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A Study on the Strategic Capability for the Competitive Advantage of the Company with the Mediating Role of Artificial Intelligence Adoption in Iraqi Banks

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ABSTRACT

The banking industry in Iraq, especially after 2003, has witnessed significant transformations. Amid these changes, competition among banks to attract customers and offer innovative services has intensified. In this context, artificial intelligence (AI) has emerged as a novel tool, creating new opportunities for banks. This research examines the impact of AI adoption on the company's competitive advantage, with the mediating role of strategic capability in Iraqi banks. The research methodology is mixed (qualitative followed by quantitative). Initially, a review of the literature and relevant articles was conducted to analyze the company's strategic capability, marketing competitive advantage, and the mediating role of AI. Then, based on interviews, relevant indicators were identified and determined. After these factors were clarified, a questionnaire was designed based on the identified components and distributed to a specific sample within the target population to test the proposed model. According to the research findings, AI adoption can be utilized as a strategic tool to enhance strategic capability and the company's competitive advantage in Iraqi banks.

Keywords: Artificial Intelligence, Strategic Capability, Competitive Advantage, Banking, Iraq.

1. INTRODUCTION

The current competitive environment is rapidly evolving, with the nature of these changes becoming increasingly diverse, requiring capabilities that can create a competitive advantage for businesses (Ghasemi & Erbabi, 2023). Competitive advantage is a characteristic that a company can achieve by providing high-quality products and services that add value to customers, thereby outperforming its competitors (Hedge et al., 2020). In the digital age, businesses and organizations require greater awareness of the market environment, which can change faster than in previous decades. From this perspective, several organizations are using emerging technologies designed to achieve high performance and competitive advantage (Haji Amir Damavandi, 2023). Among these advancements, "artificial intelligence" has taken on a central role and attracted considerable attention from researchers. Artificial intelligence is transforming organizations and industries (Stanley-Lachman, 2023). It aids in business intelligence decisions, competitive intelligence, and the discovery and management of knowledge (Borjas, 2021). However, despite the significant potential of AI technologies for solving problems, there are still challenges in practical implementation and a lack of knowledge about the strategic use of AI to create business value. Krakowski et al. (2023) argued that more research is needed to assess the extent of AI integration in organizational planning and business strategy execution, as there are still limited theoretical and empirical findings on creating value propositions through AI technologies. Thus, this study seeks to answer the question: How does the company's strategic capability, with the mediating role of AI adoption, impact competitive advantage?

This research introduces the following innovations:

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- For the first time, a comprehensive model has been developed to examine the impact of strategic capability on marketing competitive advantage with the mediating role of AI adoption.
- Unlike other similar studies, this research aims to identify and evaluate all dimensions and components comprehensively.

The hypotheses tested in this research are as follows:

- It is assumed that "strategic capability" influences the company's "competitive advantage."
- It is assumed that "strategic capability" influences "AI adoption."
- It is assumed that "AI adoption" influences the company's "competitive advantage."
- It is assumed that "strategic capability," with the mediating role of "AI adoption," influences the company's "competitive advantage."

2. THEORETICAL FRAMEWORK OF THE RESEARCH

In various industries, some companies are more profitable than others, regardless of whether the average profitability of the industry is high or low. This superior performance is due to possessing unique and inimitable factors that result in better performance compared to competitors. These unique skills and assets are the sources of competitive advantage. For resources or skills to be a source of sustainable competitive advantage, they must have four essential characteristics:

- They must be valuable.
- They must be rare among existing companies and potential competitors.
- They must be difficult to imitate.
- There should be no strategic equivalent or substitute for that resource or skill.

2.1 Competitive Advantage Strategies

According to Michael Porter, achieving a competitive advantage involves either ensuring cost reduction or creating differentiation so that the quality of the product is higher than that of similar products offered by competitors. The cost reduction strategy is defined as achieving production and sales cost levels that are lower than those of competitors, utilizing economies of scale, the accumulation of experience, or any other source to reduce unit costs, while maintaining quality balance and proximity to the products of other companies. Differentiation, as a strategic perspective, involves developing a competitive advantage strategy by offering greater value to customers and sustaining this position through unique products and services. This approach creates a perception among buyers that the products and services are unique and unlike any other available in the market (Dorostkar Ahmadi et al., 2013).

