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The impact of marketing intelligence adoption on banking profitability: Evidence from Egypt

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Abstract

The study investigates the impact of marketing intelligence on the profitability of banks by integrating the qualitative analysis of marketing intelligence according to the questionnaire with the quantitative analysis of profitability indicators of the same bank. Using return on assets and return on equity, the study estimates the bank's profitability using two metrics: return on assets and return on equity. Consequently, the study provides a separate model for each cross-sectional measure examined. That includes bank size, capital adequacy, and leverage as control variables. The study found that marketing intelligence has an impact on the bank's profitability, which includes bank size, capital adequacy, and leverage as control variables. Within the control variables, competitor intelligence, product intelligence, technology intelligence, and marketing environment intelligence affected (78.09%) the return on assets. However, competitor intelligence, customer intelligence, product intelligence, technology intelligence, and marketing environment intelligence influenced 82.56 percent of the return on equity among the control variables. The study has several limitations. This research has only been conducted in Egypt. In addition, the study concentrates on a single service sector. Consequently, the generalizability of the findings requires further investigation.

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1. Introduction

The business world is evolving, and Marketing Intelligence (MI) is almost certainly at its core. With the fast change in the business environment, organizations should prepare themselves to face challenges. MI should decrease businesses' surprises at changes and increase their ability to confront environmental changes. In addition, it should decrease an organization's risks (Johns & Van Doren, 2010). MI is considered a new tool that helps organizations stabilize their position in their environment. It is the collection and analysing of available information concerning competitors, markets, and customers (Kotler & Armstrong, 2013).

According to Vishnoi, Bagga, and Aggarwal (2019), there are five main dimensions for MI. These include intelligence on competitors, customers, products, technologies, and the marketing environment. Competitor intelligence is concerned with competitors' abilities and strategies. Customer intelligence focuses on his or her behaviour and preferences. Product intelligence examines product specifications and features. Technology intelligence analyses technological trends. Finally, marketing environment intelligence examines a company's external environment.

Given the intensive competition between banks, it was essential for banks operating in the Egyptian market to implement MI in order to respond to market pressures and compete with larger banks on the market. In consequence, the vast majority of Egyptian banks have embraced MI.

Regretfully, not much research has been done on the relationship between MI and company profitability in the Egyptian market. Thus, this study tries to cover the gap by examining the effect of using MI on Egyptian banks profitability. The aim of the study is to examine the effect of using MI on a bank's profitability. Consequently, it can be posed as the following question: Does the use of MI improve the efficacy of banks? The research will utilize Return on equity (ROE) and Return on assets (ROA) as profitability indicators that can reflect a facet of performance (Al-Harbi, 2019; Al-Homaidi, Almaqtari, Yahya, & Khaled, 2020; Al-Homaidi, Tabash, Farhan, & Almaqtari, 2018; Almaqtari, Hashid, Farhan, Tabash, & Al-ahdal, 2022; Desai, 2021; Rahman, Yousaf, & Tabassum, 2020; Subbarayan & Jothikumar, 2017).

2. Literature Review

2.1. Main Dimensions of MI Adoption

Marketing intelligence (MI) can give a company a competitive edge in today's fast-paced market by using data and insights to make smarter decisions, gain a deeper understanding of their consumers, and discover new opportunities. So, marketing intelligence is a critical component of strategic planning, MI adoption is comprised of five primary dimensions, or variables. Figure 1 shows these dimensions or variables.

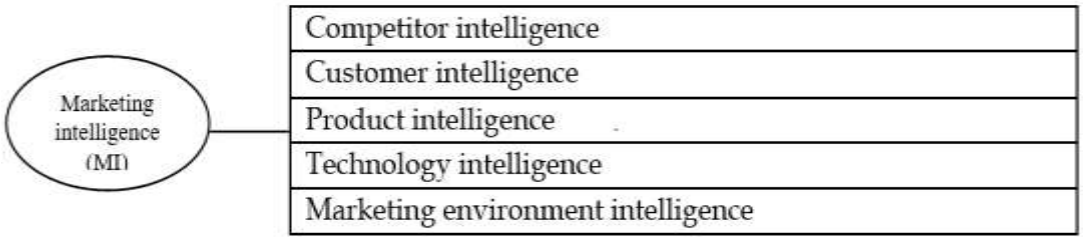

Figure 1. Main dimensions of MI.

Source: Vishnoi et al. (2019).

2.1.1. Competitor Intelligence

Competitor intelligence is the process of gathering and analyzing information about rivals' strategies, trends, and future plans. This facilitates the formation of a clear image of the competitive environment in which an organization operates and the creation of exhaustive profiles of its competitors. Competitor intelligence is based on the ethical collection of diverse categories of information, such as publicly accessible government records (AL-Hashem, 2020; Haripriya, 2020; Maria, Pusriadi, & Darma, 2020; Rao, 2020; Vishnoi & Bagga, 2020).

2.1.2. Customer Intelligence

Customers' purchasing behaviour, intentions, preferences, motivations, concerns, and perceptions are gathered and analysed through market research. This facilitates the creation of consumer profiles. As a result, an organization will be able to produce products that both meet and exceed consumer requirements and expectations (Maria et al., 2020; Rao, 2020).

2.1.3. Product Intelligence

Is the process of accumulating and analysing information about a company's products and its competitors' products. This provides the management team of a company with significant insights regarding product development and innovation activities. Product intelligence enables a company to make judgments regarding product-specific characteristics, such as quality, price, design, features, labelling, packaging, and after-sale services (Inha & Bohlin, 2018; Kumar, 2020; Yadav & Meena, 2020).

2.1.4. Technology Intelligence

Identifies and analyzes technological opportunities and threats that may have an impact on the development of an organization. This allows an organization to comprehend what is happening in the neighboring technology world and implement the technologies that offer the greatest competitive advantage. Good technology intelligence enables a company to plan and establish its own innovation path by providing the necessary knowledge and support (Kamau & Njuguna, 2020; Yadav & Meena, 2020).

2.1.5. Marketing Environment Intelligence

MI extends beyond the collection of information about competitors and customers. The process entails the collection of data pertaining to the external marketing environment of an organisation. The objective of marketing environment intelligence is to identify both the opportunities and threats a company encounters in its external marketing environment. MI aims to capitalize on available opportunities, overcome potential threats, and transform them into investment opportunities (Inha & Bohlin, 2018; Ismaeel & Alzubi, 2020; Kamau & Njuguna, 2020; Vishnoi et al., 2019).

