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Original Research

Testing the Accuracy of Altman, Springate, and Zmijewski Models in the Context of Indonesian Banking

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Abstract

This research aims to identify the most accurate model for predicting bankruptcy in the banking industry in Indonesia. The three models used in this study are the *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models. The population used consists of all banks listed on the Indonesia Stock Exchange (IDX). The data used are secondary data in the form of financial reports from 2012 to 2022. The methodology employed includes hypothesis testing using tests for normality, homogeneity, and one-way ANOVA. The research findings indicate that the *Z-Score* model is the most suitable and accurate model for predicting bankruptcy, with an accuracy rate of 85.53%. The *S-Score* model achieved an accuracy rate of 14.47%, while the *X-Score* model did not provide significant accuracy. The implications of the findings are that if the *Z-Score* model can be used to evaluate the financial health of banks and provide concrete preventive actions before bankruptcy occurs.

Keywords: Bankruptcy, *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* Models.

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Introduction

Analysis and prediction of the financial condition of a company has become very important in the era of technological advancement and economic cycle changes that affect intense competition in the business world (Ali, Aysan & Yousef, 2023). The capital market, as a source of funding or alternative financing for publicly traded companies, can reflect the performance and financial condition of the companies. Investors examine the financial condition of the company before deciding to invest their funds (Grikietytė & Šniukienė, 2023). Therefore, companies analysis and prediction of financial conditions of companies is a market demands (Agwata, 2018).

The prediction model of bankruptcy for a company is highly needed by various parties such as lenders, investors, government, accountants, and management due to the uncertain economic conditions in Indonesia, which potentially lead to financial difficulties or even bankruptcy for companies (Ayvaz & Erkan, 2023; Gupta, 2023; and Vu & Tran, 2023). A prediction error regarding the continuity of a company's operations in the future can have consequences, including the loss of revenue or investment that has been invested in a company. However, in addition to the uncertain economic conditions, the phenomenon of the weakening of the rupiah exchange rate is also a concern for the banking industry in Indonesia. If the rupiah continues to weaken to the level of Rp 15,000, it is estimated that five national banks will collapse, similar to the economic crisis in late 1998 that caused many banks to "fall" due to the weakening of the rupiah exchange rate against the US dollar. This means that the Otoritas Jasa Keuangan (OJK) is taking anticipatory steps by calling the bank management related to the depreciation (Fredy, 2018; Agustina, 2022).

The *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models have been analyzed in several previous studies. A study conducted by Dailibas (2021) showed strong and significant results in using the *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models to analyze bankruptcy. Meanwhile, research conducted by Melina and Kalinggo (2023) on companies listed on the Indonesia Stock Exchange (IDX) showed that the *Altman X-Score* and *Springate S-Score* models provided similarly high bankruptcy prediction rates. This means that both studies indicate that the *Altman X-Score* and *Springate S-Score* models have high and comparable bankruptcy prediction rates.

According to the studies of Siahoe and Kordlouie, (2018); Bansal et al., (2020); Shree and Selvam, (2023), in testing the three bankruptcy prediction models (*Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score*), it was found that the *Altman X-Score* model provided the highest prediction rate in 15 companies, while the Springate model provided a prediction rate for 7 companies. On the other hand, the *Zmijewski Z-Score* model provided the lowest prediction rate, with no companies predicted to go bankrupt. Another study conducted by Sitorus, (2023) on delisted companies in the Indonesia Stock Exchange (IDX) during 2019-2021 showed that the *Altman X-Score* model had the highest accuracy rate, reaching 71%, while the *Springate S-Score* model had an accuracy rate of 70%, and the *Zmijewski Z-Score* model only achieved an accuracy rate of 65%. Thus, both studies show that the *Altman X-Score* model has the highest accuracy rate, followed by the *Springate S-Score* and *Zmijewski Z-Score* models.

Research on corporate bankruptcy has been extensively conducted in Indonesia and other countries. However, research specifically focusing on the banking industry and comparing the accuracy of bankruptcy prediction models remains limited. Therefore, researchers are interested in conducting a study to determine which model is the most accurate in predicting bankruptcy in the banking industry in Indonesia. This is because previous research on the *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models has yielded inconsistent results when analyzing corporate bankruptcy or the banking industry. In addition, this study aims to provide empirical evidence regarding the accuracy of the *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models in predicting bankruptcy in the banking industry in Indonesia.

In this study, several relevant problem arguments were found. First, there is an urgent need to find the most accurate model in predicting bankruptcy in the Indonesian banking industry. Currently, there is no model that consistently provides accurate predictions, which poses a challenge for researchers and practitioners in identifying bankruptcy risks in the banking sector. Second, the importance of bankruptcy prediction in the banking industry becomes a focal point of attention due to its serious implications for the economic and financial stability of the country. By having a reliable bankruptcy prediction model, financial managers and regulators can evaluate the financial health of the banking industry in Indonesia and take preventive measures before bankruptcy occurs.

Furthermore, this study also demonstrates the need for a comparison between existing bankruptcy prediction models. In this case, the *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* models are compared to determine the performance and accuracy of each model. The research results show that the *Springate S-Score* model has a higher accuracy rate compared to other models. However, it is also found that the *Altman X-Score* model does not provide adequate accuracy. This highlights the importance of evaluation and improvement of less effective models to enhance bankruptcy prediction capabilities in the future. Taking these arguments into consideration, it can be seen that determining the most accurate model in predicting bankruptcy in the Indonesian banking industry is a major problem that needs to be addressed.

This phenomenon indicates the need for the development of better bankruptcy prediction models in the context of the Indonesian banking industry. Evaluation and improvement of existing models need to be carried out in order to enhance the ability to predict bankruptcies in the future. The development of more reliable and accurate prediction models will provide a positive contribution in identifying bankruptcy risks in the banking sector, maintaining economic and financial stability of the country, and providing a foundation for making more accurate decisions in managing the financial aspects of the Indonesian banking industry.

Literature Review

The theoretical framework for this research consists of the theory of bankruptcy and credit prediction models, Bank Indonesia's policy theory regarding credit monitoring and bankruptcy prevention, and the theory of using bankruptcy and credit prediction models in Bank Indonesia. As a result, researchers can analyze and evaluate the

bankruptcy and credit prediction models used in Bank Indonesia and draw conclusions or recommendations necessary to improve the accuracy of the bankruptcy prediction model in Indonesia's banking industry.

The *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score* bankruptcy prediction models are methods used to assess the bankruptcy potential of a company. The *Altman X-Score* combines several financial ratios such as liquidity, profitability, and leverage to generate a bankruptcy score. The *Springate S-Score* measures the financial health of a company by considering profitability, liquidity, and operational efficiency ratios. Meanwhile, the *Zmijewski Z-Score* uses variables such as profitability, liquidity, leverage, and activity to predict bankruptcy risk. These three models provide important indicators for financial analysts to evaluate the level of bankruptcy risk of a company based on available financial data.

Altman X-Score, *Springate S-Score*, and *Zmijewski Z-Score* are bankruptcy models used to evaluate the financial health of companies. *Altman X-Score* combines ratios such as liquidity, profitability, and leverage, while *Springate S-Score* includes factors like profitability, liquidity, and operational efficiency. *Zmijewski Z-Score* considers external factors such as changes in economic conditions and market. The advantage of *Altman X-Score* lies in its ease of use and interpretation, while *Springate S-Score* provides a more in-depth analysis and can be applied to various types of companies. *Zmijewski Z-Score* takes into account external factors and a company's operational activities. However, these models have some limitations, including their relevance to changing business environments, the use of complex variables, and the dependence on complete historical data.

Thus, it can be concluded that these three models can provide useful methods for financial analysts to evaluate the financial health of banks and identify bankruptcy risks. *Altman X-Score* is easy to use and interpret, while *Springate S-Score* provides more in-depth analysis and can be applied to various types of companies. *Zmijewski Z-Score* considers external factors and the operational activities of the company. By using these models, financial analysts can gain a better understanding of the financial health of a company and the potential bankruptcy risks it faces through a comprehensive and holistic approach that takes into account various interacting factors, including internal aspects of operational efficiency and external factors that can impact the company's financial performance and its financial condition and bankruptcy risk. This helps in making more accurate and thorough decisions.

Altman X-Score

The Altman (1968) model uses the Multiple Discriminant Analysis method with five types of financial ratios, namely working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to book value of total debts, and sales to total assets. To this day, the *Altman X-Score* is still widely used by researchers, practitioners, and academics in the accounting field compared to other prediction models (Irawan, 2023). The results of Altman's developed research are:

$$Z = 1.2 Z_1 + 1.4 Z_2 + 3.3 Z_3 + 0.6 Z_4 + 0.999 Z_5 \quad (1)$$

Where;

Z₁: Working capital

Z₂: Retained earnings

Z₃: Earnings before taxes

Z₄: Book value of equity/book value of debt

Z₅: Sales/total asset

In its development, the Altman model underwent revisions so that it could be used not only for public manufacturing companies but also for private companies (Laitinen & Suvas, 2017; Altman, 2018). The revision was carried out by changing one of the variables used in the previous model.

$$Z' = 0.0717 Z_1 + 0.874 Z_2 + 3.107 Z_3 + 0.420 Z_4 + 0.988 Z_5 \quad (2)$$

Where;

Z'₁ : Working capital/total asset

Z'₂ : Retained earnings/total asset

Z'₃ : Earnings before taxes/total asset

Z'₄ : Book value of equity/book value of debt

Z'₅ : Sales/total asset

The final result in the form of X-Score values for each company will be grouped according to the critical value standards set by Altman (Irawan, 2023), which are :

If the X-Score value is greater than 2.99, the company is in the safe zone, which means the company is healthy or not bankrupt, if the X-Score value is between 1.01 - 2.99, it is in the gray zone, which means the company is in a gray area, where the company may potentially not go bankrupt or go bankrupt and if the X-Score value is less than 1.01, the company is in the distress zone, where the company is unhealthy or potentially facing bankruptcy.

Springate S-Score

This model was developed by Springate (1978) using multidiscriminant analysis. The model can be used to predict bankruptcy with an accuracy rate of 92.5% (Irawan, 2023). The model successfully developed by Springate is :

$$S = 1.03 A + 3.07 B + 0.66 C + 0.4 D \quad (3)$$

Where;

A : Working capital/total asset

B : Earnings before taxes/total asset

C : Earnings before taxes / current liabilities

D : Sales/total asset

The final result in the form of *Springate* X_{score} for each company will be grouped according to the critical value standards set by *Springate* as follows :

If the *Springate* value is greater than 0.862, the company falls into the category of healthy companies and if the *Springate* value is less than 0.862, the company falls into the category of unhealthy companies or potentially bankrupt companies.

Zmijewski Z_{Score}

Model *Zmijewski* (1984) uses ratio analysis to measure the performance, leverage, and liquidity of a company for its prediction model. *Zmijewski* used probability analysis applied to 40 bankrupt companies and 800 surviving companies at that time (Irawan, 2023; Leisen & Swan, 2023). The successfully developed model is :

$$Z = 1.03 A + 3.07 B + 0.66 C + 0.4 D \quad (4)$$

Where;

A : Return on asset
B : Debt ratio
C : Current ratio

The final result in the form of *Zmijewski* Z_{Score} for each company will be grouped according to the critical value standards set by *Zmijewski* Z_{Score} as follows :

The higher the *Zmijewski* Z_{Score} value (positive value), the more likely the company is classified as bankrupt and the smaller the *Zmijewski* Z_{Score} value (negative value), if the *Zmijewski* Z_{Score} value is also smaller and negative, the company is categorized as healthy.

Methodology

This research focuses on the banking industry in Indonesia listed on the Indonesia Stock Exchange (IDX) within the time range from 2012 to 2022. The population of this study consists of 10 banks that meet the following criteria: Banks listed on the Indonesia Stock Exchange (IDX) for three consecutive years, where the sample is selected from banks listed on the IDX and have met the listing requirements for three consecutive years. This criterion is used to ensure that the selected banks have stability and continuity in operating in the Indonesian stock market, financial statements in Indonesian Rupiah (Rp), where the sample is selected based on financial statements presented in Indonesian Rupiah. This is done to facilitate the comparison and analysis of financial data between different banks. The cut-off period is on December 31 of each year, where the sample is selected based on the cut-off period at the end of the year, namely December 31, for each year within the research period. This ensures that the financial data analyzed is the most up-to-date data at the end of each year and has been audited, where the sample is selected from banks that have undergone the auditing process. Auditing is conducted by independent third parties to verify and assess the accuracy of the banks' financial statements. This criterion ensures that the data used in

this research has been verified and considered reliable. Following are the results of purposive sampling :

Tabel 1. Sample Criteria

IDX Code	Issuer	Presentment
BDMN	PT. Bank Danamon, Tbk.	IDR · IDX
BBRI	PT. Bank Rakyat Indonesia (Persero), Tbk.	IDR · IDX
BMRI	PT. Bank Mandiri, (Persero) Tbk.	IDR · IDX
BBNI	PT. Bank Negara Indonesia, (Persero) Tbk.	IDR · IDX
BRIS	PT. Bank Syariah Indonesia, (Persero) Tbk.	IDR · IDX
BTPN	PT. Bank Tabungan Pensiunan Nasional, Tbk.	IDR · IDX
NISP	PT. Bank OCBC NISP, Tbk.	IDR · IDX
BBTN	PT. Bank Tabungan Negara (Persero), Tbk.	IDR · IDX
BTPS	PT. Bank BTPN Syariah, Tbk.	IDR · IDX
BBCA	PT. Bank Central Asia, Tbk.	IDR · IDX
Research Sample Criteria		Quantity
<i>Banking in Indonesia that is listed on the IDX</i>		36
<i>Banking listed on IDX 10 consecutive years</i>		(23)
<i>Financial statements are presented in Rupiah (Rp)</i>		(3)
<i>Cut-off per December 31 each year and has been audited</i>		(0)
<i>Number of research samples</i>		10

Furthermore, the data used in this research are quantitative secondary data in the form of annual financial reports of banks listed on the Indonesia Stock Exchange (IDX) for the period 2012 to 2022. The data collection method in this study was obtained from documentary data taken through the internet site provided by the official website of the Indonesia Stock Exchange (IDX). The data analysis methodology used includes hypothesis testing using tests for normality, homogeneity, and one-way ANOVA with the assistance of a computer using IBM SPSS 25 for Windows program.

Analysis and Discussions

To assess the suitability of data and analyze factors, it is necessary to perform prerequisite tests that the data must meet. These prerequisite tests are intended to ensure that the data to be used in factor analysis meets the requirements and can be relied upon in generating analysis results.

Tabel 2. Descriptive Statistics of Research Variables

Variable	N	Minimal	Maximal	Mean	S.D
<i>Altman X-Score</i>	100	2.000	963.000	166.72000	178.968824
<i>Springate S-Score</i>	100	4.000	293.000	43.27000	47.503504
<i>Zmijewski Z-Score</i>	100	.000	66.000	13.38000	12.389129

In Table 2, there are several conclusions that can be drawn regarding the three models used in the study, namely *Altman X-Score*, *Springate S-Score*, and *Zmijewski Z-Score*. Firstly, looking at their average values, *Altman X-Score* has an average value of 166.72, followed by *Springate S-Score* with an average value of 43.27, and *Zmijewski Z-Score* with an average value of 13.38. The interpretation of these average values provides a general overview of the relative performance of each model. *Altman X-Score*, with a high average value, indicates that the model tends to provide better results in predicting the financial condition of banks. On the other hand, *Zmijewski Z-Score*, with a negative average value, indicates that the model tends to provide lower results in predicting the financial condition of companies. *Springate S-Score* has an average value between the two, indicating moderate performance in predicting the financial condition of companies. In the context of a more specific research, definitive conclusions can be drawn through a more comprehensive analysis among these models.

Results of the Altman X-Score Bankruptcy Prediction Analysis

The analysis in this study is the *Altman X-Score* discriminant model. This analysis is used to identify and analyze the prediction of bankruptcy in the banking industry in Indonesia for the period of 2018-2022. The *Altman X-Score* formula is as follows :

$$X = 1,2 X_1 + 1,4 X_2 + 3,3 X_3 + 0,6 X_4 + 0,999 X_5 \quad (1)$$

Based on the calculation results using Excel program, the following results were obtained :

Tabel 3. The Calculation Results of *Altman X-Score*

Issuer	Categories									
	1 th	2 th	3 th	4 th	5 th	6 th	7 th	8 th	9 th	10 th
PT. Bank Danamon, Tbk.	G	H	H	G	G	G	H	G	G	G
PT. Bank Rakyat Indonesia (Persero), Tbk.	G	G	H	H	H	H	H	G	H	H
PT. Bank Mandiri, (Persero) Tbk.	G	H	H	H	G	H	H	G	H	H
PT. Bank Negara Indonesia, (Persero) Tbk.	H	G	H	H	G	H	H	H	H	H
PT. Bank Syariah Indonesia, (Persero) Tbk.	G	G	G	G	H	G	G	G	H	H
PT. Bank Tabungan Pensiunan Nasional, Tbk.	G	G	G	G	G	H	G	G	H	G
PT. Bank OCBC NISP, Tbk.	H	G	H	H	G	G	G	G	G	G
PT. Bank Tabungan Negara (Persero), Tbk.	H	G	H	H	H	G	H	H	G	H
PT. Bank BTPN Syariah, Tbk.	G	H	G	G	G	H	G	G	H	G
PT. Bank Central Asia, Tbk.	H	H	H	G	H	G	H	G	H	H

G = Grey Area, H = Healthy

Table 3 shows that there are several healthy banking industries in Indonesia during the predicted period of 2012-2022, namely PT. Bank Rakyat Indonesia (Persero) Tbk, PT. Bank Mandiri (Persero) Tbk, PT. Bank Negara Indonesia (Persero) Tbk, PT. Bank Tabungan Negara (Persero) Tbk, and PT. Bank Central Asia Tbk. However, all banks have experienced Grey Area predictions at various points. During that period, there were five banks consistently classified as Grey Area, namely PT. Bank Danamon Tbk, PT. Bank Syariah Indonesia (Persero) Tbk, PT. Bank Tabungan Pensiunan Nasional

Tbk, PT. Bank OCBC NISP Tbk, and PT. Bank BTPN Syariah Tbk. No banks were predicted to go bankrupt during 2012-2022. The implication of this study is the importance of using the *Altman Z-Score* model to assess the financial health of the banking industry in Indonesia. Banks categorized as Grey Area need to take preventive measures before bankruptcy occurs. Furthermore, the findings of this research also affirm that the *Altman Z-Score* model can be used by financial managers and regulators to evaluate the financial health of the banking industry in Indonesia and implement concrete preventive measures before bankruptcy occurs. These findings are consistent with previous research conducted by (Putri et al., 2020; Tiryaki, 2021; and Ullah et al., 2021).