Some researchers have concluded that the key to achieving a competitive advantage lies in the ability to develop unique products and the flexibility to adopt new technologies. Companies seeking competitive advantage and market share will be as successful as the importance they place on innovation.

2-2.Components of Competitive Advantage

Four factors help a company build and maintain a competitive advantage: superior efficiency, quality, innovation, and responsiveness to customers. Each of these factors is the result of a company's distinctive competency. Distinctive competencies are the specific strengths of a company that enable it to achieve lower costs compared to competitors or differentiate its products to gain a competitive advantage. Essentially, these competencies are unique capabilities that allow a company to lower its cost structure.

2-3. Efficiency and Competitive Advantage

Simply put, a business is a means of transforming inputs into outputs. Inputs include fundamental factors of production such as labor, land, capital, management, and technical information. Outputs are the goods and services

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that a business produces. The simplest way to measure efficiency is the amount of input consumed to produce a given output; efficiency is the ratio of output to input. Using less input for a given output increases efficiency. Higher efficiency helps a company achieve competitive advantage through a lower cost structure. For many companies, employee productivity is the most important component of efficiency, often measured by output per employee. Companies with the highest employee productivity in an industry generally have the lowest production costs.

2-4.Quality and Competitive Advantage

Quality has no meaning beyond what the customer truly wants. In other words, a product is considered high-quality when it meets customer desires and needs. Perceived quality is the customer's judgment about the overall superiority or advantage of an object. High-quality products are reliable goods or services that effectively perform their intended functions and incorporate distinct features to enhance customer value. When customers recognize that a company's product offers greater value than competitors' in terms of form, features, durability, reliability, design, and style, it is said to have higher quality. The impact of quality on competitive advantage is as follows :

High-quality products differentiate and increase the perceived value of products in the eyes of customers, allowing the company to command a higher price for its products. Additionally, higher efficiency and lower costs are achieved with high-quality products.

2-5.Customer Responsiveness and Competitive Advantage

Customer responsiveness means identifying and addressing customer needs more effectively than competitors. The added value that customers perceive in the company's products leads to a differentiation-based competitive advantage. Quality and innovation are integral to improving customer responsiveness. A key factor in customer responsiveness is customizing goods and services to meet the specific demands of individual or group customers. Customer response time is one aspect of customer responsiveness. Other resources for improving customer responsiveness include superior design, better service, and superior after-sales support (Rahimi & Irajpour, 2020).

2-6. Innovation and Competitive Advantage

Innovation can be defined as the new or unique way a company operates with a new product it creates. Innovation includes the creation of new products through new processes. Innovation may be the most important component of competitive advantage. Ultimately, it is innovation that drives competition. Since innovation provides unique advantages to a company (advantages that competitors lack), it can serve as the primary source of competitive advantage. This uniqueness allows the company to differentiate itself from competitors and charge higher prices for its products or significantly reduce its costs compared to its rivals.

2-7- Literature Review

Kazemi Saraskanrood and Safari (2023) designed an AI-based marketing process model. To gather information, they reviewed 140related articles published between 2010and 2022, using Cochran's seven-step manual (2008) to identify the dimensions, antecedents, and outcomes. After collating and integrating the obtained indices, they derived a five-stage model for AI-based marketing processes. The antecedents for using AI in marketing include technological, organizational, environmental, behavioral, and individual factors.

Poursalar (2023) examined the impact of strategic learning and artificial intelligence on the competitive advantage of Bakhtar Electricity Company, with digital marketing as a mediating role. The statistical population comprised senior managers, supervisors, and experts from Bakhtar Regional Electricity Company. The sample was selected using cluster sampling and random methods. According to the provided statistics, the company directly employs around 900employees, with the total number, including affiliated service providers, reaching 1,500. Descriptive statistics were used in the initial phase for demographic information, while inferential statistics were utilized for data analysis with SPSS and Smart PLS software. The significance test results indicated that the impact of strategic learning on competitive advantage, considering digital marketing's mediating role, was 0.300. Additionally, the impact of artificial intelligence on competitive advantage, with digital marketing as the mediator, was 0.408. The impact of digital marketing as a mediator on competitive advantage was 0.287, and the impact of strategic learning on digital marketing was .0.430

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Faramarzpour et al. (2023) investigated the impact of AI functions on creating a competitive advantage for knowledge-based companies. The research population included all managers of knowledge-based companies active in the field of video games in the Mashhad area, totaling 53, using a complete census strategy. Data collection tools included interviews and questionnaires. According to the results, all seven dimensions related to artificial intelligence significantly impact creating competitive advantage for organizations.

