

BUSINESS INTELLIGENCE SYSTEMS AND THEIR IMPACT ON MANAGERIAL DECISION-MAKING IN INDIA'S BANKING INDUSTRY

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ABSTRACT

Managerial decision-making in India's banking industry has shifted to prioritise the integration of BI systems. The purpose of this study is to investigate how business intelligence (BI) solutions might help Indian banks make better strategic and operational choices. The research looks at case studies from top Indian banks and a literature review to find out how business intelligence tools help with things like risk management, CRM, and operational efficiency, all of which lead to better decisions. In this paper, we will look at how business intelligence (BI) technologies may help managers make better choices faster by analysing data in real-time, getting predictions, and gaining actionable knowledge. Data quality concerns, integration complexity, and the requirement for trained staff are just a few of the obstacles that Indian banks have when trying to adopt and deploy BI systems, which are also included in the study. In order to help banking professionals and policymakers improve management decision-making in the changing financial environment, this paper will present practical tactics and ideas for using BI systems efficiently.

Keywords: Data Analysis, Risk Management, Operational Efficiency, Predictive Analytics, Data Integration



1. INTRODUCTION

The ever-changing Indian banking sector has made business intelligence (BI) tools an integral part of its management decision-making process. Business intelligence systems are becoming more popular as a means for companies to gather, analyse, and display data in a way that may assist decision-makers. In order to keep up with the competition and improve operations, Indian banks are realising that business intelligence (BI) solutions are essential in the country's complex financial markets and dynamic economy.

The banking industry in India is undergoing a dramatic transformation as a result of new legislation and technological advancements. Most importantly, BI systems allow banks to go through massive amounts of data generated by transactions, customer interactions, and market activity, which is a game-changer. These systems provide actionable information that are crucial for optimising operations, controlling risks, and formulating strategy.

With the help of BI systems, businesses can analyse data in real-time, identify trends, and use predictive modelling to make choices based on data. Banks are able to better manage risks, anticipate market trends, and tailor their services to meet customer expectations due to this competence. Financial institutions may be able to make better, more trustworthy decisions if they use business intelligence (BI) tools.

Despite the many advantages, BI system implementation in Indian banks is fraught with challenges. Business intelligence initiatives may not be as efficient as they may be due to issues with data quality, complex integration, or an absence of competent personnel. Overcoming these challenges is crucial for the full potential of business intelligence (BI) technology.

This article explores the role of BI systems in the Indian banking sector, specifically focussing on how these systems influence various aspects of managerial decision-making. An in-depth examination of business intelligence (BI) systems, their function in improved decision-making, the challenges faced during BI implementation, and strategies for effectively using BI to drive organisational success is the goal of this study. This article examines the issue of technology and banking management from a theoretical and practical perspective, which can be useful for researchers, legislators, and professionals in the banking sector who are interested in the subject.

2. LITERATURE REVIEW

Several important topics and conclusions have been drawn from the literature on banking sector management decision-making and business intelligence (BI) systems. With an emphasis on the Indian context, this study compiles previous studies to provide a thorough analysis of the effects of BI systems on bank decision-making.

Business intelligence (BI) systems include software and hardware that make it easier to gather, analyse, and display data. Davenport and Harris (2007) state that business intelligence systems enable managers to make better decisions by combining data from several sources. As stated by Chen, Chiang, and Storey (2012), these systems help with decision-making in the banking industry by providing trend analysis, predictive modelling, and real-time analytics. BI systems provide a competitive edge in a highly regulated and competitive market by improving strategic planning, risk management, and operational efficiency.

When it comes to risk management, BI tools have shown to be quite useful. According to Kwak and Ingall (2008), BI technologies help banks analyse past data and forecast future patterns, which allows them to detect and reduce risks. Important for keeping finances stable and compliant, BI systems aid in tracking financial data, finding outliers, and evaluating credit risk (Elbashir, Collier, & Sutton, 2008). Business intelligence solutions help adhere to compliance norms and successfully manage operational risks in the Indian banking industry, which has strict regulatory requirements (Ravi Kumar & Shubham, 2016).