Results of the Springate S-Score Bankruptcy Prediction Analysis

The analysis in this study is the S-Score discriminant model. This analysis is used to determine and analyze bankruptcy prediction in the banking industry in Indonesia for the period 2018-2022. The following is the formula for the S-Score :

$$S = 1,03A + 3,07B + 0,66C + 0,4D \quad (2)$$

Based on the calculation results using Microsoft Excel, the following results were obtained :

Tabel 4. The Calculation Results of S-Score

Issuer	Categories									
	1 th	2 th	3 th	4 th	5 th	6 th	7 th	8 th	9 th	10 th
PT. Bank Danamon, Tbk.	B	H	H	B	B	B	H	H	B	H
PT. Bank Rakyat Indonesia (Persero), Tbk.	H	H	H	H	H	H	H	H	H	H
PT. Bank Mandiri, (Persero) Tbk.	H	H	B	H	H	H	B	H	H	B
PT. Bank Negara Indonesia, (Persero) Tbk.	H	H	H	H	H	H	H	H	H	H
PT. Bank Syariah Indonesia, (Persero) Tbk.	B	B	B	H	B	H	B	H	B	H
PT. Bank Tabungan Pensiunan Nasional, Tbk.	H	H	H	B	B	H	H	H	B	B
PT. Bank OCBC NISP, Tbk.	B	H	H	B	B	B	B	B	H	H
PT. Bank Tabungan Negara (Persero), Tbk.	H	H	B	H	H	H	B	H	B	H
PT. Bank BTPN Syariah, Tbk.	H	H	H	B	B	H	H	B	H	H
PT. Bank Central Asia, Tbk.	H	H	H	H	H	H	H	H	H	H

B = Bankrupt, H = Healthy

Table 4 shows that there are several banking industries in Indonesia that experienced healthy predictions during the period of 2012-2022, including PT. Bank Rakyat Indonesia (Persero) Tbk, PT. Bank Mandiri (Persero) Tbk, PT. Bank Negara Indonesia (Persero) Tbk, PT. Bank Tabungan Negara (Persero) Tbk, PT. Bank BTPN Syariah Tbk, and PT. Bank Central Asia Tbk. However, there are several banking industries in Indonesia that were predicted to go bankrupt during that period, namely PT. Bank Danamon Tbk, PT. Bank Syariah Indonesia (Persero) Tbk, PT. Bank Tabungan Pensiunan Nasional Tbk, and PT. Bank OCBC NISP Tbk. From the analysis, there are three banking industries in Indonesia that consistently experienced healthy predictions during the period of 2018-2022, namely PT. Bank Rakyat Indonesia (Persero) Tbk, PT. Bank Negara Indonesia (Persero) Tbk, and PT. Bank Central Asia Tbk. Meanwhile,

there are two banking industries in Indonesia that were predicted to go bankrupt consistently during that period, namely PT. Bank Syariah Indonesia (Persero) Tbk, and PT. Bank OCBC NISP Tbk. In terms of implications, this analysis can provide useful information for financial managers and regulators to assess the financial health of the banking industry in Indonesia. By knowing which banking industries consistently experience healthy predictions and bankruptcies, financial managers can evaluate and improve specific aspects to prevent bankruptcy. Additionally, regulators can be more proactive in monitoring banking industries that are predicted to go bankrupt consistently to maintain financial system stability. These research findings confirm the results of previous studies conducted by (Verlekar & Kamat, 2019; Sybirtsev, Mazhara & Moskalenko, 2020; and Ridwan, Pagalung, & Kara, 2022).

Results of the Zmijewski Z-Score Bankruptcy Prediction Analysis

The analysis in this study is the Z-Score discriminant model. This analysis is used to determine and analyze the bankruptcy prediction in the banking industry in Indonesia for the period of 2018-2022. The Z-Score formulation is as follows :

$$X = -4,3 - 4,5X_1 + 5,7X_2 - 0,004X_3 \quad (3)$$

Based on the calculation results using Microsoft Excel program, the following results were obtained :

Tabel 5. The Calculation Results of Z-Score

Issuer	Categories									
	1 th	2 th	3 th	4 th	5 th	6 th	7 th	8 th	9 th	10 th
PT. Bank Danamon, Tbk.	H	H	H	H	B	H	H	H	H	H
PT. Bank Rakyat Indonesia (Persero), Tbk.	H	H	H	H	B	H	H	H	H	H
PT. Bank Mandiri, (Persero) Tbk.	H	H	H	H	H	H	H	H	H	H
PT. Bank Negara Indonesia, (Persero) Tbk.	H	H	B	H	H	H	H	H	H	H
PT. Bank Syariah Indonesia, (Persero) Tbk.	B	B	B	B	B	B	B	B	H	H
PT. Bank Tabungan Pensiunan Nasional, Tbk.	H	H	H	B	H	B	H	H	H	H
PT. Bank OCBC NISP, Tbk.	H	H	B	H	H	H	H	B	H	H
PT. Bank Tabungan Negara (Persero), Tbk.	H	H	H	H	H	H	H	H	B	H
PT. Bank BTPN Syariah, Tbk.	H	H	H	H	H	H	B	H	H	H
PT. Bank Central Asia, Tbk.	H	H	H	H	H	H	H	H	H	H

B = **Bankrupt**, H = **Healthy**

In Table 5, it can be seen that several banking industries in Indonesia fall under the category of healthy predictions during the period of 2012-2022, including PT. Bank Danamon Tbk, PT. Bank Rakyat Indonesia (Persero) Tbk, PT. Bank Mandiri (Persero) Tbk, PT. Bank Negara Indonesia (Persero) Tbk, PT. Bank Tabungan Pensiunan Nasional Tbk, PT. Bank OCBC NISP Tbk, PT. Bank Tabungan Negara (Persero) Tbk, PT. Bank BTPN Syariah Tbk, and PT. Bank Central Asia Tbk. Meanwhile, the banks predicted to go bankrupt are PT. Bank Syariah Indonesia (Persero) Tbk and PT. Bank OCBC NISP Tbk. There are three banks that consistently fall under the category of healthy predictions during that period, namely PT. Bank Mandiri (Persero) Tbk and PT. Bank Central Asia Tbk. From the analysis of Z-Score (Zmijewski), it can be observed that

several banking industries in Indonesia consistently fall under the category of healthy predictions during that period. This indicates that the Zmijewski Z-Score model is more realistic in predicting the bankruptcy of the banking industry in Indonesia during that period and is in line with the current conditions. These findings also have important implications for the Indonesian banking industry, highlighting the importance of adopting more accurate credit analysis methods in accordance with changing market conditions. By using the right methods, the banking industry can minimize the risk of unpaid credit and ensure healthy financial performance. Philosophically, these findings emphasize the importance of adopting more advanced technology and methodologies in the business world. The rapid development of technology and methodologies can provide significant benefits to the business world, especially in decision-making. For example, in credit analysis, the use of more advanced methods can yield more accurate results and assist the banking industry in making better decisions. Therefore, these findings support research conducted by (Zelenkov, Fedorova & Chekrizov, 2017; Prusak, 2017; Manousaridis, 2017; Karas & Srbová, 2019; Laurila, 2020; Bărbuță-Mișu & Madaleno, 2020; Alibabae & Khanmohammadi, 2022).

Data Normality Testing

Normality test in this research is used to evaluate whether the data of a statistical model and analysis has a normal distribution or not. Normal distribution is important in statistical analysis because many statistical models are based on the assumption that data is taken from a normal distribution. In this research, Kolmogorov-Smirnov normality test is chosen to be used. The Kolmogorov-Smirnov test is one of the most common methods used to evaluate the normality of data. This test is based on the comparison between the empirical distribution of the observed data and the expected distribution of the data (normal distribution in this case). If the p-value of the normality test is greater than 0.05, it can be concluded that the data has a normal distribution, and if the p-value is less than or equal to 0.05, it can be concluded that the data does not have a normal distribution.

Tabel 6. Model Calculation Results

Univariate	Sig.	Probability	Description
<i>Altman X-Score</i>	0,179	0,05	Normal
<i>Springate S-Score</i>	0,206	0,05	Normal
<i>Zmijewski Z-Score</i>	0,216	0,05	Normal

Based on the normality test results with the Kolmogorov Smirnov Test above, it can be seen that the probability value > 0.05 . Therefore, it can be concluded that the data is normally distributed. This result indicates that the data taken from the sample meets the normal distribution assumption required to apply many statistical analysis techniques. Furthermore, this result emphasizes the importance of data validity in evaluating research hypotheses and provides confidence that the data taken from the sample can represent the population in general.

Homogeneity Testing with Levene Test

To determine whether the variable data in the model has homogenous distribution or not, a homogeneity test is conducted Yitnosumarto & O'Neill, (1986). In decision-making, a good data model is the one that has homogenous data distribution. To test for homogeneity, the probability value can be analyzed. If the probability value is > 0.05 , then it can be concluded that the regression model meets the homogeneity assumption. Conversely, if the probability value is ≤ 0.05 , then the regression model does not meet the homogeneity assumption. The homogeneity test is conducted using the Levene Test, and the results can be seen in the following table:

Tabel 7. Homogeneity Test Results with Levene

Univariate	Sig.	Probability	Description
<i>Altman – Springate – Zmijewski</i>	0,138	0,05	Homogeneous

The model data tested by Levene Test showed a probability value of 0.138, which is greater than the predetermined significance level of 0.05. Therefore, it can be concluded that the model data meets the assumption of homogeneity. This finding indicates that the data used in the study can be considered homogeneous, so that the statistical analysis performed can be relied upon and the results can be interpreted accurately. This is important to ensure that the conclusions drawn from the statistical analysis results are not distorted by unwanted differences in variance between groups.

One Way ANOVA Test

In this study, One Way ANOVA analysis was used to compare Altman, Springate, and Zmijewski models in predicting bankruptcy in the banking industry in Indonesia with a significance level (α) of $5\% = 0.05$. The results of One Way ANOVA Test showed that the probability value was 0.000, indicating a significant difference between the three models in predicting bankruptcy in the banking industry in Indonesia.

Tabel 8. *One Way ANOVA Test*

Model	F-test	Sig.	Level of Significant
<i>Altman – Springate – Zmijewski</i>	31,233	0,03	0,05

Based on the data analysis using One Way ANOVA, a probability value of 0.03 was obtained which is smaller than the significance level of 0.05. Therefore, it can be concluded that there is a significant difference between the three models, namely Altman, Springate, and Zmijewski, in predicting the bankruptcy of the banking industry in Indonesia. In addition, this technique can also reveal the differences between each model compared to the other models. These findings can provide an important contribution in decision-making for investors and other stakeholders in choosing the appropriate model to predict the bankruptcy of the banking industry in Indonesia.

Comparison of the Three Models

X-Score (Altman) is a model used to predict bankruptcy by measuring the financial health of a company or financial institution. This model uses five standardized financial ratios, and their weights are determined based on regression analysis. X-Score (Altman) generates a numerical score that can be used to classify companies into categories indicating bankruptcy risk. S-Score (Springate) is a model used to analyze the bankruptcy tendency of a company. This model uses financial ratios measured based on liquidity, profitability, operational efficiency, and sales growth. S-Score (Springate) produces a numerical score that can be used to evaluate the likelihood of a company's bankruptcy. Z-Score (Zmijewski) is a model used to predict the bankruptcy risk of a company. This model uses various financial ratios measured based on liquidity, profitability, operational efficiency, and sales growth. Z-Score (Zmijewski) generates a numerical score that can be used to identify companies with high bankruptcy risk. These three models have the same objective, which is to provide information and predictions regarding the likelihood of a company or financial institution going bankrupt. Although they use different approaches and variables, these models can be useful analytical tools in identifying bankruptcy risks and taking appropriate preventive measures.

Tabel 9. Comparison of the Three Models

Description	<i>Altman, Springate and Zmijewski</i>		
	X-Score	S-Score	Z-Score
Healthy	19,28%	26,45%	54,27%
Grey Area	89,60%	-	-
Bankrupt	-	14,47%	85,53%

Based on Table 8, it can be concluded that the *Springate* S-Score model can predict 14.47% of the banking industry in Indonesia in the bankrupt category and 26.45% in the healthy category, during the research period from 2012 to 2022. Furthermore, the *Zmijewski* Z-Score model can predict 85.53% of the banking industry in Indonesia in the bankrupt category and 54.27% in the healthy category, during the research period from 2012 to 2022. Additionally, the *Altman* X-Score model can predict that 89.60% of the banking industry in Indonesia falls into the grey area category, 19.28% in the healthy category, and none in the bankrupt category, during the research period from 2012 to 2022. Based on these results, it can be concluded that the *Zmijewski* Z-Score model is the most suitable for predicting the bankruptcy of the banking industry in Indonesia with an accuracy rate of 85.53%, followed by the *Springate* S-Score model with an accuracy rate of 14.47%. However, the *Altman* X-Score model is not suitable for predicting the bankruptcy of the banking industry in Indonesia. This is because the *Altman* X-Score model, designed by Edward Altman in 1968, is a model for predicting bankruptcy in the manufacturing sector. The model is based on financial ratio analysis that may not always be relevant to predicting the bankruptcy of the banking industry in Indonesia, as the banking industry has different business characteristics compared to manufacturing companies. Therefore, the *Altman* X-Score model is not suitable for predicting the bankruptcy of the banking industry in Indonesia.

Conclusion

Based on the analysis results, it can be concluded that the *Zmijewski Z-Score* model is the most accurate model for predicting the bankruptcy of the banking industry in Indonesia. This is also because the *Zmijewski Z-Score* model is considered the best model as it utilizes multidiscriminant approach analysis and key financial ratios that are deemed most important in predicting the bankruptcy of the banking industry in Indonesia. Factors such as credit risk, liquidity, and solvency significantly influence the risk of banking bankruptcy. However, it is important to be aware that this model still has limitations and needs to be complemented with external factors and careful assessment. Despite the high accuracy of the *Zmijewski Z-Score* model in predicting the bankruptcy of the banking industry in Indonesia based on historical financial data, it is important to remember that this model cannot fully account for non-financial factors that also impact bankruptcy risk. Factors such as regulatory changes, market shifts, risk management, and macroeconomic factors can affect banking bankruptcy but may not always be reflected in historical financial data. Therefore, it is important to conduct a comprehensive assessment by considering non-financial condition factors and the holistic and structured objectives of the banking industry before making an assessment of the banking industry risk in Indonesia.

Based on the above results, there are several suggestions or options that can be pursued in further research. First, the research can focus on developing bankruptcy prediction models based on machine learning or artificial intelligence. This method can involve algorithms such as *random forest*, *support vector machines*, or *neural networks* to obtain more accurate predictions and capture complex patterns in banking industry financial data. Second, the research can integrate multidimensional approaches such as factor analysis or cluster analysis to identify hidden financial patterns or groups of banks with similar bankruptcy risks. This approach can assist in developing more effective prediction models that focus on specific material aspects within the banking industry in Indonesia. Third, the research can explore the use of alternative data sources such as market sentiment, social media data, or geospatial data to enhance the accuracy of banking bankruptcy predictions. Lastly, expanding the sample to cross-country banks or the Islamic banking industry in other countries could help identify long-term trends and changes in global bankruptcy risk.

References

- Agustina, A. N. (2022). Perbandingan kebangkrutan menggunakan model altman z score, model springate dan model zmijweski. *Jurnal Ilmiah Poli Bisnis*, 13–28.
- Agwata, J. A. (2018). Using multiple approaches in the financial distress evaluation of companies listed in the manufacturing segment of the Nairobi Securities Exchange. *African Journal of Accounting, Auditing and Finance*, 6(2), 130-153.
- Ali, H., Aysan, A. F., & Yousef, T. (2023). From tech hub to banking failure: exploring the implications of cbdc on the destiny of Silicon Valley Bank. *Available at SSRN* 4411360.

- Alibabae, G., & Khanmohammadi, M. (2022). The study of the predictive power of meta-heuristic algorithms to provide a model for bankruptcy prediction. *International Journal of Finance & Managerial Accounting*, 7(26), 33-51.
- Altman, E. I. (2018). A fifty-year retrospective on credit risk models, the altman z-score family of models and their applications to financial markets and managerial strategies. *Journal of Credit Risk*, 14(4).
- Altman, E. I., Iwanicz-Drozdowska, M., Laitinen, E. K., & Suvas, A. (2017). financial distress prediction in an international context: a review and empirical analysis of altman's z-score model. *Journal of International Financial Management & Accounting*, 28(2), 131-171.
- Ameri Siahoe, S., & Kordlouie, H. R. (2018). investigating the risk of paying loans to public and private companies using the logit model and comparing it with altman z (Case Study: A Private Bank in Iran). *International Journal of Finance & Managerial Accounting*, 3(11), 33-41.
- Ayvaz, R. N., & Erkan, M. K. (2023). A review on financial failure models-the case of Manufacturing Industry. *Business & Management Studies: An International Journal*, 11(1), 375-399.
- Bansal, R., Kashyap, S. K., Pranav, N. S. S. P. R., Krishna, U. S., Ahmad, Z., & Chauhan, A. (2020). the analysis of altman and ohlson model in predicting distress of indian companies: A Review. *Solid State Technology*, 63(6), 20725-20733.
- Bărbuță-Mișu, N., & Madaleno, M. (2020). assessment of bankruptcy risk of large companies: European Countries Evolution Analysis. *Journal of Risk and Financial Management*, 13(3), 58.
- Dailibas, D. R. (2021). analysis of bankruptcy prediction with altman z-score, springate and zmijewski models Based Engineering Science. *Turkish Journal of Computer and Mathematics Education* Vol, 12(4), 1530-1537.
- Fredy, H. (2018). The prediction of bankruptcy in the pulp and paper industry company listed in indonesia stock exchange on 2011-2016 period using z-score altman, springate and grover model. *Jurnal South East Asia Journal of Contemporary Business, Economics and Law*, 15(5).
- Grikietytė, G., & Mačiulytė-Šniukienė, A. (2023). Applicability of bankruptcy probability assessment models to financial sector companies. *Mokslas–Lietuvos ateitis/Science–Future of Lithuania*, 15.
- Gupta, V. (2023). Evaluating the accuracy of prediction in accounting-based models for companies in india under IBC. *Journal of Commerce & Accounting Research*, 12(1).
- Irawan, J. L. (2023). Model prediksi kebangkrutan. *Manajemen Keuangan Perusahaan*

Lanjutan, 18.

- Karas, M., & Srbová, P. (2019). Predicting bankruptcy in construction business: traditional model validation and formulation of a new model. *Journal Of International Studies*, 12(1).
- Laurila, K. (2020). Accuracy comparison of accounting-based bankruptcy prediction models of Springate (1978), Ohlson (1980) and Altman (2000) to US Manufacturing Companies 1990-2018.
- Leisen, D., & Swan, P. L. (2023). Bank risk governance. Available at SSRN 4385351.
- Manousaridis, C. O. (2017). Z-Altman's model effectiveness in bank failure prediction- The Case Of European Banks.
- Melina, M., & Kalinggo, A. G. (2023). The effect of altman, grover and zmijewski models in predicting the financial distress of coal companies listed on the Indonesia Stock Exchange. *International Journal Of Social, Policy And Law*, 4(1), 69-79.
- Prusak, B. (2017). Predicting corporate bankruptcies in poland and lithuania– comparative analysis. *Intelektinė ekonomika*, 11(1), 18-31.
- Putri, A. S., Badri, R. E., Pranyoto, E., Susanti, S., & Lestari, W. R. (2020). Financial distress prediction; Springate, Zmijewski, and Grover method. *In Proceeding International Conference on Information Technology and Business* (pp. 1-8).
- Ridwan, M., Pagalung, G., & Kara, M. (2022). Methods for measuring potential bankruptcy of Sharia Banking. *Al-Mashrafiyah: Jurnal Ekonomi, Keuangan, dan Perbankan Syariah*, 6(2), 81-90.
- Shree, N., & Selvam, D. (2023). Prediction of bankruptcy of Indian Manufacturing Companies (construction) using Zmijewski model and Altman z score. *In Advances in Management Research* (pp. 116-142). Routledge.
- Sitorus, Y. C. T. (2023). Bankruptcy prediction analysis with the Altman z–score, Springate and Zmijewski models in fisheries sub sector companies listed on the Indonesia Stock Exchange (IDX) For The 2019-2021 Period. *Dinasti International Journal of Digital Business Management*, 4(2), 319-327.
- Steinskog, D. J., Tjøstheim, D. B., & Kvamstø, N. G. (2007). A cautionary note on the use of the kolmogorov–smirnov test for normality. *Monthly Weather Review*, 135(3), 1151-1157.
- Sybirtsev, V., Mazhara, V., & Moskalenko, V. (2020). Analysis of discriminant models in forecasting bankruptcy of enterprises. bulletin of the Cherkasy Bohdan Khmelnytsky National University. *Economic Sciences*, (2).
- Tiryaki, Y. (2021). Bankruptcy prediction models: A comparative analysis with polish

data. *Tallin University of Technology*.