Salehi (2022) examined the impact of strategic management and organizational capabilities on the strategic competitive advantage of employees in a knowledge-based company. The population included all employees of a knowledge-based company in 2022, totaling 100people. A stratified random sampling method based on gender was used to select a sample size of 80. Data collection methods included both library and field research. The findings showed a relationship between organizational capabilities, strategic management, and the strategic competitive advantage of employees. Additionally, a significant relationship was found between organizational capabilities, strategic management, and competitive advantage.

Yousefi et al**.** (2022) examined the relationship between organizational capabilities, strategic management, and the strategic competitive advantage of employees. The statistical population consisted of all employees at a computer training center in Qaemshahr County during 2018-2017, totaling 100people. A sample of 80was selected using stratified random sampling based on gender. The findings indicated a relationship between organizational capabilities, strategic management, and the strategic competitive advantage of employees at the Qaemshahr computer training center. Additionally, a relationship was found between organizational capabilities, strategic management, and competitive advantage.

Hussein Al-Shami**.** (2022) investigated how hotels use artificial intelligence to perform service tasks. The research method used in this study was qualitative, with semi-structured interviews. A purposeful sample was selected from five 5-star hotels in the UAE, targeting managers as respondents. Through content analysis, the authors found that UAE hotels use AI in trip planning, catering services, and room services. The results indicated four key drivers that improve AI performance: AI infrastructure flexibility, strategic alignment, management, and skills. Four indicators of AI's impact on hotels were provided, including quality, cost, market share, and customer satisfaction.

Awamleh and Bashta**.** (2022) examined the mediating role of IT capabilities in the relationship between AI and competitive advantage during the COVID- 19pandemic. The study aimed to explore this mediating role in a sample of 224people from e-commerce companies in Jordan. Smart PLS 3was used to analyze the collected data and address the research objective. The results confirmed that IT capabilities serve as a mediator between AI and competitive advantage. Additionally, companies that adopted IT and AI capabilities successfully benefited from overcoming COVID- 19challenges.

Sun et al. (2022) studied the impact of value co-creation in the AI innovation ecosystem on competitive advantage and innovation perception capability. Data was collected from 234individuals involved in AI, for structural equation modeling analysis. The research results showed that (1) the AI innovation ecosystem can bring economic and relational value to companies; (2) the effects of economic and relational value on competitive advantage and innovation comprehension were not significant; and (3) value co-creation did not significantly affect competitive advantage and innovation comprehension, while dynamic and innovation capabilities played a mediating role.

.Ali Mohammad et al. (2023) investigated how AI impacts the competitive advantage of healthcare organizations. The results showed three primary outcomes influenced by AI implementation in organizational processes: clinical, financial, and technological outcomes. This study provided interesting insights into AI tools in healthcare, particularly robotic surgeries, and their contribution to competitive advantage.

3 .MATERIALS AND METHODS

This research is applied in purpose and utilizes a "mixed-methods" approach, meaning that both qualitative and quantitative methods are employed. The qualitative research is structured analytically and relates to theoretical studies and conducted interviews, while the quantitative part involves questionnaires and statistical analyses aimed

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at ranking factors. After the questionnaires are completed, data is analyzed using relevant software, and the relative importance of factors is ranked.

The statistical population of this study includes all employees of Rafidain and Rashid Banks in Iraq. Only managers are considered in the qualitative section, while all employees are included in the quantitative section.

In the first phase, the theoretical foundations are reviewed, and existing strengths and weaknesses are identified. In the second phase, based on previous studies, an interview questionnaire (Appendix 1) is designed to address the researcher's questions, and it is validated by several professors. Interviews are scheduled with fifteen experts (managers of Rafidain Bank), and questions are asked of them, with fifteen individuals agreeing to participate in the qualitative section. Based on the content analysis of the interviews, a questionnaire is prepared and approved by respected professors. The questionnaire, confirmed for validity, is distributed among the sample members, and path analysis is conducted based on the results.

