SOCIOLOGICAL DISCOURSE
ISSN 2232-867X (Print) · e-ISSN 2637-2878 (Online)
sociologicaldiscourse.com/index.php/sd

Volume 16 · Issue 2 · 2026
Pages 412–423

Human capital as an effective mechanism for improving the quality of services provided by Algerian banking institutions

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Received: 18 April 2026 | **Accepted:** 12 July 2026 | **Published:** 2 November 2026

***Abstract*—This article aims to identify the importance of human capital in improving the quality of services provided by Algerian banking institutions, by examining a group of banking institutions in Algeria, To achieve the objectives of this study, a descriptive approach was adopted, whereby a questionnaire was designed and distributed to the study sample comprising executives from public and private banking institutions operating in Algeria. To analyse the data and test the proposed hypotheses, SPSS version 25 was used. The study ultimately reached several conclusions, the most important of which are: The level of implementation of human capital requirements in the Algerian banking institutions under study is high; the quality of banking services provided by the Algerian banking institutions under study is high; and there is a positive role and relationship between human capital and the improvement of the quality of banking services in the Algerian banking institutions under study.**

Keywords—Algerian Banking institutions; Human capital; Quality of services; Tangibility; reliability; responsiveness.

JEL Classification: G21; J24; M31; O55.

INTRODUCTION

In light of the many shifts and developments taking place in the global economy, which have led to the emergence of new realities, particularly in the fields of knowledge and information technology, it was inevitable that the banking sector, in all its components, would be affected by these changes, given its vital and active role in the economic system. Banks now have a greater need for individuals and expertise capable of making effective use of various modern information technologies in order to cope with the intense competition in the banking market. Human capital has now become a key factor in economic recovery and growth, underscoring the importance of investing in education, vocational training, and workforce development to overcome the many challenges (Kompanets & all, 2026).

In light of these ongoing changes, the knowledge economy has become an absolute necessity and a reality that must be embraced; all banking institutions must keep pace with and adapt to all its developments, This is in order to achieve all their current and future objectives, as the value of banking institutions today is no longer measured by their physical and financial capital, but rather by the knowledge and skills they possess – what is known as human capital.

Human capital is the true asset and wealth of all banking institutions, because it represents he process by which individuals acquire and enhance the knowledge, skills, health, and competencies needed to participate productively in economic and social life (Onipe , 2026), The focus should be on enhancing the value and uniqueness of human capital within banking institutions, as this is directly and positively linked to digital transformation, performance, and sustainable human capital in these institutions (Lorena & all, 2026). This valuable asset has received considerable attention from numerous authors and researchers, as it represents the foundation and main basis upon which most banking institutions rely to highlight their capabilities and competitive advantages, thereby ensuring improved performance.

The increased level of knowledge among many customers in the banking sector has contributed to their greater ability and awareness to distinguish between banking institutions that offer high-quality services and those that provide merely standard, routine services, This has prompted the management of these institutions to modernize and update their operational and management practices by incorporating the concept of quality into all their processes and the services they provide to their customers. Numerous studies have shown that exemplary service delivery is a cornerstone of fostering customer engagement, satisfaction, and long-term loyalty (Ariyanto & Sholahuddin, 2026).

In light of this, and given these circumstances, the management of various banking institutions must work to develop mechanisms that enable them to improve the standard and quality of the banking services they provide to their customers, thereby ensuring their satisfaction and loyalty, particularly in the face of fierce competition in the banking market, The success of any organization depends largely on the performance of its employees (Esagala, S & Ntale, 2026). Indeed, attention to the human capital requirements of banking institutions is arguably one of the most significant factors contributing to the improvement of service quality. The results indicate that interactions between employees and customers have a positive impact on the quality of banking services provided to them (Tabaeeian RA,, Mohammad shafiee M, , & Arman , 2026).

The Algerian banking sector has recently seen an intensification of competition among various banking institutions in the provision of services, particularly in light of the significant developments and transformations the sector is undergoing in the fields of knowledge and technology, In order to keep pace with these changes and ensure the continuity and success of these Algerian banking institutions in raising the standard and quality of their services, they must pay greater attention to their intellectual resources and assets, or what is known as human capital, given the significant role this valuable asset plays in improving the quality of the banking services provided by these institutions. which in turn positively impacts customer satisfaction (Sianturi & Gultom , 2025).