Ullah, H., Wang, Z., Abbas, M. G., Zhang, F., Shahzad, U., & Mahmood, M. R. (2021). Association of financial distress and predicted bankruptcy: the case of Pakistani Banking Sector. *The Journal of Asian Finance, Economics and Business*, 8(1), 573-585.

Verlekar, R. P., & Kamat, M. (2019). An application and comparison of bankruptcy models in the Indian Banking Sector. *International Journal of Financial Management*, 9(4).

Vu, H. T., & Tran, L. T. T. (2023). Research on comparing z-score, o-score and x-score models in analyzing factors affecting financial risk in medical companies listed on Vietnam Stock Market. In *Contemporary Economic Issues in Asian Countries: Proceeding of CEIAC 2022*, Volume 2 (pp. 99-126). Singapore: Springer Nature Singapore.

Yitnosumarto, S., & O'Neill, M. E. (1986). On Levene's Tests of Variance Homogeneity. *Australian Journal of Statistics*, 28(2), 230-241.

Zelenkov, Y., Fedorova, E., & Chekrizov, D. (2017). Two-step classification method based on genetic algorithm for bankruptcy forecasting. *Expert Systems with Applications*, 88, 393-401.

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Original Research

Customers' Awareness, Perceptions and Satisfaction from Islamic Banking Products and Services: Evidence from Nigeria

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Abstract

This study investigated the awareness, perceptions and satisfaction of bank customers over Islamic bank products and services within the Benin metropolis. The specific objectives of the research were to examine the relationship between awareness and Islamic bank products and services; find out if customers' perception affects Islamic banks' products and services; and investigate if there is a relationship between customers' satisfaction and Islamic bank products and services in Nigeria. Structured questionnaires were used to elicit responses from one hundred respondents. The data collected was analyzed using the ordinary least squares (OLS) multivariate regression estimation method. Findings from the analyses revealed that customers' awareness and satisfaction exerted negative and non-significant influence on Islamic banking products and services. Customers' perception about Islamic banking products and services was positive and not significant. The study therefore recommends that operators and regulators of Islamic banks need to pay due attention to public awareness and perception with a view to enhancing patronage of the Islamic banking products and services and enabling the sector to effectively compete with its already well-established conventional counterpart.

Keywords: Awareness, Perception, Satisfaction, Religion, Islamic Bank.

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Introduction

The awareness, perceptions, and satisfaction of customers regarding Islamic banking products and services in Nigeria have been the subject of several scholarly studies (Akinsanya & Adediran, 2018; Oseni, 2019; Hassan, Shaikh & Aliyu, 2020). Awareness of Islamic banking in Nigeria is relatively low among the general public. Many people are not familiar with the concept of Islamic banking, its principles, and the range of products and services it offers in Nigeria (Adeyemi, 2018; Azeez & Mohammed, 2019; Aigbovo & Idolor, 2021). Islamic banking is a financial institution that operates based on Sharia principles and practices, which are mainly concerned with Islamic ethics (Adeyemi, 2018; Aigbovo & Idolor, 2021; Asaolu, 2022). This type of banking provides access to finances to businesses and individuals while maintaining ethical financing procedures and practices. Islamic banks are more concerned with conforming to the norms of Islamic ethics that dominate every financial operation. Islamic banking requires transactions to be governed by norms of Islamic ethics as highlighted in Sharia and the Holy Quran. The chief principle of Islamic banking is that interest-taking is forbidden or haram, but this does not mean that non-Muslims are denied access to the products as long as they are willing to abide by the provisions of their ethics (Aigbovo & Idolor, 2021).

Islamic banks mainly engage in non-interest banking, unlike conventional banks that engage in interest banking, which is taken as unethical from the perspective of Islamic religion. Islamic banks operate side by side with conventional banks in countries with loose Islamic rules. Some Muslim countries like Arab that are adopting Sharia practices, and in non-Muslim countries, particularly in the western world. Islamic banking has the potential to bolster economic growth by providing comfortable access to finance in an ethical manner (Soud & Sayilir, 2017). Non-interest finance instruments, assets, and products issued and owned by Islamic banks are catalysts for leading and developing economies worldwide. However, despite its increasing popularity, there is a dearth of awareness in both Muslim and Non-Muslim countries, which slows the pace of development of the system. Research on Islamic banking has mainly evolved in Islamic practicing countries, and there are very scanty researches about Islamic banking in Sub-Saharan African countries (Sonko, 2020). There are limited studies that have examined the awareness and perception of bank customers about Islamic banking in Nigeria, thus opening up a research gap in this study (Asaolu, 2022; Botis, 2013).

Since the emergence of Islamic banks in Nigeria, there have been concerns by a large segment of the banking public on the sustainability of Islamic banks like the Jaiz Bank Plc, but her consistent churning out of attractive products and services coupled with sterling performance over the years has laid to rest fears on its going concern status (Tijjani et al. 2021). Prominent instruments and products of Islamic financial institutions are Sukuk, Murabaha, Musharakah, Ijarah, Istisna, Qard Hasan, Mozara'h, and Mogharasah, Tawarroq, Modarabah, Irrigation, Bay 'Salam and Wadi'ah. The first six products are already prominent in the balance sheet of Jaiz Bank and Sukuk (Islamic bond) is fast gaining traction in the country as well. However, how much of the awareness, perception the customers of banks have about these Islamic products and services and the satisfaction they derive from the Islamic banks' product and services particularly in the Benin metropolis remained uninvestigated and unknown.

This is so because the spread of both Islamic commercial banks and microfinance finance banks in the South-South geopolitical zone is slow, unlike in the North-West, North Central and North-East geopolitical zones in Nigeria. Apart from the study of Aigbovo and Isibor (2022) which assessed the awareness of Islamic banks in Benin City, the researcher found no other studies which have been carried out to examine the subject matter.

The Innovation of the Study

The innovation of this research lies in its specific focus on Nigeria, exploring customers' awareness, perceptions, and satisfaction with Islamic banking products and services. By examining these factors, future researchers are able to gain insights into the acceptance and effectiveness of Islamic banking in Nigeria, identify areas of improvement, and contribute to the development of the Islamic finance industry in the country. This study is quite innovative with respect to its focus on Islamic banking, the aptness of the research in the context of Nigeria, its investigation of the awareness of, perception of and satisfaction from Islamic banking in a developing country like Nigeria.

By focusing on Islamic banking, it makes the research unique and a departure from previous study like Tijani et al. (2021); Aigbovo and Isibor (2022) conducted on only the awareness and perception of Islamic Banking in Nigeria which failed to examine the satisfaction customers get from patronizing the products and services offered by Islamic banks in the Benin City metropolis. Islamic banking operates based on principles derived from Shariah law, which prohibits the payment or receipt of interest (riba). It emphasizes ethical and socially responsible financial practices. Studying customers' awareness, perceptions, and satisfaction with Islamic banking products and services is important because it provides insights into the adoption and acceptance of this alternative banking system. In terms of Nigerian Context, Nigeria is a country with a significant Muslim population, and Islamic banking has gained traction as an alternative to conventional banking in recent years. By focusing specifically on Nigeria, this research recognizes the unique characteristics and challenges associated with Islamic banking in the Nigerian market. It allows for a better understanding of how customers in Nigeria perceive and engage with Islamic banking products and services.

Investigating customers' awareness of Islamic banking products and services is crucial as it sheds light on the level of knowledge and understanding of the principles and offerings of Islamic finance among the Nigerian population. This research revealed gaps in awareness and provide insights into the effectiveness of marketing and educational efforts by Islamic financial institutions. Examining customers' perceptions of Islamic banking products and services helps to understand their attitudes, beliefs, and expectations. This research topic may delve into customers' opinions regarding the compatibility of Islamic banking with their religious and ethical values, the perceived level of transparency, the credibility of Islamic financial institutions, and the overall trust in the system. Assessing customer satisfaction with Islamic banking products and services provides valuable feedback on the quality and effectiveness of offerings. It allows for an evaluation of customers' experiences with Islamic banks, including factors such as customer service, product features, accessibility, convenience, and overall satisfaction

levels. Understanding customer satisfaction can help Islamic financial institutions identify areas for improvement and enhance customer loyalty.

Literature Review

Conceptual Review

Concept of Islamic Banking

Islamic banking is rooted in the principles of Islamic law, or Sharia. One of the fundamental principles is the prohibition of interest, or *riba*. Islamic banking promotes the concept of profit-sharing and risk-sharing, aligning the interests of the bank and the customer (Al-Khatib, 2019). Instead of earning interest, Islamic banks generate profit through ethical investment and participation in economic activities. Islamic banking prohibits engaging in activities that are considered *haram* (forbidden) in Islam. This includes avoiding investments in industries such as alcohol, gambling, tobacco, and other activities that are deemed unethical (Saleem, 2020). Islamic banks strive to maintain ethical standards in their operations, making socially responsible investments and adhering to strict ethical guidelines.

Islamic banking utilizes various modes of financing that comply with Sharia principles. Some common modes include *mudarabah* (profit-sharing partnership), *musharakah* (joint venture), *murabahah* (cost-plus financing), *ijara* (leasing), and *sukuk* (Islamic bonds) (Al-Khatib, 2019). These modes of financing are designed to avoid interest and promote equity-based transactions. Islamic banks offer a range of products and services that comply with Sharia principles. These products include Islamic current accounts, savings accounts, home financing (known as *ijara* or diminishing *musharakah*), trade financing, project financing, and Islamic investment funds (Saleem, 2020). These products are structured to avoid interest-based transactions and ensure compliance with Islamic principles. The development and regulation of Islamic banking vary across countries. In countries where Islamic banking has gained prominence, dedicated regulatory bodies have been established to oversee and regulate the operations of Islamic banks (Hasan, 2021). These regulatory bodies work towards creating an enabling environment for Islamic banking and ensuring compliance with Sharia principles.

Non-interest (Islamic) Banking and Its Products/Services

Islamic banking, also known as non-interest banking or Sharia-compliant banking, is a financial system that operates in accordance with Islamic principles. Islamic banks offer current accounts that operate based on the principles of *mudarabah* or *wadiah*. In *mudarabah*, the bank acts as a *mudarib* (entrepreneur) while the account holder is the *rabbul mal* (capital provider). The bank uses the funds for investments and profit-sharing, with the account holder receiving a portion of the generated profits. *Wadiah* accounts, on the other hand, operate as safekeeping accounts where the bank guarantees the return of the deposited funds without providing any share of profits to the account holder (Miah, 2019).

Similar to current accounts, Islamic banks offer savings accounts based on the principles of *mudharabah* or *wadiah*. These accounts provide a secure and Halal way for individuals to save their money while participating in profit-sharing or receiving guaranteed returns on their deposits (Abedifar et al., 2019). Islamic banks provide financing through the *Murabaha* contract, which involves the purchase and subsequent sale of goods at a marked-up price. The bank acquires the asset requested by the customer and sells it to them at an agreed-upon price, payable in installments. Islamic banks offer leasing arrangements where they purchase an asset and lease it to the customer for a specified period. The customer pays regular rental payments, and at the end of the lease term, they may have the option to purchase the asset.

Islamic banks provide investment opportunities through various types of investment funds compliant with Sharia principles. These funds invest in Sharia-compliant assets such as equities, real estate, and *sukuk* (Islamic bonds). Investors benefit from the potential profits generated by these investments while adhering to Islamic ethical guidelines (Abedifar et al., 2019). It operates on the principles of mutual cooperation and shared responsibility. Participants contribute to a common pool of funds, which are used to compensate any losses incurred by members of the pool. *Takaful* offers various types of insurance coverage, such as life insurance, health insurance, and property insurance, in compliance with Islamic principles (Iqbal, 2020).

The Concept of Awareness

Awareness is the state or ability to perceive, to feel, to know, or to be conscious of events, objects, or sensory patterns. Awareness in Islamic banking refers to the understanding and knowledge that individuals, institutions, and communities have regarding the principles, practices, and benefits of Islamic finance. It encompasses both the awareness of the general public and the participants within the Islamic finance industry.

Awareness in the context of Islamic banking refers to the level of understanding and knowledge that individuals, institutions, and society have about the principles and practices of Islamic finance. It encompasses the understanding of the underlying Shariah principles, the unique features of Islamic financial products and services, and the overall goals and objectives of Islamic banking. Awareness plays a crucial role in Islamic banking for several reasons. Awareness is important to ensure that the financial transactions conducted by Islamic banks comply with the principles of Shariah. By having a deep understanding of Shariah principles and guidelines, both customers and financial institutions can ensure that their financial activities are in line with Islamic ethical standards.

Awareness empowers individuals to make informed and ethical decisions regarding their financial activities. Customers who are aware of the principles of Islamic finance can choose products and services that align with their values and beliefs, promoting ethical financial practices. Awareness among investors and stakeholders helps build confidence in the Islamic banking industry. When investors are knowledgeable about the unique features and benefits of Islamic finance, they can make informed investment decisions, leading to increased trust and stability in the industry. Awareness is essential

for promoting financial inclusion and expanding access to Islamic banking services. By raising awareness about Islamic finance and its benefits, individuals and communities who were previously unaware or hesitant to engage with Islamic banks may be encouraged to participate and benefit from the services offered.

The level of awareness plays a crucial role in the growth and development of Islamic banking and finance. Product awareness, therefore, is the degree of knowledge that customers have about a product. This involves developing the knowledge that a product exists, information about its function, benefits, quality, price, compatibility, and usability. The steps involved in product awareness are brand awareness, brand image, discovery, observation, information gathering, and trial. Studies establish that consumers' awareness significantly influences their attitude and intention to use Islamic banking products and services and thus more awareness leads to higher intention to use the Islamic banks (. Therefore, continuous public awareness campaigns that mobilize public interest could contribute to the additional expansion of the industry to bring about financial inclusion and sustainable development.

The Concept of Perception

Customer perception refers to customers' awareness, their impressions, and their opinions about a business, products, and brand; and it is shaped by multiple variables, including direct and indirect interactions with the products and services of a firm (Zach, 2019). It is also defined as a marketing concept that encompasses a customer's impression, awareness, or consciousness about a company or its offerings (Business Dictionary, 2020). It is the process through which consumers select, organize and interpret the information they gather through their senses (mouth, eye, ear, nose and skin) in order to provide themselves with a meaningful and coherent view of the product or service. The ultimate aim of every business is to increase sales by finding out the factors that drive consumers' buying decisions. Therefore, thorough examination of customers' perception and awareness is critical to the success of any business endeavor.

Customer Satisfaction

Customer satisfaction in Islamic banking refers to the level of contentment or happiness experienced by customers who use Islamic financial products and services. Factors influencing customer satisfaction in Islamic banking can include various aspects, such as product offerings, customer service, convenience, and trust in the institution. Research has indicated that customer satisfaction in Islamic banking can positively impact customer loyalty, word-of-mouth recommendations, and the overall reputation of Islamic financial institutions. A dissatisfied consumer, on the other hand, responds differently. As a satisfied customer tells people about a good service experience, dissatisfied customer complains to even more people than a satisfied customer does (Ogunbayi, 2019). Customers are satisfied with the services of a firm if they perceive such services as offering high quality. It therefore becomes necessary that organizations that want to satisfy its customers must step-up the quality of their services offerings to the customers. This is particularly important because customers who are satisfied are likely to become more attracted to the firm's offerings than those who are dissatisfied.

Religion

Religion plays a critical role in the demand for the products and services of Islamic banking generally. A deeper understanding of religion is perhaps more important today than ever before (Carvalho, Iyer, Rubin, 2019). Many factors have contributed to the strong growth of Islamic finance. Nevertheless, religion can be considered as the most important reason why customers prefer Islamic financial institutions, i.e. Islamic banks. Given the above-mentioned, the purpose of The imperative of religion in driving Islamic banking products and services are gaining ascendancy in literature in recent times particularly in the context of Nigeria. For instance, Murtala et al. (2020) examined the role of religion in influencing customers' selection decision to bank without interest in Nigeria. Using a multistage sampling technique, they analyzed the responses of 395 customers of an Islamic bank in Bauchi State. The study found that Bank Selection Decision correlate positively with all independent variables, i.e., Religious Affiliation (RA), Preference for Religion (PR), Staff Religiosity (SR) and Religious Fundamentalism (RF). The result of multiple regression analysis shows that RA, PR and RF are the most significant factors influencing customers' Bank Selection Decision, while SR has an insignificant influence on the predicted variable.

Conceptual Framework

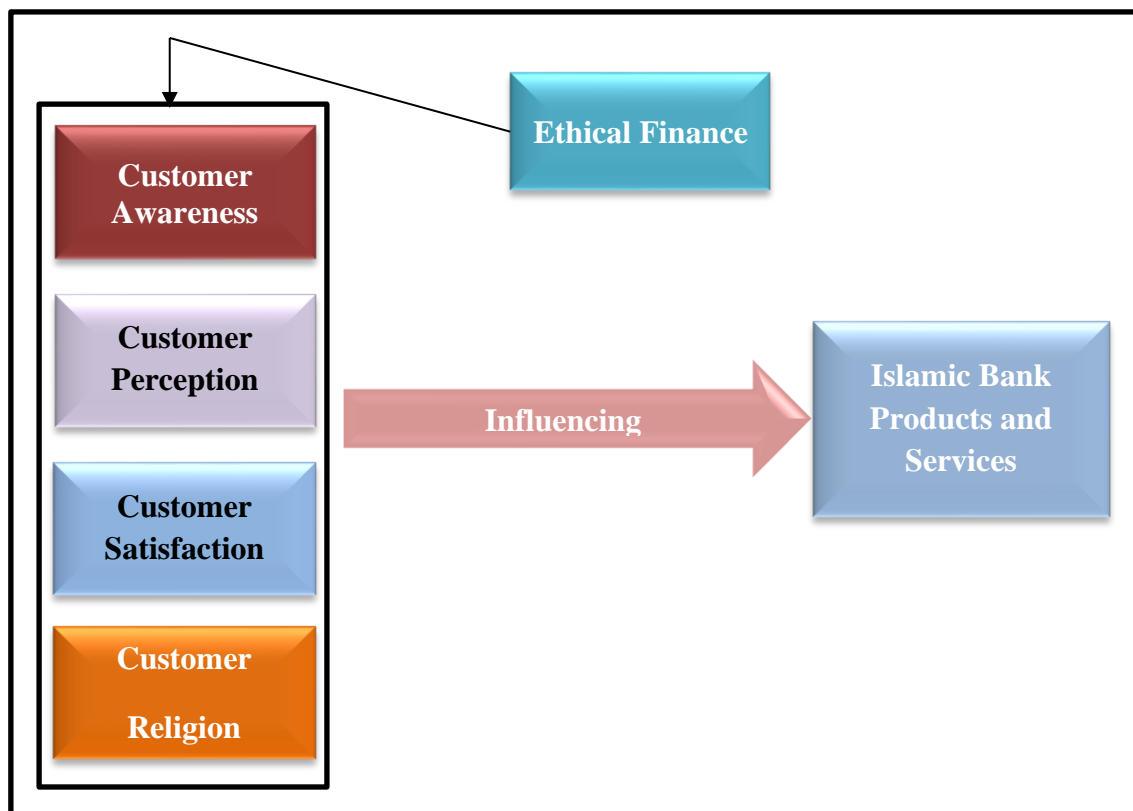


Figure 1. Relationship between Awareness, Perception and Satisfaction on Islamic Banking Products and Services

Empirical Review

While several empirical studies have been carried out concerning customers' awareness and perception about Islamic banking products and services in developed climes. This same cannot be said when it comes to developing countries like Nigeria. In the context of Nigeria, there are not so much studies which have investigated Islamic banking. Some of the few studies carried out so far in Nigeria related to the awareness on Islamic banking include Tijjani et al. (2021); Asaolu (2022); Aigbovo and Isibor (2022). Tijjani et al. (2021), conceptually reviewed the awareness and assumptions of customers on Islamic banking products and services in a form of metal synthesis. The methodology they employed involved critical reviews and synthesis of previous researches on customers' awareness and perception of Islamic banking in the context of Nigeria. The result of the review reveals that good awareness and perception of the public on Islamic banking products and services are critical to the development of Islamic banking and finance. The study concludes that significant progress has been made in Muslim and Non-Muslim countries with the potentials to dominate conventional banking shortly in some jurisdictions.

