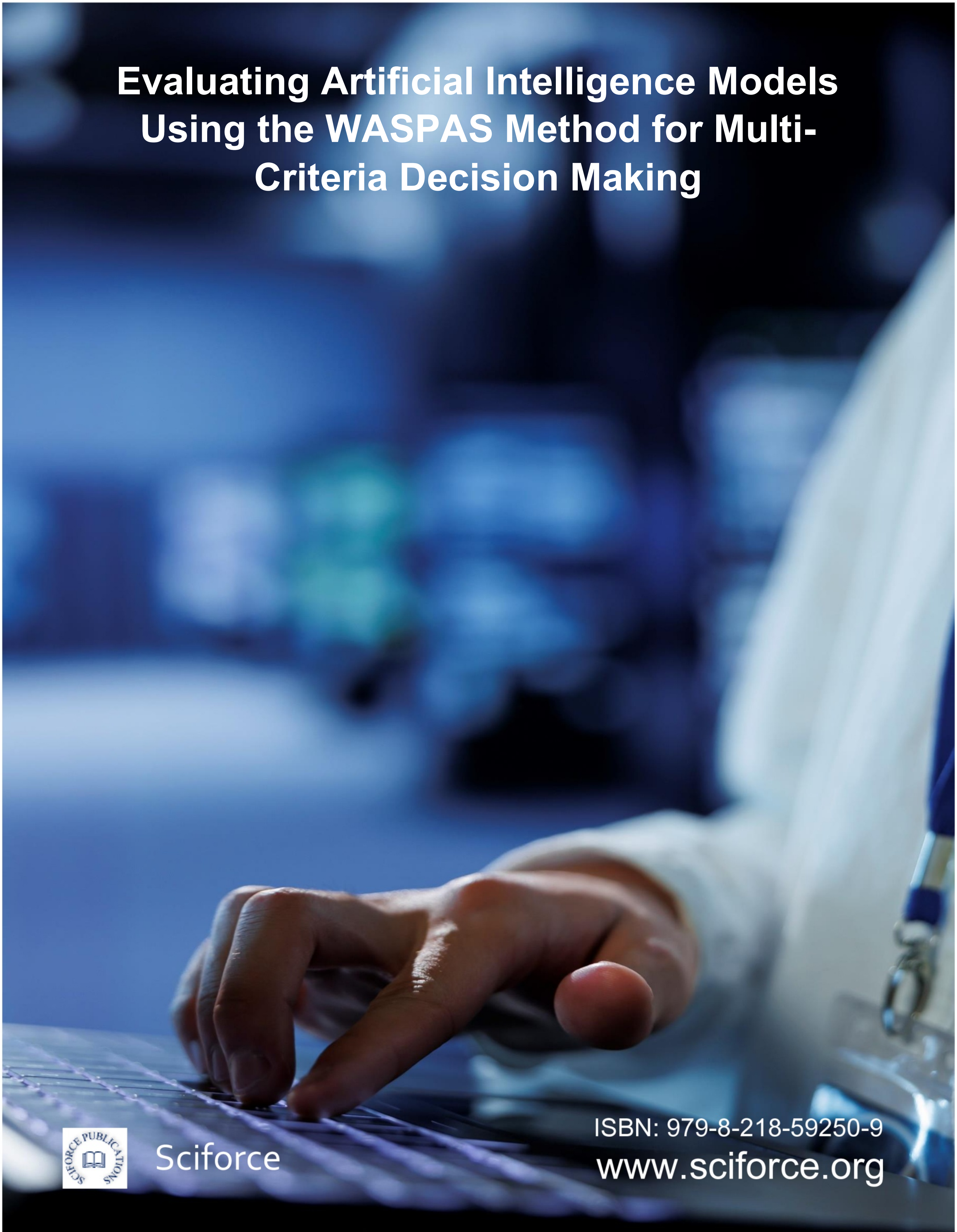
Evaluating Artificial Intelligence Models Using the WASPAS Method for Multi-Criteria Decision Making



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The replication of human Artificial intelligence (AI) refers to cognitive functions such as learning, reasoning, problem-solving, perception, and language understanding. understanding of machines, particularly computer systems. Artificial intelligence (AI), which was first developed in the 1950s, has developed from a niche area of study to a disruptive force in sectors like healthcare, banking, education, and transportation. The ability to process massive datasets, extract insights, and apply this knowledge to carry out tasks with flexibility is the foundation of artificial intelligence. Advances in deep learning and machine learning have made it possible for AI systems to get better on their own over time, doing away with the requirement for ongoing programming. AI is notable for its capacity to generate results on par with human intelligence, enabling machines to make choices that have hitherto required human judgment. As AI becomes more and more. Research significance: Artificial intelligence (AI) research is essential because of its potential to revolutionize industries and everyday life. As AI advances, gaining a deeper understanding of its key mechanisms, applications, and consequences is critical to fully exploiting its potential. AI research provides key insights into how machines can learn, adapt, and act autonomously, improving efficiency and accuracy in fields such as medicine, finance, manufacturing, and education. In addition, it is crucial in tackling ethical challenges such as bias, transparency, and accountability, making sure that AI systems are designed and used responsibly. Methodology: Artificial intelligence (AI) research is essential because of its profound potential to reshape industries and everyday life. As AI technology advances, it is increasingly important to explore its fundamental mechanisms, applications, and implications to maximize its capabilities. Research in AI provides critical insights into how machines can learn, adapt, and act autonomously with greater efficiency and accuracy in areas like healthcare, finance, manufacturing, and education. Furthermore, AI research plays a key role in addressing ethical issues like bias, transparency, and accountability, making certain that AI systems are created and applied responsibly. Alternative: Planning: Planning involves setting clear goals, developing strategies, and determining the actions needed to achieve organizational objectives. It is a forward-thinking process that creates a roadmap for success and informs decision-making along the way.