Sampling is accessible and purposive, meaning that any members of the population willing to cooperate with the researcher are included in the study. After receiving information from Rafidain Bank, individual members of the population were contacted and asked for their cooperation. If the response was negative, no further insistence was made. Most interviews were conducted online. In the interview section, 15managers agreed to cooperate and set up an interview appointment. In the questionnaire section, only 120members of the statistical population agreed to participate, of which 100questionnaires were returned and used for analysis. Questionnaires were sent electronically, and responses were also received in the same manner.

3-1. Interview Section

After conducting a theoretical study on the related literature, parts of which were presented in the previous section, questions addressing ambiguities in this area were listed and asked in the form of a 15-question interview. The interview questions are provided in Appendix 1. Through direct contact (phone calls and, if unanswered, text messages) with the 1,524employees, despite repeated attempts, only fifteen individuals agreed to collaborate with the researcher. Some of these individuals participated in face-to-face interviews, while others responded to the interview questions online. As mentioned, the sampling method was non-random, purposive, and accessible. Details of the interviewees are presented in Table .1

Table 1. Interviewee Details

Position	Number of Individuals
CEO	3
Branch Manager	6
Financial Manager	4
Legal Department Manager	2
Total	15

In all interviews, whether conducted in person or online, the interview content was recorded and listened to multiple times. It is worth noting here that artificial intelligence was identified in five dimensions.

The analysis of responses from the theoretical section and then the interviews was conducted analytically and descriptively. After designing the questionnaire based on these insights and upon completion by sample members, the responses were gathered, and the data were entered into Excel and SPSS software for demographic and statistical analysis. The demographic section was first analyzed using descriptive statistics, including frequency tables and charts, and then questionnaire responses, along with identified factors, were ranked using the Friedman test.

Finally, all factors were ranked, making processing and ranking clearly identifiable. In the theoretical and

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interview sections, data were analyzed descriptively and analytically, forming the basis for the questionnaire questions. After questionnaire completion, the responses were recorded in Excel and SPSS, with each factor's intensity determined, leading to the design of the desired localized model .

3-2.Questionnaire Section

After analyzing the interview questions, a questionnaire was designed with five sections, each containing four questions (a total of 20questions) to assess the respondents' views on artificial intelligence. Each section had a sub-section dedicated to specific detailed questions. The questionnaire is provided in Appendix 2and has been validated by several experts and academics. In this phase, members of the community (previously described) were randomly and purposefully contacted for availability. Finally, visits were made to several branches, and a total of 120staff members agreed to participate, and the questionnaire was distributed among them. It should be noted that the interview sample members were not included in the questionnaire sample. The questionnaires were sent and received via email and WhatsApp. After diligent follow-up, only 100questionnaires were returned and used for analysis. Before the main questions, demographic information was also gathered. Table 2provides details of the respondents (100returned questionnaires), and Table 3details the questionnaire items and their validity.

Table 2. Respondent Details

Position	Number of Individuals
CEO	5
Company Staff	40
Financial Manager	15
Financial Department Employee	15
Other Mid-Level Managers	25
Total	100

Table* 3. *Questionnaire Questions and Their Reliability

Questionnaire Questions	Cronbach's Alpha	Result
20	0.82	Validated

The initial test results were entered into SPSS software. Only the Friedman test was used for ranking purposes, and other correlation tests were not employed due to the specific nature of the hypotheses and research method. The sole objective was to rank factors for path analysis to assess each factor's effect, which is discussed in greater detail in the following section.

4 .FINDINGS

As mentioned, this research employed a mixed-method approach, so this section comprises two parts. In the first part, the qualitative findings are examined, with the interview transcripts analyzed through content analysis. In the second part, quantitative findings, including descriptive statistics and weighting tactics, are presented. Model validation is also discussed.

4-1. Qualitative Data Analysis

Among the available approaches, the systematic approach presented by Strauss and Corbin (1998) was chosen. The main unit of analysis during open and axial coding was the paragraph, where key concepts were extracted by

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fragmenting the text. The researcher designed 15questions after consulting with advisors and supervisors.

In the next stage, the researcher identified key informants in the field of the study topic. The criteria for selecting interview participants were individuals with a solid academic background in the area under study. The sample size and number of interviewees were determined based on theoretical saturation, using a purposive sampling method. Theoretical saturation occurs when the researcher concludes that they are encountering similar concepts and responses at a certain stage, with no new ideas emerging. Therefore, the number of interviews in this research was determined by the level of theoretical saturation, which was reached when interviewees' responses began to repeat previous insights.