Aigbovo and Isibor (2022) investigated the extent of the awareness, understanding and willingness to patronize Islamic banking products and services among non-Muslims in Nigeria. The study used purposive sampling method. Structured questionnaire was employed to elicit responses from the respondents who were majorly customers of commercial banks branches. The data was analyzed using descriptive statistics. Findings obtained from the study indicated that over sixty percent of the respondents were unaware and had no or little understanding about Islamic banking products and services; while the willingness to use Islamic banking products and services was low among the customers who are also non-Muslims. One of the major reasons for the unawareness and poor understanding as well as the unwillingness to use Islamic banking products and services by the customers was age factor.

Asaolu (2022) examined the impact of Islamic banking on financial inclusion in Nigeria. The research used primary and secondary sources of data. The findings from the study primary data analysis showed high level of acceptability of Islamic banking and secondary data analyses signal the financial soundness of Jaiz bank to give existing and prospective investors' the needed comfort. The study recommended that economic units in developing economies, private companies and individuals should tap into the vast bouquet of Islamic banking products offered on flexible terms in achieving their broad objectives.

Hosen et al., (2019) examine the perception and expectation of customers in Islamic bank customers in Indonesia. The study intends to analyze the gap between the perception and expectations of quality of services as well as the factors responsible for customer satisfaction in Bank in Muamalat, Indonesia. Using both quantitative and qualitative techniques, the finding of the study revealed that sharia compliance is a critical point of service in Islamic banks. It was also shown that accessibility, price of service, and sophistication in technology contribute significantly to service quality and satisfaction of the customers.

Abdullahi and Shaharuddin (2016) examined the understanding and perception of Islamic banking in Macedonia. The authors used both questionnaire and interview responses. Interestingly they found that the respondents were mainly using conventional banks in the absence of Islamic banks. Similarly, they demonstrated moderate understanding on the concept of Islamic banking. In fact, when asked about the possibility of keeping their deposit in Islamic banks even when no profit was declared for one year, more than 45% of the respondents agreed to remain with Islamic banks as they do not want to deal with interest.

Kewuyemi (2015) examined the awareness, attitude, and patronage of Islamic Banking in Nigeria. The study, using survey technique found that a large number of Muslims and a significant number non-Muslim respondents were willing to adopt Islamic banks. Cheteni (2014) analyzed customer's awareness towards Islamic banking products and services in some cities of South Africa. The researcher administered a questionnaire among 40% Muslims and 59% non-Muslims. From the responses of 140 respondents, it was clear that despite the fact the Islamic banking started since 1989 in the country, there is low adoption of Islamic banking products and services as 70% of the respondents were having accounts with conventional banks. Using descriptive statistics and binary logistic regression, it was revealed that demographic variables such as age and gender were significant in awareness among the respondents.

Ringim (2014) studied the perception of Nigerian Muslim account holders in conventional banks toward Islamic banking products. The author used a cross-sectional survey technique to administer 500 questionnaires out of which 304 were returned and only 286 were found to be valid for the analysis. The findings showed the respondents had a positive perception of Islamic banking. Naser et al., (2013) investigated customer awareness and satisfaction with Islamic financial products and services offered by the Kuwait Finance House (KFH). Primary data was collected from 429 customers through questionnaire administration. The authors used descriptive and inferential statistics to analyze the data. Findings showed that a significant proportion of the respondents were not aware of many products of the bank.

Methodology

This research is quantitative in nature and it used the survey-descriptive research design while four-point scale likert-type questionnaire was employed as the research instrument to elicit responses from one hundred respondents using the simple random sampling method. The respondents in the study mainly consisted of customers of banks in the Benin metropolis. Before administering the structure questionnaire, it was validated and tested for reliability to ensure internal consistency using Cronbach's alpha. The result from the Cronbach's alpha gives 0.765 value. The reliability test value affirms the internal consistency of the instrument and meet the threshold suggested by Nunally and Bernstein (1994) that argue that Cronbach's Alpha greater than 0.6 is acceptable. The study used the ordinary least squares (OLS) multiple regression to show the effect of the independent variables on the dependent variable. The econometric model for the study is presented below.

$$IBPS = \alpha + \beta_1AW + \beta_2PERC + \beta_3SA + \beta_4REL + \varepsilon \quad (1)$$

Where; IBPS represents Islamic banking products and services; AW represents awareness of Islamic banking products and services by customers; PERC represents perception of Islamic banking products and services by customers of banks; SA represents derived from Islamic products and services by bank customers; REL represents religion of the bank customers. β_1 , β_2 , β_3 and β_4 are the predictors. ε - is the error term.

Empirical Analysis

This section concerns the analysis of the data collected from the respondents. The data were analyzed using the multivariate regression estimation methods. The results from the estimation methods are presented and discussion in each of the tables sequentially as follow:

Table 1. Presentation of the Ordinary Least Squares (OLS) Multivariate Regression Result
Dependent Variable: IBPS

AW	-2.04 (0.078) **
PERC	13.33 (0.083) **
SA	-0.06 (0.22) *
REL	15.67 (0.000) *
R-Square	0.842
Adjusted R-Square	0.763
F-Statistics	16.156
Prob. (F-Statistic)	0.003
Durbin-Watson Statistics	1.981

Table 1 represents the variables in the model. IBPS represents Islamic bank products and services; AW represents awareness of the bank customers; PERC represents perception of the bank customers; SA represents satisfaction derive by the bank customers from the Islamic bank products and services while REL represents the religion of the bank customers towards the Islamic bank products and services. The probability values are in parenthesis at different significance level with * $p < 0.01$ (significant at 5%) and *** $p < 0.1$ (not significant at 5%).

The result of the multivariate regression method in table 1 shows that the adjusted R-square reads 0.763, which approximates 76% systematic variation on Islamic bank products and services. The F-statistics representing goodness of fit of the regression model is observed to be statistically significant at 5%. The Durbin-Watson statistics of 1.981 portrays the absence of serial correlation in the overall result, thus making it fit for policy prescription purpose. The implication of the study finding is that customers' awareness, perception, satisfaction and religion influence the demand for Islamic bank products and services in Nigeria. The research finding is in tandem with Aigbovo and Omoruyi (2022); Tijjani et al. (2021); Kewuyemi (2015); Cheteni (2014).

Awareness of bank customers is negative and not statistically significant at 5% on Islamic bank products and services in the area covered by this study. The null hypothesis (H_{01}) which states that there is no significant relationship between awareness and Islamic bank products and services in Nigeria is accepted. The inverse nexus between the bank customers' awareness and Islamic bank products services demand may be adduced to scantiness of Islamic bank and the high number of conventional banks which the customers are used to particularly in the South-South geopolitical zone of Nigeria. The finding aligns with the research outcome of Aigbovo and Omoruyi (2022); Tijjani et al. (2021) Customers' perception about Islamic bank products and services has a positive coefficient value (13.33) and is statistically not significant at 95% level. The null hypothesis (H_{02}) which states that customers' perception does not significantly affect Islamic banks' products and services in Nigeria is rejected. The non-significant of the variable is also not unconnected with the fact that majority of the respondents have not used the products and services of the Islamic banks and perhaps there are no branches of any of the Islamic banks in the Benin metropolis. The study finding also affirms the research outcome of Kewuyemi (2015); Cheteni (2014); Ringim (2014).

Satisfaction by the customers from the use of Islamic products and services is negative (-0.06) and not significant at 5%. The finding suggests that since majority of the customers are not aware and also do not have a clear perception about Islamic bank products and services, they are not satisfied. Hence, satisfaction on the part of the bank customers does not influence the demand and use of Islamic bank products and services. The null hypothesis (H_{03}) which states that there is no significant relationship between customers' satisfaction and Islamic bank products and services in Nigeria is accepted. Customers' religion had a positive coefficient value of 15.67 and is statistically significant at 95% level. This clearly suggests that customers' religion is a major driver for the demand and use of Islamic products and services in the context of Nigeria. It implies that religion plays a dominant role for the patronage of Islamic bank products and services in Nigeria. The study finding affirms the research outcome of Asaolu (2022).

Conclusion and Recommendations

The aim of this research was to investigate about the awareness, perception and satisfaction of bank customers on the demand and use of Islamic products and services in the Benin metropolis. The study reveals that there has been a little increase in customers' awareness of Islamic banking products and services in Nigeria. This can be attributed to poor concerted efforts made by Islamic banks to educate and inform the public about the principles and benefits of Islamic finance. The low spread availability of information through various channels, including social media, seminars, and community outreach programs, has not successfully reached a large segment of the population, resulting in unheightened awareness. The study demonstrates that customers' perceptions of Islamic banking in Nigeria are predominantly positive. Islamic banking is seen as a viable alternative to conventional banking, with its adherence to Shariah principles being a key driver of trust and confidence.

The emphasis on ethical banking practices, profit-sharing, and avoidance of interest-based transactions resonates with customers who seek financial services aligned with their religious beliefs and values. This positive perception further reinforces the appeal

and acceptance of Islamic banking in the Nigerian market. The study indicates a good level of customer satisfaction with Islamic banking products and services. Customers express satisfaction with the transparency, fairness, and customer-centric approach adopted by Islamic banks. The availability of innovative products tailored to meet the specific needs of customers, such as Islamic home financing, Islamic savings accounts, and Islamic investment options, has contributed to their overall satisfaction. Furthermore, the study highlights the efficiency of Islamic banks in providing prompt and reliable services, leading to a positive customer experience.

In conclusion, the findings of this study provide robust evidence that customers in Nigeria are not only increasingly aware of Islamic banking but also hold positive perceptions towards it and are highly satisfied with the products and services offered. Islamic banking has successfully carved out a niche in the Nigerian financial market by offering ethical and Shariah-compliant alternatives to conventional banking. The growth and success of Islamic banking in Nigeria are expected to continue, as it caters to the unique needs of customers and gains further recognition as a viable and reliable financial system.

Based on the outcome of the study, the following suggestions are put forward:

1. Government should collaborate with Islamic banking institutions and regulatory bodies to develop comprehensive awareness campaigns targeting various segments of the Nigerian population.
2. The government and Islamic banks should frequently conduct workshops, seminars, and community outreach programs to educate customers about the benefits and principles of Islamic banking.
3. Islamic banks should leverage digital platforms, such as social media, websites, and mobile applications, to disseminate information about Islamic banking products and services.
4. Islamic banking institutions need to regularly conduct market research to identify the specific needs and preferences of potential customers and align product development accordingly.
5. Islamic banks should quickly introduce innovative and competitive Islamic banking products, such as Sharia-compliant investment options, profit-sharing accounts, and ethical financing solutions.
6. Islamic banks in Nigeria should customize products to cater to different customer segments, such as individuals, businesses, and nonprofit organizations, addressing their unique financial requirements.
7. Islamic banks should implement rigorous training programs for Islamic banking staff to enhance their knowledge of Islamic finance principles and customer service skills.
8. Islamic banks should develop standardized service protocols and ensure their consistent implementation across all branches and touchpoints.

9. Islamic banks should regularly seek customer feedback through surveys, focus groups, and complaint resolution mechanisms to identify areas for improvement and make necessary changes.
10. The government should collaborate with regulatory authorities to develop a robust and transparent regulatory framework for Islamic banking in Nigeria.
11. The government through the Central of Nigeria should establish clear guidelines and standards for Islamic banking operations, risk management, and customer protection.
12. Central bank of Nigeria monitor compliance with Sharia principles and ensure strict adherence to ethical and Islamic banking practices.
13. There is need to engage reputable Islamic scholars and experts to validate the adherence of Islamic banking products and services to Sharia principles.
14. Central bank of Nigeria should always publish regular reports on the financial performance, social impact, and governance practices of Islamic banking institutions in Nigeria.
15. Islamic banks need to collaborate with religious organizations, community leaders, and opinion influencers to promote trust and credibility in Islamic banking.
16. Islamic banks need to invest in robust and secure technological infrastructure to support efficient and user-friendly digital banking services.
17. Islamic banks need to develop mobile banking applications that provide easy access to Islamic banking products and services, allowing customers to perform transactions, access account information, and receive notifications.
18. Islamic banks need to ensure a seamless and secure online banking experience, including strong authentication mechanisms, data privacy, and protection against cyber threats.
19. Islamic banks need to regularly assess customers' awareness, perceptions, and satisfaction through periodic surveys and research studies to track progress and identify emerging trends.
20. Islamic banks need to frequently monitor changes in customer preferences, demographic shifts, and market dynamics to adapt Islamic banking strategies accordingly.

Author Contributions

Dr Sunday Oseiweh Ogbeide wrote the introduction part, conducted the literature review, and design the methodology. Dr Sunday Nosa Ugbogbo carried out the empirical analysis, discussions of findings, wrote conclusions and recommendations. Both authors framed the research topic, and proofread the entire manuscript.

References



- Abdullah, A. A., Sidek, R., & Adnan, A. A. (2012). Perception of non-Muslims customers towards Islamic banks in Malaysia. *International Journal of Business and Social Science*, 3(11), 1-9.
- Abdullahi, S., & Shaharuddin, A. (2016). knowledge and awareness of islamic banking and finance in Macedonia: An empirical evidence. *Journal of Global Business and Social Entrepreneurship*, 2(4), 39–50.
- Adeyemi, R. (2018). Islamic banking in Nigeria: A review of operations and performance. *European Journal of Islamic Finance*, 9, 1-13.
- Aigbovo, O., & Isbor, B. O. (2022). Exploring the level of awareness, understanding and willingness of non-Muslims in patronizing Islamic banking in Nigeria. *Elizade University International Journal of Management*, 1(1), 42-53.
- Akinsanya, O. M., & Adediran, S. A. (2018). Determinants of Islamic banking awareness in Nigeria. *Banks and Bank Systems*, 13(3), 79-88.
- Al-Khatib, S. M. (2019). Principles of Islamic banking: An overview. *Journal of Economics, Business, and Management*, 7(1), 64-68.
- Asaolu, A. (2022). Evaluation of non-interest banking and financial inclusion in Nigeria. *Elizade University International Journal of Management*, 1(1), 68-79.
- Ayodeji, H. (2021). Expanding Financial Inclusion through non-interest banking. *The Punch Newspaper*, October 8, 2021.
- Azeez, M. A., & Mohammed, Y. A. (2019). Awareness and perception of Islamic banking among undergraduate students in Nigeria. *International Journal of Islamic and Middle Eastern Finance and Management*, 12(4), 609-627.
- Carvalho, J. P., Iyer, S., Rubin, J. (2019). Introduction. In J. P. Carvalho, S. Iyer, J. Rubin (ed.), *Advances in the Economics of Religion*. International Economic Association Series. Cham: Palgrave Macmillan.
- Cheteni, P. (2014). Awareness of Islamic banking products and services among consumers in South Africa. *Mediterranean Journal of Social Sciences*, 5(9), 96.
- Hasan, Z. (2021). Islamic banking and finance: Regulation, supervision, and corporate governance. *Journal of Islamic Banking and Finance*, 8(1), 23-45.
- Hassan, K., Shaikh, S. A., & Aliyu, S. U. R. (2020). Customers' awareness and adoption of Islamic banking products in Nigeria. *Journal of Islamic Accounting and Business Research*, 11(4), 777-797.
- Hosen, M. N., Lathifah, F., & Jie, F. (2019). Perception and expectation of customers in Islamic bank perspective. *Journal of Islamic Marketing*.

- Kewuyemi, K. M. (2015). Customers' Awareness, Attitude and Patronage of Islamic Banking in Nigeria. *Islam and Civilisational Renewal*, 274(2625), 1–21.
- Murtala, G., Hafiz, U. A., Rabi, I. D., Ladan, S. (2020). Influence of religion on customers' selection decision of interest-free banking in Bauchi state. *ATBU Journal of Accounting and Finance*, 1(1), 319-331.
- Ogunbayi U. (2020). E-service quality and customer loyalty in deposit money banks in Nigeria. *European Journal of Business and Management*, 12(21), 24- 42.
- Okumus, H. (2005). Interest-free banking in Turkey: a study of customer satisfaction and bank selection criteria. *Journal of Economic Cooperation*, 26(4), 51–86.
- Omer, H. (1992). *The implication of Islamic beliefs and practice on Islamic financial institutions in the UK*. PhD dissertation, Loughborough University, Loughborough
- Oseni, U. A. (2019). Factors influencing the adoption of Islamic banking products in Nigeria: A structural equation modelling approach. *African Journal of Economic Review*, 7(2), 111-125.
- Oyewole, A. (2021). Islamic Finance and the Investment Opportunities in the Capital Market.
- Rammal, H., & Zurbrugg, R. (2007). Awareness of Islamic banking products among Muslims: The case of Australia. *Journal of Financial Services Marketing*, 12. <https://doi.org/10.1057/palgrave.fsm.4760060>
- Rustam, S., Bibi, S., Zaman, K., Rustam, A., & Haq, Z. U. (2011). Perceptions of corporate customers towards Islamic banking products and services in Pakistan. *The Romanian Economic Journal*, 41(4), 107–123.
- Saleem, A. M. (2020). Islamic banking: A comprehensive review of the literature. *Journal of Financial Regulation and Compliance*, 28(3), 434-454.
- Sasu, D.D. (2022). Population of Nigeria 1950-2021. *Statista.com*. (February 1,2022)
- Shaikh, S. A., & Al-Jarhi, M. (2019). An analysis of Islamic banking in Nigeria. *International Journal of Business and Social Science*, 10(9), 130-140.
- Sonko, M. (2020). Customers' perceptions on Islamic banking: A case study in the Gambia. *Journal of Islamic Finance*, 9(1), 13 – 23.
- Tang, E.P.Y., Chan, R.Y. & Tai, S.H. (2002). Asian dimensions of services marketing. *Journal of International Consumer Marketing*, 14 (1), 1-15.
- Thambiah, S., Eze, U. C., Santhapparaj, A. J., & Arumugam, K. (2011). Customers' perception on Islamic retail banking: A comparative analysis between the urban

and rural regions of Malaysia. *International Journal of Business and Management*, 6(1), 187.

Tijjani, B.T., Hamid, K.T., Muhammad, A.D., & Rabi, W.T. (2021). Awareness and perception of customers on Islamic banking products and services: A meta-analysis.

Zekiri, S. (2011). Services quality dimension of internet retailing: an exploratory analysis. *Journal of Services Marketing*, 17 (6), 685-700.

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Original Research

Impact of Firm Size on Digitalization of Management Control: Evidence from Morocco

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Abstract

For several years, and especially during the health crisis caused by the Covid-19 pandemic, digitalization has become one of the major challenges for all companies. In this regard, several research works have been carried out to understand the possible effects of digitalization on some areas of management, such as finance (Vasarhelyi et al. 2015, Pan and Seow 2016, etc.), work organization and jobs (Dorn, 2017, etc.), Human resources (Audrin et Davoine, 2017), etc. Unfortunately, this type of work is still absent in the field of management control (Quatrone 2016; Möller et al. 2020). In this context, this article, based on a survey carried out among forty-two Moroccan companies, aims to answer two main questions. First, how can we judge the degree of management control digitalization in the studied companies? Second, does the firm size impact this digitalization? The results obtained show that the management control digitalization is considered to be "moderate" in studied companies. It has also been shown that firm size does not have a statistically significant impact on this digitalization.