Organizing: Organizing involves structuring resources, tasks, and responsibilities in an orderly way to efficiently carry out plans. It ensures that the necessary tools and resources are available at the right time, enabling seamless execution. Directing: Directing: Guiding and motivating employees to work toward organizational objectives. It involves effective communication, leadership, and support to ensure that tasks are completed efficiently and effectively. Controlling: Controlling entails tracking progress, comparing actual performance with established goals, and taking corrective actions as needed. necessary adjustments. This process ensures alignment with plans and maintains consistency in achieving desired outcomes. Commitment: Commitment reflects the commitment and accountability of individuals or teams in achieving organizational goals. This fosters a strong sense of ownership and sustained effort, creating a motivational and productive environment for success. Evaluation parameter: Management: Management entails planning, organizing, directing, and controlling resources to accomplish organizational goals. It centers on optimizing resource utilization and aligning operations with strategic goals, ensuring that the organization operates effectively and achieves success. Finance: Money refers to the financial resources designated for various organizational activities. It is crucial in decision-making, budgeting, and investment processes, facilitating efficient operations, and achieving business objectives. Marketing: Marketing involves promoting products or services to customers using strategies like market research, advertising, and sales efforts. It aims to create awareness, increase demand, and strengthen customer relationships, contributing to organizational growth. Human Resources: Human resources refer to the human resources required to execute tasks and achieve organizational goals. Effective management and allocation of human resources are essential to increase productivity and ensure operational efficiency.Material: Includes the physical resources required for production or service delivery, including raw materials, equipment, and technology. Properly managing these resources helps organizations meet customer needs while maintaining quality and efficiency.

Result: The ranking shows that planning is essential for organizational success, emphasizing the importance of prioritizing goal-setting and strategy formulation. On the other hand, controlling is ranked last as a reactive process that ensures alignment but depends on effective planning to be successful.

Keywords: WASPAS, Machine Learning, Automation, Neural Networks, Data Analytics, Natural Language Processing.

INTRODUCTION

Artificial intelligence (AI) integration into everyday life is rapidly becoming essential, affecting decisions that were once made only by highly skilled professionals. The Artificial Intelligence House in the United Kingdom recently stressed that for AI tools to gain public trust, any organization that significantly impacts an individual's life must provide a clear and comprehensive description of its decision-making process. Therefore, applications can be classified as AI when they meet the definition of artificial intelligence and produce results comparable to human intelligence. This progress has been made possible by advances in AI, particularly in its capacity to effectively analyze external information, absorb it, and apply it to activities in a flexible manner. achieve goals. Although AI emerged as an academic field in the 1950s, it remained relatively undeveloped and did not receive practical attention for more than 50 years. Tambe, Cappelli, and Yakobovich's article, "Artificial Intelligence in Human Resource Management," examines the transformative impact of AI on human resources. The article, "Challenges and a Path Forward," examines the transformative impact of AI on human resource practices within organizations. Human resource management is a complex field that involves tasks such as assessing employee performance and handling important but rare events such as hiring and firing, which have significant consequences for both employees and the organization. AI has proven valuable in specific medical applications such as atrial fibrillation, epileptic seizures, and hypoglycemia, as well as in histopathological analysis and diagnosis of diseases through medical imaging. This study reviews current scientific research to illuminate the advantages, potential advances, and risks associated with established AI applications in medical settings. Artificial intelligence is being applied to various aspects of clinical nephrology. In this paper, our aim is not only to improve current AI methods but also to introduce a new concept for the next generation of general-purpose cognitive technologies.

The rapid the progress of AI technology is fueled by the growing availability of data and advancements in computing power. However, despite these advances, existing AI technologies are confined to particular fields of expertise, such as image recognition. Many challenges still persist in AI development. In this work, we present a next-generation AI framework, Brain Intelligence, and explore recent algorithms for weak AI to address the limitations of current approaches. Academic computer science is increasingly emphasizing the importance of biomedical applications, especially as bioinformatics researchers integrate AI techniques into their work. Over the years, significant progress has been made, especially with the growing recognition of the need to adopt standards that facilitate better computer integration.[7] The study, creation, and use of intelligent systems are the main objectives of the computer science discipline known as artificial intelligence (AI). systems for computing. AI-based solutions can provide cost-effective alternatives to address civil engineering challenges, where conventional approaches to modeling and optimizing complex systems frequently demand significant computational power. Initially, AI research focused on single intelligent agents, but the focus has now shifted to distributed artificial intelligence in networked environments. Researchers are increasingly interested in solving problems through multiple intelligent agents working toward shared goals, improving the practical applicability and versatility of AI. In the healthcare sector, personal health data, such as demographics, medical records, photographs, laboratory results, genetic test results, and data from wearable sensors are increasingly being used. This shift empowers patients and highlights the need for continued efforts to protect patient privacy and establish proper governance of data ownership.

