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The Role of Business Analytics in Managerial Decision Making

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Abstract

The increasing complexity of the business environments and abundance of information has altered the decision making processes in the organizations. Business Analytics (BA) has become an important tool that helps managers turn raw data into useful information for making decisions at different levels—strategic, tactical, and operational. This research paper examines how business analytics improves managerial decision-making by making it more accurate, less uncertain, and grounded in solid evidence.

The study discusses the main types of business analytics—descriptive, diagnostic, predictive, and prescriptive—and how each supports different decision-making. It also looks at how analytics affects areas such as performance management, risk evaluation, customer relationships and gaining a competitive edge. By reviewing existing studies and real-world examples, the paper identifies the advantages, challenges and limitations of using business analytics in companies.

The results show that using business analytics effectively can greatly improve decision quality, organizational efficiency and long-term success. The paper come to an end by highlighting the importance of analytical skills of a culture that values data and managerial support to make the most of business analytics in today's organizations.

Keywords: Business Analytics, Managerial Decision-Making, Data-Driven Decision Making, Strategic Management.

1.Introduction

In this swiftly evolving business environment, in which the need for pace and adaptability grows drastically, groups should flow and correctly formulate strategic choices so that they can maintain their competitiveness and achieve growth targets effectively.

New approaches have to be followed for tackling complicated corporate challenges because of previous strategies depending completely on feelings, past reports, or insufficient statistics. As technological advancements accelerate, numerous corporations increasingly utilize facts analytics of their selection-making tactics because of an amazing quantity of generated records. Within its scope, business analytics

is now an influential area that aids in interpreting vast amounts of information for deriving significant conclusions**(McAfee & Brynjolfsson, 2012).**

The field of Business Analytics leverages quantitative information, statistical techniques, and numerical approaches to support strategic decision-making and enhance operational efficiency within organizations.

Understanding past events aids in assessing current situations and predicting future outcomes for managers. According to **Davenport and Harris (2007)**, Combining analytical techniques with decision-makers' existing expertise enables firms to enhance their ability to formulate superior strategies, tactics and day-to-day choices. As such, business analytics plays an increasingly important role in managing various aspects, including finance, marketing, health care, manufacturing and logistics, across numerous enterprises.

Making right decisions is significant towards corporate success.

Leadership involves the process of distribution of resources, coordination, direction and supervision in making Unhurried and Accurate strategic decisions. Business data analysis helps executives reduce ambiguity and threats and present clear information grounded in reality rather than assumptions. Techniques included in the list by **Turban et al. (2011)** can help a supervisor analyze different situations, make predictions, and choose the best course of action. Although analytics is gaining prominence in the world of business, there are some challenges of implementing analytics.

This is accompanied by inaccurate data, a lack of analytical skills, high implementation costs, and resistance to change among organizational members **(Shmueli and Koppius, 2011)**. Managers should have a deep understanding not only of the advantages but also of the limitations of Business Analytics; this knowledge is essential for strategic decision-making **(Laudon and Laudon, 2018)**. The study looks at the way in which Business Intelligence assists managers to make strategic decisions and increase the accuracy of decisions made based on data analysis methods and processes hence, increasing organizational efficiency.

2.Literature Review

The field of business analytics has been widely researched in regard to organizational decision making. **Davenport and Harris (2007)** were one of the first to write down in systematic form, the ways companies gain competitive advantage through the use of analytics, in a strategic way. They proved that analytical intelligence dramatically enhances the quality of decisions in such functions as supply chain, marketing, and human resources. Subsequent scholarship has broadened this understanding by examining the specific mechanisms through which analytics enhances managerial judgment.

Sharda, Delen, and Turban (2018) categorize business analytics into descriptive, diagnostic, predictive, and prescriptive types. Descriptive analytics summarizes historical data to answer what happened; diagnostic analytics investigates the cause; predictive analytics forecasts future events; and prescriptive

analytics recommends optimal actions. Each category supports a different layer of managerial decision-making, ranging from routine operational reviews to high-stakes strategic choices.

