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Transforming Data into Insights: The Impact of Business Intelligence on Enhancing Decision-Making and Achieving Organizational Success

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Abstract

The role of Business Intelligence (BI) enabled capability in contributing to better decisions such as decision making process and organizational success is studied in this research. Building on recent Big Data, Artificial Intelligence (AI) and data analytics advances, this research carefully explores the mechanisms by which BI transforms raw data to actionable insights in order to facilitate strategic and operational decision making. Data were collected from decision makers in the constantly evolving telecom & technology sector of Pakistan using a detailed quantitative approach. Our findings show that BI capabilities have a significant positive effect on decision making, and this effect in turn mediates BI initiative success. It not only improves on the existing literature with a twentieth century approach to understanding the enormous impact BI has on organizational performance, but also provides practical advice for those managers seeking to invest in BI in a more optimal way. This research highlights the critical importance of leveraging advanced BI tools in the current information driven business setting by elucidating how BI capabilities can improve decision making and organizational outcomes. The insights of this study will take the BI technology to its full potential by empowering the managers to utilize the BI systems to create an informed decision making culture and sustained competitive edge.

Keywords: *Business Intelligence (BI), Decision-making, Organizational success, Data analytics, Data-driven decision-making*

1. Introduction

Business Intelligence (BI) has the potential to help organizations address key challenges and capitalize on available opportunities (Trieu, 2017). BI involves extracting maximum information from available data to create substantial value for businesses. Advent of Big Data, Machine Learning, Artificial Intelligence, Data

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Analytics, and Data Pattern Recognition has revolutionized the concept of value creation within organizations. Nowadays, data is produced from a wide range of sources, including external ones like the internet, social media, government statistics, and corporate announcements, as well as internal ones like digital controllers, IoT devices, and cameras (Bello-Orgaz *et al.*, 2016). Businesses can use this information to improve their decision-making, which is sometimes the challenging and most important part for management.

BI is a process that transforms raw data into information and subsequently into actionable knowledge (Khan and Quadri, 2012). It conceptualizes and visualizes data, transforming it into knowledge in a more efficient and unconventional manner (Ghasemaghaei *et al.*, 2017). This capability enables organizations to address decision-making challenges swiftly and effectively. Successful enterprises leverage BI technology to enhance their business decision processes, facilitating better and faster decision-making. It is crucial for decision-makers to have actionable information at the right place, at the right time, and in the right form, which is made possible through BI. This tool and technique bring knowledge to decision-makers by presenting multidimensional internal and competitive knowledge through data correlation using information technology and knowledge management.

Organizations often possess large volumes of data that are technically and geographically dispersed. BI helps to relate, correlate, and differentiate this data, transforming it into a valuable asset (Trieu, 2017). This asset, in the form of knowledge extracted from available data, is critical for decision-making, the study examines that role of BI in decision making and how BI success is mediated by BI. Managers use various tools and techniques to aid their decision-making processes, and better knowledge and information enable more effective decisions. The use of BI is increasingly integrated into daily decision-making, playing a critical role in business operations.

Information technology has disrupted traditional decision-making processes, with managers now seeking more knowledge and insights before making decisions. BI provides in-depth knowledge and insights, aiding managers in making better and more effective decisions. The use of BI processes enhances organizational performance and market competence, leading to organizational success (Richards *et al.*, 2017). The knowledge obtained through BI is a principal source of creating value and gaining a competitive advantage in the market. As competition intensifies and the global market moves towards perfect competition, the competitiveness of organizations has increased, driven by the rise of e-commerce in various economies. Moving forward, it is essential to understand how to manage BI successfully post-implementation (Wieder and Ossimitz, 2015). In Literature review the diagram illustrates the basic workflow of a BI application, showing how data is transformed into knowledge, which is then used for decision-making, the concept of a data warehouse, where data is collected from multiple sources and transformed into reports and analyses by BI algorithms, is central to this process (Figure 1).

2. Literature Review

2.1. Business Intelligence Capabilities: (BI-Capabilities)

Business Intelligence (BI) capabilities refer to the tools and techniques used to transform data into knowledge, presenting it in a way that is understandable and valuable to humans, these capabilities are essential for extracting maximum information from data, which can be processed from various sources, both internal and external (Gürses, 2014). The integration of technological capabilities, data sources, data reliability, and the incorporation of diverse data types are significant aspects of BI-capabilities (Bello-Orgaz *et al.*, 2016). By establishing a unified corporate view, analytics, and process overview, effective BI-capabilities allow firms to react quickly to market opportunities and threats (Ghasemaghaei *et al.*, 2017).