In addition, a potential "right of explanation" requirement could limit the types of models that developers can use, particularly in healthcare applications. Artificial intelligence AI is transforming industries by automating tasks that were once dependent on human intelligence. AI can perform complex scientific and engineering processes with greater efficiency and accuracy by replicating, assisting, or enhancing human intelligence. Many business leaders are excited about AI's capabilities, aiming to understand how it will impact their industries and how it can transform their organizations. However, recent media portrayals have often exaggerated AI's potential. Once executives have a clear understanding of AI's true capabilities and limitations, the next step is to incorporate it into their business strategies. If a machine can perform a task, they can design an automated calculator to replicate that function. New Hampshire, is based on the hypothesis that It is suggested that learning and various facets of intelligence can be clearly defined. To motivate developers of low-risk AI systems to voluntarily adhere to the regulations for high-risk AI systems, the AI Act recommends the establishment of ethical codes of conduct. Additionally, the act provides a definition for general-purpose artificial intelligence (GPAI), which refers to models that are versatile, able to perform numerous tasks, and can be incorporated into various downstream systems or applications. These models are trained on large datasets using self-supervision at scale. At its most advanced, AI has the potential to relieve us from undesirable work and provide a deeper understanding of ourselves than ever before. No other scientific field may present as many challenges as AI. AI's ability to perform tasks involving navigation, sensing, and interacting with the physical environment presents significant hurdles. Pursuing AI with human-like sensory and manipulation capabilities will introduce numerous complex challenges. [15]" The White House emphasized several policy concerns surrounding artificial intelligence (AI), noting that, like any transformative technology, AI carries risks and presents complex challenges in areas such as employment, the economy, safety, and regulation. Policymakers must focus on understanding the various sectors within AI technologies from the outset, while also acknowledging the limitations in predicting future AI developments or potential crises that may never occur.

In a computer, energy is consumed by the central processing unit, graphics processing units, and random-access memory, whereas in the brain, energy usage from adenosine triphosphate (ATP) molecules is associated with the widespread use of big data, sensor networks, and the Internet has significantly transformed the information environment. This transformation, alongside the convergence of data from physical, virtual, and human realms, has driven necessary adjustments as AI progresses, with its scientific foundations reaching new milestones. [18] Papers that solely include abstracts or keywords with terms like "neural network" or "neural networks" in their titles are disqualified. However, it is important to recognize that references to terms like "artificial neural network" or "convolutional neural network" should be interpreted as specifically referring to artificial intelligence. Therefore, the sample may include some literature from neuroscience. As machine learning and artificial intelligence techniques continue to advance, researchers have been investigating their potential applications in education. The primary focus has been on enhancing the learning experience by providing support for students and streamlining repetitive tasks for teachers. As noted, the benefits of using these technologies correctly are substantial. If students use this technology responsibly, their academic performance could improve, and teachers could also benefit from its capabilities. [20]

While there is already research on organizational ethics, there is still a paucity of studies focusing on the ethical management of AI. This article aims to lay the groundwork for addressing ethical issues related to AI and highlight areas that warrant further study. Previous research has highlighted the role of artificial intelligence, particularly social bots, in influencing public opinion within political debates. The negative impacts of AI extend beyond individual or organizational boundaries and have the potential to affect society as a whole. The severity of these impacts, combined with the rapid deployment the deployment of AI applications and large machine learning models across different fields requires a coordinated response. This study reexamines key notions of Information technologies are seen as intermediaries for symbolic actions and communication. In this regard, the influence of AI on digital practices is approached as an information systems (IS) issue. which has significant implications for how to formulate key research questions in this field.[24] It is also employed to power chatbots, which are interactive interfaces that enable companies to utilize their data combined with natural language processing and machine learning to deliver a variety of information to customers automatically. John McCarthy, who is often credited with coining the term "Artificial Intelligence" in 1956, defined AI as the ability to behave in ways similar to human actions. This definition emphasizes the importance of considering human intelligence as the benchmark for AI. In this context, intelligence refers to the capacity for learning and discovery as well as the capacity for abstract, logical, and consistent reasoning. [27]

MATERIALS AND METHOD

Alternatives: Planning: Planning is essential for success, providing clear direction and structure to achieve goals. It involves defining specific objectives, assessing the current situation, and identifying the resources and actions needed to achieve the desired results. A well-designed plan reduces uncertainty by anticipating potential challenges and developing strategies to overcome them. Planning can focus on short-term, immediate tasks or long-term, larger aspirations. It helps ensure that efforts are aligned, priorities are set, and resources are used efficiently. Whether individual or organizational, planning provides the foundation for success by linking goals to actions and allowing flexibility to adapt to unexpected changes.

Organizing: Organizing involves arranging and coordinating resources, tasks, and activities to achieve specific objectives in an efficient manner. It includes establishing a structure that defines roles, responsibilities, and relationships within a team or organization. By categorizing tasks and distributing resources, organizing ensures that all aspects of a goal are addressed in a systematic way. It also improves communication, minimizes redundant efforts, and encourages teamwork. A well-structured organization helps individuals and teams stay focused on their roles, fosters accountability, and creates an environment where productivity can flourish.