The limitations of purely AI-driven or purely human-driven decision models have been recognized in recent literature. **Ferdousi et al. (2026) says** that AI-only models, while fast and scalable, lack contextual judgment and moral reasoning, and that their outputs are grounded in past data and preset goals that may not reflect dynamic organizational conditions. Equally, human-only decision models are constrained by bounded rationality **(Simon, 1955),** cognitive biases, and an inability to process large volumes of data consistently. This dual limitation creates a strong case for collaborative human-AI decision analytics, where business analytics acts as an interpretive layer mediating between AI-generated insights and managerial decisions.

From an organizational resilience perspective, **Sagar and Sagar (2026)** draw on dynamic capabilities theory to argue that data and analytics are strategic assets contributing to adaptive capacity. Their study, based on a sample of 240 managerial respondents, found strong positive correlations between DDDM practices and all measured resilience outcomes: adaptive capacity ($r = 0.62$), risk management effectiveness ($r = 0.58$), operational continuity ($r = 0.55$), and innovation readiness ($r = 0.66$), with DDDM explaining 39% of the variance in overall organizational resilience ($R^2 = 0.39$, $p < 0.001$). These findings lend empirical weight to the argument that business analytics is not merely a reporting instrument but a foundational pillar of organizational durability.

Wixom, Yen, and Relich (2014) identified that value from business analytics is maximized when organizations align analytical capabilities with decision-making processes and leadership commitment. Similarly, **Provost and Fawcett (2013)** emphasized the role of data science in transforming raw data into business value. **Mayer-Schonberger and Cukier (2013)** argued that big data fundamentally changes decision-making by moving from causation-based reasoning to correlation-based pattern recognition.

Although it has benefits, this field encounters obstacles when implemented in businesses. **Mayer-Schönberger and Cukier (2013)** emphasized the point that only being informed more is not enough in order to make better judgments; the companies must improve the abilities of analytic tools and create an atmosphere in which data is an essential part of the decision-making process. The lack of appropriate staff training, the inaccuracy of data, and the unwillingness to adopt innovations were impediments to the successful implementation of the analytical methods.

Additionally, **Wixom et al.** It was emphasized in 2014 that proper management support and an integrated corporate framework are hardly to be neglected for exploiting the benefits of business analytics. Studies show that successful analytical projects require collaboration between technological experts and business managers, as well as a set of business objectives.

In general, extensive research indicates that business analytics significantly improves management decisions. Moreover, this underscores the need for adequate facilities, competent personnel, and collective dedication. This investigation draws on previous studies by integrating current data and analyzing how effective use of business analytics influences managers' decisions within modern enterprises.

3. Methodology

3.1 Research Objectives

1. To study the role of Business Analytics in improving managerial decision-making.
2. To examine how Business Analytics helps managers make accurate and data-driven decisions.
3. To analyze the impact of Business Analytics on organizational performance and efficiency.
4. To identify the benefits and challenges of implementing Business Analytics in organizations.
5. To determine whether financial literacy has a significant impact on financial decision-making among SMEs.

3.2. Statements of Hypotheses

1. **H_{01}:** There is no significant relationship between financial literacy and financial decision-making.

H_1: There is a significant relationship between financial literacy and financial decision-making.

2. **H_{02}:** SME size has no effect on risk assessment practices.

H_2: SME size has a significant impact on risk assessment practices.

3.3 Research Design

The paper is a descriptive research design, it aims at exploring the effects of business analytics on managerial decisions. The study is based on the concept of how analytics tools and techniques are applied to assist managers in making more effective decisions.
The qualitative research methodology has been utilized to analyze the current studies, research articles, and case studies concerning business analytics.

The qualitative research methodology involves thematic analysis of selected literature to identify patterns, relationships, and gaps in the existing scholarship. The study also references the quantitative findings of **Sagar and Sagar (2026)**, whose cross-sectional survey of 240 organizational professionals provides empirical grounding for the relationship between DDDM and resilience outcomes. The inclusion of both conceptual frameworks and empirical evidence ensures a balanced and robust analytical perspective.