2.2. Importance of MI Adoption

The significance of implementing marketing intelligence in any business stems from its indispensable role in carrying out the following responsibilities: MI collects daily data on marketing environment changes, allowing managers to construct and modify marketing plans (Al-Weshah, 2017; Haripriya, 2020; Kumar, 2020; Moghaddam, Vazifeh, & Okati, 2014; Öztürk, Okumuş, & Mutlu, 2012; Rao, 2020; Ubiparipovic & Durkovic, 2011; Vishnoi & Bagga, 2020).

MI is a crucial tool for amassing relevant data that assists marketing managers in making better decisions under varying conditions, such as uncertainty, risk, and certainty (AL-Hashem, 2020; Al-Weshah, 2017; Igbaekemen, 2014; Öztürk et al., 2012; Ubiparipovic & Durkovic, 2011). MI is a future-oriented activity that assists managers in anticipating and planning for competitors' future actions. This enables managers to counter threats, avoid competitor hazards, and capitalize on market opportunities (Ade, Akanbi, & Ismail, 2017; Hussein, 2020; Inha & Bohlin, 2018; Noviyanti, Suryani, Arianto, & Asmalah, 2020; Öztürk et al., 2012). MI reduces employees' surprise and incapacity to adapt to environmental changes, as well as the organization's exposure to environmental danger and risk (Al-Weshah, 2017).

MI assists marketing managers in identifying the organization's target market and provides information on current and prospective consumers who are likely to purchase the organization's products and services. This will help organizations in directing their marketing efforts toward appropriate target market. In addition, MI assists in analyzing consumer purchasing behaviour, which helps in producing products that exclusively satisfy and fulfil consumers' demands and desires (Ade et al., 2017; Carson, O'Connor, & Simmons, 2020; Lekhanya, 2014; Maria et al., 2020).

MI assists marketing managers in establishing and managing long-term client relationships, thereby increasing consumer satisfaction, loyalty, retention, and positive word-of-mouth (Carson et al., 2020; Faryabi, Moradi, Yasrebdoost, & Moghadam, 2013; Vishnoi et al., 2019).

A company's competitive advantage relies heavily on the efficient adoption of MI. MI aids a company's ability to contend with other companies by providing it with pertinent information about its rivals. This allows a company to anticipate the responses of its competitors and plan its next strategic moves (Carson et al., 2020; Haripriya, 2020; Inha & Bohlin, 2018; Maria et al., 2020; Noviyanti et al., 2020; Vishnoi & Bagga, 2020). MI contributes to the enhancement of an organization's performance by increasing sales, maximizing profitability, and expanding market share (Ismaeel & Alzubi, 2020; Kamau & Njuguna, 2020; Nadeem & Jaffri, 2005; Öztürk et al., 2012).

From the foregoing, and based on the fact that current study covers the Egyptian banking sector, the following question emerges:

Is there an impact of dimensions of marketing intelligence on banks profitability in the Egyptian business environment?

2.3. Bank Profitability

The financial sector is the most essential component of a country's financial system. The viability of banks is highly dependent on their financial performance, which reveals either their resiliency or their fragility. Profitability is used to evaluate the financial performance of a bank. Given that healthy and sustainable profitability is one of the conditions for maintaining the stability of the banking system, this study concentrates on bank profitability indicators among the diverse measurable performance metrics of banks (Akbas, 2012). The profitability of a bank refers to its effectiveness in generating earnings (Lipunga, 2014). The profitability is defined as a bank's net income or revenues after taxes. Profitability of banks contributes to the nation's economic growth by creating more jobs and generating more tax revenue for the government. Additionally, profitability contributes to the income of investors via higher dividends, thereby enhancing the standard of living of the populace (Al-Taei & Al-Shakarchi, 2022; Asqar & Farhod, 2022; Nuhiu, Hoti, & Bektashi, 2017; Perisa, Kurnoga, & Sopta, 2017). Several previous studies have argued that there are numerous methods for measuring bank profitability. In addition, they indicated that financial ratios are the most prevalent method. Financial ratios assist bank management in analyzing and interpreting financial data and accounting information, providing managers with a comprehensive comprehension of the bank's financial situation and facilitating performance evaluation (Al-Taei & Al-Shakarchi, 2022; Asqar & Farhod, 2022; Hossain & Ahamed, 2015; San & Heng, 2013).

A study by Al-Homaidi et al. (2018) examined Indian commercial banks profitability determinants. This study utilized bank-specific variables, including bank size, asset quality, capital adequacy, liquidity, operational efficiency, leverage, deposits, asset management, and branch count. The Gross Domestic product (GDP), the interest rate, the inflation rate, and the exchange rate were also factors in determining it. The results demonstrated that bank size, branch count, asset management ratio, and leverage ratio have a positive impact on profitability. In the same context, Almaqtari, Al-Homaidi, Tabash, and Farhan (2019) demonstrated that the bank size, number of branches, asset management ratio, leverage ratio, and operational efficiency were bank-specific factors that affect profitability. While Subbarayan and Jothikumar (2017) questioned the impact of bank-specific, industry-specific, and macroeconomic variables on public sector banks' profitability. Results indicated that bank-specific variables (ratio of net interest income, reserves, and surplus) are important

profitability determinants for public sector banks. While Operating costs have a negative effect on profitability. The macroeconomic variable (inflation rate) has a positive impact on the profitability of institutions.

Al-Homaidi et al. (2020) found bank size, asset quality, asset management, liquidity, and net interest margin to be significant internal profitability determinants by testing profitability determinants. While capital sufficiency, deposits, operation efficiency, the inflation rate, and gross domestic product have negative effects on return on assets, gross domestic product has a positive effect. In addition, the results demonstrated that capital adequacy, bank size, operation efficiency, inflation rate, and gross domestic product all have a negative effect on ROE.

Rahman et al. (2020) examined the impact of bank-specific and macroeconomic profitability determinants on Pakistan's banking sector. The findings demonstrated that sufficient capital has a positive influence on profitability. But according to Almaqtari et al. (2022), the impact of country-level corporate governance on the profitability of Indian institutions was investigated. The findings demonstrated that corporate governance at the national level has a substantial effect on profitability. Governance at the national level had a positive impact on the profitability of private banks, which was greater than the effect on public banks. It was discovered that demonetization negatively affected the profitability of banks.