The fact that a significant amount of the BI budget is devoted to integration and deployment because of its complexity serves as a reminder of how tough it is to integrate BI technologies (Trieu, 2017). Inconsistencies in data, lack of availability, and unreliability can undermine the capabilities of Business Intelligence. The BI framework consists of a range of systematically aligned processes, such as data warehousing, data mining, data storage, logical processing, querying, and reporting inclusive (Koscielniak and Puto, 2015). Big Data, constituted of its gigantic volume, variety, velocity, and value, supports decision-making based on data

Figure 1: Concepts and Definitions
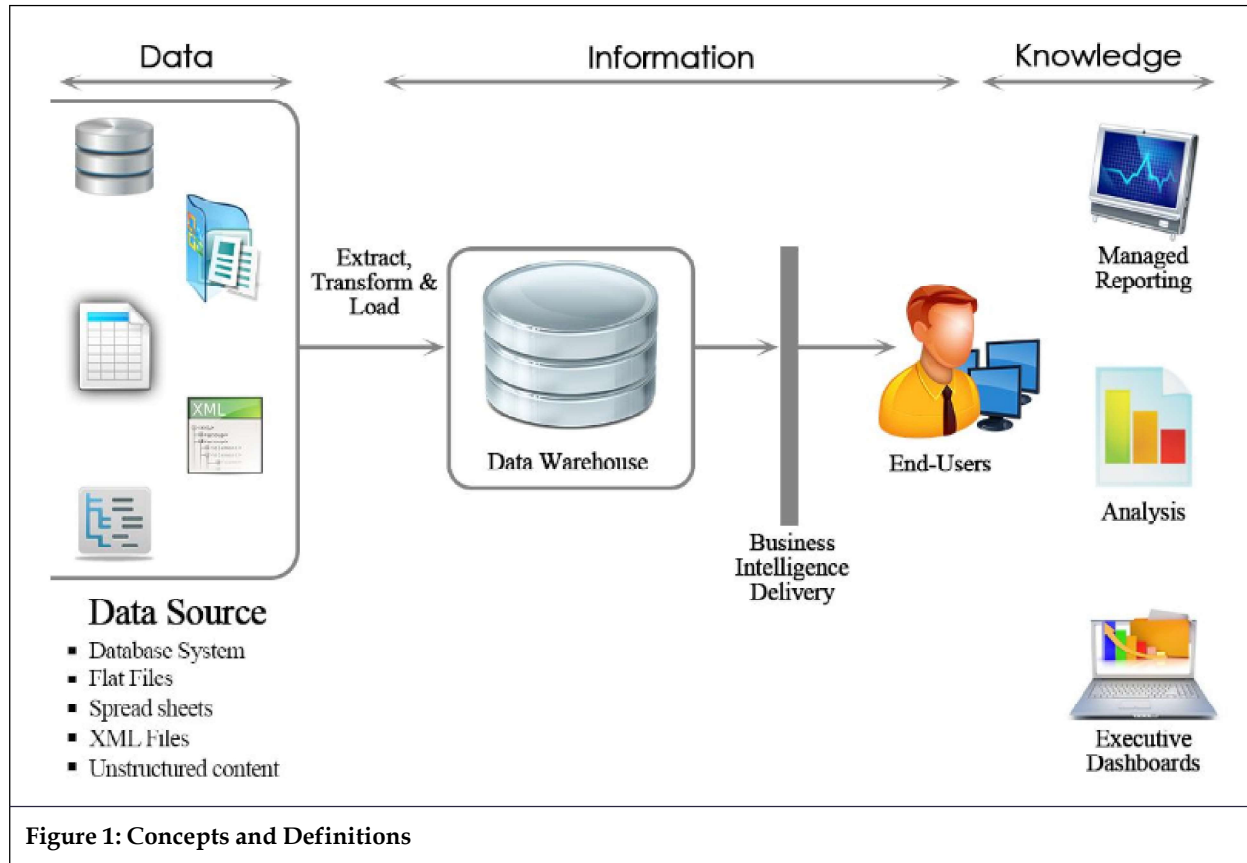
insight. Organizations have the potential to enhance their operational efficiency and effectiveness through the strategic application of Business Intelligence (BI) for forecasting market trends and shifts. To ensure sustained success and extensive utilization, a persistent advancement in BI capabilities is essential (Janssen *et al.*, 2017). Additionally, the decision-maker's management approach influences the effectiveness of BI capabilities, highlighting the significance of human factors in maximizing BI's role as a decision-making instrument.