Directing: Directing is a leadership function centered on guiding and motivating individuals or teams to achieve objectives. It involves offering clear instructions, encouraging open communication, and inspiring employees to put forth their best efforts. A crucial element of directing is building trust and creating a positive work environment that fosters creativity and collaboration. Effective leaders in this area not only align their teams with organizational goals but also empower them to innovate and develop. Successful directing connects planning with execution, ensuring that efforts stay focused and desired results are attained.

Controlling: Controlling is the process of ensuring the effective implementation of plans and the achievement of objectives. It includes monitoring performance, comparing results with set standards, and taking corrective measures when needed. This function helps pinpoint areas for improvement, ensuring that resources are used efficiently and goals are met on schedule. Controlling promotes accountability and ensures consistent performance by addressing discrepancies promptly. Through continuous assessment and strategy adjustments.

Commitment: Commitment is the steadfast dedication to reaching goals, despite challenges or setbacks. It embodies a deep sense of responsibility, persistence, and involvement in the pursuit of success. Within an organization, commitment motivates employees to align their efforts with the company's mission, creating a culture of trust, teamwork, and excellence. Strong Commitment fosters long-term success and continuous growth by improving resilience, productivity, and morale. It acts as the cornerstone of any successful endeavor, driving continuous effort and determination to reach the intended outcomes.

Evaluation parameter:

Management: Management is the practice of efficiently coordinating resources, people, and processes To reach an organization's objectives, it involves planning, organizing, leading, and overseeing activities to ensure success. that objectives are met in an effective and efficient manner. A proficient management team sets clear goals, allocates resources wisely, and tracks progress to adjust strategies when necessary. Effective management creates a collaborative environment, fosters innovation, and improves decision-making through data analysis and trend evaluation. It is crucial in aligning individual and team efforts with the organization's vision, driving sustainability and growth in a competitive landscape.

Money: Money is essential for the functioning, growth, and achievement of organizational goals. It is a crucial resource used to acquire materials, compensate employees, promote products or services, and invest in innovation. Efficient financial management ensures the proper allocation of funds, adherence to budgets, and minimization of financial risks. Organizations must focus on generating revenue and controlling costs to maintain profitability and stability. In personal finance, managing money involves budgeting, saving, and investing prudently to secure financial stability and reach long-term objectives. Effective money management is vital for sustaining operations and ensuring ongoing success.

Marketing: Marketing is the process of understanding, anticipating, and fulfilling customer needs while creating value for It benefits both the customer and the organization. This includes activities like product development, pricing, distribution, marketing, and market research. Effective marketing techniques help businesses establish a connection with their target market and increase brand awareness, and cultivate customer loyalty. In the digital era, marketing has expanded to include online platforms, social media, and data-driven analytics, enabling companies to tailor their strategies and assess the effectiveness of their campaigns. A well-executed marketing plan not only boosts sales but also enhances the organization's reputation and competitive advantage.

Manpower: Manpower, or human resources, refers to the workforce that powers an organization's operations and success. Skilled and motivated employees are essential for reaching organizational objectives, as they bring expertise, creativity, and commitment to their work. Effective management of manpower includes recruiting the right talent, providing chances for training and development and fostering a climate at work that encourages involvement and productivity. Retaining talent is equally vital, as experienced employees provide stability and support growth. Organizations that prioritize their workforce and invest in their well-being tend to achieve higher performance and foster greater innovation.

Material: Materials refer to the physical resources or inputs needed to produce goods or provide services. These include raw materials, components, tools, and supplies that are essential to the production process. Efficient management of materials ensures that the correct quantity and quality are available at the right time, helping to minimize waste and reduce costs. This includes procurement, inventory control, and logistics management to optimize the supply chain and ensure smooth operations. Organizations must also prioritize sustainability by adopting eco-friendly practices in sourcing and using materials. Effective material management results in higher customer happiness, cost savings, and productivity making it a key factor in operational success.

WAS PAS

The goal of this research is to create a decision support system for choosing VR HMDs by applying the Weighted Aggregated Sum Product Assessment (WASPAS) approach. The objective is to offer suitable alternatives and streamline leads to better customer happiness, cost savings, and enhanced productivity, excels at determining the best alternative by prioritizing according to the assigned weights. In the case studies performed, the method successfully identified the optimal VR HMD, providing the most suitable option. The decision support system developed produced precise WASPAS calculations, with results matching those obtained manually. Usability testing, evaluating factors like understandability, learnability, operability, and attractiveness, achieved an average score of 90%, classifying it as "good." The entropy method combined with the WASPAS technique was also used to identify suitable energy sources for India. This process assesses the suitability of renewable energy sources by considering environmental, technical, social, and economic factors. In the second phase, a recommendation is made for the best renewable energy source, as determined by the WASPAS approach, to meet India's energy requirements. The results from the WASPAS method reveal the best energy options. We start by explaining the evaluation methodology, which includes determining the criteria weights using Shannon entropy and ranking different energy sources based on their scores with the WASPAS method. After assigning weights to the criteria in the first step, the WASPAS technique is applied to rank the alternatives.