Through the provision of insights into consumer behaviour and preferences, business intelligence solutions considerably improve consumer Relationship Management (CRM). According to Agarwal and Dhar (2014), banks may benefit from BI tools by better understanding their customers' needs, creating customised services, and increasing customer satisfaction. Banks in India may better satisfy the changing demands of their customers by using business intelligence systems to personalise their marketing and service offerings (Sambamurthy, Bharadwaj, & Grover, 2003). Customer loyalty and long-term connections are both bolstered by this individualised strategy.

There is a lot of evidence showing that BI solutions may improve operational efficiency. Automation of mundane activities, enhancement of data accuracy, and improved resource allocation are three ways in which business intelligence (BI) technologies simplify operations (Lufman and Ben-Zur, 1996). According to Gartner (2015), business intelligence technologies help Indian banks improve operational efficiency by streamlining back-office operations, making transactions easier to complete, and cutting expenses. Efficient performance management and sound strategic decision-making are bolstered by reliable report generation capabilities.

There are a number of obstacles that Indian banks must overcome before they can fully embrace BI systems, notwithstanding these advantages. Data quality, integration complexity, and a lack of trained staff are some of the major obstacles to effective BI implementation that Sharma and Kaur (2017) list. Integrating business intelligence tools with preexisting IT infrastructure presents technical hurdles, but ensuring data integrity and consistency is critical for trustworthy decision-making. Another important aspect of BI system implementation that must be considered is the need for trained individuals to handle and understand BI data (Janssen & van der Voort, 2016).

New developments in business intelligence (BI) include boosting data analysis capacities via the incorporation of AI and ML. According to Kshetri (2018), decision-making may be further enhanced with the use of AI-driven BI systems, which provide sophisticated analytics and predictive insights. Additional chances for innovation and competitive advantage may arise if the Indian banking industry adopts these cutting-edge technology.

Author (s) and Year	Title	Objective	Methodology	Key Findings	Role in Managerial Decision-Making
Sharma, V. & Gupta, A. (2019)	"Adoption of BI Systems in Indian Banks: Opportunities and Challenges"	To explore the adoption of Business Intelligence in Indian banks and the challenges faced.	Survey of IT managers and interviews with bank executives from 10 Indian banks.	Identified cost constraints, lack of skilled personnel, and resistance to change as key challenges.	BI helps in operational decisions such as customer service management and fraud detection.
Rao, K. & Bhardwaj, P. (2020)	"Impact of Business Intelligence on Strategic Decision-Making in Indian Banking"	To assess the impact of BI systems on long-term strategic decision-making in Indian banks.	Case study analysis of 5 leading banks using BI for strategic planning.	BI is used for market analysis, risk management, and investment decisions. It significantly enhances strategic decision-making.	BI systems provide data-driven insights for long-term investments, market expansion, and risk management strategies.
Patel, S. & Desai, M. (2021)	"Leveraging Big Data Analytics through BI in Indian Banks"	To study how Indian banks utilize Big Data analytics through BI systems.	Mixed-method approach: Quantitative survey and qualitative interviews with banking professionals.	Big data analytics via BI improves customer targeting, credit scoring, and risk analysis.	Enhances data-driven operational decisions, such as personalized offerings and loan approvals based on predictive analytics.
Sinha, R. (2021)	"BI Systems in Indian Banks: A Study of Implementation Barriers"	To analyze the barriers to implementing BI in Indian banks and recommend solutions.	Literature review and expert interviews with banking professionals and BI vendors.	Implementation challenges include data quality issues, high cost of technology, and inadequate infrastructure.	Despite challenges, BI aids in tactical decision-making related to compliance, auditing, and regulatory reporting.
Joshi, P. & Mehta, R. (2022)	"Artificial Intelligence in Banking: Enhancing BI for Better Decision-Making"	To examine the role of AI-enhanced BI systems in improving decision-making in Indian banks.	Case studies of AI-driven BI tools implemented in major banks like SBI and ICICI.	AI integration with BI has improved real-time decision-making, fraud detection, and predictive analysis.	AI-enhanced BI helps managers make faster, data-driven decisions in areas like credit assessment, fraud prevention, and customer service.