Research Questions

1. PRIMARY QUESTION :

Does human capital play a role in improving the quality of services provided by the Algerian banking institutions under study?

2. SUB-QUESTIONS:

- To what extent are human capital requirements implemented in the Algerian banking institutions under review?
- What is the standard of banking services provided by the Algerian banking institutions under review?
- Is there a link between human capital and improvements in the quality of services provided by the Algerian banking institutions under review?

Research Hypotheses

In order to answer the questions posed above, the following hypothese is proposed:

- Hypothesis: There is a positive correlation between human capital and improvements in the quality of services provided by the Algerian banking institutions under review.

Research Objectives

This study seeks to achieve a set of goals, which we summarize as follows:

- To examine the concept of human capital and its main approaches and dimensions;

- To assess the level and extent of Algerian banking institutions' focus on the quality of their banking services;

- To seek to explain and analyse the relationship between human capital and the quality of banking services in the commercial banks under review;

- To identify the impact between the study variables in order to arrive at findings and recommendations regarding the improvement of management practices and the quality of services in Algerian banking institutions;

-To present a set of proposals and recommendations designed to assist the Algerian banking institutions under study in adopting a quality-oriented approach to their banking services, through optimal investment in their human capital.

Research Importance

The significance of this study stems from the great importance of its two variables human capital and the quality of banking services particularly in light of the major challenges facing banks today. This is what leads them to adopt these concepts in order to keep pace with these changes. The importance of our study can be highlighted in the following points:

- An attempt to identify the various theoretical approaches to intellectual capital and the quality of banking services;

- An attempt to ascertain the reality of the application of intellectual capital requirements in Algerian commercial banks;

- To identify the degree and level of interest shown by Algerian commercial banks in the quality of their banking services;

- To ascertain the extent to which managers in Algerian commercial banks are aware of the role of intellectual capital, in its three dimensions, in improving the quality of banking services provided by these banks;

- To draw the attention of the commercial banks under study to the need to apply the key requirements of intellectual capital at all levels in order to improve the quality of banking services provided to their customers;

- This study is a further contribution to previous studies on this subject.

4. DEFINITION OF TERMS

4.1 Human Capital

It consists of the intellectual and mental capabilities, skills and expertise required to provide clients with appropriate solutions; it is the source of development and creativity within the organisation. Human capital is also a resource inherent in people that is, it is intrinsically linked to employees and therefore cannot be directly owned by the organisation (Hardeep & B, 2016)This perspective aligns with standard definitions of human capital as a collection of productive skills (Xijin , Jose Vicente , Michael , & Matthias , 2026).

The importance of human capital is evident in its support for the organization's creativity and innovation through the development of new and innovative ways to address the challenges it faces. The results show how digital transformation improves organizational performance through the mediating effect of human capital (Isha & all, 2026). Furthermore, the use of human capital in research and development significantly promotes sustainable innovation (Haidong & all, 2026). It also serves to bolster competitive capabilities and advantages, as it is regarded as a resource that cannot be replicated by competing organisations.

From the above, it is clear that human capital is the foundation and basis of intellectual capital, as it serves as the starting point for creating and building the other elements.

It is the source of development and creativity in the enterprise, human capital is a resource inherent in people, that is, it is related and related to employees, it cannot be directly owned by the enterprise.

4.2 Banking Service Quality

Smith defines banking service quality as: Meeting the needs and expectations of the customer (Mei Mei Lau, 2013, p. 266), this concept suggests that service quality is related to how well the various needs and desires of customers are satisfied, and how closely expectations are met using the best possible methods.Achyut and colleagues considered service quality as: The customer's overall evaluation of the service (Achyut Gnawali, 2016, p. 1). This definition focuses on service quality from the customer's perspective, where the perceived quality of banking service is reflected in the positive evaluation a customer makes about the level of service provided. This is directly tied to the level of satisfaction the customer feels. In this sense, quality is closely related to the interaction between service providers and customers. (Rui Biscaiaet, 2023, p. 902).