Nevertheless, to ensure thoroughness, the researcher continued the interview process until the final interview.

The researcher proceeded with semi-structured interviews with each expert. After conducting each interview, the audio files were carefully listened to several times, and the conversations were transcribed into a Word document. An "inductive content analysis" approach was applied for the analysis. Since no predefined structure or categories were present, open coding was used. In the first phase of coding, the researcher segmented the interview data to extract open codes. This involved breaking down the text into smaller units to capture all relevant concepts expressed by the interviewees, organizing the information about the studied phenomenon into main (categories) and sub-categories.

In the second stage, axial coding was conducted by first identifying the central category (main phenomenon), then grouping other categories under five dimensions: causal conditions, strategies, contextual characteristics, intervening conditions, and outcomes. In the third stage of coding, or selective coding, the researcher developed a theory about the relationships between the categories found in the axial coding model. In this stage, connections between categories became apparent, and the theoretical paradigm grounded in the data was constructed.

The interview data analysis was repeated multiple times with precision to reach theoretical saturation for main categories and sub-categories. This phase of the qualitative analysis resulted in 200concepts in the open coding stage, grouped into 25sub-categories, which in turn were organized into 5main categories. Open and axial coding were stopped when:

a) A meaningful categorization emerged after repeated reviews of the interview transcripts;

b) Sub-categories and attributes became repetitive;

c) No new relevant information was identified, and any new information aligned with the existing categorization.

The stages of coding, including open, axial, and selective coding, are discussed sequentially.

4-1-1 .Phase One: Open Coding

Open coding is an interpretive process by which data is analytically broken down to provide the analyst with new insights by challenging standard ways of thinking about phenomena or interpreting phenomena reflected in the data. In open coding, events/actions/interactions are compared for similarities and differences, and conceptual labels are assigned to them. Similar conceptual events, actions, or interactions are grouped to form categories and sub-categories.

In this first phase, the researcher conducted interviews with experts. After each interview, the audio file, which was recorded with the interviewee's consent, was carefully listened to multiple times by the researcher, then transcribed in full detail into a Word document. The researcher then segmented the data from each interview. Each concept in the interviewees' responses was broken down into smaller units. Similar concepts were grouped into larger categories based on conceptual relationships among them. Table 4, which displays the open coding process derived from the interviews, is provided below.

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Table *4*. Open Coding from Interview Process

Axial Coding	Key Extracted Concepts
Code 1	Financial need (1), facilities (1), banking operations acceleration (1), account review (1), simple modifications (1), banking needs identification (1), simple inquiries (1), easy access to account (1), banking affairs (1), financial need recognition (1), ease (1), timely support (1), acceleration (1), ease of finding password (1).
Code 2	Fault reduction (2), reduced waiting time (2), relatively simple passwords (2), password forgetting (2), birthday discounts (2), marriage discounts (2), low memory requirement (2), holiday loan offers (2), recognition through account transactions (2), recognition through transactions (2), recognition through capital growth (2), recognition through credit history (2).
Code 3	Financial need (3), facilities (3), banking operations acceleration (3), account review (3), simple modifications (3), banking needs identification (3), simple inquiries (3), easy access to account (3), banking affairs (3), marriage discounts (3), low memory requirement (3), holiday loan offers (3), recognition through account transactions (3), recognition through transactions (3), recognition through capital growth (3), recognition through credit history (3).
Code 4	Financial need (4), facilities (4), banking operations acceleration (4), account review (4), simple modifications (4), banking needs identification (4), simple inquiries (4), easy access to account (4), banking affairs (4), financial need recognition (4), ease (4), timely support (4), acceleration (4), ease of finding password (4), fault reduction (4), reduced waiting time (4), relatively simple passwords (4), password forgetting (4), birthday discounts (4), marriage discounts (4), low memory requirement (4), holiday loan offers (4), recognition through account transactions (4), recognition through transactions (4), recognition through capital growth (4), recognition through credit history (4).
Code 5	Financial need (5), facilities (5), banking operations acceleration (5), account review (5), simple modifications (5), banking needs identification (5), simple inquiries (5), easy access to account (5), banking affairs (5), financial need recognition (5), ease (5), timely support (5), acceleration (5), ease of finding password (5).
Code 6	Fault reduction (6), reduced waiting time (6), relatively simple passwords (6), password forgetting (6), birthday discounts (6), marriage discounts (6), low memory requirement (6), holiday loan offers (6), recognition through account transactions (6), recognition through transactions (6), recognition through capital growth (6), recognition through credit history (6).
Code 7	Financial need (7), facilities (7), banking operations acceleration (7), account review (7), simple modifications (7), banking needs identification (7), simple inquiries (7), easy access to account (7), banking affairs (7), marriage discounts (7), low memory requirement (7), holiday loan offers (7), recognition through account transactions (7), recognition through transactions (7), recognition through capital growth (7), recognition through credit history (7).
Code 8	Financial need (8), facilities (8), banking operations acceleration (8), account review (8), simple modifications (8), banking needs identification (8), simple inquiries (8), easy access to account (8), banking affairs (8), financial need recognition (8), ease (8), timely support (8), acceleration (8), ease of finding password (8), fault reduction (8), reduced waiting time (8), relatively simple passwords (8), password forgetting (8), birthday discounts (8), marriage discounts (8), low memory requirement (8), holiday loan offers (8), recognition through account transactions (8), recognition through transactions (8), recognition through capital growth (8), recognition through credit history (8).

