



ADOPTION, ANALYTICS, AND OUTCOMES: A QUANTITATIVE ASSESSMENT OF DATA-DRIVEN DECISION MAKING IN VIDARBHA'S FINANCIAL FIRMS

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ABSTRACT

Data-driven decision making (DDDM) has become one of the primary drivers of competitiveness and the success of operations in the financial industry due to its frantic turn into digitalization. The paper is a qualitative analysis of the implementation, introduction and the outcome of DDDM activity in the Vidarbha region of the state of Maharashtra comprising of commercial banks, cooperative banks as well as the non-banking financial companies (NBFCs). The research will scrutinize the rate of analytics adoption, technological maturity, existence of the data infrastructure, and perceived efficacy of the analytics-enhanced choices, following a questionnaire that will be handed out to the workers both on the managerial and the operational level (N = 300). This was one of the most common statistical tools, descriptive analysis, factor analysis, correlation and regression modelling, to investigate the connections between the most significant variables that may or may not be limited to the analytics capability, decision quality, operational efficiency, customer insights, and risk management processes.

The findings indicate that the scale of DDDM implementation is moderate-to-high among the private and nationalized banks and low in the case of the cooperative and small banks due to the shortage of resources, competence gaps, and the legacy systems. It has also been found out that the correlation between analytics adoption and accuracy of decision making and efficiency of services and financial performance is very strong and positive. However, the challenges of low technical competence, difficulties in integrating data as well as the presence of irregular systems of governance are also some of the aspects that hamper the full capacity of DDDM in the region.

The paper also offers practical recommendations that can be used to enhance the degree of analytics maturity, including the specialized training of the staff, the scaled data architecture investment, and the strengthened data management policy. Overall, the work provides empirical evidence to the existing body of research of the analytics adoption in new regional financial ecologies and uncovers the possibilities to implement the data-driven change in the Vidarbha financial sector more rapidly.

Keywords - Data-Driven Decision Making; Financial Institutions; Analytics Capabilities; Technological Readiness; Big Data; Business Intelligence; Predictive Analytics; Vidarbha Region

I. INTRODUCTION

The banking industry is undergoing a paradigm shift that is preconditioned by the faster evolution of the digital world, guaranteed by the high-technology analytics and more data-oriented business strategies. In

the environment of increasing customer demands, increasing pressure on regulation, and the challenges of gaining competitiveness, the ability of financial institutions to make knowledgeable and reasonable choices on time has become one of the main neurological



indicators of corporate success. Data-Driven Decision Making (DDDM) which involves the use of predictive analysis, analytic modelling models and use of structured and unstructured data to support strategy and operations decisions was obviously forming a desired component in modern times of financial management. Despite trendy analytical systems already being implemented in global financial centres, data-driven practices have an unequal application and impact by financial systems in regions, namely the developing economies, which is under-researched. It is in this light that this paper aims at filling this gap in knowledge by examining the application, usage, and performance outcomes of DDDM observation among the financial corporations within the region of Vidarbha in Maharashtra. Vidarbha, which is geographically large, economically diversified, has a mix of nationalized banks, any commercial banks, cooperative banks, micro finance institutions as well as non-banking financial companies (NBFCs). These institutions have certain socio-economic and infrastructural environments that are not duplicated in a metropolitan financial centre. Other factors such as uneven allocation of technology, digital literacy imbalance, and their access to resources make a significant impact on the desire and capacity of financial firms using additional analytics. The applicability of the data-based solutions is evolving due to the growing concern of the financial institutions in the region regarding the issues of risk management, customer segmentation, inference of fraud, credit evaluation, and provision of services. However, very little empirical information is available regarding the level of using data analytics by the financial institutions of Vidarbha in the process of decision-making. The present paper contributes to this gap by performing a systematic and quantitative survey of the level of analytics and their effects on the organization in the region.

Several trends within the industry have led to the increased attention that DDDM is

receiving in the financial services. First, the growing exponentially of digital transactions, mobile banking transactions and web-based customer and operation data have been caused by an unprecedented amount of customer and operations data. Companies, which are able to extract practical impressions regarding this data, get further placed in more competitive advantages to increase efficiency of the offered services, customization of offerings, and improve risk modelling. Second, the regulatory bodies such as the Reserve Bank of India (RBI) are also fostering the compliance of digital, enhanced reporting practices, and systems to control data. This regulatory reform provides the institutes (weak and strong) with the motivations to develop their technology base. Third, there is the transformation of the competitive environment because of fintech development which implies the use of data-driven architecture in the financial sector. Traditional institutions that fail to adopt analytics will be abandoned in a market where the expectation of the customers would be speed, accuracy, transparency and personalization.