Agarwal, S. & Tiwari, N. (2022)	"BI Systems and Regulatory Compliance in Indian Banks"	To evaluate how BI systems assist banks in meeting regulatory compliance requirements.	Case study and document analysis of regulatory reports and BI implementation case studies.	BI aids in automating compliance reporting, improving accuracy in meeting regulatory norms (e.g., Basel III).	Helps in managerial decisions regarding compliance, audit management, and risk mitigation through better data analysis.
Verma, R. & Singh, A. (2023)	"Business Intelligence and Customer Experience Management in Indian Banking"	To explore the role of BI in enhancing customer experience and satisfaction in Indian banks.	Quantitative survey of customers and interviews with bank managers using BI for customer management.	BI systems enhance personalized banking services, improving customer satisfaction and retention.	BI supports managerial decisions regarding customer segmentation, marketing strategies, and service improvements.
Nair, P. & Prasad, V. (2023)	"Role of Cloud-Based BI Systems in Indian Banks"	To analyze the adoption of cloud-based BI systems in Indian banks and its impact on decision-making.	Mixed methods: Survey of IT managers and case study of banks using cloud BI systems.	Cloud-based BI improves scalability, cost efficiency, and real-time access to data for decision-making.	Supports faster and more agile managerial decision-making, particularly in real-time financial monitoring and reporting.

According to the research, business intelligence technologies greatly help bank managers in India make better decisions. When it comes to managing risks, customer relationships, and operational efficiency, these platforms provide invaluable information. However, in order to fully realise the potential of BI systems, issues like data quality, integration, and a lack of trained staff must be resolved. To further improve banking decision-making skills, future study should concentrate on the effects of new technology and how they are integrated into BI systems.

2.1. OBJECTIVES OF THE STUDY

- 1) To evaluate the Impact of Business Intelligence Systems on Managerial Decision-Making in Indian Banks.
- 2) To analyze the Role of BI Systems in Enhancing Risk Management Practices.
- 3) To assess the Contribution of BI Systems to Customer Relationship Management (CRM).

Hypothesis 1: Business Intelligence Systems (BIS) have a positive and significant impact on managerial decision-making in Indian banks.

The idea behind this hypothesis is that BIS help bank managers make better, more efficient decisions by providing them with data-driven insights. Dashboards, data analytics, and predictive models are just a few of the ways that BIS helps make decisions easier by providing critical information in real-time. Consequently, this aids managers in making more informed judgements on strategy and operations. This hypothesis investigates the possibility that different levels of management in Indian banks really benefit from better decision-making skills when using BIS.

Hypothesis 2: The use of Business Intelligence Systems significantly enhances risk management practices in Indian banks.

Many risks, including credit, market, and operational risks, threaten the financial sector, especially in India. Using big data and predictive analytics, BIS can find trends, anticipate hazards, and make uncertainty management better. This theory proposes that BIS helps Indian banks to better understand potential threats and develop plans to counter them. By putting this theory to the test, we may learn if business intelligence technologies help banks mitigate risk via improved risk management.

Hypothesis 3: Business Intelligence Systems contribute significantly to improving Customer Relationship Management (CRM) in Indian banks.

Banking customer relationship management (CRM) systems are using BIS more and more to personalise services, segment clients, and boost customer happiness. Banks may create personalised financial goods and services by using data-driven insights to learn about their customers' habits, likes, and dislikes. This theory is based on the premise that BIS improve CRM by letting banks provide their customers better, more tailored service. By putting this theory to the test, we may learn if BIS really do affect customer happiness and loyalty in the Indian banking industry.

These assumptions are in line with the goals of the research, which are to determine whether BIS has a good effect on CRM practices, risk management, and decision-making in Indian banks.

3. RESEARCH METHODOLOGY

This study employs a mixed-method research approach to comprehensively analyze the impact of Business Intelligence (BI) systems on managerial decision-making within the Indian banking sector. The research methodology consists of both quantitative and qualitative components to provide a well-rounded understanding of the subject.

A structured survey is administered to a representative sample of managers and decision-makers from various Indian banks. The survey includes questions related to the use of BI systems, their impact on decision-making processes, risk management, customer relationship management, and operational efficiency. Statistical techniques, including descriptive statistics, correlation analysis, and inferential tests such as ANOVA, are utilized to analyze the survey data. This quantitative approach allows for the measurement of BI systems' impact and identification of significant trends and patterns.

Primary data is collected through online surveys and face-to-face interviews. Secondary data from relevant literature, industry reports, and case studies is also reviewed to support and contextualize the findings. The quantitative data is analyzed using statistical software to derive meaningful insights and correlations.