The selection of the optimal energy source for India is achieved through an integrated model that combines the WASPAS and Entropy techniques. The entropy method uses objective data to Establish the weights for the criteria. The WASPAS approach then makes use of the weights. Of the which processes the empirical data according to the assigned weights and determines the most suitable energy source for India. The main goal is to propose a hierarchical model for identifying the optimal location in Turkey for the first marine current energy plant. The secondary goal is to be the first study in the literature to combine two methods (SWARA and WASPAS) in the emerging field of harnessing renewable energy from the sea. The criteria weights were established using the SWARA approach, and the alternatives were ranked using the WASPAS method. The suggested solution methodology's schematic diagram is displayed in Figure 4. Both the SWARA and WASPAS methods are utilized to tackle the problem of selecting the ideal location for a marine current energy production plant in Turkey. The evaluation process for assessing the performance of the top teachers at SD IT Al-MunadiMarelan Medan entails assessing every educator over a predetermined time frame using predetermined standards. Test results, attendance, leadership, and attitude are some of these requirements. Each criterion is given a unique value and weight using the WASPAS approach, which is based on the priorities established during the decision-making process. Based on each participant's success in the evaluation, this method determines the most effective teacher. To illustrate the usefulness and efficiency Sensitivity and comparison analyses further support its validity and feasibility, demonstrating that the enhanced WASPAS technique is well-suited for real-world applications and successfully tackles the difficulties of choosing a site for such a power plant.

This study improves the process for calculating the aggregated WASPAS measure by generalizing the operator within the WASPAS approach. The study presents an enhanced WASPAS technique that includes three realistically applicable processes, taking into consideration human expression preferences and the uncertainty they encounter. The results indicate that there are no ranking or selection differences when utilizing completely distinct methodologies, indicating that the classical WASPAS method cannot be categorically regarded as superior. Nonetheless, there is a clear difference between the suggested and classical approaches in terms of ranking and selection outcomes. Specifically, the rankings of A1 and A4 differ. While both methods follow the same procedure of aggregating the WASPAS measure using two types of operators, the extended WASPAS method provides a more rational selection outcome by leveraging the advantages of PA operators. Furthermore, the integrated weight information estimation process provides additional support for the scientific approach of selecting the extended WASPAS method. An extended WASPAS technique, which incorporates three procedures, has been developed to improve its relevance to real-world applications. To more accurately reflect realistic information, several adjustments have been made to the classical WASPAS method, particularly in how objective and subjective criteria weights are integrated. The benefits of this approach are thoroughly explored through comparison and sensitivity analyses. WASPAS is a relatively recent method, recognized for its enhanced consistency and accuracy. The main advantage of the fuzzy WASPAS method, which integrates the WSM and WPS models, lies in its improved accuracy. Moreover, WASPAS is an ideal MCDM method for evaluating alternatives, as it simplifies complex multiplication tasks and enables easier computations. Consequently, a method that combines AHP and WASPAS is considered highly effective.

To compare the outcomes of the proposed method with existing ones, such as standard fuzzy AHP and fuzzy WASPAS, reliability comparisons of decision-makers are used to assess the trustworthiness of the comparisons in the matrix. However, because traditional fuzzy methods assume decision-makers are always reliable, reliability comparisons cannot be applied in these evaluations. The difference between the scores of the first and last alternatives in fuzzy Z-WASPAS grew as more information was incorporated into the analysis for evaluating decision-makers. The comparison results show that, particularly when the weights of criteria and alternatives are more similar, the differences are more effectively identified using Z-number-based methods. Hybrid decision support systems were developed by combining the entropy, WASPAS, and MACBETH methods. The entropy approach was utilized to determine the priority weights of the criteria, while the ranking of alternatives was performed using WASPAS by assigning evaluation scores. This study introduces a new integration of the WASPAS method with DFS, designed to rank alternatives in an uncertain environment with multiple main and sub-criteria. The criterion weights were determined using the recently developed DF AHP method. This research is notable for being the first to apply the WASPAS method under DFS, contributing to the body of literature on decision-making techniques in uncertain environments. The WASPAS method, a well-known MCDM technique, is discussed in this study. A review of the existing literature reveals that while the WASPAS method has been extended with various fuzzy set extensions, its integration with DFS, a newly introduced fuzzy set extension, has not been explored. Therefore, this research aims to fill this gap by applying the extended WASPAS method with DFS. An illustrative example from the cold food supply chain industry is provided to demonstrate its applicability in addressing industrial problems.