4.3 The Relationship Between Human Capital And Banking Service Quality

Mostafa A. Ali and colleagues point out that employees with high qualifications—those with a good level of education and exceptional cognitive and practical skills—greatly enhance the organization's performance overall. Highly skilled employees encourage the use of innovative and creative methods in performing their tasks. This, in turn, greatly benefits the institution by enabling it to offer high-level services that generate customer satisfaction and loyalty (Mostafa A. Ali, 2023, p. 2). Thus, we can conclude that creative and innovative human capital contributes significantly to the improvement of service quality. Investing in training front-line staff leads to higher customer retention rates. (L.J, Z, & P, 2025)

In a study conducted by Goh (2005) to analyze the intellectual capital of Malaysian commercial banks using the VAIC model, the results revealed a strong relationship between service quality and the efficiency of human capital. The study also showed that human capital indicators play an essential role in improving these banks' performance (Robel Hilegiyorgis Behaylu, 2020, p. 30). Hence, the human capital held by Malaysian commercial banks contributed significantly to the enhancement of their service quality.

5. EXPLORATORY STUDY

The exploratory study served as a pilot stage for assessing the clarity, reliability and correctness of research tools. , Where a questionnaire was prepared in a way that helps to collect data from the study sample, in its initial form according to the variables and dimensions of the study, in addition, the sample size was determined Accurately, the methodology and statistical techniques most suitable for the main study were confirmed.

6. METHODOLOGICAL PROCEDURES

6.1 Research Methodology

Considering the nature of this study and in order to answer the problem posed and reach the results of the proposed hypotheses, the descriptive approach will be relied upon, as the questionnaire was relied upon, as well as personal meetings and interviews with officials and employees of the Algerian banks under study.

6.2 Research Population

The study population consisted of staff from public and private Algerian banks, specifically:

* External Bank of Algeria (BEA),* Bank for Agriculture and Rural Development (BADR),* National Bank of Algeria (BNA),* Local Development Bank (BDL),* Popular Credit of Algeria (CPA),* BNP Paribas – Algeria,* Arab Banking Corporation - Algeria (ABC),* Society General - Algeria (SG),* Al Salam Bank (SB),* Natixis – Algeria (NA),* Trust Bank – Algeria

6.3 Research Sample

In this study, a random sample size of 120 frames was selected from the total frames of Algerian banks, as 120 questionnaire forms were distributed to the study sample, after which we retrieve 109 forms, three of which are not valid for the study, so that we have 106 questionnaire forms valid for the statistical analysis process.

6.4 Study Variables

• **Independent variables :** human capital.

• **Dependent variables :** The quality of banking services and their most important dimensions (Tangibility, reliability, responsiveness, security and trust, empathy).

6.5 Research Tools

In this study, we used the questionnaire as a tool to collect the main data, distributed to the study sample, and the phrases of the study axes (independent variable and dependent variable) came closed, designed to stop the five-way Likert scale, and to determine the role of human capital in improving the quality of banking services, options were set available for each phrase, namely: strongly disagree, disagree, agree to a lesser degree, agree, strongly agree.

6.6 Statistical Analyses

To evaluate the validity and reliability of the research instruments and to test the study's hypotheses, data were analyzed using **the Statistical Package for the Social Sciences (SPSS, version 25),** which helped us to easily deal with a set of statistical methods suitable for the objectives of the study.

