From Data to Decision: An Empirical Study of Behavioral Biases in Data-Driven Decision-Making and Managerial Judgment

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Abstract:

The increasing reliance on data analytics and digital technologies has transformed managerial decision-making processes across organizations. However, despite the availability of analytical tools and data-driven systems, managerial decisions are still influenced by behavioural biases, personal judgement, intuition, and experience. This study examines the influence of behavioural biases on data-driven decision-making and managerial judgement, while also exploring the role of trust in analytical tools and systems.

The study is based on primary data collected through a structured questionnaire from managerial professionals across different industries. Statistical tools including descriptive analysis, reliability analysis, t-test, ANOVA, correlation, and regression analysis were used to analyse the collected data. The findings reveal that demographic factors such as gender and age do not significantly influence behavioural bias. However, behavioural bias shows a significant negative relationship with trust in data-driven decision-making, indicating that higher behavioural bias tends to reduce trust in analytical systems. Further, the study also highlights the importance of reliance on data-driven tools in improving managerial judgement and decision effectiveness.

The study contributes to understanding how behavioural factors continue to affect managerial decision-making even in highly data-oriented environments.The study further emphasizes that while organizations are increasingly adopting artificial intelligence, predictive analytics, and business intelligence tools, the effectiveness of these technologies largely depends on managerial acceptance and interpretation. Managers often combine analytical insights with personal experience and intuition while making strategic decisions, especially in complex or uncertain situations. This indicates that technology acts as a support mechanism rather than a complete replacement for human judgement in organizational decision-making.

The research also highlights the practical and academic significance of integrating behavioural perspectives with data-driven management practices. The findings provide useful insights for organizations in designing training programs, improving analytical culture, and encouraging balanced decision-making approaches. Additionally, the study contributes to existing literature by examining the interaction between behavioural biases and analytical reliance in managerial contexts, thereby providing a foundation for future research in the fields of business analytics, behavioural decision-making, and artificial intelligence-driven management systems.

Keywords: Behavioural Bias, Data-Driven Decision-Making, Managerial Judgement, digital technologies

INTRODUCTION:

The rapid advancement of digital technologies, artificial intelligence, and business analytics has transformed the way organizations make decisions. Modern organizations increasingly rely on data-driven decision-making (DDDM) to improve efficiency, reduce uncertainty, and enhance business performance. The availability of large volumes of real-time data, combined with sophisticated analytical tools, enables managers to make decisions based on evidence rather than intuition alone. Consequently, data has emerged as one of the most valuable organizational resources in today's competitive business environment.

Despite the growing adoption of analytical systems, managerial decision-making remains heavily dependent on human judgment. Data provides insights and recommendations; however, managers are ultimately responsible for interpreting analytical outputs and converting them into actionable decisions. In many situations, business problems involve uncertainty, contextual factors, and qualitative considerations that cannot be fully captured through data alone. Therefore, managerial experience, intuition, and professional judgment continue to play an important role in organizational decision-making.

The evolution of data-driven decision-making has progressed significantly over the last few decades. Early decision support systems focused primarily on storing and reporting information, whereas modern organizations utilize advanced technologies such as business intelligence systems, predictive analytics, machine learning, and artificial intelligence. These technologies enable organizations to identify patterns, forecast future outcomes, and generate recommendations that support strategic and operational decisions.

Data-driven tools have become integral components of organizational decision-making processes. Business intelligence dashboards, statistical software, predictive models, and AI-based systems help managers analyze complex information efficiently. These technologies improve decision quality by providing structured insights, enhancing forecasting capabilities, and supporting evidence-based management practices. However, the effectiveness of these tools depends not only on technological sophistication but also on how managers perceive, trust, and utilize the information generated by them.

The increasing integration of analytics into business processes has highlighted the importance of understanding the interaction between human cognition and data-driven technologies. While analytical systems are designed to reduce uncertainty and improve objectivity, managers may either over-rely on these systems or disregard valuable insights due to personal beliefs and biases. Therefore, successful decision-making requires a balance between analytical evidence and managerial judgment rather than complete dependence on either approach.

Behavioral analytics has emerged as an important field that combines concepts from psychology, management, and data science to examine how human behavior influences decision outcomes. This perspective recognizes that technology alone cannot guarantee effective decisions. Instead, organizations must understand how managers interact with analytical tools, interpret data, and develop trust in technological systems. Such understanding can contribute to the design of more effective decision-support mechanisms and managerial training programs.

The present study investigates the influence of behavioral biases on data-driven decision-making and managerial judgment. It examines the relationship between demographic characteristics, behavioral factors, reliance on analytics, and managerial decision effectiveness. By bridging the gap between behavioral theory and analytics practice, the study contributes to a deeper understanding of how organizations can effectively integrate analytical tools with human judgment to achieve more informed and balanced managerial decisions.

DATA COLLECTION → DATA ANALYSIS → INTERPRETATION BY MANAGER→ INFLUENCE OF BEHAVIORAL BIASES → FINAL DECISION

Objectives of the Study

1. To examine the influence of demographic factors such as gender, age, education and managerial experience on behavioral biases managers in data-driven decision-making.

2. To analyze the influence of behavioral factors on managers' interpretation of analytical data.

3. To analyze the relationship between behavioral biases and effectiveness of managerial judgement in data driven decision-making.