Keywords: Digitalization, Management control, Firm size, SMEs.

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Introduction

For several years, with smartphones, tablets, internet, applications, artificial intelligence (AI), etc., digital is everywhere and has invaded our personal and professional lives. If the industrial revolution has changed the society of the 19th century, it is sure that digitalization is deeply changing ours. This phenomenon is accelerating more and more with the current health crisis caused by the Covid-19 pandemic. According to the international agency We Are Social and the Hootsuite platform, in 2021, 4.66 billion internet users are counted worldwide, among them, 4.2 billion people use social media.

Following Schumpeterian logic, Metais-Wiersch and Autissier (2016) demonstrate that digitalization, and to find solutions to the economic crisis of 2008, is considered a differentiation strategy adopted by companies to improve their performance. According to a 2014 study by Capgemini consulting and the MIT Center for Digital Business, the most mature companies in terms of digital transformation outperform others in their sector (Bonnet, Westerman and McAfee, 2014). Also, according to a research study by McKinsey Global Institute (MGI) on the state of digitalization in the U.S. economy, the most digitalized companies achieve higher productivity and profit margins (Gandhi et al. 2016). According to a 2019 survey conducted by The Economist Intelligence Unit in collaboration with DXC Technology of 621 companies with annual revenues of more than \$500 million, 68% of respondents confirmed an increase in annual profitability following the introduction of digitalization in their companies. Also, a 2018 survey conducted by the Bank of France showed that the use of digital technologies (cloud and big data) improves labor productivity by about 23% and overall factor productivity by about 17%. In the same vein of ideas, a survey by Deloitte (2016) showed that digitalized French SMEs are four times more likely to export than the average SME.

Aware of these advantages of digitalization and in order to position itself as an emerging country in the digital economy and ICTs (Information and Communication Technologies), Morocco has adopted several measures and plans. In 2009, the "Maroc Numeric 2013" plan was adopted, which essentially contributed to the implementation of several online administrative service sites. In 2016, Morocco adopted a new five-year plan, entitled "Maroc Digital 2020", which aimed to complete the major projects that remained open from "Maroc Numeric 2013" as well as to achieve other objectives.

In companies, digitalization affects all departments and functions: marketing, Human Resources, logistics, etc. In financial services, digitalization facilitates the collection, processing and production of data. To better understand this problematic, a few studies have been conducted during the last years (Vasarhelyi et al. 2015; Pan and Seow, 2016; Al-Htaybat and von Alberti-Alhtaybat, 2017; Cavelius et al., 2018; etc.). However, there is still a significant lack of research on management control digitalization (MCD) (Quatrone 2016; Möller et al. 2020). In this context, this study aims to highlight the MCD in forty-two companies located in Morocco. Our objective is twofold and we will therefore try to answer two main questions. First, how can we qualify the maturity degree of MCD in Moroccan companies? Second, does firm size affect significantly the MCD?

A review of the literature related to our problematic (§1) and a presentation of our research methodological choices (§2) are necessary to conduct the statistical analysis and to present the main results obtained (§3).

Digitalization, management control and the possible impact of firm size

In this first section, we will first present the phenomenon of digitalization and its relation to management control (1.1), and then we will expose the possible effects of firm size on management control and its digitalization (1.2).

Digitalization of management control

Since the 1990s, the emergence and development of the Internet has led to a profound transformation of the production system, commonly referred to as the "digitization of the economy" or "digitalization". "Big data", "artificial intelligence", "cloud computing", "internet of things", "social networks", etc. are technologies that are imposed on all organizations and are among the main challenges for many companies around the world (Trabucchi et al., 2017). A digital company can be defined, according to Cavelius et al. (2018), as "one that has brought the use of innovative digital tools, such as Big Data, artificial intelligence, cloud computing, social networks, and the Internet of Things, into its daily operations." According to Bos (2018), digitalization is defined as the adoption of readily available technology skills that transforms the organization's responsiveness to market changes. Also, Benedetto-Meyer and Boboc (2019) consider that, the notion of digital transformation refers to the introduction of digital tools in the work activity (new equipment such as smartphones, tablets, instant communication tools, applications that allow the sharing of documents, videos, agendas, etc.).

Digitalization is leading to radical transformations that influence many areas such as strategic direction, competitiveness, business model, decision making, etc. These transformations present significant opportunities for companies (Cohen et al. 2017; Li et al. 2018). With more innovative products, giants such as Amazon, Facebook, Airbnb, Uber, etc. have really disrupted the traditional market and they are able to compete with large companies in their industries (Brasseur and Biaz, 2018). Digitalization is a decisive competitive advantage. In this context, during the last decades, some research works have been done on the advantages and benefits of digitalization for companies. According to Westerman et al, (2014, p. 33), digital should be a tool that could allow the company to achieve certain objectives such as "getting closer to their customers, empowering their employees and transforming their business processes". In the same sense, Matt et al (2015) show that the exploitation of new technologies affects productivity, business processes and innovation management. Also, Sestino et al (2020) highlights how digital transformation (Internet of Things and Big Data) can have a positive impact on many facets of business. In Morocco, according to a survey conducted by the *Association des Utilisateurs des Systèmes d'Information Au Maroc* (AUSIM) (Association of Users of Information Systems in Morocco) (2019), 57% of respondents confirmed that digitalization allows for "better customer service," 30.2% for "process improvement," and 10.5% for "time savings".

In view of all these advantages, Morocco adopted a five-year program in 2009, the "Maroc Numeric 2013" plan, which focuses mainly on the following areas: broadband Internet; e-government; the local IT sector; and the computerization of small and medium-sized enterprises. In 2016, the Moroccan government adopted the "Maroc Digital 2020" plan, which is considered a four-year strategic plan and which essentially aims to develop digitalization and ICTs in the country. This plan had as objectives the dematerialization of 50% of administrative procedures, the connection of 20% of Moroccan SMEs and the reduction of the digital divide by half. Despite these efforts, the digitalization of companies in Morocco is far from a certain digital maturity. According to a survey conducted by AUSIM (2019), only 16.3% of respondents believe that their companies are advanced in the process of digitalization.

For several years, and like all other facets of organizational management (marketing, logistics, finance, etc.), management control has been strongly influenced by this phenomenon of digitalization. Management control is defined by Anthony (1965) as "the process of assuring that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives" (p. 17). According to Anthony and Govindarajan (1995), management control is "the process by which managers influence other members of the organization to implement the organization's strategies" (p. 8). Since the 1990s, ERPs (Enterprise Resource Planning) have driven some MCD and are a central element in the digitization of businesses (Ross et al, 2017). However, lately, huge volumes of data, coming from multiple internal and external sources are beginning to be considered a real challenge in front of the traditional information systems of companies, hence the concept of "Big Data" which have very high capacities of storage and processing of data and characterized by the 5V: Volume, Velocity, Variety, Veracity and Value (Vasarhelyi et al., 2015). The use of this Big Data in management control is inevitable. According to a survey conducted by the International Management Control Observatory (DFCG, 2016), management control benefits from Big Data in order to improve its analytical capacity (79% of respondents) and optimize processes and costs (55% of respondents), etc.

Digitization impacts all management control tools, including management accounting, budget management, etc. Regarding management accounting, according to Becker and Nolte (2019), through digitalization, management accounting allows for improved quality, efficiency, speed, and decision making (Becker & Nolte, 2019). In budget management, a few authors (Heimel and Müller, 2019; Schön, 2018) have recently shown that, thanks to automation and predictive analytics, forecasts are made more accurately. This forecast accuracy improves the quality of analysis and decision-making. According to a survey conducted by the International Management Control Observatory (DFCG, 2016), 60% of respondents consider the management controller to be active, as a contributor or leader, in their company's digital transformation projects. According to this survey, digitalization leads to changes in tools (57%), processes (53%) and consistency capabilities (52%).

Impact of firm size on management control and its digitalization

The influence of firm size on the organization and its internal management has long been demonstrated (Mintzberg, 1982; etc.). Several research studies, both empirical and

theoretical, show that firm size is a crucial variable in explaining the diversity of content of management control tools (Chenhall, 2003). Merchant (1981), Kalika (1987), Jorissen A. et al (1997), Elhamma (2011, 2012, 2015, 2017), etc. have highlighted that management control tools are more sophisticated and developed the larger the size of the companies. This variable also has a remarkable influence on the nature of the indicators integrated in the dashboards and the adoption of some new methods of management accounting such as the ABC method (Activity Based Costing) for example.

The firm size can be considered as an important factor in the digitalization of companies. This can be explained by the human, technical and financial resources available to large companies to succeed in their digital transformation. According to a study conducted by Deloitte in 2016, 11.5% of French SMEs are able to sell their products online, compared to 47% of large companies. Also, only 11% of SMEs use digital tools compared to 36% of large companies. In addition, in the same sense, a study conducted by BPI France Le Lab (idea laboratory for SMEs-ETIs) among 1,800 leaders of SMEs and ETIs in 2017, showed that 45% of respondents still do not have a vision for the digital transformation of their company. Unfortunately, and to our knowledge, no empirical study has been conducted on the possible effects of firm size on the MCD. We can therefore formulate the following hypothesis:

H₁: Firm size has a positive impact on management control digitalization.

Methodological framework

In this second section, we will first present the characteristics of the study sample (2.1) and second, we will outline the study variables and their operationalization (2.2).

The Sample of the Study

The main characteristics of our sample are summarized in the table below.

Table 1. Study sample description

Sector of activity		Number of employees	
Services	38,1%	Less than 100	28,6%
Industry	33,3%	Between 100 and 200	21,4%
Commerce	19%	Between 200 and 500	11,9%
Construction	9,5%	More than 500	38,1%
Total	100%	Total	100%

Regarding the sector of activity, 38.1% of the companies in the sample operate in the service sector, 33.3% of industrial companies, 19% of commercial companies and 9.5% operate in the BTP (Buildings and Public Works). Regarding the size, we have retained 50% of SMEs (with less than 200 employees according to the SME charter in Morocco) and 50% of large companies.

The variables

In this research, to collect information on the MCD, we opted for a perceptual approach. This approach consists of an assessment by the respondent, on a five-point scale, of the average level of Management Control Digitalization in his or her company. The following question was asked: How do you rate the level of MCD in your company? (A brief explanation was provided: digitalization is the use of new information and communication technologies, the Internet, networks, applications...). The respondent had the choice between 5 answers: from "very weak digitalization" to "very strong digitalization".

In order to differentiate between companies according to their size, three main criteria or parameters can be used: share capital, turnover or number of employees. In this research, we retain the third indicator for reasons of availability of information. According to Chenhall (2003), firm size is often measured by the number of staff. Therefore, we consider as SMEs those companies employing less than 200 people according to the legislation in force in Morocco (SME Charter).

Results and discussion

This third section will be devoted to the presentation of the results of our study. We will first present the results related to the maturity degree of MCD in the studied companies (3.1), and then we will test our research hypothesis (3.2).

Maturity degree of digitalization of management control

The main results of our survey are summarized in the table below:

Table 2. Degree of MCD in the studied companies

Scale	Percentage
Very low digitization	2,4%
Low digitalization	23,8%
Medium digitization	47,6%
Strong digitization	16,7%
Very strong digitization	9,5
Total	100%

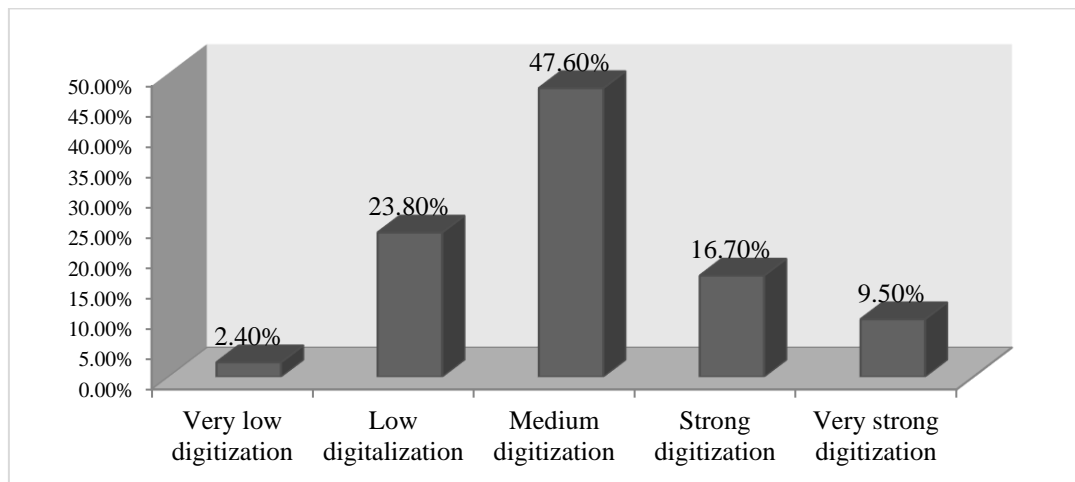


Figure 1. Maturity degree of MCD in the studied companies

The first results of this research show that the MCD can be qualified generally as "moderate". More than 47% of respondents confirmed that their management control is moderately digitalized. On the other hand, only 26.2% judged that this digitalization is "strong" or "very strong". In order to exploit all the answers in their entirety and thus have a clearer idea of the maturity degree of MCD in the studied companies, we will code the answers obtained (ranging from 1: "very weak digitalization" to 5: "very strong digitalization"). The average score obtained is 3.0714, while the maximum score is 5. Therefore, we can calculate a rate that we will call the "perceptual rate of MCD". The decision rule is the following:

Table 3. Decision rule for the perceptual rates of DMC

Average scores	Min (=1) Max (=5)				
Perceptual rate of MCD	Very low if between 20% and 36%*.	Low if between 36% and 52%*.	Moderate if between 52% and 68%*.	Strong if between 68% and 84%*.	Very strong if between 84% and 100%*.

* Class size= [maximum rate (100%)-minimum rate (20%)]/5

The perceptual rate of MCD is therefore equal to $3.0714/5=61.43\%$. These results show us that the MCD in the studied companies can be qualified as "moderate", and therefore we are far from a certain digital "maturity" of management control in the studied companies.

Digitization of management control according to the firm size

The main results concerning the possible links between firm size and the MCD are summarized in the table below:

Table 4. Maturity Degree of MCD according to the firm size

Scale	Large companies	SME
Very low digitalization	00%	4,8%
Low digitalization	19%	28,6%
Moderate digitalization	42,9%	52,4%
Strong digitalization	28,6%	4,8%
Very strong digitalization	9,5%	9,5%
Total	100%	100%

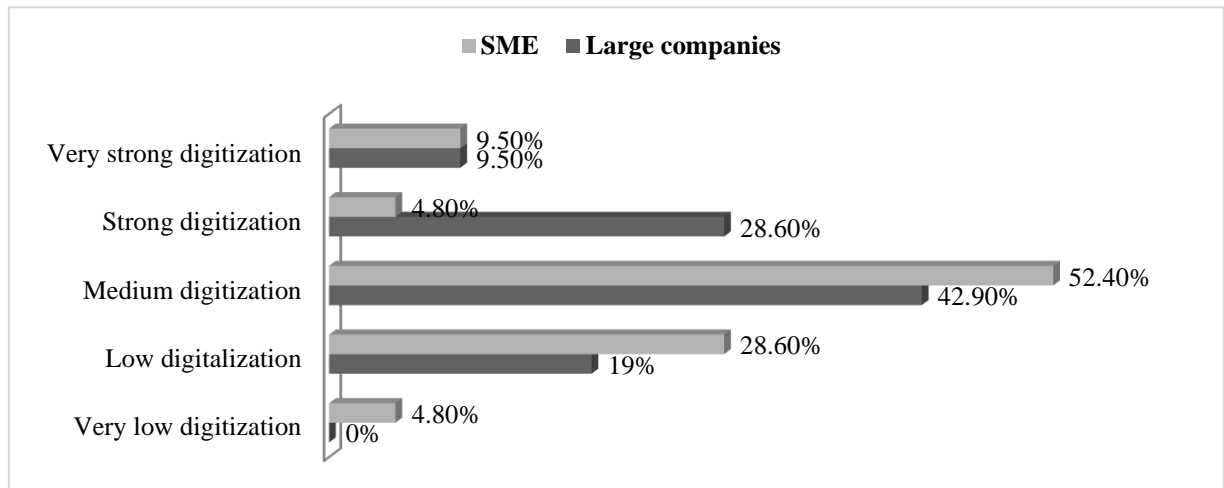


Figure 2. MCD according to the firm size

38.1% of large companies consider that their management control is "strongly" or "very strongly" digitalized, compared to only 14.3% of SMEs. On the other hand, 19% of large companies and 33.4% of SMEs consider their management control to be "weakly" or "very weakly" digitalized. These initial results support our research hypothesis that management control is more digitalized in large companies than in SMEs. To test the possible relationship between firm size and MCD, we will calculate the mean scores and perceptual rates of MCD for each category of companies.

Table 5. Average scores and perceptual rate of MCD according to the firm size

Size		Average score on 5 points		Perceptual rate of DMC	
SME	Less 100	3,1667	2,9048	63,33% (moderate)	58.10% (moderate)
	Between 100 and 200	2,5556		51,11% (low)	
Large companies	Between 200 and 500	3,0000	3,2381	60% (moderate)	64.76% (moderate)
	More than 500	3,3125		66,25% (moderate)	

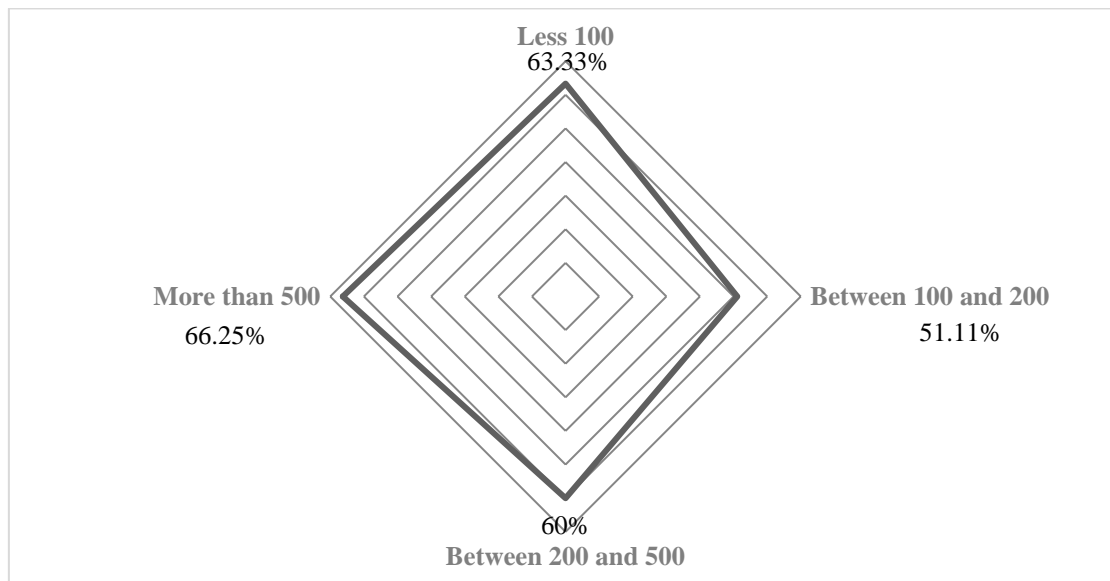


Figure 3. Perceptual rate of MCD according to the firm size

In general, the perceptual rate of MCD in large companies (64.76%) exceeds that observed in SMEs (58.10%). However, and surprisingly, the MCD in companies with less than 100 employees (63.33%) is considered higher than that observed in companies with between 100 and 500 employees (between 100 and 200, the rate is 51.11% and 60% for companies with between 200 and 500 employees). Unfortunately, these results do not allow us to make a definitive decision on the impact of firm size on the MCD in the studied companies. For this purpose, a linear regression will be used.