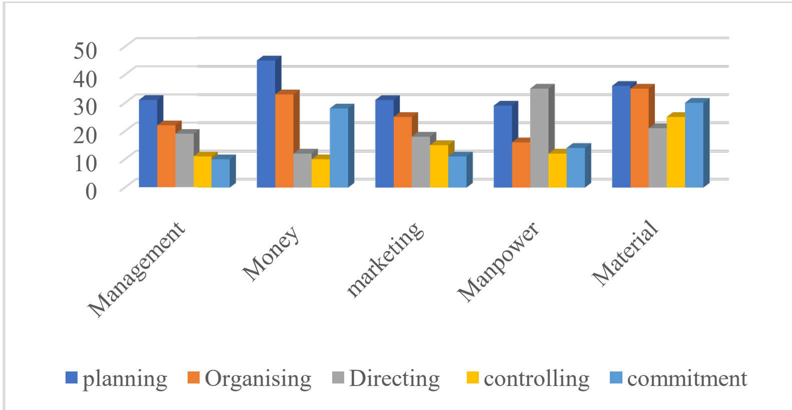
The differences in rankings between IF WASPAS and DF WASPAS can be attributed to the additional information obtained by asking questions from both optimistic and pessimistic perspectives in DFS. These varied responses provide deeper insights into the complex decision-making process, allowing for a more comprehensive understanding of the problem being analyzed. The objective is to enable decision-makers to use the WASPAS method as a supportive tool, without requiring programming or mathematical expertise. The complexity of the calculation algorithms is hidden from the user, who simply needs to input relevant information through an easy-to-use graphical interface. While applying constraints to each criterion would be more appropriate, the primary focus of this work is to introduce a public decision support tool based on WASPAS, including the development process and the societal benefits derived from this research. The WASPAS method, which combines two distinct techniques in MCDM, has been used to rank landfills for sanitary waste, showing significant accuracy compared to other independent methods. This study aims to evaluate and assess medical waste landfills to prevent environmental pollution by selecting suitable locations that do not harm sustainability or human health. The proposed approach was compared with IF-SWARA-WASPAS, with results indicating that this method more effectively accounted for uncertainty in the evaluations, providing a clearer prioritization. As a result, decision-makers can select the best site for medical waste disposal. The SFSWARA and SFWASPAS methods enable specialists to express their opinions more effectively, given the inherent uncertainty in data related to medical waste landfills. Decision-makers engaged in strategic supplier selection can find important criteria for selecting green suppliers and assessing them in regional and international supply chains with the aid of this technique and its analysis. Lastly, a comparison with alternative approaches is used to discuss the framework's advantages and disadvantages.

3. ANALYSIS AND DISCUSSION

TABLE1: Data Set

	Management	Money	marketing	Manpower	Material
planning	31	45	31	29	36
Organizing	22	33	25	16	35
Directing	19	12	18	35	21
controlling	11	10	15	12	25
commitment	10	28	11	14	30

Table 1 presents the distribution of values across five key management functions Planning, Organizing, Directing, Controlling, and Commitment relative to the essential resources: Management, Money, Marketing, Manpower, and Material. For the Planning function, the highest allocation of resources is in Money (45), followed by Material (36), indicating a strong focus on financial and material planning. Organizing also prioritizes Money (33) and Material (35), suggesting that effective organization depends heavily on financial and material resources. Directing, however, places the most emphasis on Manpower (35), indicating that leading a team is crucial in this function, with a smaller focus on other resources like Marketing and Material. Controlling is more evenly distributed, with slightly higher attention on Material (25), reflecting the importance of resource management in controlling activities. Finally, Commitment emphasizes Money (28) and Material (30), underlining the need for financial investment and resources to ensure commitment to goals. This table highlights the varying resource priorities across management functions.



The figure 1 show data reveal several notable patterns. Money shows the highest overall values, especially for planning (around 45) and organizing (around 32). Materials shows relatively high values across most functions, with both planning and organizing reaching around 35. Management shows moderate values, with a declining trend from planning (31) to controlling (10). Marketing maintains fairly consistent moderate values across functions, while human resources show an interesting spike in operating (35) compared to other functions. Across all dimensions, planning generally shows the highest values, while controlling shows the lowest values. This suggests that more emphasis is placed on the early planning stages than on the control mechanisms in these business aspects.

TABLE 2: Performance value

	Performance value				
planning	1.00000	1.00000	1.00000	0.82857	1.00000
organising	0.70968	0.73333	0.80645	0.45714	0.97222
Directing	0.61290	0.26667	0.58065	1.00000	0.58333
controlling	0.35484	0.22222	0.48387	0.34286	0.69444
commitment	0.32258	0.62222	0.35484	0.40000	0.83333

The table provides data on different performance values in various management functions. Planning consistently achieves a maximum performance value of 1.00000 across all categories, indicating a strong and consistent emphasis on strategic goal setting and preparation. Organizing shows moderate values, with a maximum of 0.97222 suggesting that resources are generally well organized, although there is some room for improvement in some areas (e.g., 0.45714). With values ranging from 0.26667 to 1.00000, the movement fluctuates more. This variation reflects varying performance in leadership and communication, with some areas excelling while others may need more attention. Controlling provides lower values overall, with 0.35484 being low and 0.69444 being high. This indicates that performance monitoring and corrective actions are not always as effective as desired. Commitment also varies but generally shows a positive trend, with values of 0.32258 and 0.83333, suggesting moderate commitment to achieving organizational goals.

TABLE 3: weight

	Weight				
planning	0.20	0.20	0.20	0.20	0.20

Organising	0.20	0.20	0.20	0.20	0.20
Directing	0.20	0.20	0.20	0.20	0.20
controlling	0.20	0.20	0.20	0.20	0.20
commitment	0.20	0.20	0.20	0.20	0.20

The table displays equal weight distributions across five managerial functions, with each function receiving a weight of 0.20 across all categories. This uniform weighting suggests that each of the five functions—planning, organizing, directing, controlling, and commitment—are considered equally important in the evaluation or assessment framework. The consistent allocation of 0.20 emphasizes a balanced approach to management, where no single function is prioritized over the others. This structure may indicate an organizational philosophy that values each function's contribution to overall success and recognizes the interconnectedness of these functions in achieving goals. The equal weighting allows for a fair and comprehensive evaluation of performance, ensuring that all aspects of management receive appropriate attention and resources.