4. To assess how reliance on data analytics moderates the impact of behavioral bias on managerial decisions.

Hypotheses of the study

H_{01}: There is no significant influence of demographic factors (age, gender, education, and managerial experience) on behavioral biases in data-driven decision-making.

H_{02}: Behavioral factors do not significantly influence managers' interpretation of analytical data.

H_{03}: There is no significant relationship between behavioral biases and the effectiveness of managerial judgement in data-driven decision-making.

H_{04}: Reliance on data analytics does not significantly moderate the relationship between behavioral biases and managerial decision-making.

LITERATURE REVIEW:

A literature review is a systematic and critical evaluation of existing research related to a particular topic. The review of literature is an essential component of research that provides a comprehensive understanding of existing studies related to the topic. It involves analyzing and synthesizing the work of various researchers to identify key concepts, theories, and findings relevant to the study. In the context of the present research, the literature review focuses on behavioral biases, data-driven decision-making, and managerial judgment. Some of the studies referred for carrying out the present work includes:

- **Author(s) and Year: Raja Parasuraman and Dieter Manzey (2010)**

Study Title: ***Complacency and Bias in Human Use of Automation***
Journal: *Human Factors*

- The study investigated automation bias, which occurs when individuals excessively rely on automated systems and ignore contradictory information. The researchers found that overdependence on technology can reduce critical thinking and independent judgment among decision-makers. This study highlights the risks associated with blind reliance on AI and automated analytical systems in managerial decision-making.

  Keywords: Automation bias, overreliance on AI, human-AI interaction.

- **Author(s) and Year: Foster Provost and Tom Fawcett (2013)**

Study Title: ***Data Science for Business***
Source: *O'Reilly Media*

- The authors emphasized the growing importance of data-driven decision-making in achieving organizational competitiveness and performance improvement. The study suggested that organizations that effectively integrate analytics into managerial processes perform better than competitors. It also highlighted the importance of managerial support and analytical culture in successful adoption of data-driven systems.

  Keywords: Evidence-based management, analytics adoption, data-driven culture.

- **Author(s) and Year: Berkeley J. Dietvorst, J. P. Simmons, C. Massey (2015)**

Study Title: ***Algorithm Aversion: People Erroneously Avoid Algorithms after Seeing Them Err***
Journal: *Journal of Experimental Psychology: General*

- The researchers found that individuals tend to lose trust in algorithms after observing even minor errors in automated systems. Managers often revert to personal intuition instead of relying on analytical tools once they perceive imperfections in algorithmic outputs. The study demonstrated that trust and perception significantly influence the adoption of AI-based decision-support systems.

  Keywords: Algorithm aversion, trust, AI adoption, decision bias.

• Author(s) and Year: Erik Brynjolfsson and Kristina McElheran (2016)

Study Title: ***The Rapid Adoption of Data-Driven Decision-Making***
Journal: *American Economic Review (Papers & Proceedings)*

- This research examined how organizations adopting data-driven practices improve productivity and operational performance. The findings indicated that companies with strong analytical cultures and managerial openness toward data are more successful in utilizing analytics effectively. The study reinforced the importance of organizational readiness in supporting evidence-based decision-making.

  Keywords: Big data, organizational performance, data-driven culture.

• Author(s) and Year: Thomas H. Davenport and Rajeev Ronanki (2018)

Study Title: ***Artificial Intelligence for the Real World***
Source: *Harvard Business Review*

- The authors argued that artificial intelligence is most effective when used to support rather than replace managerial judgment. The study emphasized that successful AI implementation requires organizational clarity, trust, and collaboration between humans and intelligent systems. It highlighted the importance of balancing automated insights with human reasoning in managerial decision-making.

  Keywords: Human-AI collaboration, AI integration, decision support.

• Author(s) and Year: Jennifer M. Logg, Julia A. Minson, Don A. Moore (2019)

Study Title: ***Algorithm Appreciation: People Prefer Algorithmic to Human Judgment***
Journal: *Organizational Behavior and Human Decision Processes*

- Contrary to algorithm aversion, this study found that individuals sometimes prefer algorithmic recommendations over human judgment, particularly when algorithms are perceived as objective and expert-driven. The findings demonstrated that trust in AI systems can positively influence decision-making acceptance. The study highlighted the evolving relationship between managers and data-driven technologies.

Keywords: Algorithm appreciation, trust in AI, decision support.

• **Author(s) and Year: Ajay Agrawal, Joshua Gans, and Avi Goldfarb (2022)**

Study Title: ***Power and Prediction: The Disruptive Economics of Artificial Intelligence***
Source: *Harvard Business Review Press*

- The authors discussed how artificial intelligence changes organizational decision-making by improving prediction accuracy while still requiring human judgment for interpretation and implementation. The study emphasized that AI supports managerial decisions but cannot fully replace strategic and ethical reasoning.

Keywords: Artificial intelligence, managerial judgment, predictive analytics.

• **Author(s) and Year: Nandan Nilekani (2024)**

Study Title: ***Data Governance and Digital Decision Ecosystems in India***
Source: *Policy and Digital Governance Discussions*

The study discussed the growing role of digital ecosystems, analytics, and AI in organizational and public-sector decision-making in India. It emphasized that while data-driven technologies improve efficiency, ethical governance and human oversight remain essential for effective decisions.

Keywords: Digital governance, analytics, managerial decisions, India.