Table 6. Linear regression of MCD according to the firm size

Model	Non-standardized coefficients		Standardized coefficients	t (de Student)	Sig.
	B	Standard error	Beta		
(Constant)	2,871	0,229		12,527	0,000
Firm Size	0,001	0,000	0,176	1,131	0,265

According to the results of our analysis, firm size does not have a statistically significant impact on the maturity degree of Management Control Digitization in the studied companies (Beta=0.176; $p>10\%$). The research hypothesis is rejected by our analysis. The firm size has a non-significant impact on MCD. This result is mainly explained by the acceleration of digitalization experienced by SMEs following the health crisis caused by the Covid-19 pandemic. According to a survey conducted by CISCO (2020) among SMEs in eight countries (USA, Canada, Mexico, Brazil, Chile, UK, Germany and France) shows that 70% of these SMEs are accelerating their digitalization efforts due to Covid-19. Also, a GoDaddy survey of 5265 small business owners in Australia, Canada, Germany, India, Mexico, the Philippines, Spain, Turkey, the UK, and the US (2020) shows that of those owners who have a website, more than half increased their online presence during the Covid-19 pandemic. In the same vein of ideas, and according to a Connected Commerce Council report on the digitalization of small

businesses (2020), 72% of these businesses accelerated the use of digital tools during the Covid-19 pandemic. Also, As of May 2020, a survey by the U.S. Chamber of Commerce shows that the share of small businesses transitioning all or some of their employees to telecommuting has increased from 12% to 20%.

Conclusion

The objective of this article was to present the main results of a survey on the digitalization of management control in Moroccan companies. This study can be considered as a pioneer not only in this country but in the whole MENA region (North Africa and the Middle East). In this work, we have shown that the companies studied are far from a certain digital “maturity” in management control. We have also shown that the firm size does not have a significant impact on this digitalization.

The results obtained must be interpreted with caution in view of the limitations of our research. Two major methodological limitations must be emphasized: the small sample size and the use of a perceptual approach to collect data. In this respect, Nobre (2001) states that there can be a significant gap between discourse and actual practice.

There are many possible avenues of research, the most important of which are to answer the following questions: Compared to developed countries, why do companies in Morocco not adopt sufficiently digitalized management control? What impact does culture have on this situation? What are the main difficulties encountered by these companies in their digitalization? Etc.

References

- Al-Htaybat K., von Alberti-Alhtaybat. L. (2017). Big data and corporate reporting: impacts and paradoxes, *Accounting, auditing & accountability journal*, 30 (4), 850-873.
- Audrin B., Davoine E. (2017), La fonction RH face à la numérisation des organisations : le cas des outils de communication numérique, *Management & Avenir* (N° 92), 15-39.
- Banque de France (2018), L’impact des TIC et de la digitalisation sur la productivité et la part du travail dans la valeur ajoutée : enseignements à partir d’un échantillon d’entreprises françaises. Document de travail n°785.
- Becker, W. and Nolte, M. (2019), Die Rolle des Controllings im Rahmen der Digitalisierung Funktionen, Aufgaben und Instrumente, in Becker, W., Eierle, B., Fliaster, A., Ivens, B., Leischnig, A., Pflaum, A. and Sucky, E. (eds) *Geschäftsmodelle in der digitalen Welt*, Wiesbaden, Springer Fachmedien. 75–89.
- Benedetto-Meyer M. et Boboc A. (2019), Accompagner la « transformation digitale » : du flou des discours à la réalité des mises en œuvre, *Travail et emploi* 2019/3 (n° 159), 93-118.

- Bos C. (2018), La transformation digitale, vers un management stratégique augmenté?, Céline Bos, Ea Conseil & formation, DIF 2018, Lyon.
- Bpifrance Le Lab, Enquête (2017), « Histoire d'incompréhension », février-avril 2017.
https://lelab.bpifrance.fr/get_pdf/1022/etude_dirigeantsfaceaudigital_bpifrancelelab.pdf
- Brasseur M. et Biaz F. (2018), L'impact de la digitalisation des organisations sur le rapport au travail : entre aliénation et émancipation, Question(s) de management 2018/2 (n° 21), 143-155.
- Cavelius F., Endenich Ch. et Zicari A. (2018). L'impact de la digitalisation sur le rôle du contrôleur de gestion. Transitions numériques et informations comptables, May, Nantes, France. pp.cd-rom. fahal-01907810f.
- Chambre de commerce des États-Unis (2020), Small Business Coronavirus Impact Poll – June <https://www.uschamber.com/report/small-business-coronavirus-impact-poll-june>
- Chenhall R.H. (2003), Management control systems design within its organizational context; findings from contingency-based research and directions for the future, Accounting, Organizations and Society, Vol. 28, n°2/3, p. 127-168.
- Cohen, B., Amorós, J. E. & Lundy, L. (2017). The generative potential of emerging technology to support startups and new ecosystems. Business Horizon, 60 (6), pp. 741-745.
- Connected Commerce Council (3C) (2020), Digital Safety Net Helps Small Businesses Survive During COVID-19, <https://connectedcouncil.org/digital-safety-net-helps-small-businesses-survive-during-covid-19/>
- Deloitte report (2016), Economie numérique : Le digital, une opportunité pour les PME françaises, https://www2.deloitte.com/content/dam/Deloitte/fr/Documents/strategy/deloitte_digital-opportunit%C3%A9-pme-fran%C3%A7aises_jan2017.pdf
- Dorn D. (2017), La montée en puissance des machines : comment l'ordinateur a changé le travail, Revue française des affaires sociales, 1, pp. 35-63.
- Elhamma A. (2012), The Relationship between Firm Size, Activity Based Costing and Performance: An Application on Moroccan Enterprises, Journal of Accounting, Business and Management (JABM), 19 (1).
- Elhamma, A. (2011), Impact de la taille sur le contenu des tableaux de bord dans les entreprises au Maroc : résultats d'une étude empirique, Revue Marocaine de Recherche en Management et Marketing, N° 4-5, pp. 317-329.
- Elhamma, A. and Lassaad, BM. (2017), Liens entre participation budgétaire, taille et performance: cas des entreprises au Maroc, Revue Congolaise de Gestion, 24 (2), pp. 43-62.
- Elhamma, A. (2015), The relationship between budgetary evaluation, firm size and performance, Journal of Management Development, Vol. 34 No. 8, pp. 973-986.

- GoDaddy (2020), The 2020 Global Entrepreneurship Survey,
<https://www.techrepublic.com/article/feeling-optimistic-71-of-microbusiness-owners-expect-to-recover-from-covid-19-financial-hit-within-a-year/>
- Heimel, J. and Müller, M. (2019) 'Controlling 4.0', in Erner, M. (ed) Management 4.0 – Unternehmensführung im digitalen Zeitalter, Berlin, Springer, pp. 389–430.
- Jorissen A., Devinck S. et A. Vanstraelen (1997), Planning and control: are these necessary tools for success? Empirical results of survey and case research on small and medium-sized enterprises compared with research on large enterprises, Congrès de l'IAAER, Paris.
- Kalika M. (1987), Structures d'entreprises, réalités, déterminants, performances, Economica ;
- Khandwalla P. (1977), The Design of Organizations, Harcourt Brace Jovanovich
- Li, L., Su, F., Zhang, W. & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. Information Systems Journal, 28 (6), pp. 1129-1157.
- Matt, C., Hess, T. & Benlian, A. (2015). Digital Transformation Strategies. Business & Information Systems Engineering, 57 (5), 339-343.
- Metais-Wiersch et Autissier (2016), la transformation digitale des entreprises. Les bonnes pratiques, édition Eyrolles.
- Mintzberg H. (1982), Structure et dynamique des organisations, Les Editions d'Organisation.
- Möller K., Schäfer U. and Verbeeten F. (2020), Digitalization in management accounting and control: an editorial, Journal of Management Control (2020) 31,1–8.
- Pan, G., Seow, P. (2016), Preparing accounting graduates for digital revolution: a critical review of information technology competencies and skills development Journal of education for business, 91 (3), 166-175.
- Quattrone, P. (2016). Management accounting goes digital: Will the move make it wiser? Management Accounting Research 31,118-122.
- Ross, J. W., Beath, C. M., Sebastian, I., M. (2017). Digitized ≠ Digital. MIT CISR Research Briefings, 18(10), 1-3.
- Schön, D. (2018) Planung und Reporting im BI-gestützten Controlling, Wiesbaden, Springer Fachmedien.
- Sestino A. Irene M. Piper L. et Guido G. (2020), Internet of Things and Big Data as enablers for business digitalization strategies, Technovation, Volume 98.



The Economist Intelligence Unit report (2019), 2019: the Year of Digital Decisions,
https://assets1.dxc.technology/digital_transformation/downloads/Digital_Decisions_Survey_Report.pdf

Trabucchi, D., Buganza, T. et Pellizzoni, E. (2017). Give away your digital services: Leveraging big data to capture value. *Research-Technology Management*, 60 (2), 43-52.

Vasarhelyi, M. A., Kogan, A., Tuttle, B. M. (2015). Big Data in Accounting: An Overview *Accounting Horizons*. 29(2), 381-396.

We Are Social et Hootsuite (2021), Digital 2021 global overview report,
<https://wearesocial.com/digital-2021>

Westerman G., Bonnett D. et McAfee A. (2014), *Gagner avec le digital*, Paris, Editions Diatein.

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Original Research

Organizational Vigor Creation Paradigm Model in Universities

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Abstract

This study aimed to identify and validate the organizational vigor creation model in the universities. In order to identify factors affecting the organizational vigor, after a focused literature review the consensus of the experts' opinion was explored. This information was placed in the form of a set of causal, intervening, axial, underlying, facilitating, strategic conditions and their outcomes by multiple coding based on grounded theory model. These data were collected from 169 experts by snowball sampling method and the hypotheses were tested. For checking validity and reliability of the designed model Smart PLS and SPSS software were used. Finally, the relationships of these variables were presented based on the path analysis model. Based on the obtained results, Organizational vigor creation model, university growth has a significant effect on the strategic management of human resources; also, strategic management of human resources, intervening conditions and organizational support in resolving work-family conflict have a significant effect on university branding, and the latter also has a positive and significant effect on the vigorous state of human resources of the universities. The results of fitting showed that the model proposed in this study has good validity and fit. The significance, implications and limitations of results have also been deliberated for further research.

Keywords: Organizational Vigor, Paradigm Model, Structural Equations.

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Introduction

The realization of any social transcreation is necessary to create vigor in the people of that society in relation to that transcreation, in order to align them with the desired goals and paths (Jovari, 2021). The characteristic of organizational vigor refers to a person when a person devotes all his strength, efforts and talents to achieve the goals and mission of the organization, sincerely and enthusiastically and without any bias (Jovari, et al., 2019). This issue has a special appearance in scientific-academic circles, because universities are the centers of creating, processing and producing knowledge and technology, their effect on the development process of countries is unique, and many new areas and concepts that enter the field of human life are originated from universities (Ghoreishi, 2019) so in recent times, the importance of the responsibility of universities has been highlighted (Ramos et al., 2020). The present study aims to design and compile a paradigm model of creating organizational vigor for human resources of the university by using the qualitative content analysis approach, because if the cycle of vigor in the university environment is disturbed due to the presence of some obstacles, the scientific development system of the country will be affected because its product cannot reflect the superior scientific-executive principles and strategies, and it cannot be expected to produce useful science and knowledge. Therefore, the present study aims to answer the question, what is the paradigm model of vigor creation in universities and how can it be introduced and explained? For this purpose, the conceptual framework has been examined according to the Fig. 1.

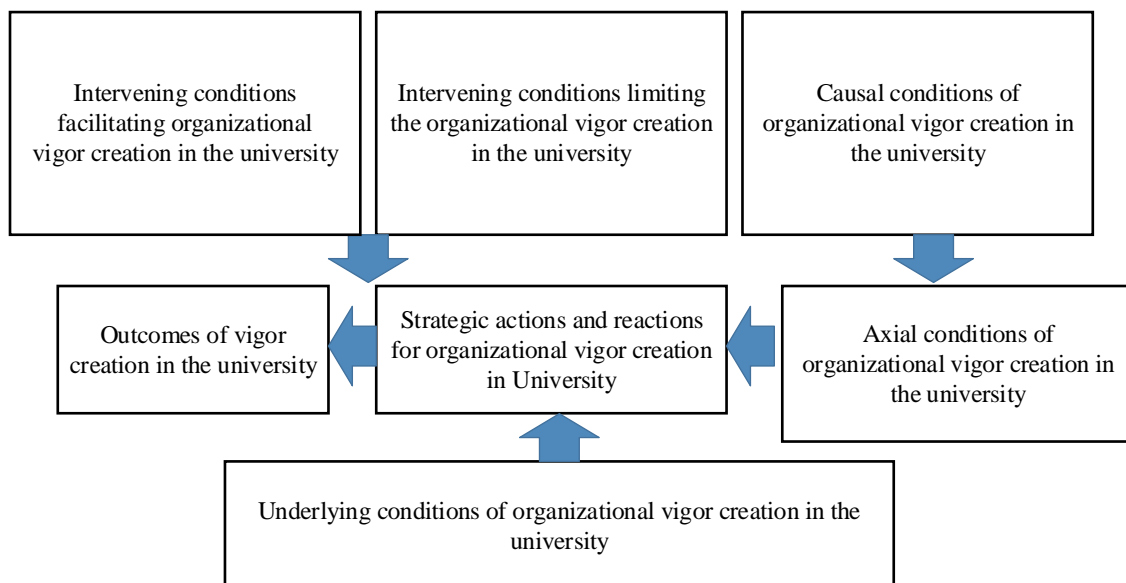


Fig. 1. The conceptual framework of the research (proposed research model)

Literature Review

Vigor as a mode is a positive and distinct feeling that can arise from internal and external events and situations (Armon, et al., 2011: 11). When vigor is considered as a mode, attention is paid to its changes within a person in a working day; while vigor is defined as a feature with indicators such as effort, energy, flexibility and resistance to

work problems, and attention is paid to its changes among people (Wafald, et al., 2012: 5). In the Shairom model, the similar structure of Schlafly introduces vigor as one of the components of job engagement. Shairom has criticized Schlafly's model. He states that the vigor factor is considered as a non-ambiguous structure in Schlafly's model. To solve these problems, Shairom introduced a multi-dimensional conceptualization of vigor, which reflects the three feelings of physical strength, emotional energy, and cognitive vigor (Shairom, et al., 2003). Contrary to Schlafly and Shairom's model, Britt's model considers job involvement as a single-factor construct and measures it with three conceptual categories including responsibility for performance, commitment to performance, and importance of performance for the individual. (Wefald, et al., 2012: 5).

Research background

Several studies have shown that vigor acts as a mediator role in predicting individual results and outcomes, including job satisfaction, organizational commitment, job performance, and organizational citizenship behavior (for example: Fisher (2010: 385); Karanika, et al., (2015); Corbeanu & Iliescu (2023); Fatimah, E. P. N. (2023)). Jovari and Mohammadi Moghadam (2021) in their qualitative research introduced the inefficient conditions of laws and regulations, the abandonment of the capabilities of universities among the effective factors in intensifying the phenomenon of organizational no vigor of university members. Carmeli (2013) in presenting his final model refers to the effect of emotional intelligence on the generosity and benevolence of people through their vigor. In a comprehensive summary of the research background, it can be said that the studies conducted in the field of vigor and individual, organizational and social health are divided into five general categories: The first category is research related to the concept of vigor, which, of course, mistakenly in most of these researches, vigor is considered synonymous with happiness (for example: Silva Munar(2020); Çayak (2021); Sanamthong & Prabyai (2023); Salvadorinho &Teixeira (2023)). The second category is the studies that have examined organizational vigor as one of the components of job involvement and in the form of a sub-topic and indirectly(for example: Kong (2009), Wefald, et al., (2012); Cortes-Denia,et al.,(2023)).The third category is researches that have paid attention to the outcomes and results of people's vigor and health from the perspective of individual psychology and personal life, ignoring this phenomenon in the organizational environment(for example: Akhavan Sarraf, et al., (2017); Sepahvand & Bagherzadeh Khodashahri (2021); Azike, et al., (2023)). In the fourth category of research (for example: Cortés-Denia, et al., (2023); Alkorashy & Alanazi (2023), Abduraimi, et al., (2023)) the comparison of the state of social vigor and health in different cities with a social and sociological approach can be seen, which beyond the statistical relationship between variables, no other analysis of the state of social vigor has been done, and only the level of happiness and vigor and the effective factors have been examined. In the fifth category, which has more semantic affinity with the topic and context of the present study, the category of vigor has been analyzed from the perspective of obstacles and outcomes (for example: Anaza, et al., (2016); Corbeanu & Iliescu (2023); Sypniewska, et al., (2023)). Therefore, the factors affecting the vigor of employees are divided into four levels of job, organizational, managerial and welfare factors (material and spiritual) and then each of these factors is divided into three more detailed categories called sub-factors at a lower level. one of the things that can be found in this study is that in the mentioned researches, the criteria of measurements were two standard questionnaires of

organizational vigor by Pryce-Jones (2011) and Kjerulf (2007)(Jovari, et al., 2020; 2019). Considering that every person has his own spiritual and psychological world and also considering the socio-cultural and ideological differences between countries, cities, villages, neighborhoods and even families, the question that arises is whether to measure the state of vigor of people with a fixed measure is also correct based on non-Iranian research with distinct cultures.

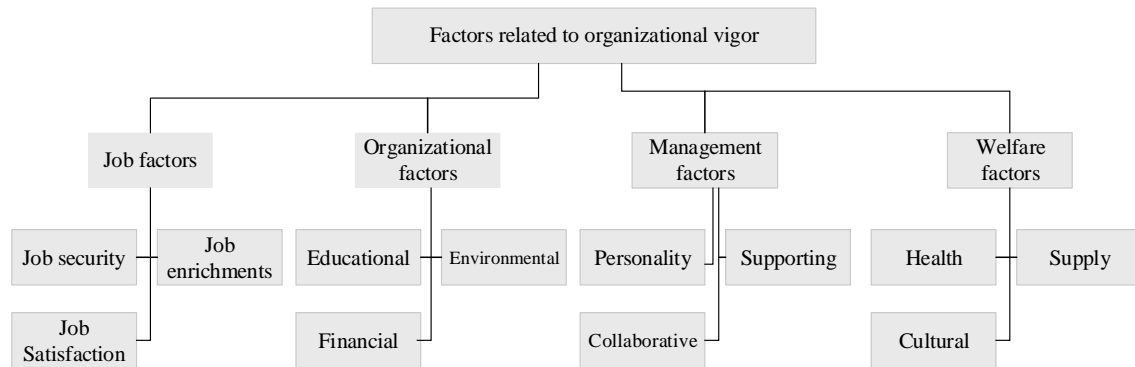


Fig. 2. Factors related to organizational vigor (extracted from research literature)

Research method

The present study is practical in terms of purpose and descriptive-exploratory in terms of method. To collect data, the method of studying theoretical foundations and past researches, in-depth and semi-structured interviews, and questionnaires were used. In order to examine the pattern of vigor and relationships between conditions, contexts and factors, this questionnaire was compiled based on the categories counted in the interview section of the research. The community of interviewees were 20 university members who have the highest experimental and scientific creation regarding the issues related to this study (the scope of this study), while having a wide range of opinions and deep knowledge. This means that in this field, they have records and educational background, scientific works (books, articles), teaching or research records, or related positions and executive records, or in this field (for example, in the field of human resources management, educational sciences, and organizational psychology, strategic and operational program of the university) make decisions. Therefore, the sampling method in the present study was non-random and purposive method, during which people with specific characteristics in terms of scientific and experimental records and having the necessary communication skills to participate and influence the research were selected. Emphasis on the membership in the specialized working group of the strategic and operational program of the university, academic degree and work experience has been in order to express the individual's opinion based on organizational knowledge and the data are reliable. At the beginning, in order to achieve a common understanding of the content of the interview, the desired concept of vigor was explained to the participants based on the findings of the literature review and the background of the research. The vigor of human resources of the university is a state of positivity, satisfaction and intellectual flexibility in university members, which leads to the activity and expenditure of additional educational, research and executive energy, in order to voluntarily participate in the realization of individual and organizational goals. In these interviews, the questions were

formulated and adjusted according to the grounded theory, and gradually, according to the progress and conduct of the initial interviews, these questions became more comprehensive. The data obtained from semi-structured interviews with academic experts were analyzed using the grounded theory method. To study the hypotheses, the quantitative phase of the research was based on the data that was collected using a researcher-made questionnaire. This questionnaire was collected from 169 experts by snowball sampling method and was obtained based on the dimensions and subcategories identified in the first phase. The questionnaire included 17 dimensions and 73 items. After ensuring the reliability and validity of the questionnaire, the variable measurement tool was distributed among the members of the statistical sample. In this study, the partial least square method was used to test the hypotheses. Finally, by using PLS Smart software, the conceptual model of the research has been measured and the construct validity has been determined.