There are a variety of financial ratios that can be used to evaluate a bank's profitability and performance. Return on equity (ROE) and return on assets (ROA) are the two profitability indicators highlighted in this and previous studies. ROE and ROA are the most frequently used profitability indicators for banks. According to Wagdi and Salman (2022), the profitability of Egyptian institutions is influenced by numerous variables. These variables are categorized as bank-related variables, industry-related variables, and macroeconomic variables. According to the current research, which focuses on the Egyptian banking sector, this indicates that industry-related and macroeconomic factors do not influence banks differently, so the study poses the following question:

What are the bank-related factors affecting the profitability of Egyptian banks?

3. Research Design and Methodology

3.1. Study Outline

With increasing competition and changing market dynamics, banks are recognizing the significance of leveraging marketing intelligence to gain a competitive edge. By employing advanced data analytics techniques, banks can better understand customer needs, preferences, and market trends, leading to improved strategic decision-making and ultimately enhanced profitability. This study examines the impact of marketing intelligence adoption on banking profitability, considering the specific context of the Egyptian banking industry. According to Vishnoi et al. (2019), marketing expertise will include intelligence regarding competitors, consumers, products, technologies, and the marketing environment.

Marketing intelligence is vital to the banking industry because it enables banks to collect and analyze data to obtain valuable insights into customer behaviour, market trends, and competitive dynamics. It is the process of gathering, integrating, analyzing, and disseminating information to facilitate effective decision-making. By leveraging marketing intelligence, banks can better understand customer needs and preferences, tailor their product and service offerings, and design targeted marketing campaigns. This supports the profitability of Egyptian banks. Nevertheless, wide ranges of factor affect an institution's profitability. These variables are classified as bank-related, industry-related, and macroeconomic (Wagdi & Salman, 2022).

Returns on assets and returns on equity are used to estimate the bank's profitability using two measures in this study (Al-Homaidi et al., 2020; Al-Homaidi et al., 2018; Almaqtari et al., 2019; Almaqtari et al., 2022; Desai, 2021; Rahman et al., 2020; Subbarayan & Jothikumar, 2017). Consequently, the study provides a separate model for each cross-sectional measure examined. This underutilized bank-specific variables, such as bank size, capital adequacy, and leverage, as control variables (Al-Homaidi et al., 2018; Almaqtari et al., 2019; Wagdi & Salman, 2022).

$$ROA_i = \beta_0 + \beta_1 COM_i + \beta_2 CUS_i + \beta_3 PRO_i + \beta_4 TEC_i + \beta_5 ENV_i + \beta_6 DEP_i + \beta_7 ADE_i + \beta_8 Lev_i + \varepsilon_i \quad (1)$$

$$ROE_i = \beta_0 + \beta_1 COM_i + \beta_2 CUS_i + \beta_3 PRO_i + \beta_4 TEC_i + \beta_5 ENV_i + \beta_6 DEP_i + \beta_7 ADE_i + \beta_8 Lev_i + \varepsilon_i (2)$$

Three hypotheses were examined in the study, and Equations 1 and 2 were developed to test these hypotheses. (i) is the bank's representative. ROA represents the dependent variable return on assets in Equation 1, while ROE represents the dependent variable return on equity in Equation 2. On the one hand, competitor intelligence: COMi, customer intelligence: CUSi, product intelligence: PROi, technology intelligence: TECi, and marketing environment intelligence: ENVi are used as proxies for the marketing intelligence of a bank, whereas β0 is a constant. On the other hand; Bank deposits are DEP, capital adequacy ratio are ADE, and financial leverage: Lev. The study variables can be shown in the Figure 2.

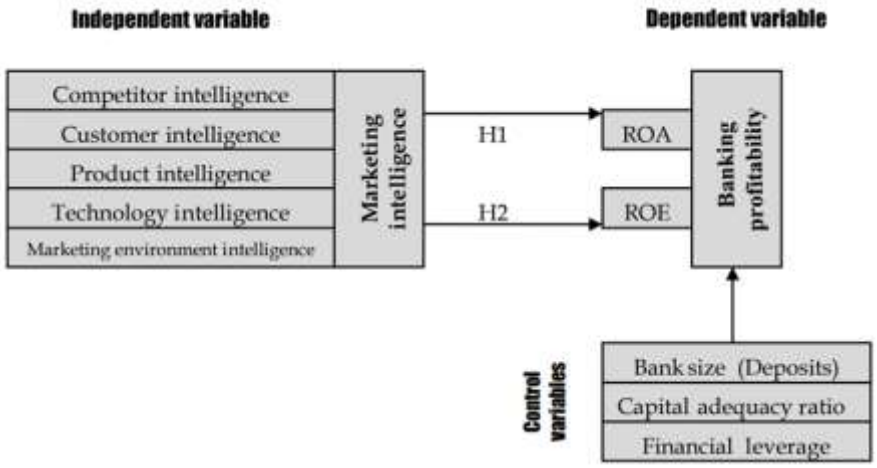

Figure 2. Study outline.

Based on the literature review and the study outline, the following hypotheses can be formulated:
H_{10} There isn't a significant impact of marketing intelligence on return on assets of Egyptian banks.
H_{20} There isn't a significant impact of marketing intelligence on the return on equity of Egyptian banks.
Thus, the study includes the main hypothesis as follows:
H_0 There isn't a significant impact of marketing intelligence on the profitability of Egyptian banks.

3.2. Measures

The questionnaire was used to measure the independent variable (marketing intelligence) in this study. Twelve Egyptian banks that have adopted MI were used. The survey was distributed to employees in information technology (IT) departments. The questionnaire consists of closed-form questions measured on a five-point Likert scale. Dimensions of MI were included based on literature review. Prior research has shown that MI consists of five essential variables: customers, product or service, marketing environment analysis, competitive hazards, and technology. The original questionnaire was composed in English before being translated into Arabic.

Variable dependence is separated into return on equity (ROE) and return on assets (ROA). The ROE and ROA were calculated for the period (2012–2021); comparing the ROE and ROA for a five-year period prior to the implementation of MI (2012-2016), to their equivalents for a five-year period following the adoption of MI (2017-2021) for each of the 12 banks. Consequently, the incorporation of MI has a discernible effect on the profitability indicators of these 12 institutions.

The study investigates the impact of the independent variable on the dependent variable through integration between the qualitative analysis of marketing intelligence according to the survey and the profitability indicators of the same bank according to the quantitative analysis.

3.3. The Sample and Response Rate

The twelve Egyptian banks are numbered rather than named to safeguard bank anonymity. This study focuses on IT professionals in the IT department because of their deep understanding of MI adoption. Each of these 12 banks has a 40-person IT department. The research population is 480; hence, the minimal sample size is 224. Simple random sampling was best for this investigation. 320 IT workers at this bank using MI, received the questionnaire. Only 240 of 320 surveys were gathered since 80 were mostly inadequate. Thus, the sample size for each bank is 20 participants. The remaining 240 usable surveys had a good 75% response rate for MI adoption research.