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Code 9	Financial need (9), facilities (9), banking operations acceleration (9), account review (9), simple modifications (9), banking needs identification (9), simple inquiries (9), easy access to account (9), banking affairs (9), financial need recognition (9), ease (9), timely support (9), acceleration (9), ease of finding password (9).
Code 10	Fault reduction (10), reduced waiting time (10), relatively simple passwords (10), password forgetting (10), birthday discounts (10), marriage discounts (10), low memory requirement (10), holiday loan offers (10), recognition through account transactions (10), recognition through transactions (10), recognition through capital growth (10), recognition through credit history (10).
Code 11	Financial need (11), facilities (11), banking operations acceleration (11), account review (11), simple modifications (11), banking needs identification (11), simple inquiries (11), easy access to account (11), banking affairs (11), marriage discounts (11), low memory requirement (11), holiday loan offers (11), recognition through account transactions (11), recognition through transactions (11), recognition through capital growth (11), recognition through credit history (11).
Code 12	Financial need (12), facilities (12), banking operations acceleration (12), account review (12), simple modifications (12), banking needs identification (12), simple inquiries (12), easy access to account (12), banking affairs (12), financial need recognition (12), ease (12), timely support (12), acceleration (12), ease of finding password (12), fault reduction (12), reduced waiting time (12), relatively simple passwords (12), password forgetting (12), birthday discounts (12), marriage discounts (12), low memory requirement (12), holiday loan offers (12), recognition through account transactions (12), recognition through transactions (12), recognition through capital growth (12), recognition through credit history (12).
Code 13	Financial need (13), facilities (13), banking operations acceleration (13), account review (13), simple modifications (13), banking needs identification (13), simple inquiries (13), easy access to account (13), banking affairs (13), financial need recognition (13), ease (13), timely support (13), acceleration (13), ease of finding password (13).
Code 14	Fault reduction (14), reduced waiting time (14), relatively simple passwords (14), password forgetting (14), birthday discounts (14), marriage discounts (14), low memory requirement (14), holiday loan offers (14), recognition through account transactions (14), recognition through transactions (14), recognition through capital growth (14), recognition through credit history (14).
Code 15	Financial need (15), facilities (15), banking operations acceleration (15), account review (15), simple modifications (15), banking needs identification (15), simple inquiries (15), easy access to account (15), banking affairs (15), marriage discounts (15), low memory requirement (15), holiday loan offers (15), recognition through account transactions (15), recognition through transactions (15), recognition through capital growth (15), recognition through credit history (15).

As shown in Table 4, a significant number of open codes were extracted from the 15 interviews, and categorized into different clusters. It is also evident from this table that participants 1-2-3-4-5 had more active engagement compared to others.

4-1-2 . Paradigmatic Findings of Selective Coding

In the third stage of coding, known as "selective coding," various elements identified in the axial coding phase are integrated and analyzed as a whole. In this stage, the grounded theory researcher develops a theory based on the interrelationships of the categories within the axial coding model. At a foundational level, this theory provides an abstract explanation of the process studied in the research. Two procedures exist for integration:

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1. Using a narrative based on the paradigmatic model centered around the core category.