Findings

40.24% and 59.76% of respondents are male and female, respectively. The number of students, professors, managers, and experts in respondents are 4.14%, 37.27%, and 13.01% and 24.85%, respectively. 49.11% and 50.89% of respondents are single and married, respectively, whose age range is between 20 to 30 years to over 50 years. The age range of the respondents in 20 to 30 years old, 31 to 40 years old, 41 to 50 years old and over 50 years old are 39.05%, 34.19%, 13.02% and 13.02%, respectively. Therefore, the lowest frequency of age in the sample volume is 41 to 50 years and above 50 years and the highest frequency of age in the target sample volume is 20 to 30 years.

University growth, strategic management of human resources, positive psychological characteristics in members, extra-university restrictions, intra-university restrictions, support in resolving work-family conflicts, brand-referencing of university capabilities, university is responsive of a set of causal, intervening, strategic, axial, underlying, facilitative. How these categories are related was proposed in the form of a paradigm model according to Fig. 3.

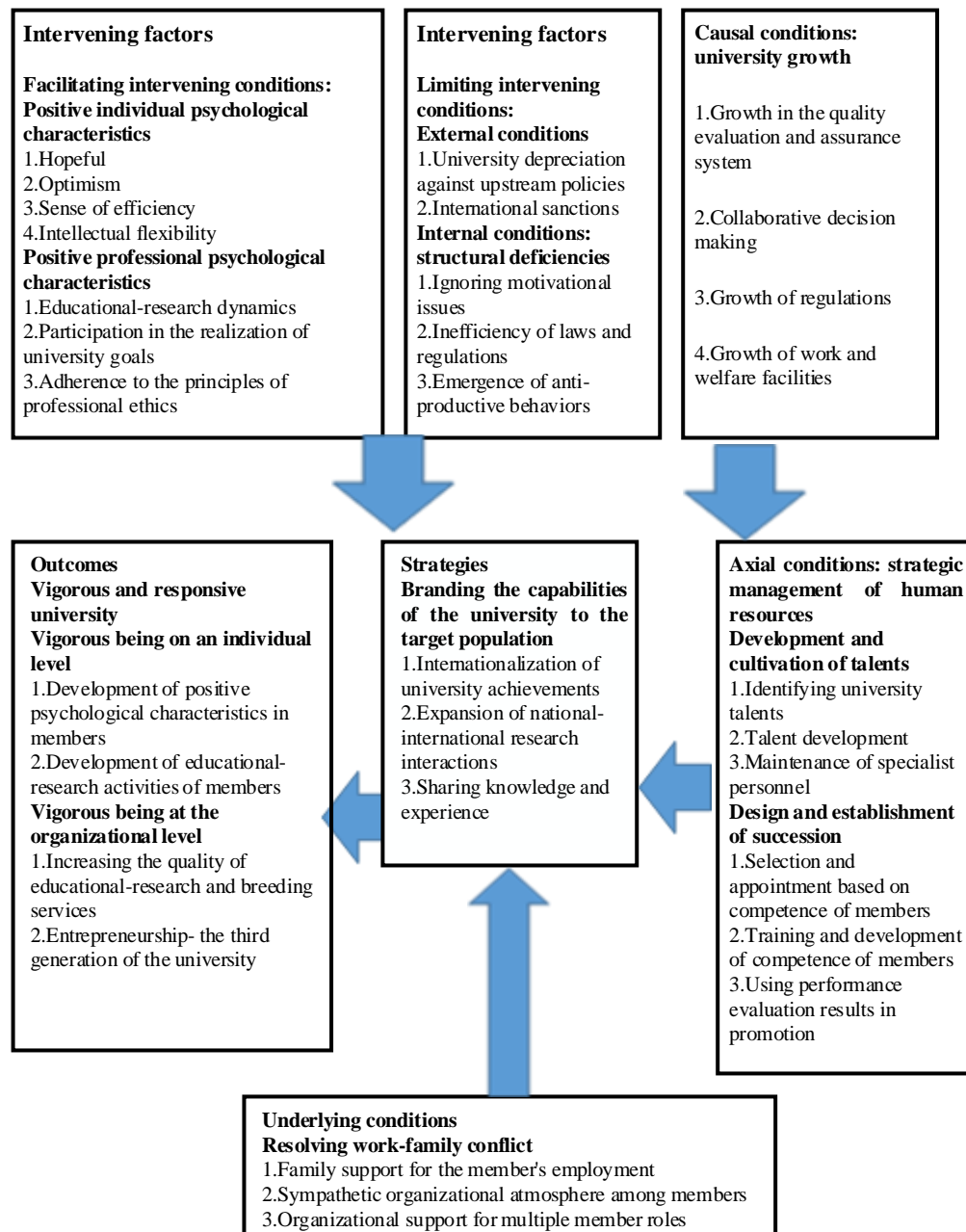


Fig. 3. Organizational vigor creation model for human resources of the university

According to the proposed classification based on the opinion of experts, the research hypotheses were introduced as follows:

H₁: the university growth (Causal conditions) has a positive and significant effect on the strategic management of human resources (Axial phenomenon).

H₂: strategic management of human resources (axial phenomenon) has a positive and significant effect on university branding (Strategies).

H₃: Intervening condition has a positive and significant effect on university branding (S).

H₄: organizational support in resolving work-family conflict (Underlying conditions) has a positive and significant effect on university branding (S).

H₅: the university branding (S) has a positive and significant effect on the vigor and responsiveness (Outcomes).

Measurable models goodness fit (outer model)

In face validity, the appearance of the questionnaire is examined in terms of editing, shape, spelling, etc., before its distribution. In this study, the questionnaire was reviewed by several university professors and some organizational experts (higher education authorities) before distribution, and the researcher designed and edited the questionnaire after applying their correction comments.

Table 1. Average Variance Extracted (AVE) criterion

Latent variables	AVE>0.5
Cc	0.693
AC	0.684
Ic	0.706
Uc	0.650
S	0.720
O	0.756

As can be seen in Table 1, all the AVEs for the latent variables of the research model are greater than 0.5 and therefore the measurement model has appropriate convergent validity.

To check the discriminant (divergent) validity of the measurement model, the Fornell and Larker criterion shows the degree of correlation of a construct with its indicators compared to the correlation of that construct with other constructs.

Table 2. Fornell and Larker criterion

Variable code	S	Uc	Cc	Ac	Ap	O
S	0.681					
Uc	0.606	0.764				
Cc	0.533	0.629	0.765			
Ic	0.595	0.692	0.737	0.744		
Ap	0.618	0.750	0.711	0.675	0.683	
O	0.668	0.684	0.580	0.636	0.611	0.676

As Table 2, the square root of AVE on the main diagonal is greater than the values of other variables so it can be said that the discriminant validity test is confirmed.

According to Table 3, the values of all variables are more than 0.7, and the appropriate goodness fit of the measurement models has been confirmed; therefore, the measurement model has good reliability.

Table 3. Cronbach's alpha coefficient and composite reliability of the research latent variables

Latent variables	Cronbach's alpha (Alpha>0.7)	Composite reliability (CR>0.7)
Cc	0.769	0.837
Ac	0.825	0.875
Ic	0.836	0.877
Uc	0.879	0.901
S	0.770	0.839
O	0.765	0.834

Table 4. Bartlett's and Kaiser-Meyer-Olkin (KMO) test

Significance level	Degrees of freedom	Bartlett's chi-square	KMO
0.000	820	4.12	0.903

Table 4 shows the KMO value of 0.903 of a high and appropriate value (greater than 0.5), which is the first condition for the validity of factor analysis. Also, in Bartlett's test, the chi-square value has been obtained 4.12, which is significant with a significance level of 0.000, which is less than 0.05, and the other condition of validity of the factor analysis is established.

Table 5. Kolmogorov-Smirnov test

Variables	Kolmogorov-Smirnov test statistics	Significance level	Test result
Cc	1/34	0/05	Normal
Ac	1/39	0/13	
Ic	1/14	0/14	
Uc	1/14	0/14	
S	1/21	0/10	
O	1/34	0/05	

According to the results of Table 5, because the value of the significance level for all variables is greater than the error level of $\alpha=0.05$ ($p<0.05$); as a result, the research variables have a normal distribution and parametric tests can be used to test the research hypotheses.

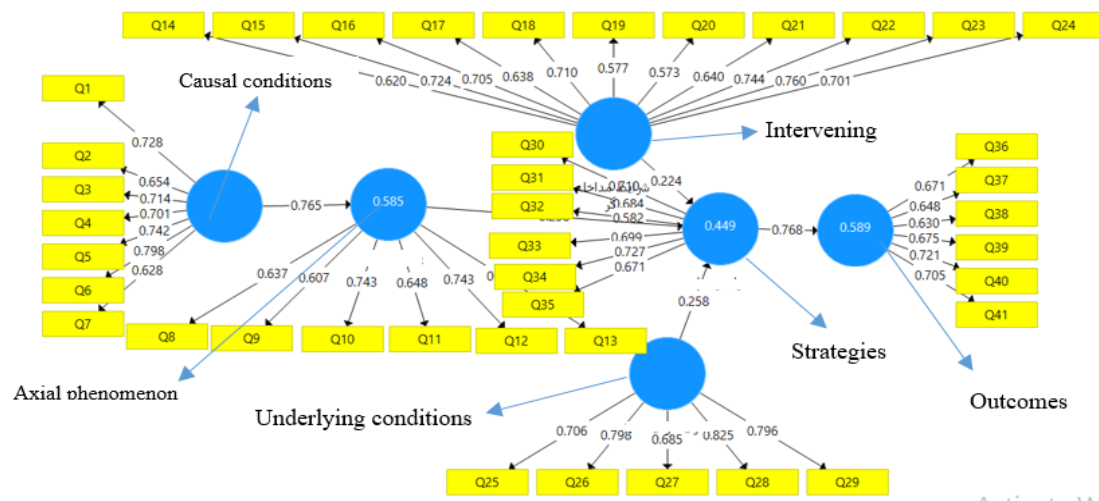


Fig. 4. The structural equation model with path coefficients

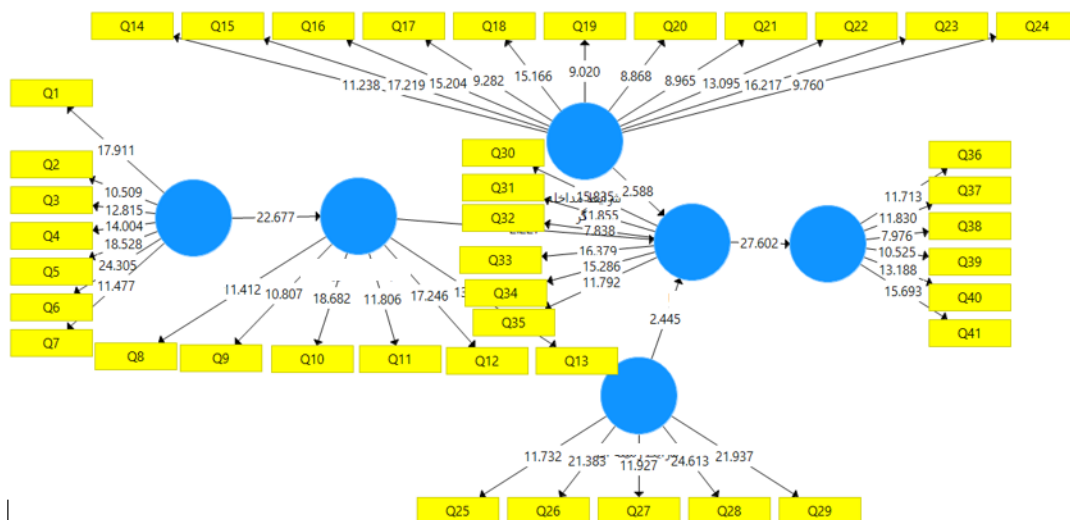


Fig. 5. The structural equation model with significant coefficients

In Fig. 4, the path coefficients or beta coefficient (β) of the research model are specified. The values of significant coefficients (T-values) of the research model are also shown in Fig. 4. Other outputs of the software that can be seen in Fig. 4 are R2 coefficients, which are included in the circle of each endogenous latent variable. The factor loading value of each of the observed variables for the corresponding latent variable is the minimum acceptable value of 0.4.

Table 6. Standardized factor loadings and t-coefficients between model classes

Variables	Factor loading	T-values	Result
C c	0.728	17.928	Significant
	0.654	11.977	
	0.714	14.446	
	0.701	14.077	
	0.742	18.386	
	0.798	25.045	
	0.628	10.747	
Ap	0.637	10.791	
	0.607	10.543	
	0.743	18.701	
	0.648	11.293	
	0.743	17.285	
	0.711	13.365	
Ic	0.620	11.186	
	0.724	18.317	
	0.705	15.007	
	0.638	9.726	
	0.710	15.657	
	0.577	9.190	
	0.573	9.201	
	0.640	9.410	
	0.744	14.123	
	0.760	16.388	
Uc	0.701	10.577	
	0.706	11.621	
	0.798	23.051	
	0.685	11.558	
	0.825	24.011	
S	0.796	21.157	
	0.710	15.026	
	0.684	11.566	
	0.582	8.427	
	0.699	16.391	
	0.727	15.345	
O	0.671	11.907	
	0.671	12.477	
	0.648	11.844	
	0.630	8.549	
	0.675	10.624	
	0.721	12.794	
	0.705	16.196	

In Table 6. As can be seen, T-values and standardized factor loading between the items and their related latent variables in all cases are calculated to be greater than 1.96 and 0.4, respectively in level 0.000.

Structural model goodness fit (inner model)

A) As can be seen in Fig. 5, all paths have a significance coefficient greater than 1.96, so all paths are confirmed for the research model.

B) R^2 criterion, the second criterion for checking the goodness fit of the structural model in research is R^2 coefficients related to endogenous (dependent) latent variables of the model.

According to Table 7, the R^2 value confirms the appropriateness of the goodness fit of the structural model according to the three criterion values.

Table 7. The results of R^2 and the main endogenous variables

Main endogenous variables	R^2	R^2 Adjusted
S	0.449	0.439
Ap	0.585	0.583
O	0.589	0.587

C) As can be seen in Table 8, the contribution of exogenous variables to the endogenous variables of the research model is strong.

Table 8. The results of f^2

Independent variable	Dependent variable	f^2
Ap	Strategies	0.41
Ic		0.37
Uc		0.48

The results of Table 9 show all variables are higher than 0.35 and indicate strong predictive power for the structure and model, the appropriate predictive power of the model regarding the endogenous constructs of the research and confirm the appropriate goodness fit of the structural model. Total model goodness fit with the GOF criterion, for the GOF criterion of 0.392, the very appropriate goodness fit of the total model for the research is confirmed.

Table 9. Q^2 coefficients of endogenous variables

Endogenous variables	Q^2
S	0.360
Ap	0.362
O	0.364

In Table 10, the results of the research hypothesis test in the structural equation model are introduced.

Table 10. The results of the research hypothesis test

Independent variable	Dependent variable	Path	Path coefficient	Path coefficient	Significance level	Test result
Cc	Ap	university growth → strategic management of human resources	0.765	23.570	0.000	Confirmed, positive and significant
Ap	S	strategic management of human resources → university branding	0.258	2.290	0.022	
Ic	S	restrictive intervening and facilitating condition → university branding	0.224	2.544	0.011	
Uc	S	support in resolving work-family conflict → university branding	0.258	2.382	0.018	
S	O	university branding → vigor and responsiveness of university	0.768	27.397	0.000	

The size of the T-value of the path related to university growth and the strategic management of human resources was found to be 23.570 and because this value is greater than the value of the critical value of 1.96, the effect of university growth on the strategic management of human resources was found to be significant at the error level of $\alpha=0.05$, and due to the positiveness of the path coefficient (0.765), this relationship is direct and positive. In the study of the relationship between the Ap of the organizational vigor creation model in the university and strategic actions, i.e. the strategic management of human resources and the university branding respectively, the significance coefficient (T-value) of this path is 2.290 and because this value is greater than the critical value of 1.96 is, the effect of strategic management of human resources on university branding is significant at the error level of $\alpha=0.05$, and considering the positiveness of the path

coefficient (0.258), this relationship is direct and positive. The size of the significance coefficient (T-value) of the path of restrictive and facilitating conditions and university branding's capabilities as axial conditions and strategic actions for the organizational vigor creation model in the university was obtained equal to 2.544 and since this value is greater than the critical value of 1.96, the effect of members' positive psychological capacities on university branding is significant at the error level of $\alpha=0.05$, and considering the positiveness of the path coefficient (0.224), this relationship is direct and positive. In other words, the calculated significance level (0.000) is smaller than the error level of $\alpha=0.05$ ($p < 0.05$). As a result, with a confidence level of 95%, it can be said that the positive psychological capacities of the members are effective on the university branding. In examining the relationship between the underlying conditions of support in resolving work-family conflict on the model strategy, i.e. university branding's capabilities, the significance coefficient (T-value) of this path was found to be 2.382, and since this value is greater than the critical value of 1.96, the effect of the conditions of the underlying conditions of the model on the action of the strategy of this model is significant at the error level of $\alpha=0.05$ and considering the positiveness of the path coefficient (0.258), this relationship is direct and positive, that is, with a confidence of 0.95%, it can be said that the support of the university in resolving work-family conflict is effective on the university branding. In examining the relationship between the action of the model and its outcome, i.e. the effect of university branding on the vigor and responsiveness of this university, the significance coefficient (T-value) of this path was found to be 2.290, and since this value is greater than the critical value of 1.96, with a confidence level of 95%, it can be said that the university branding's capabilities (with a path coefficient of 0.258) will be the basis for a vigorous and responsive outcome in the university.

Discussion and Conclusion

In this research to design the organizational vigor creation model for universities and evaluating its validity a set of causal, intervening, axial, strategies, underlying, facilitating, conditions and their outcomes were investigated by a triangulation method as follows:

Causal conditions include university growth contains growth in the quality evaluation and assurance system, collaborative decision making, growth of regulations, growth of work and welfare facilities.

Intervening factors include facilitating and limiting intervening conditions. Facilitating intervening conditions contains positive individual psychological characteristics (hopeful, optimism sense of efficiency, intellectual flexibility) and positive professional psychological characteristics (educational-research dynamics, participation in the realization of university goals, adherence to the principles of professional ethics); limiting intervening conditions external conditions (university depreciation against, upstream policies, international sanctions) and internal conditions structural deficiencies (ignoring motivational issues, inefficiency of laws and regulations and emergence of anti-productive behaviors).