4. Data Analysis and Results

4.1. Validity and Reliability

A variety of objects were chosen and honed to express the variables included in this study, and an English questionnaire was developed before being translated into Arabic. In conclusion, a preliminary study was conducted by sending a questionnaire to 25 Egyptian bank IT personnel. In response to their comments and suggestions, a number of questions and items were eliminated and modified to ensure that the questionnaire accurately reflected the investigated concepts and to enhance its lucidity and relevance.

Table 1 shows Cronbach's alpha, which is computed to evaluate the internal consistency of the five variables of MI, which served as the independent variable in this study, in order to evaluate the questionnaire's reliability. The range of alpha values is from 0.526 to 0.657, and the P-value is less than 0.001. Consequently, the reliability of the study's independent variables is satisfactory.

Table 1. Cronbach'sαcoefficients.

Variable	Cronbach's alpha	P-value
Customers	0.526	<0.001
Product/Service	0.608	<0.001
Analyzing the marketing environment	0.612	<0.001
Competitive risks	0.645	<0.001
Information technology	0.657	<0.001

4.2. Descriptive Statistics of the Independent Variables

Adoption of MI is the independent variable of the study, which includes five independent variables: consumers, products, marketing environment analysis, competitive risks, and information technology. According to Table 2, the mean values for all variables range between 3.67 and 4.89, indicating that the majority of respondents are inclined to agree or strongly agree with statements measuring these variables. Information technology has the highest agreement and lowest variation (S.D. = 0.12), as shown in Table 2. Competitive risks are the variable with the least agreement and the greatest variation (S.D. = 0.35).

Table 2. Descriptive statistics of the independent variables.

Variable	N	Minimum	Maximum	Mean	Std. deviation
Customers	214	3.704	4.801	4.3766	0.24034
Product/Service	214	4.202	5.004	4.5234	0.14410
Analyzing the marketing environment	214	3.731	4.734	4.2260	0.19415
Competitive risks	214	3.000	4.832	3.6721	0.35434
Information technology	214	4.603	4.998	4.8925	0.12349

In addition, a comparison of the twelve Egyptian banks was conducted in order to implement MI. The comparison is based on customers, product or service, marketing environment analysis, competitive risk, and information technology. In Figure 3, the study depicts a comparison between the twelve Egyptian banks that have adopted MI.

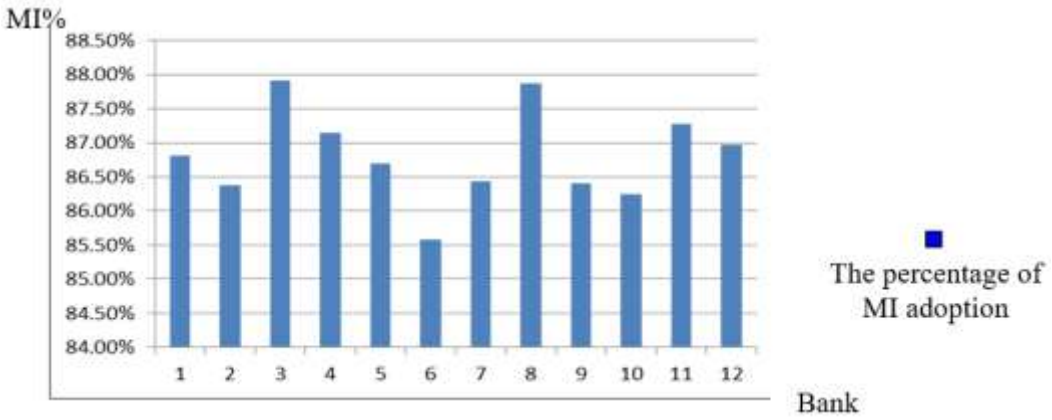

Figure 3. A comparison between 12 Egyptian banks in terms of the efficiency of adopting MI.

Table 3. Comparison among 12 banks based on the 5 variables of MI.

Bank number	Customers	Product or service	Analyzing the marketing environment	Competitive risks	Information technology	Total
1	83.47%	88.84%	85.26%	79.65%	96.84%	86.81%
2	85.64%	90.18%	85.45%	75.15%	95.45%	86.38%
3	84.90%	90.60%	87.64%	78.67%	97.80%	87.92%
4	87.22%	89.56%	85.56%	75.37%	98.00%	87.14%
5	86.90%	91.80%	84.64%	72.50%	97.60%	86.69%
6	89.05%	91.24%	79.65%	70.79%	97.14%	85.58%
7	88.82%	90.82%	84.17%	68.63%	99.76%	86.44%
8	89.44%	90.22%	82.93%	79.44%	97.33%	87.87%
9	88.96%	90.56%	85.82%	67.47%	99.20%	86.40%
10	88.91%	90.18%	83.80%	68.33%	100.00%	86.25%
11	90.20%	90.60%	87.00%	71.33%	97.20%	87.27%
12	88.78%	92.67%	86.36%	69.26%	97.78%	86.97%
Total	87.70%	90.60%	84.86%	72.89%	97.85%	86.78%

The results show that the twelve Egyptian banks have adopted the MI. However, Bank 3, Bank 8, Bank 11, and Bank 4 rank first, indicating that these banks have incorporated the MI in the most efficient manner. Banks 12, 1, 5, 7, 9, 2, and 10 have adapted the MI less effectively than the first group of banks, as their positions on the list indicate. Due to its poor ranking, Bank 6 has implemented the MI in the least effective way. Table 3 also displays the distinctions between the five most important variables in each bank's adoption of MI. Following customers' (87.70%), marketing environment analysis (84.86%), competitive risks (71.89%), and (97.85%), the most important factor in the adoption of MI is product or service (90.60%). Based on the information technology variable, Table 3's results indicate that Bank 10 has the greatest capability to utilize information technology (100%). However, the worst bank is Bank 2 (95.45%). However, based on variable products and services, Bank 12 (92.67%) is the best bank offering products and services. Nonetheless, Bank 1 offers the poorest product or service (88.84%). In addition, Bank 11 (90.20%) is the most effective bank in terms of client service based on the customer variable. However, the worst bank is Bank 1 (83.47%). Moreover, a review of the variable marketing environment reveals that Bank 3 (87.64%) is the best bank. However, the sixth-ranked bank is the worst (79.65%). According to the competitive risks variable, Bank 1 (79.65%) is the bank that avoids competitive risks the best. Bank 10 (68.33%) is the worst bank.