2. Providing theoretical propositions based on the paradigmatic model. Theoretical propositions indicate generalized relationships between a category and its concepts with certain classes.

Propositions entail conceptual relationships, while hypotheses involve measurable relationships. Since grounded theory primarily generates conceptual relationships rather than measurable ones, the term "propositions" is used here. In the propositions section, the relationships between the main categories are examined. Researchers transform qualitative research into quantitative research by converting research propositions (based on constructs, the building blocks of elements) into hypotheses (based on variables, the building blocks of elements), thereby preparing for quantitative testing. In the hypothesis section, relationships between subcategories are analyzed. For the selective coding process (the third stage), this research provides five theoretical propositions based on the research model.

4-2 .Findings of the Quantitative Research Section

The quantitative findings are divided into two parts. In the first part, descriptive statistics such as frequency and percentage are used to describe the sample under study. The second part focuses on inferential data analysis. Using the Shannon entropy weighting technique, the extracted categories are weighted and ranked based on their significance. Furthermore, to validate the research's conceptual model, a single-sample t-test was conducted using SPSS, which is elaborated on in the following sections.

In the quantitative section, the Shannon entropy technique was used for weighting and ranking the categories extracted from the qualitative section. The steps of the Shannon entropy method are subsequently presented along with an analysis of competency categories.Initially, to illustrate the Shannon entropy method, it is necessary to count the number of open codes by categories and subcategories, broken down by the frequency of participants. Therefore, in this stage, the researcher counted the open codes for categories and subcategories derived from the qualitative analysis of the competencies in sustainability education for faculty members, covering both general competencies (comprising five main categories and ten subcategories) and sustainability competencies (including six main categories and thirteen subcategories). The results are presented in Tables 5and 6.

Table *5*. Frequency of Open Codes for Main Categories and Subcategories

Factor	Subfactor	Agreeing Codes	Status 1	Status 2
Software	Loan need	1-5-7-9	Approved	Approved
	Money transfer need	5-8-5-6-2	Approved	Approved
	Simple account inquiry need	1-2-8-9-15	Approved	Approved
	Correction of erroneous transaction	1-5-17	Approved	Approved
Automatic Detection	Loan need	1-12-17	Approved	Approved
	Money transfer need	1-11-17	Approved	Approved
	Simple account inquiry need	1-10-16	Approved	Approved
	Correction of erroneous transaction	1-2-5-17	Approved	Approved
Service Speed	Reduced errors	5-8-5-6-2	Approved	Approved
	Reduced waiting time	1-2-8-9-15	Approved	Approved
	Relatively simple passwords	1-5-17	Approved	Approved
	Forgotten password	5-8-5-6-2	Approved	Approved
Timely Suggestions	Birthday discount	1-2-8-9-15	Approved	Approved
	Wedding discount	1-5-17	Approved	Approved

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	No need for high memory	5-8-5-6-2	Approved	Approved
	Travel loan suggestion before holidays	1-2-8-9-15	Approved	Approved
Capital Identification	Identification through account transactions	1-2-8-9-15	Approved	Approved
	Identification through transactions	1-5-17	Approved	Approved
	Identification through capital growth	5-8-5-6-2	Approved	Approved
	Identification through good credit	1-2-8-9-15	Approved	Approved

Table 6. Mean and Standard Deviation of Effective Factors' Scores

Group	Statistical Index	Software	Automatic Detection of Needs	Service Speed	Timely Suggestions	**Capital Identification**
Entire Population	Mean	4.8	2.2	1.95	1.7	1.5
	Standard Deviation	0.15	0.12	0.15	0.1	0.09

Based on the obtained data, the model factors need to be ranked, which was done using the Friedman test, and the results are shown in Table 7. The findings indicate that the software factor has the most significant impact on the proposed model. Following the software factor, automatic detection ranks second, and service speed is another important factor. The next ranking is for timely suggestions.