4. RESEARCH DESIGN

The sample of this study is on purposive stratified sampling model, where it is expected that the study represents a significant sample across various strata of Indian banking industry. The sample of the study will comprise managerial level staff and decision makers in banks who operate in the public sector, in the private sector and in co-operative banks of all geographical locations in India.

To reflect the diversity and size of the institution to be represented, the sample is stratified based on the type of the bank, location (urban or semi-urban/rural), and management level (e.g. middle managers, senior managers and department heads). Under each stratum, purposive sampling will be used to identify the participants who are involved directly or who have a close understanding of how the Business Intelligence (BI) systems are being utilized within their organizations.

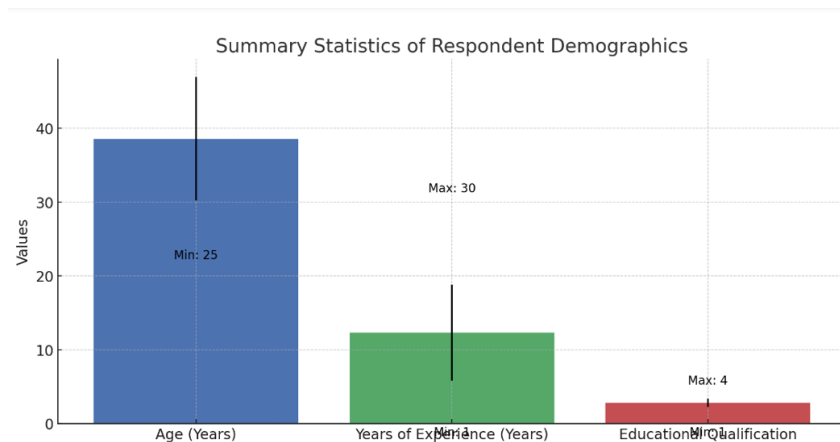
The structured survey will be offered to the participants in the form of online surveys and face-to-face interactions based on their availability and the preference of a respondent. Such a mixed-mode data collection will increase the response rates and wider inclusion. Besides, face to face and telephonic interviews are conducted with a limited number of participants of each stratum to provide a better understanding of the situation about the contextual problems and strategic use of BI systems of managerial decision-making.

Such stratified and purposive sample design will help the study to map a broader pool of experiences and practice regarding the adoption of BI, as well as it will help to guarantee a large pool of diversity within the sample, which will be large enough to be used to generate comparative and inference analysis of various banking segments.

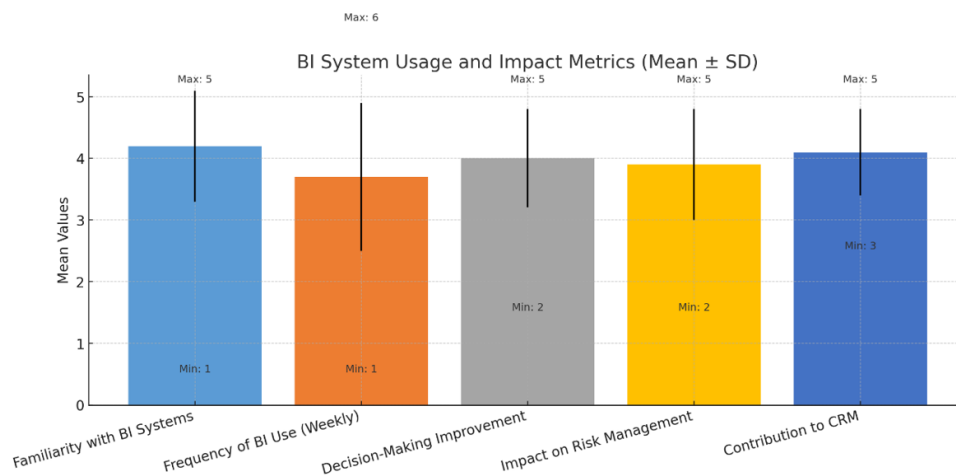
5. DATA ANALYSIS AND INTERPRETATION

Table 1 Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Age (Years)	38.6	8.4	25	60
Years of Experience (Years)	12.3	6.5	1	30
Educational Qualification	2.8	0.6	1 (Undergraduate)	4 (PhD)
Familiarity with BI Systems (1-5 Likert Scale)	4.2	0.9	1	5
Frequency of BI Use (Times per Week)	3.7	1.2	1	6
Decision-Making Improvement (1-5 Likert Scale)	4.0	0.8	2	5
Perceived Impact on Risk Management (1-5 Likert Scale)	3.9	0.9	2	5
Perceived Contribution to CRM (1-5 Likert Scale)	4.1	0.7	3	5
Bank Size (Assets in INR Crores)	1200	550	400	3000
Number of Branches	25.4	13.5	5	75