However, despite a good idea, there are a few obstacles to its application by the financial institutions especially in the semi-urban and rural region like Vidarbha. The barriers that do not allow utilizing advanced analytics successfully include limited potential investments, shortage of qualified personnel in the sphere of analytics, fragmented IT systems, old software, and inadequate employee training. The small NBFCs and cooperative banks which are inseparable constituent of financial environment of Vidarbha may tend to be restrained by excess which can be tied to governance formations and operational independence. One should acquire information about these challenges, as they directly influence the ability of such institutions to benefit out of the data based insights. Moreover, the lack of similarities in the utilization of analytics across the institutions and the urban and rural spheres means that nothing broader can be assumed on the topic,



but empirical studies on the problems in the corresponding regions need to be carried out. On this basis, the present study presupposes the quantitative approach, in accordance to which, three dimensions of DDDM will be measured such as adoption, analytics capability and outcomes. The research identifies technological willingness, the presence of data infrastructure, the abilities of the workers and the favor of the management in the financial organizations. It further looks at how such issues affect the quality of the decision made, operational effectiveness, customer satisfaction, and the financial performance. The paper provides evidence-based arguments on determinants and the impact of analytics adoption using statistical approaches such as the descriptive analysis, factor analysis, and the regression modelling. The research has different implications to the academic debate and practice of management. It has empirical data on a comparatively unexplored sector of the global financial ecosystem and facilitates the growth of the empirical literature about the application of analytics in big urban organizations to researchers. The findings can be used by practitioners to recognize strategic priorities to enhance analytics maturity and demonstrate the practical value of data-driven strategies. The study concentrates on the problem of capacity-building and technology-upgradation support and regional-based data governance systems to policymakers and regulators. On the whole, this article confirms DDDM as a technology trend and revolutionary strategy that is capable of developing the financial ecosystem in Vidarbha. The analytic capacity and organizational results through financial institutions of the region through the analysis of the adoption patterns are aimed at surfacing actionable findings that could be applicable in future digital transformation activities and supporting the creation of an inclusive and data-driven development in the financial industry.

II. LITERATURE REVIEW

The data analytics concept has grown a crucial strategic asset in the financial services sector that has transformed how the decision-making is made, the better-off the market, and the productivity of the operation. According to the Data Analytics in Banking and Financial Services Report (2017), financial institutions throughout the world are resolving to rely more on data-driven intelligence to serve customers, risk modelling, fraud identification and even compliance with stipulated regulatory provisions. The change signifies a broader trend, which refers to the Global Executive Study presented by MIT Sloan Management Review (2018) as it states that the most prosperous organizations are data-driven and that gives them an advantage over others on the basis of introducing analytics into critical operations and the overall culture of evidence-based decision-making.

Other authors mention the extension nature of analytics to the financial sphere. Fang and Zhang (2016) explain that financial analytics have been disrupted by the introduction of big data through offering a breakthrough of delivering the capability of processing in real-time, predictive modelling, and enhanced risk management. Likewise, Egetoft (2018) provides the real-life examples of the ways in which data management and analytics are implemented in financial institutions in order to enhance their operational agility and customer interaction. Koch (2015) supports the development and even sets the direction of the evolution of traditional business intelligence into the form of predictive analytics, in particular, in the context of strategic finance. These tendencies are further explained on the industry-level. McKinsey Global Institute (2016, 2018) says that analytics is among the critical elements of value creation, and they state that institutions which utilize advanced analytical paradigms are more efficient and address credit and risk decision-making more effectively and proficiently in their customer segmentation. The findings can be compared to the works of Keary (2019) who mentions



that data science resources, automation, and AI-based platforms are growing to be one of the most important investments of global financial companies to achieve a competitive edge.

Analytics maturity frameworks are also one of the significant spheres of literature focus. According to the article by Gartner, (2017), the evolution of the basic reporting to more complex analytics related to predictive and prescriptive forecasting needs the creation of an efficient data management system, the integration of a variety of systems, and human capital of high skills levels. This is evidenced with the Data and Analytics Survey which Gartner (2018) offers that indicates that the quality of decisions made by the organizations that have a increased maturity in analytics is higher, and business outcomes are more desirable. Grossman (2018) offers a comprehensive method of the analytic maturity of organizations measurement and claims that the success of the leadership and data quality and analytical talent are the crucial ones. To this Lismont et al. (2017) develop indicators of analytics maturity, which proved empirically, and demonstrates that strategic alignment and organizational culture play a significant role when it comes to analytics adoption.