Table 1

Distributed and Retrieved Questionnaires

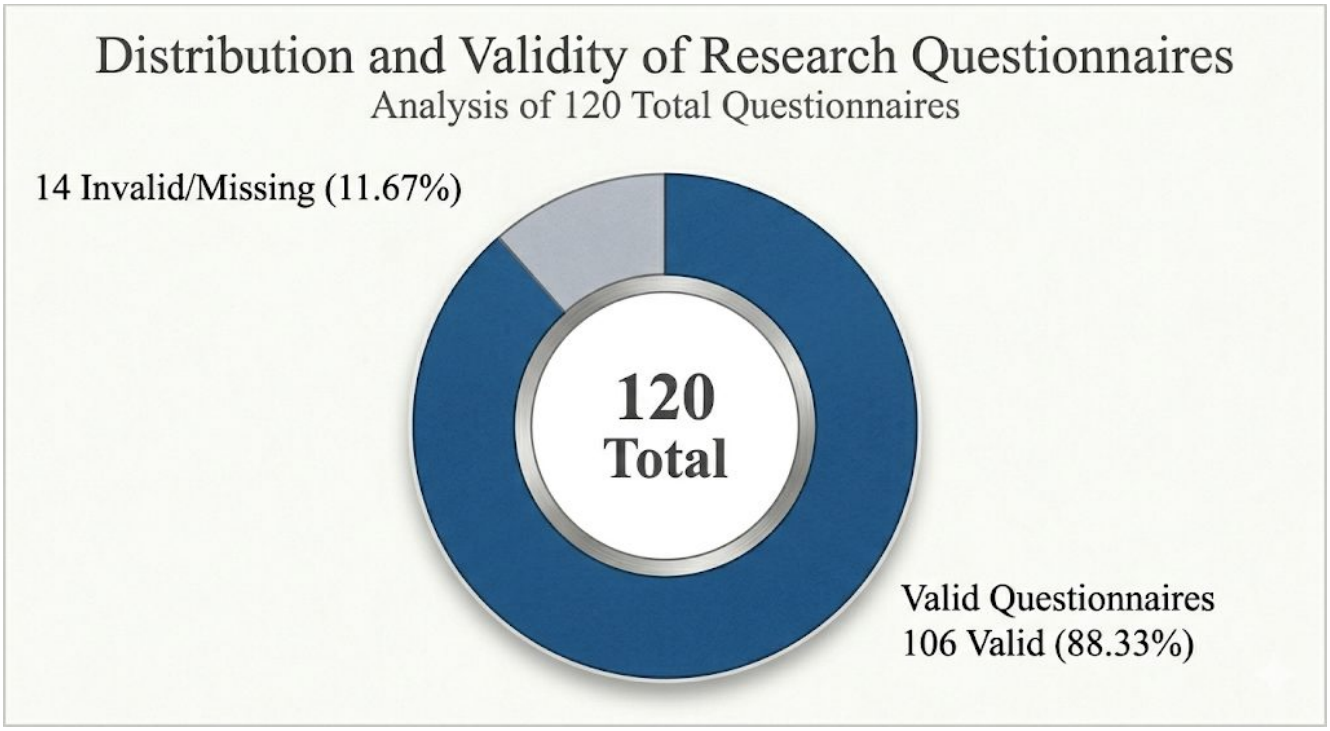
Measures	Number	Percentage
Distributed questionnaires	120	100%
Valid questionnaires	106	88.33%

Source : Prepared by the researcher based on SPSS outputs

The results of Table)1(can be further illustrated by the following Figure 1

Figure 1

Distribution and Validity of Reserch Questionnaires



The data indicate that 14 questionnaires (11.67%) were excluded due to non-retrieval, incomplete responses, or deliberate exclusion to maintain balance between participants and non-participants.

6.6.1 Reliability Testing

Reliability refers to the internal consistency of the research instrument in producing stable and reproducible results under similar conditions. **The Cronbach's Alpha** coefficient was used as a reliability indicator.

Table 2

Cronbach's Alpha coefficient for the first axis intellectual capital

Dimensions of the first axis	Items	Cronbach's Alpha
The first dimension: human capital	08	0.758
The first axis: human capital	**08**	**0.758**

Source : Prepared by the researcher based on SPSS outputs

We can see from the table above that the Cronbach's alpha coefficient for the first axis is greater than the minimum threshold of 0.6, and that the overall value for all items in the first axis human capital in the banking institutions under study was 0.758, a value falling within the fourth category of the Cronbach's alpha range, indicating that the items in the first dimension, human capital, exhibit good stability.

Table 3

Cronbach's Alpha coefficient for the second axis quality of banking services

Dimensions of the second axis	Items	Cronbach's Alpha
The first dimension: Tangibility	05	0.848
The second dimension: reliability	05	0.821
The third dimension: responsiveness	05	0.852
The fourth dimension: security and trust	05	0.869
The fifth dimension: empathy	05	0.801
The second axis: quality of banking services	**25**	**0.942**

Source : Prepared by the researcher based on SPSS outputs

We can see from the table above that the Cronbach's alpha coefficient for the second axis is greater than the minimum threshold of 0.6, and that the overall value for all items in the second axis 'Quality of Banking Services' for the banks under study was 0.942 This value falls within the sixth category of the Cronbach's alpha scale, indicating that the items of the second axis as a whole exhibit excellent reliability. This means that there is validity and reliability in the second axis, 'Quality of Banking Services'.