4.3. Descriptive Statistics of the Dependent Variable

This study's dependent variable is the profitability indicators of twelve institutions that have implemented MI. This study employs two metrics of profitability: return on equity (ROE) and return on assets (ROA).

As shown in Table 4, the results disclose that all dependent variables have minor data distraction because their standard deviation is less than the mean and their coefficient variation is less than 100%. This is true whether MI was used before or after it was put in place. Before the implementation of MI, the first profitability indicator (ROE) had a mean value of 0.015983, as shown in Table 4. After the implementation of MI, the average ROE increased to 0.030067, representing an increase of 88%. Similarly, the mean values of the second profitability indicator (ROA) increased by 88% from 0.1538 before the implementation of MI to 0.2889 after its adoption. In addition, the mean values of ROE and ROA are quite near their respective median values, indicating a symmetrical distribution for these variables. In addition to values for Skewness that indicate emergent results and close coefficient values, there are also values for Skewness that indicate coefficient values that are exceptionally close to zero. In addition, the minimum and maximum values of ROE and ROA are positive, indicating that all ratios represent profitability ratios, regardless of whether they were calculated before or after the implementation of MI. In addition, Table 4 reveals that all Jarque-Bera statistical values are less than the tabulated chi-square (with a value of 5.99), indicating that all dependent variables exhibit normal distribution. This outcome conforms to the sig values (p-value > 5%).

Table 4. Descriptive statistics of the dependent variables and goodness of fit for normal distribution.

Statistical parameters	Before		After	
	ROE	**ROA**	**ROE**	**ROA**
Mean	0.015	0.1538	0.030	0.289
Median	0.015	0.1561	0.03	0.283
Maximum	0.028	0.221	0.047	0.399
Minimum	0.007	0.049	0.016	0.185
Std. dev.	0.006	0.0346	0.006	0.059
Coef. var.	38.215	22.495	20.810	20.369
Skewness	0.216	-0.498	0.073	0.002
Kurtosis	1.771	3.370	3.032	2.041
Jarque-Bera	4.246	2.823	0.0561	2.303
Probability	0.120	0.246	0.972	0.316

In addition, the normal (P–P) and (Q–Q) graphs demonstrate that all data points are close to or on the straight reference line, indicating that both ROE and ROA have a normal distribution. In addition, Figures 4, 5, 6, and 7 depict the influence of MI adoption on ROE and ROA for 12 Egyptian institutions that have adopted MI.

Figures 4 and 5 depict the impact of MI on ROE, while Figures 6 and 7 depict the impact of MI on ROA. Twelve Egyptian banks' ROE and ROA for the five-year period preceding the implementation of MI (2012-2016) were compared to their respective figures for the five-year period after the adoption of MI (2017-2021). All figures demonstrate the high efficacy of implementing MI, and its effect on the increased ROE and ROA of the 12 institutions that adopted MI can be observed with clarity.

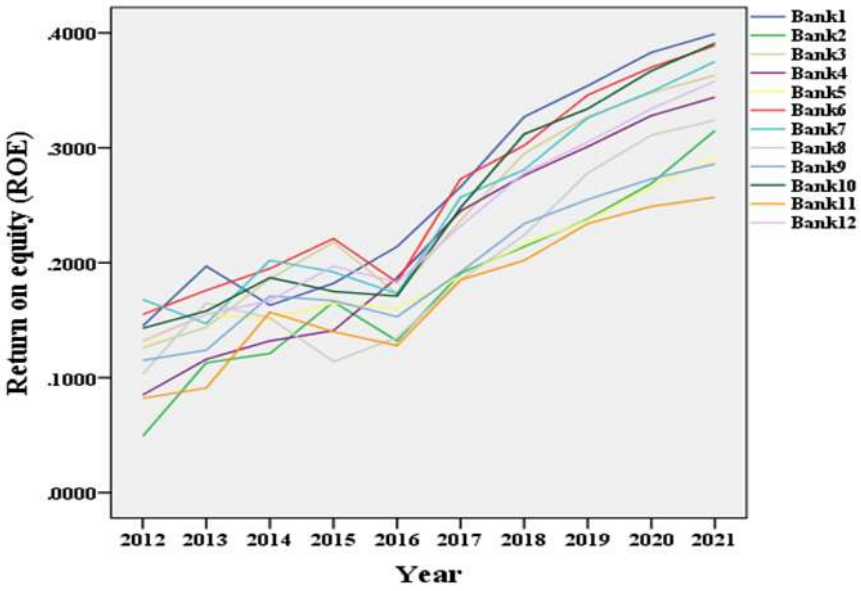

Figure 4. The effect of MI adoption on ROE.

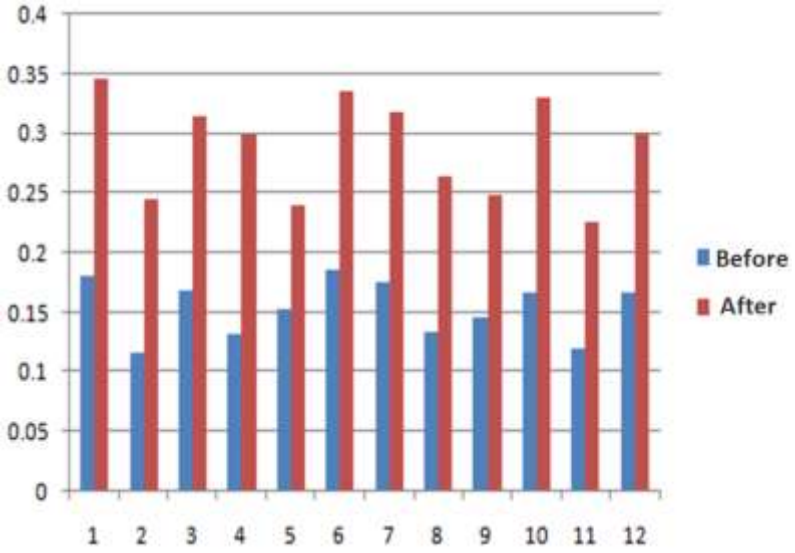

Figure 5. The effect of MI adoption on ROE.