Thus, the present study reviewed a wide range of literature from the fields of behavioral economics, psychology, management, information systems, artificial intelligence, and data-driven decision-making. Overall, the literature demonstrates that managerial decision-making is influenced by both analytical insights and behavioral factors.

CONCEPTUAL FRAMEWORK OF THE STUDY

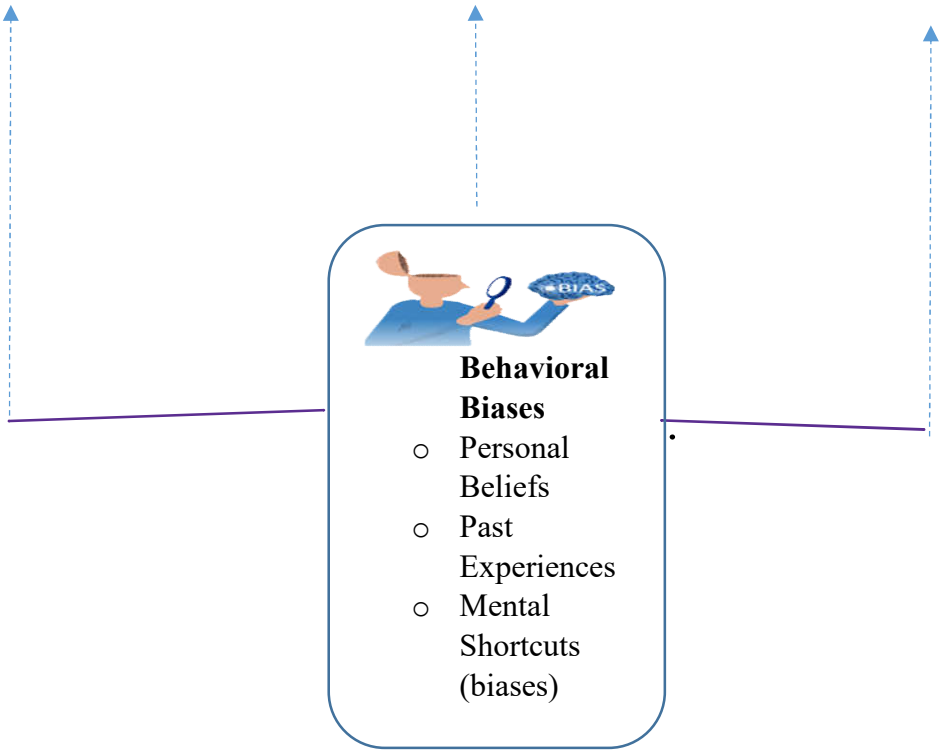
This framework shows how data-driven tools influence managerial judgement, while behavioral biases affect the interpretation of data of the final decision.

- Interpretation of data
- Use of experience
- Evaluation of options

- Choice of action
- Implementation
- Results/impact

DATA-DRIVEN TOOLS → MANAGERIAL JUDGEMENT → DECISION OUTCOME

- Collection of data
- Analysis of data
- Reports/insights



Source: Developed by the researcher

- Data driven tools provide information that managers use.
- Managers apply their judgment to interpret the data and evaluate options.
- Behavioral biases can influence the judgement and affect the final decision outcome

RESEARCH METHODOLOGY:

The present study adopted a **descriptive research design** to examine the influence of behavioral biases on data-driven decision-making and managerial judgment. A **quantitative research approach** was employed to collect measurable data and analyze the relationships among the study variables. The research focused on understanding how managers interact with analytical tools and how behavioral factors influence their decision-making processes.

The study was based on **primary data** collected through a structured questionnaire administered to **102 managerial professionals** from different industries. A **convenience sampling technique** was used for selecting respondents. The questionnaire consisted of

demographic questions and statements related to behavioral biases, trust in analytics, managerial judgment, and reliance on data-driven tools.

The collected data were analyzed using **Jamovi statistical software**. Various statistical techniques, including **descriptive analysis, reliability analysis (Cronbach's Alpha), Independent Sample t-test, One-Way ANOVA, correlation analysis, and regression analysis**, were applied to test the hypotheses and examine the relationships among the variables. These techniques helped in identifying significant patterns, associations, and the overall impact of behavioral factors on managerial decision-making.

DATA ANALYSIS AND INTERPRETATION:

The collected data from 102 managerial professionals was analyzed using Jamovi statistical software. Descriptive statistics were used to examine the demographic profile and responses of participants. Reliability analysis using Cronbach's Alpha confirmed acceptable internal consistency of the measurement scales after removing items that reduced overall reliability.

Independent Sample t-test and One-Way ANOVA were conducted to examine the influence of demographic variables on behavioral bias. The results indicated that gender, age, educational qualification, and managerial experience did not have a statistically significant influence on behavioral biases among managers. Therefore, demographic characteristics were not found to be major determinants of behavioral bias in data-driven decision-making.

Correlation analysis revealed significant relationships among behavioral bias, trust in analytical systems, reliance on data-driven tools, and managerial judgment. The findings suggested that higher behavioral bias was associated with lower trust in data-driven decision-making, while greater reliance on analytical tools was associated with improved managerial judgment and decision effectiveness.