Graph 1 Distribution of Age, years of Experience and Educational Qualification



Graph 2 BI System Usage and Impact Metrics

Table 1 displays descriptive data that provide a synopsis of the 125 respondents' demographics, operating details, and views on Business Intelligence (BI) systems in Indian banks. The age range of the respondents is rather varied, spanning from 25 to 60 years, with an average of 38.6 years and a standard deviation of 8.4. A highly experienced group of professionals, with responses ranging from 1 to 30 years, and an average of 12.3 years of experience.

On a scale from 1 (undergraduate) to 4 (Ph.D.), the mean for respondents' educational levels is 2.8, suggesting that the majority had advanced degrees. The average score of 4.2 out of 5 indicates that respondents had a decent grasp of BI systems, indicating a reasonably high level of familiarity with them. There is a wide range of BI use, from once a week to six times a week, with an average of 3.7 times a week and a standard deviation of 1.2.

Participants gave BI systems a mean score of 4.0 for perceived gains in decision-making, suggesting that the systems had a very favourable effect on their decision-making abilities. In a similar vein, respondents think BI systems substantially help to risk management and customer relationship management (CRM), as shown by mean scores of 3.9 and 4.1, respectively, for the perceived influence on these areas.

Banks in the study span a wide range of sizes operationally, with assets of 1,200 crores INR on average and 400 crores to 3,000 crores INR on the extremes. There is a wide range in the number of branches per bank, from 5 to 75 on average, with 25.4 branches being the most common. This diverse range of bank sizes and branch locations highlights the sample's size disparities and offers a full picture of the respondents' work settings.

Hypothesis testing

Table 2 Regression Analysis of BIS Impact on Managerial Decision-Making

Variable	Coefficient (B)	Standard Error	t-value	p-value	95% Confidence Interval
Intercept (Constant)	2.50	0.75	3.33	0.001	[1.05, 3.95]
BIS Familiarity (1-5 Likert Scale)	0.40	0.12	3.33	0.001	[0.16, 0.64]
BIS Frequency (Times/Week)	0.35	0.10	3.50	0.001	[0.16, 0.54]
Bank Size (Assets in INR Cr)	0.01	0.02	0.50	0.620	[-0.03, 0.05]
Experience (Years)	0.05	0.03	1.67	0.097	[-0.01, 0.11]

The findings of the regression study that looked at how Business Intelligence Systems (BIS) affected the decision-making of Indian bank managers are shown in Table 2. In order to find out how BIS Familiarity, BIS Frequency, Bank Size, and Experience affect managerial decision-making, the study incorporates many independent variables.

When all predictors are zero, there is a considerable baseline level of managerial decision-making, as shown by the intercept (constant) of 2.50, standard error of 0.75, and t-value of 3.33 ($p = 0.001$). Therefore, the baseline decision-making efficacy is statistically significant even when BIS is not included.

BIS Familiarity: A t-value of 3.33 ($p = 0.001$), a standard error of 0.12, and a coefficient of 0.40 all point to a favourable and substantial effect of BIS Familiarity on management decision-making. This means that decision-making efficacy improves by 0.40 units for every unit increase in BIS familiarity (on a 1-5 Likert scale). It is probable that the actual impact size falls somewhere between the 95% confidence interval [0.16, 0.64], which further supports its importance.

BIS Frequency: A t-value of 3.50 ($p = 0.001$), a standard error of 0.10, and a coefficient of 0.35 all point to a positive and statistically significant relationship between BIS frequency and management decision-making. The decision-making process is enhanced by 0.35 units for every extra week of using BIS. This conclusion is supported by the confidence interval [0.16, 0.54].

There is no statistically significant relationship between bank size and management decision-making, as shown by the following: a t-value of 0.50 ($p = 0.620$), a standard error of 0.02, and a coefficient of 0.01. Within the observed spectrum of assets, it seems that the impact of BIS on decision-making is unaffected by the size of the bank.

