adaptability to needs, quality of training and team competence are important factors in the user's perception of the success of the ERP system, while market analysis confirms that implementers in Bosnia and Herzegovina differentiate themselves through these dimensions. Therefore, the implementer must be treated as an integral part of the ERP alternative, and not as a separate operational service that occurs only after the selection of the software.

The theoretical contribution of the paper is reflected in the connection of general ERP selection approaches with the specifics of SMEs in Bosnia and Herzegovina. The practical contribution of the paper is reflected in the development of a five-part model of criteria, a conceptual AHP–TOPSIS framework, and in tables and figures that allow the paper to be used both as a basis for future empirical research and as a basis for a practical evaluation matrix in real companies. A special value of the paper is the emphasis on localization, partner support, TCO transparency and adaptation management as criteria that are of greater importance in the domestic context than is sometimes assumed in generic international models.

A limitation of the work remains the fact that no original survey or interview research was conducted on a sample of SMEs and implementers in Bosnia and Herzegovina. Therefore, working hypotheses remain theoretically and secondarily empirically supported, but not statistically tested on new data. The future research step should therefore include: a survey among SMEs that have recently chosen or implemented ERP, semi-structured interviews with implementers, and ranking of concrete ERP alternatives using AHP–TOPSIS or the related MCDA method. Such a continuation would allow the proposed model to be verified in practice and transformed into a full-fledged empirical scientific article with a stronger scope of generalizability.

Despite this limitation, the paper provides a well-founded and relevant basis for more rational decision-making in the selection of ERP solutions. Its key message is that a successful ERP choice in an SME does not depend only on what the system "can", but on how well it suits business processes, how sustainable it is in the local environment, how reliable the partner that implements it is, and how much the organization is ready to really change the way it manages information, resources and decisions through that choice.

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