TABLE 4: Weighted normalized decision matrix 1

	Weighted normalized decision matrix				
planning	0.20000	0.20000	0.20000	0.16571	0.20000
Organising	0.14194	0.14667	0.16129	0.09143	0.19444
Directing	0.12258	0.05333	0.11613	0.20000	0.11667
controlling	0.07097	0.04444	0.09677	0.06857	0.13889
commitment	0.06452	0.12444	0.07097	0.08000	0.16667

The table represents a weighted normalized decision matrix1, where each management function is rated on the basis of normalized scores, reflecting their relative importance and effectiveness on different scales. Planning maintains the highest values, especially at 0.20000 in most categories, indicating that it continues to play a dominant role in the decision-making process. Organizing has values ranging from 0.14194 to 0.19444, with small variations across the various ratings, highlighting a moderate but significant contribution to overall performance. Mobility fluctuates between 0.05333 and 0.20000, suggesting that its impact varies, with some leadership and communication excelling while others show weak performance. Controlling shows low values, especially at 0.04444, indicating a small contribution to the overall rating, which may suggest a lesser importance for monitoring and corrective actions. Commitment ranges from 0.06452 to 0.16667, indicating a moderate but essential focus on commitment and alignment with organizational goals.

TABLE 5: Weighted normalized decision matrix 2

	Weighted normalized decision matrix				
planning	1.00000	1.00000	1.00000	0.96309	0.89781
Organising	0.93371	0.93985	0.95789	0.85509	0.90288
Directing	0.90673	0.76770	0.89698	1.00000	1.00000

controlling	0.81284	0.74021	0.86486	0.80728	0.96573
commitment	0.79749	0.90947	0.81284	0.83255	0.93115

The table represents a weighted normal decision matrix with various types of organizational functions, such as planning, organizing, directing, controlling, and committing. Each row corresponds to a specific function, while the columns represent the normalized values for these functions under two different decision criteria: "Weighted Normalized Decision Matrix" and "Weighted Normalized Decision Matrix 2."The values in the matrix represent normalized scores, indicating how each function performs relative to the others on different criteria. For example, the planning function shows a perfect score of 1.00000 on all criteria in the first column, while in the second column, the score for planning is slightly lower (0.96309). On the other hand, the directing function has a score of 1.00000 for both decision metrics, indicating strong performance compared to the other functions.This matrix can be used for decision analysis to highlight the relative strengths and weaknesses of each organizational function relative to the selected criteria.

TABLE 6: Preference Score 1, Preference Score 2

	Preference Score 1	Preference Score 2
planning	0.96571	0.86467
Organising	0.73577	0.64898
Directing	0.60871	0.62439
controlling	0.41965	0.40568
commitment	0.50659	0.45704
	lambda	0.5

Table 6 presents the priority scores for various organizational functions under two different scoring systems, labeled “Priority Score 1” and “Priority Score 2.” Each function, such as planning, organizing, directing, controlling, and committing, is assigned a score for both systems. For example, the planning function shows a high priority score of 0.96571 in “Priority Score 1” but decreases to 0.86467 in “Priority Score 2,” reflecting a change in how this function is valued in both systems. Organizing also demonstrates a similar trend, with scores of 0.73577 and 0.64898, respectively, indicating a relative decrease in preference in the second system. In contrast, the directing function shows almost equal scores in both systems (0.60871 and 0.62439), suggesting a stable preference. The controlling and committed functions have the lowest scores in both systems, with controlling being particularly low in both cases. Finally, a lambda value of 0.5 indicates that the weight between the two preference scores is evenly distributed. This table can help to assess and compare the performance of various organizational functions under various criteria.

TABLE 7: WASPAS Coefficient

	WASPAS Coefficient
planning	0.91519

Organising	0.69237
Directing	0.61655
controlling	0.41267
commitment	0.48182

Table7 displays the WASPAS (Weighted Sum Model and Weighted Product Model) coefficients for various organizational functions, providing a quantitative evaluation of their relative importance. The planning function holds the highest coefficient of 0.91519, suggesting that it is the most critical factor in the decision-making process. This indicates that planning plays a dominant role in the organizational framework, contributing significantly to the overall evaluation. Organizing follows with a coefficient of 0.69237, which shows it has a strong, but secondary, influence in comparison to planning. The directing function is assigned a coefficient of 0.61655, reflecting moderate importance in the decision model. Controlling and commitment have the lowest coefficients at 0.41267 and 0.48182, respectively, signifying that these functions are less significant in the overall assessment. These coefficients help prioritize the functions based on their importance, guiding decision-makers to focus on the most impactful areas for organizational effectiveness.