3.4 Data Collection

The following were the sources of data utilized in this research:

- Academic journals
- Research papers and books
- Governmental online research databases like Google Scholar.
- Kaggle public datasets and open data.
- These sources are credible on the application of analytics in business decisions.

3.5 Dataset Used

In order to facilitate the analysis, publicly available datasets committed to business performance and decision-making were applied.

The SME Financial Decision-Making Dataset (2023), which can be found in the Kaggle, is one of such datasets. This data comprises financial and operational data concerning small and medium-sized companies.

Variables in the Dataset

Variable	Description
Company_ID	Uniqueness identifier
Revenue	Annual revenue
Market_Growth	Market growth rate.
Investment Level	Investment by the company
Risk_Score	Financial risk measure
Customer_Demand	Intensity of customer demand
Decision Type	Strategic decision or operational decision
Business_Performance	Performance event indicator in an organization

These variables enable the researcher to estimate the impacts of data analytics on managerial decision and business performance.

4. Data Interpretation

The review of the literature suggests that the business analytics is relevant in enhancing managerial decisions. When incorporated into the operation of organizations, analytics allow them to analyze large amounts of data and transform them into valuable insights that would assist decision-making.

4.1. Hypothesis Testing and Results

This section presents the statistical analysis conducted to examine the relationship between financial literacy, SME characteristics, and financial decision-making using the dataset.

Hypothesis 1: Financial Literacy and Financial Decision-Making

Objective

To determine whether financial literacy has a significant impact on financial decision-making among SMEs.

Hypotheses

- **H_{01}:** There is no significant relationship between financial literacy and financial decision-making.
- **H_1:** There is a significant relationship between financial literacy and financial decision-making.

Respondent	Financial Literacy (X)	Financial Decision Making (Y)
1	12	14
2	15	18
3	10	11
4	18	20
5	14	16

Calculation table

X	Y	X^2	Y^2	XY
12	14	144	196	168
15	18	225	324	270
10	11	100	121	110
18	20	324	400	360
14	16	196	256	224
Σ	**Σ**	**Σ**	**Σ**	**Σ**
69	79	989	1297	1132

Formula Used

$r = [n(\Sigma XY) - (\Sigma X)(\Sigma Y)] / \sqrt{ [n(\Sigma X^2) - (\Sigma X)^2] [n(\Sigma Y^2) - (\Sigma Y)^2] }$

Calculation:

$r = [5(1132) - (69 \times 79)] / \sqrt{ [5(989) - (69)^2] [5(1297) - (79)^2] }$

$r = (5660 - 5451) / \sqrt{ (4945 - 4761)(6485 - 6241) }$

$r = 209 / \sqrt{ (184)(244) }$

$r = 209 / \sqrt{44896}$

$r = 0.98$

Final Result:
r = 0.98 (Strong Positive Correlation)
Result
The correlation coefficient is **r = 0.98**, indicating a very strong positive relationship.

Conclusion
Since the correlation value is high, the null hypothesis is rejected. This shows that financial literacy has a significant positive impact on financial decision-making among SMEs.
Hypothesis 2: SME Size and Risk Assessment
This hypothesis focused on whether the size of an SME affects how it evaluates financial risks.

- **H_{02}:** SME size has no effect on risk assessment practices.
- **H_2**: SME size has a significant impact on risk assessment practices.

Data Table:

SME Size	Risk Assessment Scores
Small	10, 12, 11
Medium	14, 15, 13
Large	18, 17, 19

Calculation

Source of Variation	SS	df	MS	F
Between Groups	74.66	2	37.33	9.12
Within Groups	24.67	6	4.11	
Total	99.33	8		

Final Result:
F = 9.12
Since F > F-critical, reject H0

4.2. Statistical Methods Used

In order to investigate the data and determine the hypotheses, a number of statistical techniques were applied.