Regression analysis was performed to assess the impact of behavioral factors on managers' interpretation of analytical data and the effectiveness of managerial judgment. The results indicated that behavioral factors significantly influence the interpretation of analytical information and managerial decision outcomes. Further analysis also showed that reliance on data analytics plays a significant moderating role by reducing the negative impact of behavioral bias on managerial decision-making.

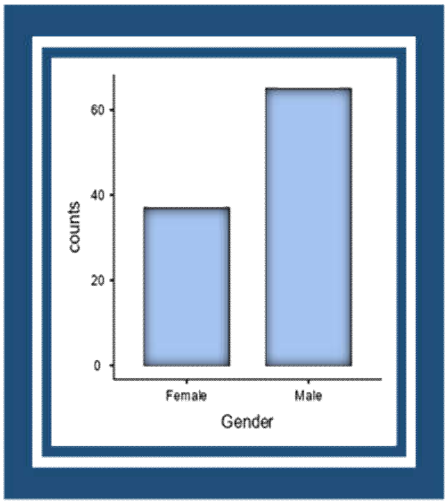
HYPOTHESES TESTING SUMMARY:

H_{01}	H_{02}	H_{03}	H_{04}
Accepted	Rejected	Rejected	Rejected

Overall, the findings indicate that while demographic factors have limited influence on behavioral bias, behavioral factors significantly affect managerial interpretation of data and decision quality. The study further confirms that reliance on data analytics can enhance managerial judgment and reduce the adverse effects of behavioral biases in organizational decision-making.

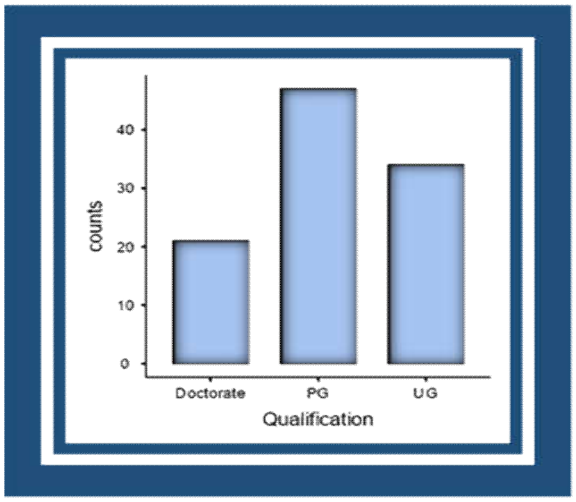
Plots

Gender



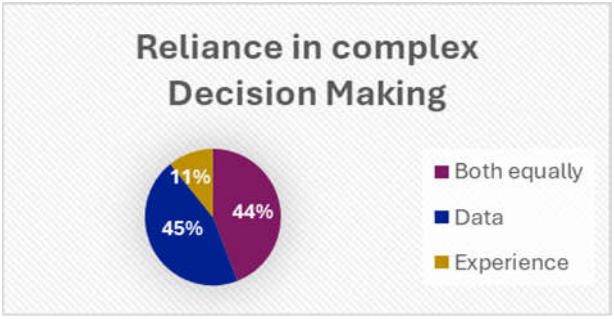
Plots

Qualification

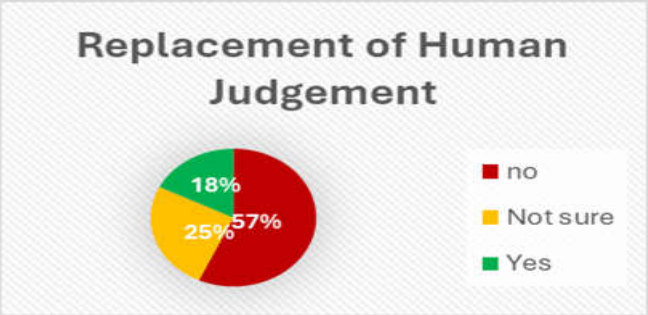


The demographic analysis indicates that the majority of respondents were male, accounting for 63.7% of the total sample, while female respondents represented 36.3%. This suggests comparatively higher participation from male professionals in the study. The gender distribution provides a diverse perspective for understanding managerial decision-making behavior.

The analysis shows that the majority of respondents possessed postgraduate qualifications (46.1%), followed by undergraduate degree holders (33.3%), while 20.6% held doctorate qualifications. This indicates that most respondents were academically qualified and capable of understanding data-driven and analytical decision-making concepts.



The analysis reveals that 45% of respondents rely mainly on data in complex situations, while 44% prefer an equal balance of data and experience. Only 11% rely primarily on personal experience alone. This indicates that managers increasingly value analytical support in handling complex decisions, although human judgment still remains an important factor.



The findings show that 57% of respondents do not believe that data-driven systems can completely replace human judgment, while 25% remain uncertain and only 18% believe that such replacement is possible. This suggests that most managers still consider human reasoning, intuition, and experience essential in organizational decision-making despite the growing use of analytics and AI-based systems.