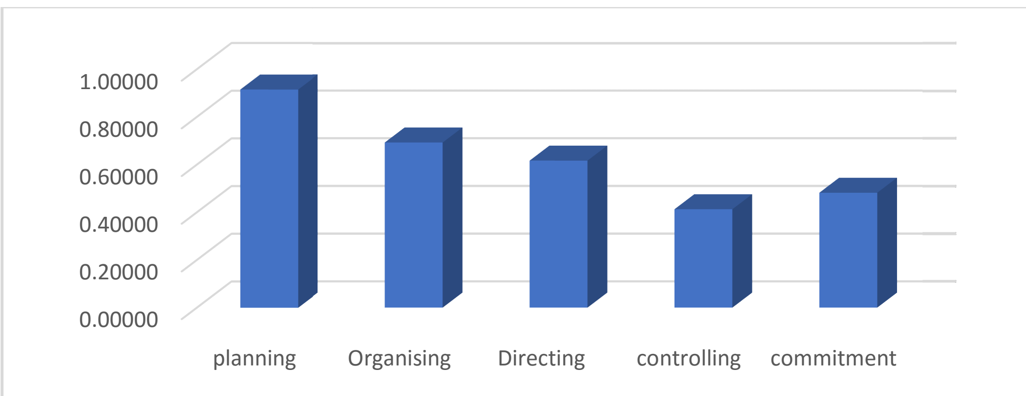


Figure 2: WASPAS Coefficient

This bar graph illustrates the relative values of five management functions: planning, organizing, directing, controlling, and committing, measured on a scale from 0 to 1.0000. The data generally shows a downward trend in these functions. Planning appears to have the highest value at approximately 0.90000, indicating that it is given the most importance in the management process. This is followed by organizing at 0.70000, and directing at 0.60000. Controlling shows the lowest value at approximately 0.40000, while committing slightly returns to 0.50000. The graph suggests a hierarchical order of importance among management functions, with initial planning given the highest priority, and subsequent implementation and controlling functions gradually receiving less weight. This pattern would reflect a typical organizational approach where more resources and attention are devoted to the planning stages, with the focus decreasing as the functions move to the implementation and monitoring phases.

	Rank
Planning	1
Organizing	2
Directing	3

Controlling	5
Commitment	4

Table 7 provides the ranking of various organizational functions based on their evaluated importance. The planning function is ranked first, indicating it is the most crucial function within the organization. This suggests that effective planning is prioritized above all other functions. Organizing holds the second position, reflecting its significant role in ensuring smooth coordination and structure within the organization. Directing is ranked third, emphasizing its importance in guiding and motivating team members towards achieving organizational goals. Commitment is placed fourth, showing its considerable, but relatively lesser, influence compared to the top three functions. Controlling, ranked fifth, is considered the least critical function in this analysis, though it still plays a role in monitoring performance and ensuring alignment with goals. These rankings highlight the relative priority of each function, providing insights into where the organization should focus its efforts for optimal performance and success.

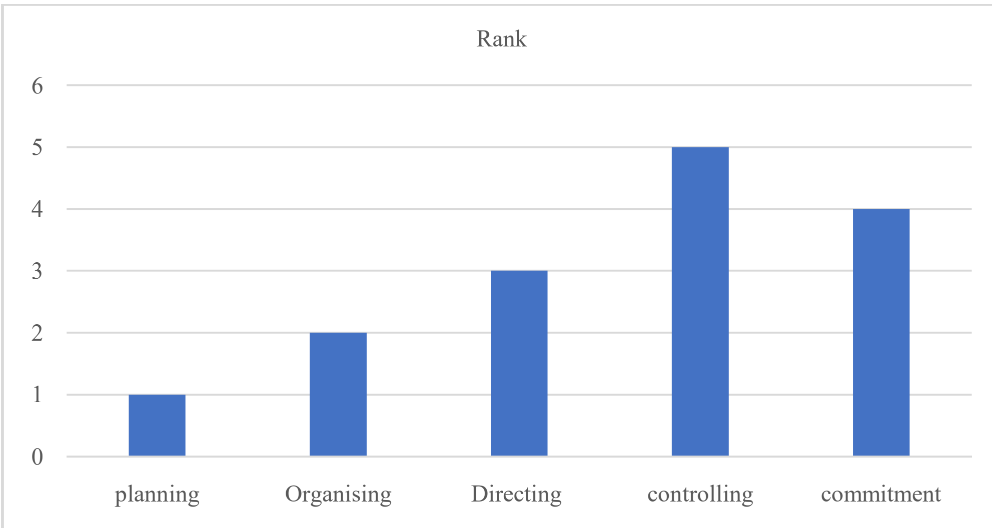


Figure 3: Rank

This bar chart shows the ranking of five management functions on a scale of 1 to 6, with lower numbers indicating greater importance. The title of the chart is labeled "Ranking." Planning has the highest ranking with a value of 1, which is considered the most important management function. Organizing follows with a rank of 2, while directing occupies the third place in importance. Controlling receives the lowest priority with a rank of 5, and commitment is in 4th place. This ranking system effectively creates a clear hierarchy of management functions, with a logical progression from planning to the control stages. The distribution suggests that organizations place the highest value on the early planning stages, with the importance decreasing towards the later stages of the management process. This ranking system is consistent with general management theory, which emphasizes the importance of proper planning as the foundation for successful organizational management.

CONCLUSION

In conclusion, the integration of artificial intelligence (AI) into various sectors has undeniably transformed decision-making processes, shifting responsibilities that were once exclusively handled by highly skilled professionals. The emphasis on transparency and the need for clear explanations of AI's decision-making processes, as highlighted by the Artificial Intelligence House of Lords, is crucial to earning public trust in these technologies. The definition of AI has evolved as systems increasingly mimic human intelligence, processing external data and adapting based on learned information. Despite its academic roots in the 1950s, AI has experienced significant advancements, positioning it as an essential tool in modern decision-making. Similarly, in the realm of management, the ranking of functions such as planning, organizing, directing, controlling, and commitment further reflects the importance of a structured, hierarchical approach to organizational effectiveness. Both AI integration and management ranking systems highlight the importance of careful planning, adaptability, and transparency in achieving success in complex environments.

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