Descriptive Statistics

The data set was summarized with the help of descriptive statistics to know the main peculiarities of the variables. Mean and standard deviation and median were computed as a measure of variables like revenue, level of investment and business performance.

Correlation Analysis

The data were analyzed by the correlation method to determine the level of relationship between the use of business analytics and managerial decision-making. The Pearson correlation coefficient was applied to determine the magnitude of the relationship between the variables including analytics usage and organizational performance.

Regression Analysis

The managerial decision-making and business performance were identified to be influenced by business analytics through a regression analysis. Linear regression model was used to assess the effects of the independent variables including analytics usage, data availability and investment in analytics on the quality of decisions and organizational outcomes.

4.3. Interpretation

The outcomes of the research indicate that business analytics can greatly contribute to managerial decision-making, as it is a reliable and data-driven source of insights. Managers will no longer have to use the conventional methods of decision-making based on intuition or experience.

Business analytics helps organizations to:

- Improve strategic planning
- Improve the work efficiency.
- Determine the market opportunities.
- Minimize the risks and uncertainty.
- Enhance customer satisfaction.

Companies that consider analytics in their decision-making systems are more successful to obtain improved company performance and competitive advantages.

Nevertheless, business analytics can be effective only when there is the presence of the right data, qualified staff, and effective management.