We also find that the Cronbach's alpha values for the five dimensions of the second axis were, respectively: the first dimension, tangibility (0.848), a value belonging to the fifth category of the Cronbach's alpha scale, indicating that the items of the first dimension, tangibility, exhibit very good reliability; as for the second dimension, reliability (0.821), which is a value belonging to the fifth category of Cronbach's alpha, indicating that the items in the second dimension of reliability are characterised by very good stability, and the same applies to the third dimension, responsiveness (0.852), whilst the Cronbach's alpha values for the fourth dimension, safety and trust (0.869), and the fifth dimension, empathy (0.801) a value falling within the fifth category of Cronbach's alpha indicate that the items for both the fourth and fifth dimensions of the second axis exhibit very good reliability, and consequently, all dimensions of the second axis are greater than the minimum threshold of 0.6, indicating the reliability of the study tool. The internal consistency coefficient, which represents the square root of the reliability coefficient for the second axis as a whole, was (0.970), indicating the validity of the study tool.

We believe that the internal consistency of the questionnaire is crucial, as it serves as one of the measures of the reliability of the study tool. It assesses the degree to which the questionnaire achieves its intended goals. Our aim is to measure the correlation between the total score of each dimension and the total score of its corresponding axis, as well as the correlation between the total score of each axis and the total score of the entire questionnaire. To statistically express reliability, we calculate the Pearson correlation coefficient. The following tables display the results of calculating the internal consistency and reliability of the axes and dimensions of the questionnaire.

The internal consistency of the statements within the first axis "Human Capital" as shown in Table 4 below.

Table 4

Ensure the internal consistency of the dimension in the first axis "Human Capital"

statements of the first axis	Pearson correlation coefficient	Significant**
The bank is working to recruit highly qualified individuals to fill vacant positions.	**0.579	0.000
The bank employs staff with exceptional knowledge and highly developed skills.	**0.549	0.000
The bank's management encourages its employees to participate in training courses to expand and enhance their theoretical and practical knowledge.	*0.206	0.034
The bank's management motivates its employees by offering them attractive bonuses.	**0.500	0.000
There is a good match between employees' academic and professional qualifications and the tasks assigned to them.	**0.621	0.000
The bank's employees have the necessary experience to perform their assigned tasks efficiently and effectively.	**0.701	0.000
The bank's management encourages its employees to adopt a team-oriented approach to solving the problems they face.	**0.586	0.000
The bank's employees offer innovative and creative solutions to the various challenges they face.	**0.634	0.000
The first axis: human capital	**0.793	0.000

Source : Prepared by the researcher based on SPSS outputs

From the results of the bivariate correlations shown above between each item of the first axis human capital, It is clear that the correlation coefficients, measured using Pearson's correlation coefficient, are significant at the (0.05) level, with the correlation coefficient for the first statement estimated at (r = 0.579), a value that falls within the third range of the coefficient. The correlation coefficient indicates that there is a moderate correlation between the first statement and the total score for the first axis, as estimated by (r=0.549) As for the second statement, the correlation coefficient falls within the third range, indicating a moderate correlation between the second statement and the total score of the first axis. The same comparison applies to statements 4 and 7 of the first axis, for which the correlation coefficients were estimated at (0.500) and (0.586), indicating a moderate correlation. Meanwhile, statements 5, 6, and 8 had correlation coefficients of (0.621), (0.701), and (0.634), respectively, which fall within the second range, indicating a strong correlation between the items and the total score of the first axis. Item 3, however, had a correlation coefficient of (0.206), falling within the range ($0.4 \geq R > 0$), which indicates a weak correlation between the item and the total score of the axis. Since the significance level for each item is less than ($0.05 \geq \alpha$), each item in the first dimension, "Human Capital," is characterized by internal consistency and coherence with the total score of the first axis; therefore, they are valid for the purpose for which they were designed to measure.

The internal consistency of the statements within the second axis " quality of banking services " as shown in Table 5 below.

Table 5

Ensure the internal consistency of the dimensions in the second axis quality of banking services

dimensions of the second axis	Pearson correlation coefficient	Significant**
The first dimension: Tangibility	**0.782	0.000
The second dimension: reliability	**0.879	0.000
The third dimension: responsiveness	**0.848	0.000
The fourth dimension: security and trust	**0.826	0.000
The fifth dimension: empathy	**0.824	0.000

dimensions of the second axis	Pearson correlation coefficient	Significant**
The second axis: quality of banking services	**0.830****	**0.000**

Source : Prepared by the researcher based on SPSS outputs

The correlation matrix for the dimensions of the second axis, "Quality of Banking Services," shows that the Pearson correlation coefficients between each dimension of the second axis and the overall score for the axis as a whole ranged from 0.782 to 0.879. These values are statistically significant because the Sig (significance level) for each correlation coefficient of each dimension is less than the significance level of (0.05). Therefore, the dimensions of the second axis are considered valid and consistent.