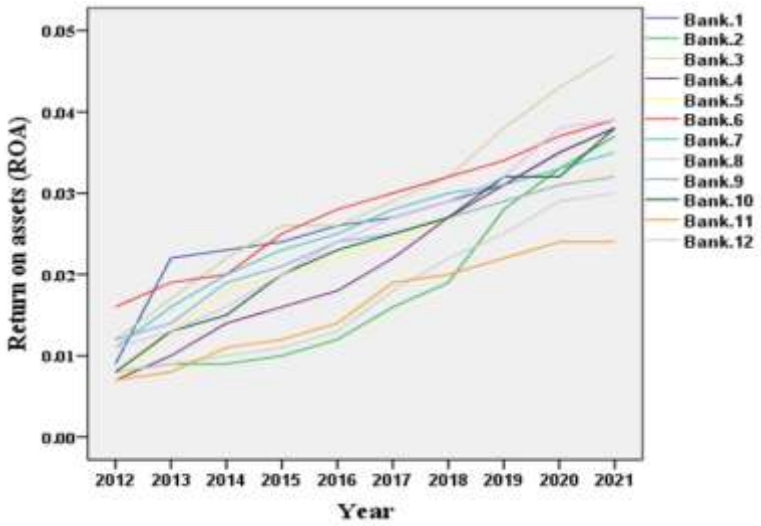

Figure 6. The effect of MI adoption on ROA.

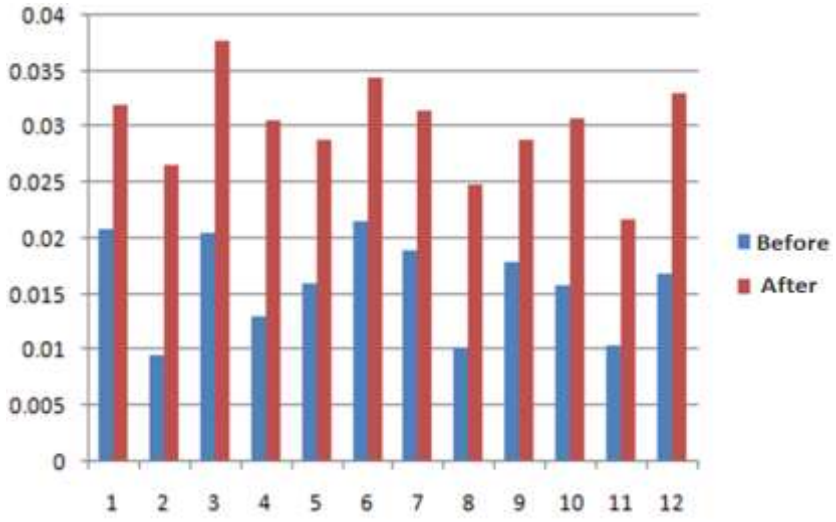

Figure 7. The effect of MI adoption on ROA.

4.4. Cross-Sectional Analysis

The study investigates the impact of marketing intelligence on the profitability of Egyptian banks. This investigation was done through the integration of quantitative analysis with qualitative analysis, or, in other words, the opinions of the participants in the questionnaire were measured about the extent to which marketing intelligence was adopted, measured through five main variables against the profitability of the bank on basis averaged over the post-adoption period. Twenty participants utilized a cross-sectional analysis of data for each bank's profitability indicators, either through the rate of return on assets or the rate of return on equity.

4.4.1. Examining the Impact of Marketing Intelligence on Return on Assets of Banks

The study tested this hypothesis based on the five independent variables (dimensions of marketing intelligence) and the dependent variable, which is the return on the bank's assets, in a cross-sectional analysis of the bank's data. The following table shows the outputs of the inferential analysis.

Table 5. Inferential analysis of the first hypothesis.

Model 1: Fixed-effects, using 240 observations
Included 12 cross-sectional units
Observations = 20
Dependent variable: ROA.

	Coefficient	Std. error	t-ratio	p-value	Sig.
Const	0.123	0.038	3.194	0.0016	***
COM	0.317	0.020	15.71	<0.0001	***
CUS	0.009	0.036	0.2743	0.7841	
PRO	0.118	0.010	11.26	<0.0001	***
TEC	0.026	0.005	4.543	<0.0001	***
ENV	0.330	0.029	11.48	<0.0001	***
DEP	0.002	0.001	8.058	<0.0001	***
ADE	−0.002	0.001	−8.861	<0.0001	***
LEV	−0.004	0.002	−1.922	0.0559	*
Mean dependent var	0.030		S.D. dependent var	0.004	
Sum squared resid	0.001		S.E. of regression	0.002	
LSDV R-squared	0.786		Within R-squared	0.781	
LSDV F(19, 220)	42.667		P-value(F)	5.97e-63	
Log-likelihood	1168.119		Akaike criterion	−2296.237	
Schwarz criterion	−2226.624		Hannan-Quinn	−2268.188	
Rho	0.153		Durbin-Watson	1.649093	

Note: ***P-value ≤ 1%.
*P-value ≤10%.
Joint test on named regressors -Test statistic: F(8, 220) = 98.0266
with p-value = P(F(8, 220) > 98.0266) = 3.28295e-068.
Test for differing group intercepts - Null hypothesis: The groups have a common intercept.
Test statistic: F(11, 220) = 0.614712.
with p-value = P(F(11, 220) > 0.614712) = 0.815416.

This model was significant at the 0.01 level, as shown in Table 5. When bank size, capital adequacy, and leverage served as control variables, competitor intelligence, product intelligence, technology intelligence, and marketing environment intelligence were all factors that influenced return on assets. However, consumer intelligence has no effect on the equity return of Egyptian banks.

4.4.2. Examining the Impact of Marketing Intelligence on Return on Equity of Banks

Cross-sectional analysis of the bank's data was used to test this hypothesis based on the five independent variables (dimensions of marketing intelligence) and the dependent variable, which is the return on the bank's equity. The following table shows the outputs of the inferential analysis.

Table 6. Inferential analysis of the second hypothesis.

Model 2: Fixed-effects, using 240 observations
Included 12 cross-sectional units
Observations = 20
Dependent variable: ROE

	Coefficient	Std. error	T-ratio	P-value	Sig.
Const	2.429	0.341	7.108	<0.0001	***
COM	2.653	0.180	14.82	<0.0001	***
CUS	1.972	0.323	6.100	<0.0001	***
PRO	1.475	0.099	15.72	<0.0001	***
TEC	0.305	0.046	6.686	<0.0001	***
ENV	3.616	0.256	14.13	<0.0001	***
DEP	0.025	0.003	9.709	<0.0001	***
ADE	−0.026	0.003	−11.47	<0.0001	***
LEV	−0.096	0.0198	−4.824	<0.0001	***
Mean dependent var	0.287	S.D. dependent var		0.041	
Sum squared resid	0.066	S.E. of regression		0.018	
LSDV R-squared	0.831	Within R-squared		0.827	
LSDV F(19, 220)	56.834	P-value(F)		7.78e-74	
Log-likelihood	643.495	Akaike criterion		−1246.991	
Schwarz criterion	−1177.378	Hannan-Quinn		−1218.942	
Rho	0.180	Durbin-Watson		1.462	

Note: ***P-value ≤ 1%.
Joint test on named regressors - Test statistic: F(8, 220) = 130.202 with p-value = P(F(8, 220) > 130.202) = 4.86128e-079.
Test for differing group intercepts - Null hypothesis: The groups have a common intercept.
Test statistic: F(11, 220) = 0.536738 with p-value = P(F(11, 220) > 0.536738) = 0.877034.