Independent Samples T-Test – Gender and Behavioural Bias

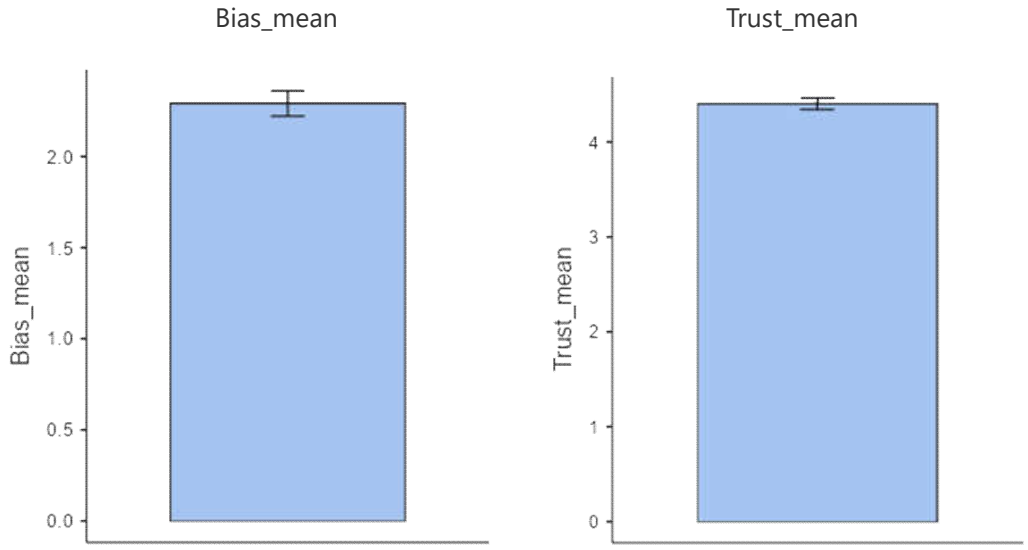
An independent samples t-test is a statistical technique used to determine whether there is a significant difference in the mean values of a continuous variable between two independent groups. In this study, it is applied to examine whether behavioural bias differs between male and female respondents.

The hypothesis tested was:There is no significant difference in behavioural bias between male and female respondents.

Descriptives

	Bias_mean	Trust_mean
N	102	102
Missing	0	0
Mean	2.29	4.41
Median	2.17	4.67
Standard deviation	0.683	0.583
Minimum	1.17	1.50
Maximum	4.17	5.00

Plots



Independent Samples T-Test

		Statistic	df	p	Mean difference	SE difference		Effect Size
Bias_mean	Student's t	0.107	100	.915	0.0171	0.160	Cohen's d	0.0249

Note. H_a $\mu_{Female} \neq \mu_{Male}$

Group Descriptives

	Group	N	Mean	Median	SD	SE
Bias_mean	Female	24	2.31	2.25	0.751	0.153
	Male	78	2.29	2.17	0.666	0.0754

The **t-value** of **(0.107),** indicates that the mean for the two groups (male and female) is extremely close together based on the variability of the groups.

The **p-value (0.915)** is considerably greater than the standard significance level of 0.05 so the difference we observed is not statistically significant therefore there is no evidence to support that gender has an effect on behavioural bias.

The **mean difference** for the two groups **(0.0171)** indicates very little difference in average behaviour bias scores for males and females. Thus, it would appear that the two groups are virtually identical in terms of their behaviour bias scores.

The calculated effect size (Cohen's d = 0.0249) is virtually zero, indicating both statistically insignificant group differences and practically negligible group differences.

One-Way ANOVA: Age and Behavioural Bias

A **One-Way ANOVA (Analysis of Variance)** is used to test whether there is a statistically significant difference in the mean values of a continuous variable across more than two independent groups.

In this study:

- **Independent variable (Factor):** Age group
- **Dependent variable:** Behavioural Bias (Bias_mean)

It tests whether behavioural bias differs across different age categories.

ASSUMPTION CHECK: Lavene's Test (Homogeneity of variance)

- F = 0.410
- p = 0.801

Homogeneity of Variances Test (Levene's)

	F	df1	df2	p
Bias_mean	0.410	4	97	.801

Levene's test checks whether the variability of scores is similar across all groups.Since **p > 0.05**, the assumption of equal variances is **met**.

This means ANOVA results are valid.

One-Way ANOVA (Welch's)

	F	df1	df2	p
Bias_mean	**0.715**	**4**	**14.3**	**.595**

Group Descriptives

	Age	N	Mean	SD	SE
Bias_mean	26-35	46	2.18	0.658	0.0971
	36-45	11	2.42	0.790	0.2382
	46-55	5	2.17	0.667	0.2981
	Above 55	5	2.17	0.816	0.3651
	Below 25	35	2.43	0.673	0.1138

INTERPRETATION

The F-ratio provides a measure of how much variation is present among groups in terms of behavioural bias, and calculates how much is present within the groups by comparing each group's mean score to the overall mean score. The corresponding p-value (0.595) is greater than 0.05, which indicates that there is no significant difference in the behavioural bias of participants in the different age categories.

A one-factor ANOVA analysis was performed to evaluate if there were differences in behaviour bias among the three age categories of participants in the study. A one-factor ANOVA is a form of statistics used to compare the means of a continuous variable among two or more independent groups.

Prior to conducting the analysis, a test of homogeneity of variance (Levene's test) was completed to address the assumption of equal variances. The results from the test ($F = 0.410$, $p = 0.801$) verified that that the assumption of equal variances was valid, as a statistically significant variance would mean that at least one of the means is significantly different from the others.

The conducted Welch's ANOVA supported the findings of Levene's test by demonstrating that there was no significant difference in behaviour bias based on the results of the ANOVA analysis ($F = 0.715$). Because the p-value was greater than 0.05, the null hypothesis was accepted.