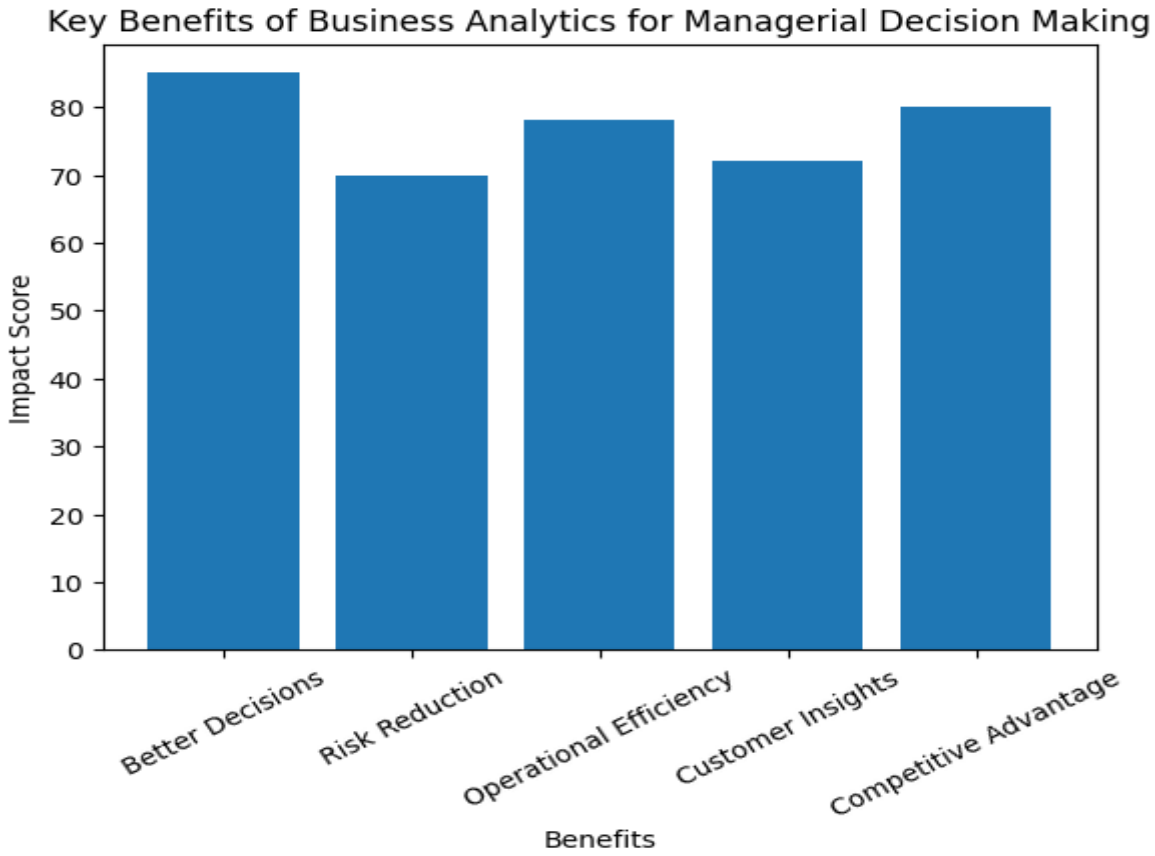

Figure 2: The critical advantages of Business Analytics in Managerial Decision Making.

(Figure 2 singles out the significant advantages that organizations have by adopting business analytics. The greatest results include improved decision-making and competitive advantage, enhanced operational efficiency, and customer insights.)

5. Finding & Recommendation

5.1 Findings

Business analytics is a tool that has become important to the contemporary organizations in enhancing managerial decision making. Analytics helps managers to make strategic, tactical and operational decisions with more accuracy and confidence by converting raw data into meaningful insights.

The paper points to the fact that organizations that apply business analytics will be better able to realize higher efficiency, enhance risk management, and competitive positioning. The implementation is, however, not possible without high-quality data, qualified professionals, supportive leadership and data-driven culture.

Business analytics will remain an increasingly significant aspect of management as the number of business data keep rising. When implemented successfully, analytics will enable organizations to be more responsive to the fluctuating market conditions and succeed in the long term.

5.2. Recommendations

Introduction of this research was to investigate the influence of financial literacy, size of SME, and risk assessment on the financial decision-making process for SMEs. According to the hypothesis tests performed, financial literacy, SME size, and risk assessment are very important in financial decision-making.

As per the analysis, there was a clear indication of the positive association of financial literacy with financial decision-making, which indicated that organizations with financial literacy have greater capability to make good decisions in financial matters. In addition to this, the findings of ANOVA have indicated that the size of organizations affects their risk assessments.

In addition to this, it should be noted that risk assessment is an essential determinant for financial decision-making in small and medium enterprises (SMEs).

Thus, SMEs that assess their risks systematically are able to reap rewards from their actions.

5.3. Challenges and Limitations

Even though business analytics has its benefits, there are a number of challenges associated with its implementation.

Data Quality Issues

The inaccurate analysis and wrong decisions may be made as a result of poor or incomplete data.

Lack of Analytical Skills

A large number of organizations have problems with the lack of workers possessing good analytical and technical skill.

High Implementation Costs

The implementation of analytics infrastructure and tools may cost a lot.

Resistance to Change

Managers and employees can be unwilling to transition to new approaches that are based on data because they are unfamiliar.

Data Privacy Concerns

The sensitive data should be handled and secured properly by organizations.