Axial conditions: strategic management of human resources contains development and cultivation of talents (identifying university talents, talent development, maintenance of

specialist personnel) and design and establishment of succession (selection and appointment based on competence of members, training and development of competence of members, using performance evaluation results in promotion).

Underlying conditions contains resolving work-family conflict (family support for the member's employment, sympathetic organizational atmosphere among members, and organizational support for multiple member roles).

Strategies include branding the capabilities of the university to the target population (internationalization of university achievements, expansion of national-international research interactions, sharing knowledge and experience).

Outcomes include vigorous being on an individual level (development of positive psychological characteristics in members, development of educational-research activities of members) and vigorous being at the organizational level (increasing the quality of educational-research and breeding services, entrepreneurship- the third generation of the university).

For explaining the mentioned items it can be said based on the obtained results, in organizational vigor creation paradigm model the members of universities want the university to become less bureaucratic because in recent years, it is felt that the university has suffered bureaucratic inferiority and this causes confusion in the realization of the goals and mission of the university and also if a precise and appropriate conceptualization of the bureaucratic processes is done for the members, the lack of organizational vigorous in them will be reduced. In matching this part of the research findings with the research background, the following cases can be mentioned: Javdani (2014) also identified the bureaucratic, inflexible organizational environment, misplaced official procedures and the promotion of administrative paperwork among the obstacles in designing the model of organizational development in Iran's higher education system. Malekinia, et al; (2014) considered the participation of university stakeholders in decision-making to foster critical thinking skills and a symbol of a sustainable university (Jovari & Mohammadi moghadam 2021). In the present study, the strategic management of human resources in the context of the organizational university model means the design and establishment of succession management, as well as the development of a comprehensive plan of human resources in order to flourish and cultivate talents for each member, and through benefiting from the capabilities and the expertise of the members will be implemented in the administration of scientific-executive affairs and the promotion of the human resources system. The issue of succession in educational organizations is of double importance because the output of educational organizations is used as the input of other organizations. In educational organizations, there is competition in the field of attracting and maintaining talented managers and employees and developing their skills. Also, the departure of people from various levels of the organization for various reasons such as resignation, retirement, job promotion or even death is inevitable, and if there is no systematic and planned solution to fill the empty place caused by the absence of these people, especially among faculty members, the university will be faced with issues such as academic decline of students, stress of professors, research defects, key positions being vacant or these positions being filled with people without the necessary talent and competence. The research of Bamdad Sufi and Imamat (2018) entitled identification and

prioritization of factors affecting the attraction and retention of scientific talents in the university, have emphasized the need for universities to try to attract and cultivate talents. In the Price and Jones (2010) model, the core of the member's vigor is nothing but a person's feeling of the flourishing and actualization of his individual talents.

In continuation of the process of the paradigm model of this study, as intervening conditions, the positive psychological capacities of university members in the individual and organizational dimensions include individual positive psychological characteristics such as hope, optimism, sense of efficacy, flexibility, ethics, as well as positive professional psychological characteristics such as educational-research dynamics, participation in the realization of university goals, adherence to the principles of professional ethics were considered as effective factors in the vigorous model of university members. With the empowerment of communication, reluctance and lack of scientific courage and organizational stagnation give way to dynamism and production of science instead of imitation, that is, we will face scientific dynamics and knowledge production. The studies can be stated in confirmation of the mentioned findings such as Stajkovic & Luthans (1998) found a positive and significant relationship between self-efficacy and performance indicators by conducting a meta-analysis. If we understand the feeling of efficacy as a person's belief about the ability to succeed in a task, then optimism is an expectation related to future success. Luthans & Youssef (2007) also confirmed the relationship between optimism and employee performance in the healthcare and banking industries. Snyder (2002) showed that people who have more hope not only have a firm determination to achieve the goal, but also consider multiple paths and methods to achieve the goal and have a special ability to anticipate obstacles and challenges. Also, organizations that have more hopeful employees are more profitable, and more hopeful managers have work units with better performance (Yazdanshenas & Mazidabadi, 2015). Luthans (2007) recognized the positive psychological capital of members as a motivational basis for the organizational productivity of members (Yildiz, 2019). Also, Arab et al. (2016) have proven the effect of positive organizational ethics on meeting the growth needs of employees and also creating a sense of energy in members.

One of the challenges identified in order to create vigor for women working in universities was the lack of sufficient support in the attitudinal and behavioral aspects of their personal and family responsibilities from the university. To solve this challenge, the strategy of raising the role of women and family by the university authorities was confirmed by the experts. In the organizational strategy of raising the status of women and the family, it is important to improve the positive attitude of the university and the family towards the valuableness of multiple family and organizational roles of women in the university. A change in values, beliefs and attitude will lead to a change in individual, family and organizational behavior. In this strategy, raising the status of women and family based on synergistic and coordinating organizational mechanisms between the family and organizational roles of members is proposed, because due to the complex and sometimes overlapping roles of working women, their job vigor can be obtained on the basis of mental images and their evaluation and perception of the degree of harmony between the quality of their organizational and personal life. University authorities should be determined with a holy perspective on the noble roles of women, to revise the internal rules and bylaws of the university in the areas of working hours and how to manage working time by insisting on meritocracy and emphasizing on their great mission in

raising university-educated girls and mothers, while creating a context for ensuring the social roles of the members on their more preferable role as mothers and wives to create self-confidence. At the least possible, it is enough for the members and their families to imagine that the main priority of the university is the individual and family vigor of the members that is when the university faces the efficient and double intellectual participation and energy of the members. However most of the researches conducted in the field of human resources and positive organizational behavior have focused on concepts such as job satisfaction, organizational commitment, organizational citizenship behavior, depression analysis, etc (Ennida & Allouani (2023); Warnabarana & Randika (2022); Alkaser (2022); Rosafizah, et al; (2020); Hossain (2020)) or studying anti-productive and stressful organizational behaviors(Yaman& Yaman (2023); Omasu et al. (2022); Ghita, et al;(2022); Privitera (2020)) but current research shows that these variables play a significant role in explaining the individual and organizational consequences of positive organizational behaviors and the phenomenon of organizational vigor has a good predictive power in predicting the occurrence of these behaviors. Therefore, by creating mutual understanding between the members and the organization, the university becomes the foundation for the vigor of the members and their families, and ultimately the health of the organization will be met. Heydari (2017) mentioned the mutual influence of organizational vigor and family vigor of members. In addition to the task of educating students, academics also have a responsibility in the legal, environmental, moral and altruistic fields under the title of social responsibility that is, meeting the needs of the local community. Branding is in services of mechanism used to introduce services and differentiate them in the competitive market. The action of university referencing is like a change strategy that marks a change in beliefs, values and attitudes, with the support of senior managers of this system, it can spread a dynamic and sustainable change process to the higher education system (Javdani, 2014). It can be said that it is necessary for university members to interact and show their capabilities to the target population in order to create platforms for scientific-executive dynamics for them in the target population. Bamdad Sufi and Imamat (2018) entitled identification and prioritization of factors affecting the attraction and retention of scientific talents in the university, has emphasized the efforts of universities in order to build a brand based on the attraction and cultivation of talents, and with the aim of presenting a better image of their university in competitive markets, they have proposed to strengthen the cooperation of each university with the academic network and commercial organizations. Hajipour and Soltani (2014) pointing out that universities are facing a complex and turbulent environment, is considered the correct guidance of universities dependent on the correct knowledge and understanding of the environment and its developments, as well as the use of strategic planning models based on environmental opportunities and internal strengths. Noorshahi (2014) listed the foundation for interactions along with the reputation of the university, among the indicators for measuring the quality of university services. Ghahramani, et al ;(2017) found the acquisition of extra-university and transnational identity to be effective in gaining reputation and social prestige from the university of the place of service also they recognized the connection of the university member with the industry as an effective factor for growth and serving the society.

Scientific-practical suggestions

The foundation of a resource-oriented view towards academic members causes the member to evaluate and judge the fairness.

To design training courses on strategies for creating the categories of organizational health and vigor and spirituality, as well as creating think tanks in the organization in order to apply the categories of organizational health and vigor and spirituality.

In order to introduce the capabilities of the members to the target population, develop the university more in the region and thus support the vigor of its members.

Suggestions for future researchers

It is recommended to include more variables in the conceptual model in the future research.

It is also recommended to implement and institutionalize the final research model in universities and other knowledge-based companies in order to improve the model.

Limitations

This study, has limitations such as the limited statistical population, and therefore caution should be observed in generalizing its results.

Lack of scientific resources that have examined the concept of vigor separately from the topic of happiness.

References


- Abduraimi, P. B., Mustafi, M., & Islami, X. (2023). The role of organizational culture on employee engagement. *Business: Theory and Practice*, 24(1), 109-122.
- Akhavan Sarraf, A. R., Abzari, M., Nasr Isfahani, A., & Fathi, S. (2017). Generational differences in job engagement: a case study of an industrial organization in Iran. *Industrial and Commercial training*, 49(3), 106-115.
- Alkaser, S. A. (2021). Implementation of Administrative Empowerment in Tackling Organizational Problems as Perceived by Female Leaders at Shaqra University. *Journal of Service Science and Management*, 14(6), 585-596.
- Alkorashy H, Alanazi M. (2023). Personal and Job-Related Factors Influencing the Work Engagement of Hospital Nurses: A Cross-Sectional Study from Saudi Arabia. *Healthcare*. 11(4):572. <https://doi.org/10.3390/healthcare11040572>
- Anaza, N. A., Nowlin, E. L., & Wu, G. J. (2016). Staying engaged on the job: the role of emotional labor, job resources, and customer orientation. *European Journal of Marketing*, 50(7/8), 1470-1492.

- Arab, A., Amin Bidokhti, A., Moradzadeh, A., & Rastegar, A., (2016). A study of the structural relationships between Islamic work ethics, meeting growth needs, feeling energetic and the desire to leave the service, *Scientific-Research Journal of Islamic Management*, 24(1), 51-84.
- Armon, G., Melamed, S., & Shirom, A. (2012). The relationship of the Job Demands-Control-Support Model with vigor across time: Testing for reciprocity. *Applied Psychology: Health and Well-Being*, 4(3), 276-298.
- Azike, I. N., Okonkwo, E. A., Ezech, M. A., Okonkwo, N. V., & Ikpenwa, C. E. (2023). Moderating Role of Perceived Organizational Support in the Relationship Between Work-Family Conflict and Work Engagement. *Esut Journal of Social Sciences*, 8(1).
- Bamdad Sufi, J., & Imamat, M.S.M.M. (2018). Identifying and prioritizing the factors affecting the attraction and retention of scientific talents in the university, *Journal of Human Resource Management Research*, Imam Hossein University (AS), 10 (3),97-120.
- Carmeli, A., Gelbard, R., & Gefen, D. (2010). The importance of innovation leadership in cultivating strategic fit and enhancing firm performance. *The Leadership Quarterly*, 21(3), 339-349.
- Çayak, S. (2021). The mediating role of organizational happiness in the relationship between work engagement and life satisfaction: A study on teachers. *International Journal of Contemporary Educational Research*, 8(4), 27-46.
<https://doi.org/10.33200/ijcer.852454>
- Corbeanu, A., & Iliescu, D. (2023). The Link between Work Engagement and Job Performance. *Journal of Personnel Psychology*; <https://doi.org/10.1027/1866-5888/a000316>.
- Cortes-Denia, D., Lopez-Zafra, E., & Pulido-Martos, M. (2023). Physical and psychological health relations to engagement and vigor at work: A PRISMA-compliant systematic review. *Current Psychology*, 42(1), 765-780.
- Ennida, K; Allouani, S. (2023). Job Satisfaction and Organizational Commitment of Teacher-Researchers through Organizational Citizenship Behavior: A Literature Review. *Social Sciences*, 11, 164-184. <https://doi.org/10.4236/jss.2023.113011>.
- Fatimah, E. P. N. (2023). The Influence of Job Resourcefulness on Job Crafting Mediated by Work Engagement at Employees in Sheraton Hotel Surabaya Restaurant. *Jurnal Bisnis dan Manajemen*, 3(3), 337-346.
- Fisher, D.C., (2010). Happiness at work, *International Journal of Management Reviews*, 12(4), 384-412.

- Ghahramani Qajar, S., Mohammadi Moghadam, Y., & Jovari, B. (2017). A study of the role of human resource vigor in organizational decision-making (case study: scientific-research centers), *Journal of Naja Human Resources*, 1(5), 67-94.
- Ghita, I; Handra, C., Naghi, E., Gurzu, I. and Chirila, M. (2022) Vulnerability to Stress and Depression Risk Related to Occupational Exposure to Aluminum. *Occupational Diseases and Environmental Medicine*, 10, 262-270. [https://doi: 10.4236/odem.2022.104020](https://doi.org/10.4236/odem.2022.104020).
- Hajipour, B., & Soltani, M., (2008). Strategic research planning in universities and higher education institutions (case study: Imam Sadiq University (A.S.)), *Journal of Strategic Management Thought*, 2, 183-224.
- Heydari, N., Faqihpour, J., & Shafiei, A. (2017). Implementation of organizational vigor in social security organization, Tehran, Dar al-Funun Publishing, First edition.
- Hossain, M. (2020). Organizational Citizenship Behavior and Organizational Commitment among Clinical Nurses in Bangladesh. *Nursing*, 10, 693-704. [https://doi: 10.4236/ojn.2020.107049](https://doi.org/10.4236/ojn.2020.107049).
- Javdani, H. (2014). Designing an organizational development model in Iran's higher education management system, *Journal of Research and Planning in Higher Education*, 4(20), 55-74.
- Jovari, B., & Mohammadi Moghadam, Y. (2021). Vigor and strategies for its implementation in universities, *Journal of New Educational Ideas*, 17(1), 229-252. doi: 10.22051/jontoe.2021.26926.2723.
- Jovari, B., Mohammadi Moghadam, Y., Ghahramani Ghajar, S & Hassan Moradi, N. (2019). Vigor creation and social health of academics (presentation of a grounded theory), *Scientific-Research Journal of Social Work*, 4(104), 64-104.
- Jovari, B., Mohammadi Moghadam, Y., Ghahramani Ghajar, S & Hassan Moradi, N. (2020). The Organizational Barriers of Vigor-Creating in the University; Providing a Grounded Model (A Case Study of Alzahra University), *Management in the Islamic university*, 8(18), 329-350.
- Karanika-Murray, M., Duncan, N., Pontes, H.M., & Griffiths, M.D. (2015). Organizational identification, work engagement and job satisfaction, *Managerial Psychology*, (30)8, 1019-1033. <https://doi.org/10.1108/JMP-11-2013-0359>.
- Kong, Y. (2009). A study on the job engagement of company employees. *International Journal of Psychological Studies*, 1(2), 65.
- Luthans, F & Youssef, C.M. (2007). Emerging positive organizational behavior, *Journal of Management*, (33)3, 321-349.

- Malekinia, E., Bazargan, A., Vaezi, M., & Ahmadian, M. (2023). Identification and prioritization of sustainable university's factors. *Research and Planning in Higher Education*, 20(3), 1-26.
- Noorshahi, N. (2014). Factors affecting the professional growth of faculty members and providing solutions for its improvement, *Journal of Research and Planning in Higher Education*, 73, 95-120.
- Omasu, F., Kawano, A., Nagayasu, M. and Nishi, A. (2022). Research on Lifestyle Habits Caused by Stress. *Preventive Medicine*, 12, 190-198.
<https://doi.org/10.4236/ojpm.2022.129014>.
- Privitera, M. (2020). Human Factors/Ergonomics (HFE) in Leadership and Management: Organizational Interventions to Reduce Stress in Healthcare Delivery. *Health*, 12, 1262-1278. <https://doi.org/10.4236/health.2020.129091>.
- Pryce-Jones, J. (2011). Happiness at work: Maximizing your psychological capital for success, *Journal of Management Decision*, 49 (6), 1028-1032,
<https://doi.org/10.1108/00251741111143676>.
- Qoreyshi Khorasgani, M. (2019). Guest editor: looking at the university from the perspective of entrepreneurship, *Science and Technology Policy*, 11(1), 1-2.
- Ramos, P., Cisneros, H., Bencomo, M. and López, J. (2020). University Social Responsibility Advancement in Mexico's Higher Education Institutions: A Comparative Study. *Business and Management*, 8, 2029-2047.
<https://doi.org/10.4236/ojbm.2020.85124>.
- Rosafizah, M., Norhaini, M. and Khairuddin, I. (2020). Organizational Support-Citizenship Behavior Relationship in Malaysian Higher Educational Institutions. *CreativeEducation*, 11,2293-2304.
- Salvadorinho, J., & Teixeira, L. (2023). Happy and Engaged Workforce in Industry 4.0: A New Concept of Digital Tool for HR Based on Theoretical and Practical Trends. *Sustainability*, 15(3), 2781.
- Sanamthong, E., Prabyai, S. (2023). A Causal Model of Relationship between Organizational Climate Influencing Happiness at Work and Organization Engagement. *Emerging Science Journal*, 7(2), 558-568.
- Sepahvand, R., & Bagherzadeh Khodashahri, R. (2021). Strategic human resource management practices and employee retention: A study of the moderating role of job engagement. *Iranian Journal of Management Studies*, 14(2), 437-468.
- Shirom, A., Toker, S., Melamed, S., Berliner, S., & Shapira, I. (2003). Burnout and vigor as predictors of the incidence of hyperlipidemia among healthy employees. *Journal of Applied Psychology: Health and Well-Being*, 5(1), 79-98.

- Silva Munar JL, De Juana-Espinosa S, Martínez-Buelvas L, Vecchiola Abarca Y, Orellana Tirado J. (2020). Organizational Happiness Dimensions as a Contribution to Sustainable Development Goals: A Prospective Study in Higher Education Institutions in Chile, Colombia and Spain. *Sustainability*. 12(24):10502. <https://doi.org/10.3390/su122410502>.
- Snyder, C.R. (2002). Hope theory: Rainbows in the mind, *Psychological Inquiry*, 13(2), 249-276.
- Stajkovic, A.D., Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis, *Psychological Bulletin*, 124, (2), 240-261.
- Sypniewska, B., Baran, M., & Kłos, M. (2023). Work engagement and employee satisfaction in the practice of sustainable human resource management–based on the study of Polish employees. *International Entrepreneurship and Management Journal*, 1-32.
- Warnabarana, T. D., & Randika, P. A. D. D. (2022). Influencing Factors of Employee Engagement on Financial Wellbeing: Special Reference to Bank of Ceylon, Matara District, Sri Lanka. *Business and Management Research*, 7(1), 333–339. <https://doi.org/10.24018/ejbmr.2022.7.1.1274>.
- Wefald, A. J., Mills, M. J., Smith, M. R., & Downey, R. G. (2012). A comparison of three job engagement measures: Examining their factorial and criterion-related validity. *Applied Psychology: Health and Well-Being*, 4(1), 67-90.
- Yaman, F. and Yaman, M. (2023) The Effect of Job Stress and Feeling of Entrapment on Perceived Task Performance and the Mediating Role of Job Satisfaction in the Scope of Organizational Sustainability. *Business and Management*, 11, 11-30. <https://doi.org/10.4236/ojbm.2023.111002>.
- Yazdanshenas, M., & Mazidabadi Farahani, A.M. (2015). The role of positivism, transformational leadership, empowerment and psychology in reducing employee negativity, *Psychological Research in Management*, 1, 31-59.
- Yildiz, H. (2019). The Interactive Effect of Positive Psychological Capital and Organizational Trust on Organizational Citizenship Behavior. *SAGE Open*, 9(3). <https://doi.org/10.1177/2158244019862661>.

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