Based upon the descriptive statistics from the three groups, the means for the behaviour bias from each of the three groups of participants were relatively similar; thus indicating minimal variability across the groups of participants with means for behaviour bias for each age group between 2.17 and 2.43.

GROUP DESCRIPTIVES

Age Group	Mean Bias
Below 25	2.43
26–35	2.18
36–45	2.42
46–55	2.17
Above 55	2.17

- All of the group means are close to one another. There is no strong evidence of an increasing or decreasing trend based on age. The differences between group means are small and probably a function of random variability.
- **H_{01}** (no differences exist between the groups by age) → **ACCEPTED**

CORRELATION ANALYSIS- Behavioral Bias and Trust

It is used to define both the degree of relationship (strength) between two continuous variables, as well as their direction. This study applied Pearson's correlations as a means of analyzing the relationship between behavioural biases (Bias_mean) and levels of trust for data driven decisions (trust_mean).Bias_mean is defined as the average bias score.Higher average represents a greater tendency for managers to be biased when making decisions. Trust_mean is defined as the average trust rating. Higher average trust ratings mean a greater level of trust in data driven decisions systems.

Correlation Matrix

		Bias_mean	Trust_mean
Bias_mean	Pearson's r	—	
	df	—	
	p-value	—	
Trust_mean	Pearson's r	-0.456***	—
	df	100	—
	p-value	<.001	—

Note. * p < .05, ** p < .01, *** p < .001

The correlation coefficient (r = -0.456) demonstrates that there is a negative correlation exists between behavioural bias and trust. A negative correlation is indicative of the fact that as one variable increases, the other variable decreases. In this instance, it means that:

• As behavioural bias increases, trust in data-driven decision-making decreases

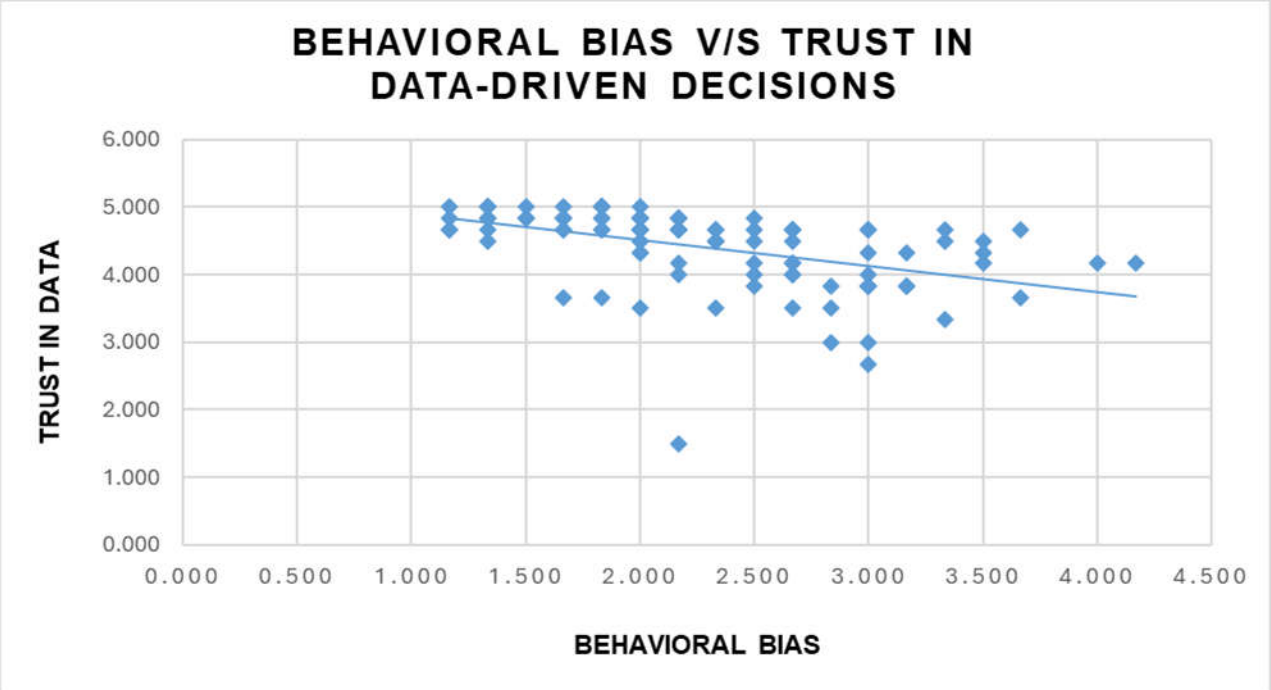
• Conversely, as trust associated with data-driven decision making increases, behavioral bias decreases

The absolute value of the correlation coefficient (0.456) shows a moderate level of association between the two variables and supports the statement "Behavioural Bias and Trust are meaningfully related though not perfectly nor strongly dependent on each other, suggesting that there are other variables influencing the relationship between these two factors."

The **p-value (< 0.001)** represents the level of statistical significance. Since the p-value is less than the standard significance level of 0.05, the result is statistically highly significant. This means that the observed relationship is not due to random chance and is reliable for interpretation.