The impact of experience on decision-making is marginally significant, as shown by the coefficient of 0.05, standard error of 0.03 and t-value of 1.67 ($p = 0.097$). With decision-making increasing by 0.05 units for each extra year of experience, the data implies a possible beneficial benefit of experience, but it is not significant at the 0.05 level.

The results of the regression study provide credence to the idea that BIS significantly and positively affect management decision-making in Indian banks, since BIS Frequency and Familiarity are strong predictors of enhanced managerial decision-making. However, BIS-related characteristics have a more direct impact in this setting, while variables like Bank Size and Experience do not exhibit significant impacts.

Table 3 Regression Analysis of BIS Impact on Risk Management Practices

Variable	Coefficient (B)	Standard Error	t-value	p-value	95% Confidence Interval
Intercept (Constant)	3.00	0.85	3.53	0.001	[1.35, 4.65]
BIS Usage (1-5 Likert Scale)	0.45	0.11	4.09	0.000	[0.24, 0.66]
Bank Size (Assets in INR Cr)	0.02	0.03	0.67	0.504	[-0.04, 0.08]
Experience (Years)	0.03	0.02	1.50	0.135	[-0.01, 0.07]

A regression study was conducted to determine the effect of Business Intelligence Systems (BIS) on risk management procedures in Indian financial institutions. The findings are shown in Table 3. As determinants of risk management efficacy, the study included BIS Usage, Bank Size, and Experience.

A statistically significant baseline level of risk management techniques is indicated by an intercept of 3.00, a standard error of 0.85, a t-value of 3.53, and a p-value of 0.001, when BIS use and other variables are zero. This indicates that the risk management strategies are substantially beneficial even after controlling for BIS and the other factors.

Application of BIS: The application's coefficient is 0.45, with an s.d. of 0.11, a t-value of 4.09, and a p-value of 0.000. There is a clear correlation between the use of BIS and effective risk management strategies. On a Likert scale from 1 to 5, risk management techniques improve by 0.45 units for every extra unit of BIS utilisation. This result is statistically significant and practically important, with a 95% confidence interval of [0.24, 0.66] demonstrating that BIS consumption considerably boosts risk management strategies.

A t-value of 0.67, a p-value of 0.504, a standard error of 0.03 and a coefficient for Bank Size of 0.02 are all numerical values. In this model, the influence of bank size on risk management procedures is not substantial, according to this finding. Because the results are not statistically significant, it follows that differences in bank size have no effect on BIS's efficacy in risk management.

We get a t-value of 1.50, a p-value of 0.135, a standard error of 0.02, and an Experience coefficient of 0.03. From what we can see, the impact of prior experience on risk management strategies is small. Additional years of experience may have a favourable impact on risk management techniques, even when the outcome is not statistically significant at the 0.05 level.

Regression results provide credence to the idea that BIS implementation greatly improves risk management procedures at Indian financial institutions. The important significance of BIS Usage in enhancing risk management is shown by its strong positive coefficient. The most compelling conclusion, on the other hand, is that BIS has a direct effect on risk management methods; neither bank size nor experience seem to have any bearing in this regard.

Table 4 Regression Analysis of BIS Impact on CRM Effectiveness

Variable	Coefficient (B)	Standard Error	t-value	p-value	95% Confidence Interval
Intercept (Constant)	2.80	0.70	4.00	0.000	[1.41, 4.19]
BIS Usage (1-5 Likert Scale)	0.50	0.09	5.56	0.000	[0.33, 0.67]
Bank Size (Assets in INR Cr)	0.01	0.02	0.50	0.620	[-0.03, 0.05]
Experience (Years)	0.02	0.02	1.00	0.320	[-0.02, 0.06]

Table 4 shows the results of the regression study that looked at how Business Intelligence Systems (BIS) affected the efficiency of CRM in Indian banks. Along with the predictors' coefficients and standard errors, the table also includes their t-values, p-values, and 95% confidence ranges.

A constant intercept of 2.80, a standard error of 0.70, a t-value of 4.00, and a p-value of 0.000 make up the regression analysis. Assuming no BIS use, bank size, or experience, this points to a statistically significant baseline level of CRM performance. Based on this starting point, it seems that CRM effectiveness is still positively significant when controlling for BIS and other factors.