7. TESTING RESEARCH HYPOTHESE AND RESULTS ANALYSIS

This section presents a hypothesis test to determine whether the study's hypotheses should be accepted or rejected using appropriate statistical methods.

7.1 Hypothesis Test Results

Hypothesis Statement:
There is a positive correlation between human capital and improvements in the quality of services provided by the Algerian banking institutions under review.

Statistical Formulation:

- Null Hypothesis (H_0): There is no statistically significant correlation between human capital and improvements in the quality of services provided by the Algerian banking institutions under review.
- Alternative Hypothesis (H_1): There is a statistically significant correlation between human capital and improvements in the quality of services provided by the Algerian banking institutions under review.

Table 6

Summary of Simple Linear Regression for the Hypothesis

Dependent Variable	Independent Variable	Significance Level (Sig.)	T-Test Value	Regression Coefficient (B)	F Value (Calculated)	Coefficient of Determination (R^2)	Correlation Coefficient (R)
Banking Service Quality	**Human Capital**	0.000	4.669	0.300	21.800	0.173	0.416
Simple Linear Regression Equation		**$Y=2.892+0.300x_1 + e_i$**					

Source : Prepared by the researcher based on SPSS outputs

The results of the hypothesis can be illustrated more clearly in Figure 2 below

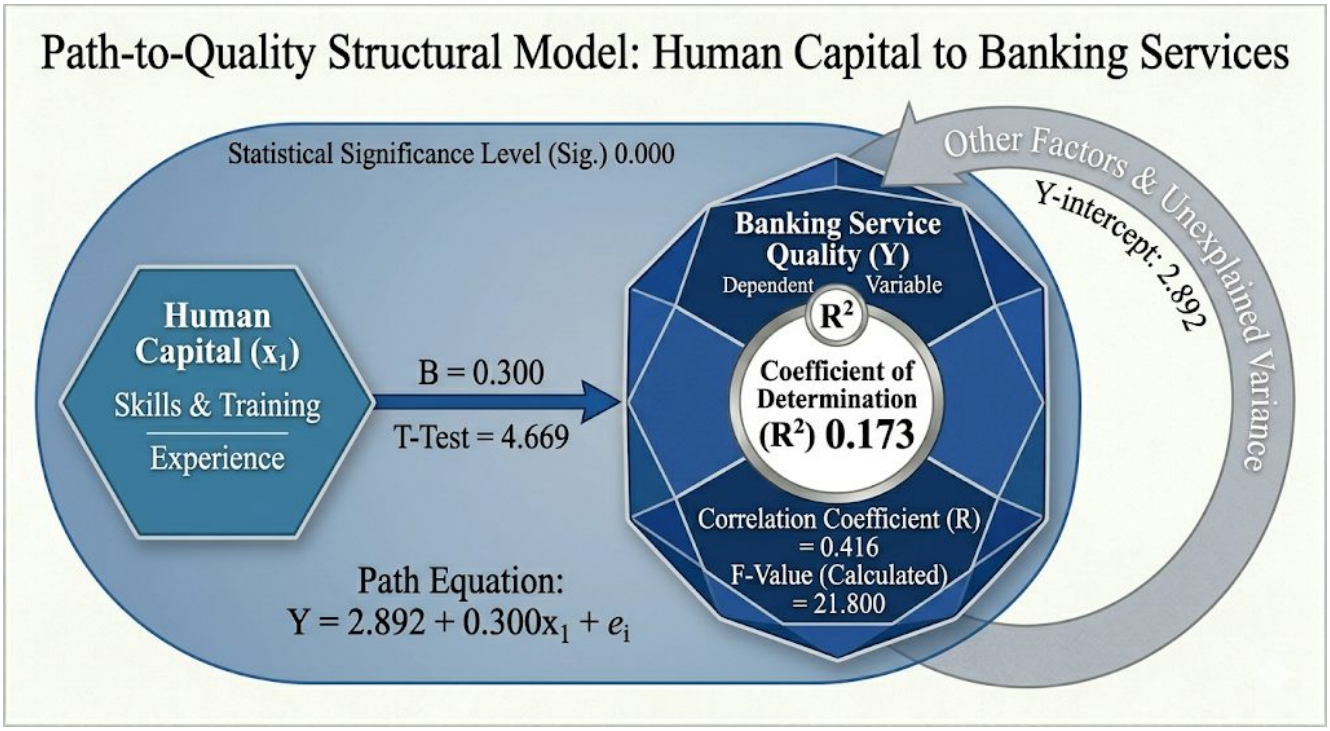
Figure 1

Dependence of Banking Service Quality on Intellectual Capital

Source : Prepared by the researcher

7.2 Interpretation of Results

We observe from the results of the test of the first sub-hypothesis that **the Pearson correlation coefficient**, which is (r = 0.416), is positive, indicating that the relationship between the two variables is positive, meaning that the human capital variable has a positive effect on improving the quality of services provided by the banks under study; as levels of attention to human capital increase, this is followed by an increase in the quality of services provided by the banks under study.



As for the estimated **coefficient of determination** (R^2 = 0.173), it is clear that human capital explains (17.3%) of the variation in the improvement of service quality provided by the banks under study, according to the opinions of the respondents in the study, while the remaining (82.7%) is attributed to other factors.

We interpret the value of the effect **(coefficient of determination B)** between the two variables: The regression coefficient value mentioned in the table above, estimated at (B=0.300), indicates that for every one-unit increase in human capital levels, there is a corresponding increase in the improvement of service quality, as perceived by the study sample, by (0.300) units.

From the table above, we observe that the F-test value for examining the effect of human capital on service quality improvement reached a value of (F=21.800), where we note that it is statistically significant at the significance level ($\alpha \leq 0.05$) due to its significance level (Sig=0.000), Therefore, we reject the null hypothesis, which states that there is no effect between the two variables, and accept the alternative hypothesis.

8. CONCLUSION

Based on the presentation of the applied part of the study, the statistical analysis of the participants' responses, and the discussion of the findings in light of the proposed hypotheses, a set of key conclusions has been reached:

The results of the empirical study revealed that the Algerian banking institutions under review are working to implement human capital requirements at a high level by increasing their focus on all components of human capital. This is evident in their commitment to attracting human resources with outstanding competence and high professional expertise, in addition to adopting flexible organizational structures based on their own organizational culture. These banks also strive to increase customer satisfaction and loyalty by listening to their advice and feedback and addressing their complaints as quickly as possible;

The study's findings also showed that the quality of banking services provided by the Algerian banking institutions under review was high, due to the fact that the management of these institutions has become

increasingly focused on the quality of the services they offer, This is due to the increasing intensity of competition in the Algerian banking market. To provide high-quality services, the banks under study ensure they have modern software that keeps pace with major changes in communications and technology, while utilizing various advanced devices that manage and streamline their information systems. They also adhere to service deadlines and work to protect customer information, which increases their level of trust and, consequently, their satisfaction and loyalty to these institutions;

Human capital clearly plays a role in improving the quality of banking services at the Algerian banking institutions included in the study, which means that these institutions rely heavily on human capital to enhance the quality of the services they provide.

In conclusion, human capital plays a significant role in improving the quality of banking services at Algerian banking institutions. These institutions' commitment to their employees, the development of their technical and practical skills, and the promotion of teamwork all have a positive impact on the overall quality of the banking services they provide.

RECOMMENDATIONS :

Based on the results obtained in this study, a set of **recommendations** can be made to Algerian banks under study, we mention them below:

- The Algerian banking institutions under study must strengthen their investment in human capital by placing greater emphasis on developing and enhancing the knowledge and skills of their employees through encouraging and motivating them to participate in various international events and training courses related to modern banking management practices, in addition to implementing financial and non-financial incentives, while ensuring employees have significant freedom for creativity and innovation; Algerian banks under study should strengthen their investments in their human capital, by working more on developing and developing the cognitive and scientific capabilities of their employees by encouraging and urging them to participate in various international events and training courses related to modern banking management methods, in addition to activating material and moral incentives, while working to give employees great freedom to creativity and innovation.
- Algerian banking institutions must increase the level of trust in their employees, which will enhance their ability to provide exceptional, high-quality services;
- We recommend that the Algerian banking institutions under study draw on leading international practices in human capital management within the banking sector by seeking to emulate these practices and adapt them to the Algerian banking system, which would contribute to the overall development of the Algerian banking system.

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