HYPOTHESIS TESTING DECISION:

H_{03} - There is no significant relationship between Behavioral Bias and Managerial Judgment/Trust → **REJECTED**



Statistically significant evidence indicating the presence of an inverse relationship between behavioural bias and levels of trust in data-driven decision making systems was established. The empirical support provided by this research demonstrates that if managers possess more behavioural bias, then they are likely to have lower levels of trust in their ability to make decisions using analytical processes.

REGRESSION ANALYSIS (Behavioural Bias and Trust)

Regression analysis measures the relationship between one independent variable and another dependent variable to determine if one will predict or explain variance in the other. Regression differs from correlation, as correlation only demonstrates association; regression demonstrates an additional degree of predictive capability.In this study:

- **The Dependent Variable (DV): Trust_mean** (Trust in data-driven decision making)
- **The Independent Variable (IV): Bias_mean** (Behavioural Bias)

Behavioural bias is cognitive tendencies that impacts managerial judgement and decision making, while trust refers to the indicator of the level of reliance placed by a manager upon an analytical system to produce accurate decision making information.

MODEL FIT (GOODNESS OF FIT)

Linear Regression

Model Fit Measures

Model	R	R^2
1	0.456	0.208

Note. Models estimated using sample size of N=102

Model Coefficients - Trust_mean

Predictor	Estimate	SE	t	p
Intercept	5.300	0.1817	29.17	<.001
Bias_mean	-0.390	0.0760	-5.13	<.001

The model summary produced the following results:

- R = 0.456
- R^2 = 0.208
- N = 102

R^2 value (0.208) is the measure to demonstrate how much impact (i.e. variance) the independent variable (i.e. Behavioural Bias) has on the dependent variable (i.e. Trust). In this model, Behavioural Bias explains 20.8% of the variance in Trust, while the remaining variance (79.2%) is attributed to other external or unmeasured variables. This indicates that

Behavioural Bias has a moderate amount of explanatory power, suggesting that Behavioural Bias is an important but not the sole determinant of trust in data-driven decision-making.

REGRESSION COEFFICIENTS

The regression coefficients are:

- **Intercept = 5.300 (p < 0.001)**
- **Bias_mean = -0.390 (t = -5.13; p < 0.001)**

The intercept value (5.300) shows what Trust is predicted to be when Behavioural Bias is zero; however, it cannot be interpreted in behavioural terms but instead is only the starting point of the regression equation.

The regression coefficient (β = -0.390) for Behavioural Bias indicates a negative association with Trust; meaning that one unit increase in Behavioural Bias will cause Trust to decrease by 0.390 units, assuming that the other variables remain the same.

The t-value (-5.13) and p-value (< 0.001) of the results demonstrate that Behavioural Bias has a strong statistically significant effect on Trust. Since the p-value is less than 0.05, and therefore the relationship is not due to chance and therefore statistically reliable.

HYPOTHESIS TESTING DECISION

- H03 (There is no significant relationship between behavioural bias and trust) → **Rejected**

The Regression Observational Analysis confirms that Behavioural Bias is a statistically significant negative predictor of Trust in Data-Driven Decision making. The data reveals that as Behavioural Bias increases, Trust in Analytical Systems and Data-Driven Managerial Judgement decreases. The model explains 20.8% of the variance of Trust and as a result, although the model illustrates a meaningful partial contribution to the Trust created through Managerial Decision Making, other factors may also contribute to the trust formation in managerial decision-making.

Multiple Regression Analysis – Trust in Data-Driven Decision-Making

Multiple regression analysis is a statistical technique used to examine the **effects of two or more independent variables on a single dependent variable. It provides a deeper understanding of how much each independent variable contributes to explaining variances within the dependent variable, while at the same time controlling for other independent variables.**

In this study:

- **Dependent Variable (DV):** Trust_mean (Trust in data-driven decision-making)
- **Independent Variables (IVs):**
  - Bias_mean (Behavioural Bias)

- Section B Mean (Use of Data-Driven Tools)

1. Model Fit (Explained Variance)

The model summary produced the following results:

Multiple Linear Regression

Model Fit Measures

Model	R	R^2
1	0.626	0.392

Note. Models estimated using sample size of N=102

Model Coefficients - Trust_mean

Predictor	Estimate	SE	t	p
Intercept	2.053	0.6136	3.35	.001
SECTION B MEAN	0.634	0.1156	5.48	<.001
Bias_mean	-0.274	0.0701	-3.90	<.001

- R = 0.626
- R^2 = 0.392
- N = 102

The R^2 value, which is 0.392, indicates the portion of the variation in trust (the dependent variable) that can be jointly explained by the two independent variables (behavioural bias and the use of data-driven tools). This means that 39.2% of the variability in trust can be reported as being explained by the combination of behavioural bias and the use of data-driven tools, while the remaining 60.8% of the variability in trust is influenced by factors related to the external environment that are not included in this model. Thus, the

explanatory power of this model is strong and represents a significant improvement over the previous model which only included one predictor.

2. Regression Coefficients (Individual Effects of Predictors)

The regression coefficients are as follows:

- Intercept = 2.053 (p = 0.001)
- Section B Mean = 0.634 (t = 5.48, p < 0.001)
- Bias_mean = -0.274 (t = -3.90, p < 0.001)

The intercept of 2.053 is the predicted value of trust in the absence of any independent variables (i.e., when both independent variable values are equal to zero). Although the intercept does not itself have an easily interpretable behavioural component, it is considered the base of the regression equation.