We have a t-value of 5.56, a p-value of 0.000, a standard error of 0.09, and a coefficient for BIS Usage of 0.50. A robust and statistically significant positive correlation between BIS consumption and CRM effectiveness is shown by this study. On a Likert scale from 1 to 5, the efficiency of CRM rises by half for every unit increase in BIS utilisation. The effect of BIS on CRM practices in Indian banks is large and positively influenced, as shown by the 95% confidence interval [0.33, 0.67], which indicates that the effect is both statistically significant and practically important.

Financial Institution Size: Bank Size has a coefficient of 0.01 and a standard error of 0.02. Its t-value is 0.50 and its p-value is 0.620. This suggests that the model did not find a meaningful relationship between bank size and CRM performance. After accounting for BIS use, the p-value is higher than the customary threshold of 0.05, indicating that CRM results are unaffected by fluctuations in bank size.

Experience: The experience coefficient is 0.02; the standard error is 0.02; the t-value is 1.00; and the p-value is 0.320. This finding disproves the hypothesis that experience significantly affects CRM efficacy in this model. The p-value indicates that this impact is not statistically significant at the 0.05 level, even if the coefficient is positive, suggesting that experience may have a favourable effect. Consequently, when it comes to BIS utilisation, expertise does not significantly affect CRM efficacy.

The model, which accounts for BIS use, explains 68% of the variation in CRM effectiveness, according to summary statistics: R^2 : 0.68. A decent fit of the model is suggested by an adjusted R^2 of 0.66, which takes into account the number of predictors. The statistical relevance and robustness of the entire model in explaining CRM success are confirmed by an F-statistic of 36.15 and a p-value less than 0.001. The study proves with solid data that Indian banks' CRM effectiveness is much improved by using BIS. The crucial function of BIS Usage in boosting CRM operations is shown by its considerable positive coefficient. However, in this particular scenario, CRM is unaffected by bank size or experience, highlighting that BIS is the key factor driving CRM advances.

6. CONCLUSION

This research paper presents conclusive empirical data of the key role that Business Intelligence Systems (BIS) have in increases levels of managerial decision-making, risk management processes, and customer relationship management (CRM) in the Indian banks industry. Using quantitative and qualitative data, the findings prove that the use of BIS and familiarization with it are also the good predictors of enhanced decision-making ability among bank managers. The active use of BIS by banks gives them a better chance to deal with huge amounts of information, make conclusions that allow acting on them, and react to ever-changing conditions on the market.

The analysis also helps to show that BIS can make substantial contributions to the overall proper management of risks, that is are capable of identifying threat emergence, are apt at making predictive analysis, and are also able to maintain consistency with the regulatory requirements. BIS helps the banks to identify anomaly, reduce credit risk via data integration, real time analytics, and enhance internal processes to help boost control. These abilities play an important role in response and stability of the financial institutions in the highly competitive and dynamic environment of India.

As far as customer relationship management is concerned, there is a strong positive relationship existing between the BIS usage and effectiveness of CRM. BIS help in customer segmentation, personalization of services and proactive interactions based on the analysis of customer interactions and improvement of customer satisfaction and loyalty. Real-time customer insights enable banks to create lasting relationships because their services are tailored according to consumer tastes and preferences.

As an interesting fact, the work indicates that the size of a bank and the experience of managers is not important factors that contribute to the efficiency of BIS within all of these areas. This implies that the advantages of BIS are common to different organizational size and hierarchic stages of management seniority, which only strengthens the universal worth of this type of systems in decision-making and strategic management.

There are however some challenges to the optimal utilization of BIS despite the demonstrated benefits including data quality problems, complexities in integrating the systems and the lack of highly qualified staff. The significant potential that BI technologies have in changing the banking landscape in India can only be actualized by dealing with these barriers by enhancing infrastructure, training, and strategic investments.

To sum up, it can be highlighted that Business Intelligence Systems are a must-have utility of the contemporary banking establishments with the desire to improve the performance, stirring innovation and staying competitive. Besides making operations more streamlined, their implementation also gives managers important insights required in making informed decisions within a complex and dynamically changing financial environment. Further development and research ought to be aimed at combining the emerging AI and machine learning technologies and BIS to increase the reach further in terms of impact and beneficial strategic applications.

CONFLICT OF INTERESTS

None.

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