As shown in Table 6, this model was significant at the 0.001 level. Using bank size, adequate capital, and leverage as control variables, competitor intelligence, customer intelligence, product intelligence, technology intelligence, and marketing environment intelligence affected 82.56 percent of return on equity.

5. Discussion

The present study contributes to the existing literature on MI adoption and its effect on increasing the profitability indicators of MI-adopting institutions by exploring a new domain and filling a knowledge vacuum. In this context, the purpose of this study is to investigate the impact of MI adoption on the enhancement of profitability indicators at twelve institutions. The study revealed that the adoption of MI had a significant positive effect on the profitability indicators of these banks.

Therefore, the study rejects the null hypothesis and adopts the alternative hypothesis stated below:
There is a significant impact of marketing intelligence on the profitability of Egyptian banks.

6. Conclusion

Currently, the Egyptian banking sector confronts intense competition on the market for financial services. Due to its impact on enhancing operational efficiency and effectiveness, obtaining a competitive advantage, increasing sales revenues, maximizing profitability, and achieving market growth and survival, the vast majority of banks are strongly encouraged to adopt MI.

The results demonstrated that the adoption of MI enhanced the profitability indicators (ROE and ROA) of the banks significantly. This result is generally consistent with the findings of previous research on the adoption of MI in various nations and contexts.

This research contributes to both the theory and practice of MI adoption. Regarding knowledge, research on the implementation of MI in the service sector, particularly in the Egyptian context, has been limited. Therefore, the present study contributes to filling this research gap regarding Egyptian institutions' adoption

of MI. Marketing managers must apply theory and gain a deeper comprehension of the MI adoption procedure.

In this context, the study offers marketing managers guidelines for concentrating on the five primary variables that comprise and support the adoption of MI.

7. Limitations and Implications for Future Research

As with the overwhelming majority of social science research, this study's underlying research has several limitations. First, data collection relied on self-reported information, which may induce bias. Second, this research was conducted solely in Egypt. In addition, the study concentrates on a specific service sector. The third objective of this study is to investigate the impact of MI adoption on the improvement of only two bank profitability indicators (ROE and ROA). Consequently, the generalizability of findings requires further investigation. To increase the generalizability of the study's findings, additional research must be conducted on numerous other dimensions, such as bank performance, market share, and competitive advantage.

This study's findings have numerous managerial implications for practice. For the successful adoption of MI, marketing managers must comprehend the fundamental requirements for adoption. The suggested managerial implications are as follows: First, the senior management's commitment, support, and conviction regarding the significance of implementing MI within banks. Second, utilising the most current information technology, this is regarded as the foundation of MI adoption. As an expensive long-term investment endeavor, the adoption of MI requires a solid financial position. The fourth priority is to regularly conduct effective training programs for all bank employees, specifically IT personnel. Providing talent members with rewards and incentives to motivate and encourage their dedicated efforts is the fifth step. Sixth, the development of cross-functional teams those are sufficiently trained, experienced, competent, and credible to employ MI effectively.

References

Ade, L. P., Akanbi, A. M., & Ismail, A. (2017). The influence of marketing intelligence on business competitive advantage a study of diamond bank PLC. *Journal of Competitiveness, 9*(1), 51-71. https://doi.org/10.7441/joc.2017.01.04

Akbas, H. E. (2012). Determinants of bank profitability: An investigation on Turkish banking sector. *OCAK*, 103-110.

Al-Harbi, A. (2019). The determinants of conventional banks profitability in developing and underdeveloped OIC countries. *Journal of Economics, Finance and Administrative Science, 24*(47), 4-28. https://doi.org/10.1108/jefas-05-2018-0043

AL-Hashem, A. O. (2020). Mediation impact of marketing intelligence in the relationship between technology based knowledge sharing and product innovation. *TEM Journal, 9*(2), 688-693. https://doi.org/10.18421/tem92-35

Al-Homaidi, E. A., Almaqtari, F. A., Yahya, A. T., & Khaled, A. S. (2020). Internal and external determinants of listed commercial banks' profitability in India: Dynamic GMM approach. *International Journal of Monetary Economics and Finance, 13*(1), 34-67. https://doi.org/10.1504/ijmef.2020.10025082

Al-Homaidi, E. A., Tabash, M. I., Farhan, N. H., & Almaqtari, F. A. (2018). Bank-specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach. *Cogent Economics & Finance, 6*(1), 1548072. https://doi.org/10.1080/23322039.2018.1548072

Al-Taei, A. M. T., & Al-Shakarchi, B. T. M. (2022). Profitability indicators and their impact on market value – a study of a sample of commercial banks listed in the Irag stock exchange for the period 2004-2019. *Journal Of Tanmiyat Al-Rafidain (TANRA), 41*(133), 288-308.

Al-Weshah, G. A. (2017). Marketing intelligence and customer relationships: Empirical evidence from Jordanian banks. *Journal of Marketing Analytics, 5*(3-4), 141-152. https://doi.org/10.1057/s41270-017-0021-7

Almaqtari, F. A., Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (2019). The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics, 24*(1), 168-185. https://doi.org/10.1002/ijfe.1655

Almaqtari, F. A., Hashid, A., Farhan, N. H., Tabash, M. I., & Al-ahdal, W. M. (2022). An empirical examination of the impact of country-level corporate governance on profitability of Indian banks. *International Journal of Finance & Economics, 27*(2), 1912-1932. https://doi.org/10.1002/ijfe.2250

Asqar, C., & Farhod, X. (2022). The profitability indicators of commercial banks in the Republic of Uzbekistan and their modern state. *World Economics and Finance Bulletin, 8*, 141-148.