After ranking the main factors, the subfactors were examined. Each subfactor was measured through a question to the respondents. Using the Friedman test, the ranking was conducted, and the results are shown in Table .8

Table 7. Ranking of Model Factors Based on the Friedman Test

Overall Rank	**Categories**	**Rank**	**Factors**	**Rank**	**Factors**
1	Software	1	Easy money	2	Internet services
		3	High security	4	Essential payments
2	Automatic Detection	1	Loan need	2	Simple account inquiry need
		3	Money transfer need	4	Correction of erroneous transaction
3	Service Speed	1	Reduced errors	2	Relatively simple passwords
		3	Reduced waiting time	4	Forgotten password
4	Timely Suggestions	1	Birthday discount	2	No need for high memory
		3	Wedding discount	4	Travel loan suggestion before holidays
5	Capital Identification	1	Identification through account transactions	2	Identification through capital growth
		3	Identification through transactions	4	Identification through good credit

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Now, after ranking the subfactors and main factors, Delphi can be repeated for them. This section, called the Delphi quantitative section, is shown in Table 8. Here, as with the Delphi quantitative section, the importance of the factors was confirmed by the majority of the respondents. The confirmation of both Delphi processes in two sections strengthens the obtained results. In the various sections, each factor has been categorized. However, time and the appropriateness of amounts overshadow other considerations.

Table *8*. Delphi Technique in the Quantitative Section

Main Factor	Sub-Factors	Respondents in Agreement	Delphi 1	Delphi 2
Software	Loan need	1-30	Approved	Approved
	Money transfer need	24-75	Approved	Approved
	Simple account inquiry need	78-90	Approved	Approved
	Correction of erroneous transaction	3-26	Approved	Approved
Automatic Detection	Loan need	89-100	Approved	Approved
	Money transfer need	36-100	Approved	Approved
	Simple account inquiry need	36-85	Approved	Approved
	Correction of erroneous transaction	58-75	Approved	Approved
Service Speed	Reduced errors	75-100	Approved	Approved
	Reduced waiting time	55-85	Approved	Approved
	Relatively simple passwords	30-52	Approved	Approved
	Forgotten password	58-69	Approved	Approved
Timely Suggestions	Birthday discount	75-100	Approved	Approved
	Wedding discount	55-85	Approved	Approved
	No need for high memory	30-52	Approved	Approved
	Travel loan suggestion before holidays	58-69	Approved	Approved
Capital Identification	Identification through account transactions	75-100	Approved	Approved
	Identification through transactions	55-85	Approved	Approved
	Identification through capital growth	30-52	Approved	Approved
	Identification through good credit	58-69	Approved	Approved

5. CONCLUSION AND RECOMMENDATIONS

The key function of artificial intelligence is precise identification and forecasting, with broad applications in various fields. In the designed model, AI, based on customer orientation, seeks to attract customers by automatically identifying their needs and moving towards its goal. This creates a competitive advantage over other banks, ultimately leading to greater economic success.

Today, traditional methods have been replaced by new approaches that rely on electronic tools. Customers seek convenient services, such as easy money transfers, simple internet services, high security software, and essential payments—all of which are concerns for customers. If a bank, with the help of AI, addresses these concerns, it can

gain a better competitive advantage in this regard.

Customers are pleased when their needs are recognized without them having to mention them. This makes the bank more attractive to customers. Using AI, the bank can identify factors such as 1) loan need, 2) simple account inquiry need, 3) money transfer need, and 4) correction of erroneous transactions, and act accordingly to make customers happy with this unexpected attention.

What worries customers is a situation that hinders the market. Therefore, AI should act to reduce these issues. Reducing internet disruptions, having relatively simple yet secure passwords, reducing waiting times, and easy password recovery could serve as competitive advantages for banks.

Timely suggestions can be a crucial factor in customer attraction, which is also a competitive advantage for the bank. AI can recognize events such as birthdays, weddings, and trips and offer timely, valuable suggestions, which contributes to a competitive edge.

Capital is the lifeblood of banks. Therefore, identifying and planning for capital can be a suitable action for AI within banks. By identifying capital through account transactions, capital growth, transactions, and good credit, the bank can develop specific plans and improve its competitive advantage.

The final conclusion is that attracting customers and their capital is the core of banking activities and must be achieved in every possible way. AI can take suitable steps in this direction, making customers happy while directing their capital towards the bank, thereby creating a competitive advantage.

Based on the research findings, the following recommendations are made for banking industry leaders:

- Based on the research, it is recommended that banking industry leaders provide high-quality software services to customers based on AI.
- Based on the research, it is recommended that banking industry leaders automatically identify customer needs and delight them with this attention.
- Based on the research, it is recommended that banking industry leaders increase speed and quality in customer services.
- Based on the research, it is recommended that banking industry leaders offer timely and constructive suggestions to customers.

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