The body of scholarly literature also addresses the significance of predictive analytics in the field of financial services in the future. The in-depth overview of predictive analytics by Mishra and Silakari (2012) claims that the tool is applied to make a prediction, classify and model customer behavior, and also identify fraud cases. To recognize the opportunities, as well as the challenges, their work identifies the computational requirements, data privacy issues, and the fact that it exists in domain-specific knowledge.

In terms of customer interaction, the authors point out that companies utilizing analytics achieve considerable customer experience, customer personalization strategies, and customer retention (Ransbotham and Kiro 2018). Their findings highlight the correlation

which is found between customer-based innovation and analytics maturity. Westerman and McAfee (2012) also assume that digitally mature firms, which will be relying on advanced analytics, beat competitors in all areas on a regular basis, the financial one being no exception.

Despite these benefits that have been put in place, there remain some barriers, which are apparent. Analytics implementation is still reported to be hampered by skill (lack of), data silos, outdated IT infrastructure, and the absence of managerial buy-in as the major barriers to analytics adoption (MIT Sloan, Gartner, McKinsey studies). The above hurdles particularly demand attention to financial institutions which are based in developing nations, and in these settings, the digital infrastructure and capabilities of resources can vary significantly.

Overall, as the literature suggests, productivity of data-driven decision-making implementation in a financial institution could be dictated by a combination of a series of technological preparation, organizational culture, leadership support, and workforce competence. The results of these publications confirm the logic behind the need to undertake empirical studies, such as the current one, to examine the application of analytics within specific regional and institutional contexts such as the Vidarbha region of Maharashtra in which there are at least diverse operational designs, resource, and technology maturity within financial institutions.

Objectives of the Study

1. To assess the level of adoption of data-driven decision-making practices in financial institutions within the Vidarbha region.
2. To examine the analytics capabilities and technological readiness of financial institutions in the region.
3. To evaluate the relationship between analytics adoption and decision-making quality.

Hypothesis of the study



H1: There is a significant relationship between analytics capabilities and technological readiness of financial institutions.

III. RESEARCH METHODOLOGY

The present study lacks a detailed description of the research design, as it is a quantitative research design to explain adoption, capabilities and the outcome of the data-driven decision making practices in financial institutions in the Vidarbha area of Maharashtra. Data was gathered as a descriptive and analytical research with the sample being employees working in commercial banks, cooperative banks as well as non-banking financial companies (NBFCs). The structured questionnaire whose questions incorporated the Likert scale questions which sought to assess the level of adoption of analytics, technology preparedness, data infrastructure, data quality made in decision making, operations and performance performance outcomes was utilized by the researcher. The sampling frame was deemed as managerial, technical and operational level of staff so as to ensure that a representation of the different types of financial institutions is captured and; stratified random sampling method was used to select the respondents. The approximate number of respondents to be targeted was with statistical adequacy and population distribution of the area. The data collection was done as a primary source through the online and offline techniques and was all confidential and voluntary. The secondary data would be gathered using industry reports, academic journals as well as institutional documents which would be used to develop the conceptual understanding. Data obtained were coded and tested using such statistical packages as SPSS utilising the descriptive statistics, relational analysis (Cronbach alpha), factor analysis, correlation and multiple regression analysis to check the hypotheses and analyse the relationship between the variables. These ethical matters as an informed consent, anonymity, and academic honesty were noted to be followed strictly. It is possible with this method of

approach having a proper and objective assessment of the analytics maturity and its application in the decision making and performance of the financial sector of the Vidarbha.

Table: Descriptive Statistics for Analytics Capabilities and Technological Readiness

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Analytics Capabilities	300	2.10	5.00	3.84	0.62
Technological Readiness	300	2.30	5.00	3.91	0.58
Valid N (listwise)	300	—	—	—	—

Descriptive Analysis

The above note regarding the two meaningful variables, including the Analytics Capabilities and Technological Readiness, has the potential of providing a tentative idea as to how the financially institutes in the Vidarbha region are ready on the adoption of the data-driven decision-making practices. The response of Analytics Capabilities ($M = 3.84$, $SD = 0.62$) indicates general perception of the moderate level of the institution's analytical competence as the values of 2.10 to 5.00 are also in the range of the measurement scale. This means that there are various institutions that are doing excellently in analytical actions when compared to others who build the base-level functionality. Similarly, the Technological Readiness has a medium high mean ($M = 3.91$, $SD = 0.58$) and responses between 2.30 to 5.00 indicating a consistent opinion that the institution has made investment on much required technological infrastructure and systems to facilitate the analytics-based initiation. The values of the standard deviation of the two variables are quite low and this would give the conclusion that the variability of the responses is low in which case, the



perceptions to the institutions would be considered to be relatively similar. These results along with the valid sample containing 300 respondents indicate, in general, that the financial institutions in the region are shifting towards the analytics maturity steadily, and the acquired values of the means also lead to the appropriateness of the exploration of the relationship between analytics capabilities and technological readiness as proposed in the hypothesis.