Carson, G., O'Connor, C., & Simmons, G. (2020). The crucial role of market intelligence in the development of small business marketing capabilities. *Journal of Small Business and Enterprise Development, 27*(5), 797-816. https://doi.org/10.1108/jsbed-12-2019-0394

Desai, R. (2021). Impact of priority sector lending on financial profitability: Segment wise panel data analysis of Indian banks. *Management & Accounting Review, 20*(1), 19-38. https://doi.org/10.24191/mar.v20i01-02

Faryabi, M., Moradi, R. M., Yasrebdoost, H., & Moghadam, S. S. (2013). The effect of marketing intelligence on customers' loyalty. *Vidyabharati International Interdisciplinary Research Journal, 2*(2), 34-45.

Haripriya, M. S. (2020). The role of culture code and IOT technology in successful implementation of marketing intelligence system. *International Journal of Current Engineering and Scientific Research, 7*(11), 68-81.

Hossain, M. S., & Ahamed, F. (2015). Determinants of bank profitability: A study on the banking sector of Bangladesh. *Journal of Finance and Banking, 13*(1), 43-57. https://doi.org/10.21511/bbs.13(1).2018.05

Hussein, E. A. (2020). Marketing intelligence system and its impact in determining strategies of competitive positions. *Utopía y Praxis Latinoamericana, 25*(1), 530-544.

Igbaekemen, G. O. (2014). Marketing intelligence as a strategic tool for competitive edge. *British Journal of Marketing Studies*, *2*(5), 17-34.
Inha, E., & Bohlin, S. (2018). Marketing intelligence: A literature review, school of business and engineering. In (pp. 1-18). Sweden: Halmstad University.
Ismaeel, B., & Alzubi, M. (2020). The impact of marketing intelligence on the market share of the Jordanian commercial banks. *Suntext Review of Economics and Business*, *1*(3), 1-8. https://doi.org/10.51737/2766-4775.2020.016
Johns, P., & Van Doren, D. C. (2010). Competitive intelligence in service marketing: A new approach with practical application. *Marketing Intelligence & Planning*, *28*(5), 551-570. https://doi.org/10.1108/02634501011066492
Kamau, E. W., & Njuguna, P. M. (2020). Effect of marketing intelligence on sales performance of commercial banks in Kenya. *The International Journal of Business Management and Technology*, *4*(5), 20-32.
Kotler, P., & Armstrong, G. (2013). *Principles of marketing*. Edinburgh Gate: Pearson Education Limited.
Kumar, R. K. (2020). Marketing intelligence practices on consumer preferences by the influence of celebrity endorsement: A conceptual approach. *International Journal of Current Engineering and Scientific Research*, *7*(4), 83-93.
Lekhanya, L. M. (2014). Perceived marketing intelligence and marketing communications tools used by rural small, medium, and micro enterprise in South Africa. *Journal of Economics and Behavioral Studies*, *6*(12), 1004-1010. https://doi.org/10.22610/jebs.v6i12.556
Lipunga, A. M. (2014). Determinants of profitability of listed commercial banks in developing countries: Evidence from Malawi. *Research Journal of Finance and Accounting*, *5*(6), 41-51.
Maria, S., Pusriadi, T., & Darma, D. C. (2020). Marketing intelligence: Benefits and implementation of its business. *Problems of Management in the 21st Century*, *15*(2), 92-99. https://doi.org/10.33225/pmc/20.15.92
Moghaddam, R. S., Vazifeh, Z., & Okati, H. (2014). Survey of relation between organizational factors and marketing intelligence on Iran's Saderat Bank case study Saderat Bank in Zabol city. *World Journal of Environmental Biosciences*, *6*, 83-88.
Nadeem, M., & Jaffri, S. A. H. (2005). Application of business intelligence in banks Pakistan. 1-6. https://doi.org/10.48550/arXiv.cs/0406004
Noviyanti, L., Suryani, N. L., Arianto, N., & Asmalah, L. (2020). Marketing intelligence implementation for supply chain management of mix products that affect the purchasing decision on Citra Karisma, Yogyakarta. *International Journal of Supply Chain Management*, *9*(3), 1235-1242.
Nuhiu, A., Hoti, A., & Bektashi, M. (2017). Determinants of commercial banks profitability through analysis of financial performance indicators: Evidence from Kosovo. *Business: Theory and Practice*, *18*, 160-170. https://doi.org/10.3846/btp.2017.017
Öztürk, S., Okumuş, A., & Mutlu, F. (2012). Segmentation based on sources of marketing intelligence, marketing intelligence quotient and business characteristics in software industry. *İstanbul Üniversitesi İşletme Fakültesi Dergisi*, *41*(2), 227-240.
Perisa, A., Kurnoga, N., & Sopta, M. (2017). Multivariate analysis of profitability indicators for selected companies of croatian market. *UTMS Journal of Economics*, *8*(3), 231-242.
Rahman, H.-U., Yousaf, M. W., & Tabassum, N. (2020). Bank-specific and macroeconomic determinants of profitability: A revisit of Pakistani banking sector under dynamic panel data approach. *International Journal of Financial Studies*, *8*(3), 1-19. https://doi.org/10.3390/ijfs8030042
Rao, S. K. (2020). The role of sales force engagement and level of competence on implementation of marketing intelligence system. *International Journal of Current Engineering and Scientific Research*, *7*(9), 126-136.
San, O. T., & Heng, T. B. (2013). Factors affecting the profitability of Malaysian commercial banks. *African Journal of Business Management*, *7*(8), 649-660.
Subbarayan, A., & Jothikumar, J. (2017). Bank specific, industry specific and macro economic determinants of profitability of public sector banks in India: 2010-2016-A panel data approach. *International Journal of Agricultural and Statistical Sciences*, *13*(2), 655-662.
Ubiparipovic, B., & Durkovic, E. (2011). Application of business intelligence in the banking industry. *Management Information Systems*, *6*(4), 23-30.
Vishnoi, S. K., & Bagga, T. (2020). *Marketing intelligence: Antecedents and consequences*. Paper presented at the 3rd Internationl Conference On Innovative Computing And Communication, (ICICC).
Vishnoi, S. K., Bagga, T., & Aggarwal, R. (2019). Marketing intelligence and firm performance: Reviewing the mediating impact of customer relationships, customer satisfaction and customer loyalty. *Indian Journal of Economics & Business*, *18*(2), 555-570.
Wagdi, O., & Salman, E. (2022). Determinants of a bank's performance in emerging markets: Evidence from Egypt. *Academy of Accounting and Financial Studies Journal*, *26*(S4), 1-21.
Yadav, A., & Meena, S. (2020). Role of market intelligence in agricultural marketing. *Journal of Pharmacognosy and Phytochemistry*, *9*(6S), 131-134.