The **mean coefficient (β = 0.634)** indicates a **statistically significant positive relationship** between the increased use of data-driven tools and trust in data-driven decision-making systems. The relationship is statistically significant **(p < 0.001)** and there is a significant amount of evidence indicating that the use of analytical tools to make decisions increases trust.The **behavioural bias coefficient (β = -0.274)** indicates a **statistically significant negative relationship** between behavioural bias and trust in data-driven decision-making systems. This suggests that as the level of behavioural bias increases, the trust in data-driven decision-making systems decreases, even when controlling for the use of data-driven tools.

3. Hypothesis Testing Decision:

H_{02} (Behavioural factors do not significantly influence interpretation/use of data) → **Rejected**

H_{03} (There is no significant relationship between behavioural bias and trust) → **Rejected**

This multiple regression analysis indicates that both Behavioral Bias and the extent to which Data-Driven Tools are used are significant predictors of Trust in Data-Driven Decision-Making. The predictive capacity of this model accounts for 39.2% of the variance in Trust; therefore, providing a strong level of explanation.

The results of this analysis indicate a two-fold impact; while Behavioral Bias is negatively impacting Trust, the increased use of Data-Driven Tools is positively associated with an increase in Trust. This indicates that the amount of managerial trust in Data-Driven Systems will depend both upon psychological biases and the extent to which technology(s) are utilized.

CONCLUSION:

The empirical findings indicate that Behavioural biases exist mostly due to psychological constructs, and not necessarily due to being influenced by the various demographic and social

characteristics of any given population group. Demographic factors did not appear to affect behavioural biases very much. However, the various cognitive and behavioural characteristics of managers will create a 'trust' environment in relation to their perception of the information produced by the data-driven systems and to what extent they use it for their decision-making processes.

The evidence also supported the negative influence of behavioural biases on managers' levels of trust in their use of data analytics for their decision-making, and the existence of a positive effect on managers' levels of trust who primarily relied on using data analytics.

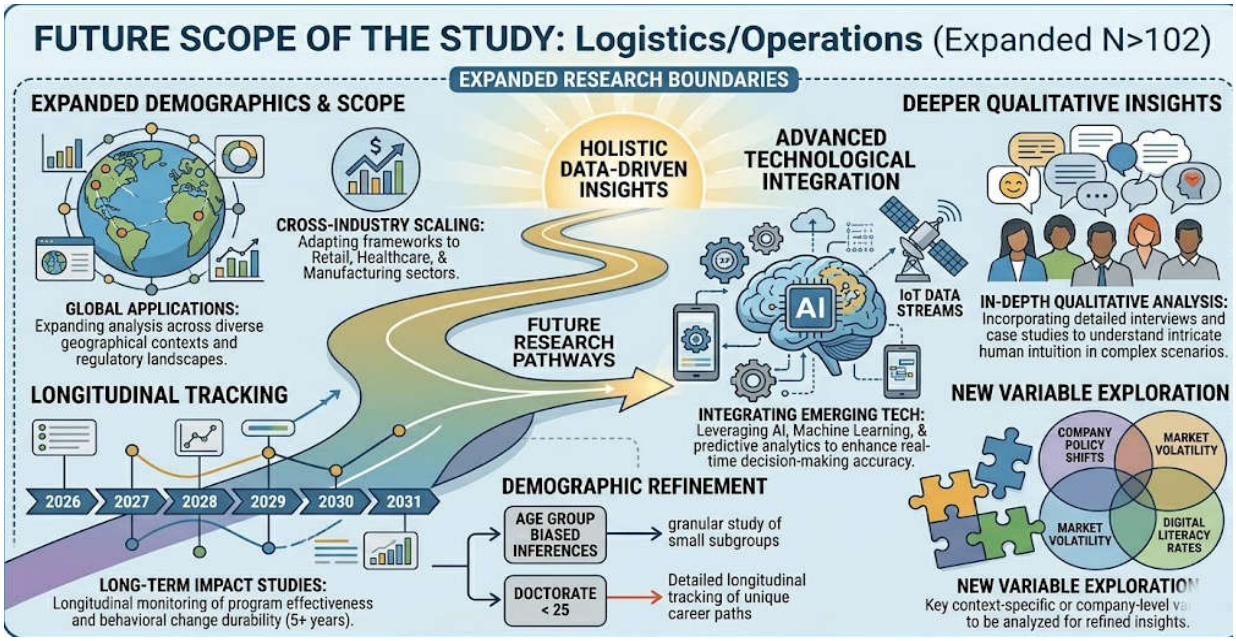
The empirical analysis produced a number of predictive models with strong explanatory power, validating the conceptual framework of this empirical study.

In conclusion, the empirical findings provided strong support to the argument that managers' decision-making behaviour in a data-oriented environment is driven primarily by cognitive and behavioural factors and not by demographic factors.

LIMITATIONS AND FUTURE SCOPE OF THE STUDY

Limitations of the Study

- The study was limited to a sample size of **102 respondents**, which may not fully represent all industries and managerial levels.
- Data were collected using **convenience sampling**, which may affect the generalizability of the findings.
- The study relied on **self-reported responses**, which may be subject to personal bias and perception errors.
- The research adopted a **cross-sectional design**, capturing responses at a single point in time.
- The study focused primarily on behavioral biases and did not examine other organizational factors such as culture, leadership, or organizational structure.



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