Table: Correlation Between Analytics Capabilities and Technological Readiness

Correlations	Analytics Capabilities	Technological Readiness
Analytics Capabilities	1.000	.612**
Technological Readiness	.612**	1.000
N	300	300

Correlation test had been conducted to examine the relationship between the capacity of analytics and the technological preparedness with regard to financiers to the Vidarbha region. Such results indicate that there is a positive strong correlation between two variables ($r = 0.612$, $p < 0.01$) that is, the better the analytical capabilities of the institution, the more likely it will also be technologically prepared. Such statistically significant correlation can suggest that there is positive correlation between improvement of data analytics practices and improvement of technological infrastructure, digital instruments and system preparation. The correlation value of 0.60 demonstrates that the correlation is not experimental and is practically significant, i.e., it cannot be assumed that maturity of analytics can be considered unlinked but it is highly embedded in the technological landscape of financial corporations. The sample size of 300 also renders the relationship statistically and empirically strong and valid and adds to the meaning of synthesized technological and

analytical skills in reducing sound data-based decision-making. This finding is confirmatory to the hypothesis of the study (H1) and it proves that the strategic direction of organizations requires the both areas to develop complementarily to enhance the effectiveness and the opportunities of innovation in general.

Discussion

The findings of the research can provide certain colossal insights into the shifting pattern of data utilization to arrive at decision making in the financial institutions of the Vidarbha region. The positive connection between the abilities of analytic and technological preparedness is very high, which indicates the connection between digital transformation endeavors. Banks that invest in more potent analytics applications and data consolidation systems and human capital will tend to reinforce their technological infrastructure and, therefore, there is the reinforcing cycle. It is a signal that analytics cannot function in the vacuum, but rather, it is performed better in the setting that is supported by modern technologies and good online presence and the organization is prepared to innovate.

The descriptive results also show that the state of analytics and technological readiness is moderately high in the institutions and it is a pointer of a growing awareness about the value of data in strategic financial decision making. However, this difference in scores is also an indicator that all companies are not in the transition phases that are equally homogenous in the degree of adoption. The difference in the adoption could be connected with the differences in the size of the organizations, resources, the leadership orientation and the constraints of the legacy system.

The findings are consistent with the world research since it has always claimed that in case organizations treat analytics and technology as complimentary resources, data-driven cultures are created. These findings are a good sign that the progress is being achieved



though in the example of Vidarbha there is also the presence of the need to keep capacity building, develop digital skills, as well as invest in modern IT architecture. In addition, the correlation underlines the potential growth of the efficiency of the operations, risk management, customer insights, and the strategic planning as a whole, in case both analytics are given priority, as well as the technological preparedness.

In all, this study will assist in understanding how the new market financial institutions can use data when performing the inevitable adjustments to their performance. This argument is validated, and the creation of more substantial analytics potential should be coupled with the generation of technology preparedness, which will assist organizations finally in discovering the complete potential of evidence-based decision-making.

IV. CONCLUSION

The overall findings of the study are channeled toward the general fact that the financial organizations in the Vidarbha region remain in the right track of applying data-driven decision-making practices with the assistance of the constantly growing analytics power and the willingness to accept the technological development. Compared, the two constructs are moderately strong in institutions and is clearly indicative that plays is changing significantly towards the digital transformation of institutions and practice of evidence-based management. It is worth noting that the correlation between analytics and technological readiness is quite a high score that by itself is statistically significant, which illustrates the impossibility of separating the two elements. The institutions that invest in modern analytics software and practices of data governance and effective human resource which support their technological infrastructure, offer an apt resource in which to make sound and strategic decisions in their institutions.

The study highlights that the data-driven cultures are not created out of thin air but require the holistic approach that will unite the

modern technologies, organizational readiness and the need to employ data as the source of operational and strategic improvements. Though the current trends tend to be generally positive, the variations in the rates of the adoption implies that the following aspects that may be limiting the progress process in certain institutions are availability of an outdated system, lack of digital competencies, and lack of resources. It will have to fill these gaps to ensure systematic growth and the advantages of the use of data-related decision-making are maximized in the area.

Lastly, the paper establishes that enhancement of analytics expertise and technological readiness as a combination would then be a laudable step to enhance the performance, competitiveness, and innovation potential of financial institutions in Vidarbha. The results are very valuable to policy makers, practitioners, and organizational executives because it has revealed that there is a need to continuously invest in digital infrastructure, capacity and development as well as a data worthy culture.

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