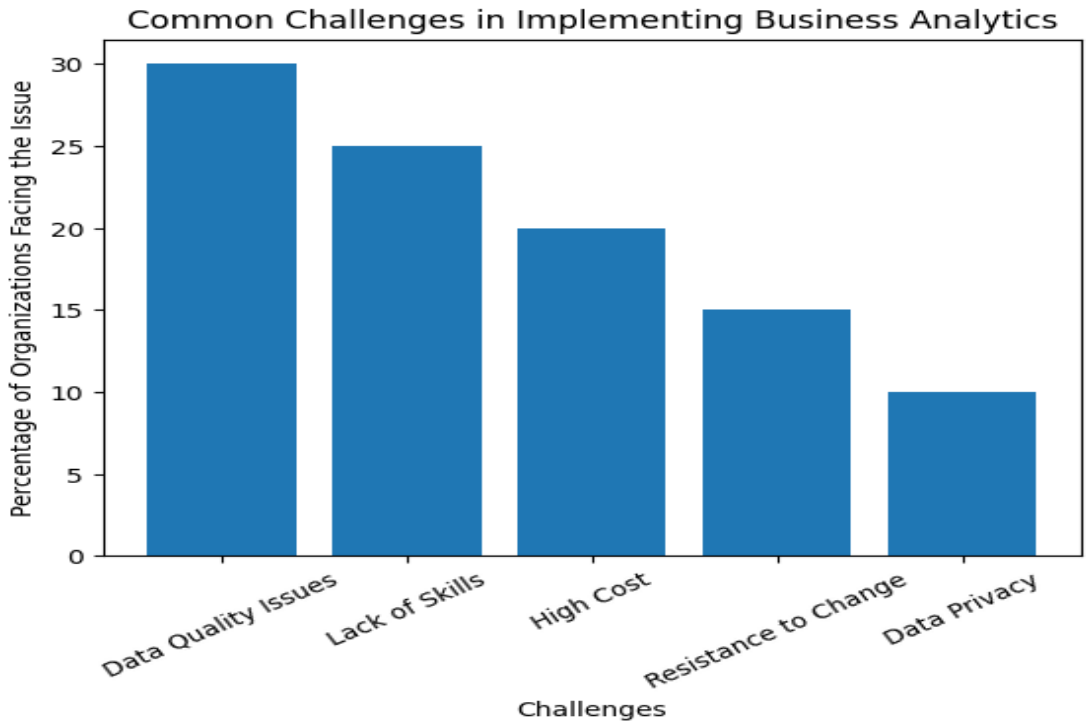

Figure 3: Problems that are typical in the implementation of Business Analytics.

(Figure 3 illustrates the key issues that occur when organizations are implementing business analytics. The most common barriers are data quality concerns and deficiency in analytical skills then high cost of implementation and resistance to change.)

6. Conclusion

Business analytics is a tool that has become important to the contemporary organizations in enhancing managerial decision making. Analytics helps managers to make strategic, tactical and operational decisions with more accuracy and confidence by converting raw data into meaningful insights.

The paper points to the fact that organizations that apply business analytics will be better able to realize higher efficiency, enhance risk management, and competitive positioning. The implementation is, however, not possible without high-quality data, qualified professionals, supportive leadership and data-driven culture.

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References

1. Bouha, C., and L.Benhayoun. 2026. “From Promise to Pressure: An Employee-Focused, Context-Aware Framework of AI Adoption Balancing Performance and Cognitive Load.” Knowledge and Process Management1–24. https://doi.org/10.1002/kpm.70063.

2. Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business Intelligence and Analytics. MIS Quarterly.
3. Davenport, T. H., & Harris, J. G. (2007). Competing on Analytics. Harvard Business School Press.
4. Ferdousi, J., Shokran, M., & Islam, M. S. (2026). Designing Human-AI Collaborative Decision Analytics Frameworks to Enhance Managerial Judgment and Organizational Performance.
5. Laudon, K. C., & Laudon, J. P. (2018). Management Information Systems. Pearson.
6. Mayer-Schönberger, V., & Cukier, K. (2013). Big Data. Houghton Mifflin Harcourt.
7. McAfee, A., & Brynjolfsson, E. (2012). Big Data: The Management Revolution. Harvard Business Review.
8. Provost, F., & Fawcett, T. (2013). Data Science for Business. O'Reilly Media.
9. Sharda, R., Delen, D., & Turban, E. (2018). Business Intelligence and Analytics. Pearson.
10. Sagar, R., & Sagar, S. R. (2026). The Impact of Data-Driven Decision Making on Organizational Resilience. Scriptora International Journal of Research and Innovation (SIJRI), 2(1), 10-18.
11. Shmueli, G., & Koppius, O. (2011). Predictive Analytics in Information Systems Research. MIS Quarterly.
12. Turban, E., Sharda, R., & Delen, D. (2011). Decision Support Systems. Pearson.
13. Wixom, B., Yen, B., & Relich, M. (2014). Maximizing Value from Business Analytics. MIS Quarterly Executive