2.2. Decision Making

A fundamental component of organizational management is the process of decision-making, which is significantly influenced by Business Intelligence (BI). The traditional reliance on intuition in decision-making has been replaced by analytical methodologies and processes based on logical and rational reasoning (Papulova and Gazova, 2016). The significance of data-driven decision-making is highlighted by contemporary examples of successful business trajectories and strategic choices (Mussoa and Francioni, 2012). By adopting BI technologies, managers can improve and provide clarity to their judgments prior to implementation, as they can augment their decisions before implementation, providing precision and betterment (Elgendy and Elragal, 2016).

BI tools develop alternatives for decision-makers, helping them select the best available options, the use of data-driven tools for decision-making is rising, as the data insights provide clear paths and answers to decision-makers' questions (Mussoa and Francioni, 2012). Different decision-making styles among managers necessitate the use of various techniques, with knowledge-based data becoming an appropriate tool for decision-making (Koscielniak and Puto, 2015). Decision-making occurs at all organizational levels, from long-term strategic decisions at the top management level to tactical decisions at lower levels (Arnott *et al.*, 2017).

The impact of BI on organizational decision-making includes efficiency, effectiveness, and the transformation of business processes (Trieu, 2017). The strategic alignment of organizational hierarchy in decision-making is crucial for achieving common goals. Organizations strive for strategic alignment and internal coherence, using BI tools to achieve these objectives (Popovic *et al.*, 2012).

2.3. Business Intelligence Success (BI Success)

Measuring the success of BI systems is complex, with various metrics such as system objectives, return on investment, system availability, and the knowledge and insights generated (Popovic *et al.,* 2012). BI success should be considered a core competency for organizations, helping them compete in traditional and non-traditional markets. Significant economic benefits can be achieved through BI, including marketing analyses, customer analyses, and monitoring competitors and market trends (Richards *et al.,* 2017).

Organizations that fail to set success parameters and scales for BI deployment often do not achieve the desired results. The alignment between BI-capabilities and expected knowledge is crucial for creating value (Richards *et al.,* 2017). Effective and efficient decision-making is a shared challenge in today's fast-paced world, requiring rational decisions backed by available knowledge (Papulova and Gazova, 2016).

The fast changes that happen around the world require quick decisions to be made with a high level of commitment. BI tools provide real-time information on the situation and possible options, hence assisting managers in making quick, evidence-based decisions (Ghasemaghaei *et al.,* 2017). It thus explores and identifies the need for business intelligence competency and the latter as a means for decision-making to enable organizations to consider data analytics in understanding the role of human intuition in the decision-making process (Papulova and Gazova, 2016).

2.4. Business Intelligence Capabilities Business Intelligence Success

The quality of data in BI-capabilities is critically important for evaluating the impact of decisions (Moges *et al.,* 2016). BI-capabilities gauge the decision impact on expected outcomes through analytics, providing clear success parameters for decision-makers. Big Data analytics form the foundation for sustainable competitive advantage, enhancing BI-capabilities (Wamba *et al.,* 2017). The relation between Business Intelligence capabilities and the success of Business Intelligence initiatives is close; enhanced capabilities lead to better decision-making, thus contributing to organizational success. This means that with comprehensive Business Intelligence tools, organizations are better positioned to turn raw data into actionable insights efficiently, which enables not only better facilitation of decision-making but also quick responses on the part of the organization to marketplace changes and opportunities.

2.5. Business Intelligence Capabilities and Decision Making

BI-capabilities are positively related to the knowledge produced for decision-making (Isik *et al.,* 2013). Organizations use BI tools to structure their decision-making processes, achieving strategic alignment and internal coherence. The knowledge generated by BI must be incorporated into organizational decision-making procedures to be effective (Popovic *et al.,* 2012). There is a clear and beneficial link between BI capabilities and decision-making, underscoring the necessity of incorporating BI into organizational workflows.

2.6. Decision Making and Business Intelligence Success

The success of BI is closely linked to the knowledge it generates for strategic and operational decision-making (Arnott *et al.,* 2017). Data-driven analytics optimize strategic decisions, contributing to BI success (Moges *et al.,* 2016). The relationship between decision-making and BI success is significant, as effective decision-making enhances the overall success of BI initiatives.

2.7. Theoretical Framework

The foundation of this study's theoretical framework rests on the following hypotheses (Figure 2).

- **H1:** BI-capabilities have a significant relationship with BI success.

- **H2:** BI-capabilities have a relationship with decision-making.

- **H3:** Decision-making has a relationship with BI success.

- **H4:** Decision-making mediates the relationship between BI-capabilities and BI success.

Figure 2: Theoritical Framework
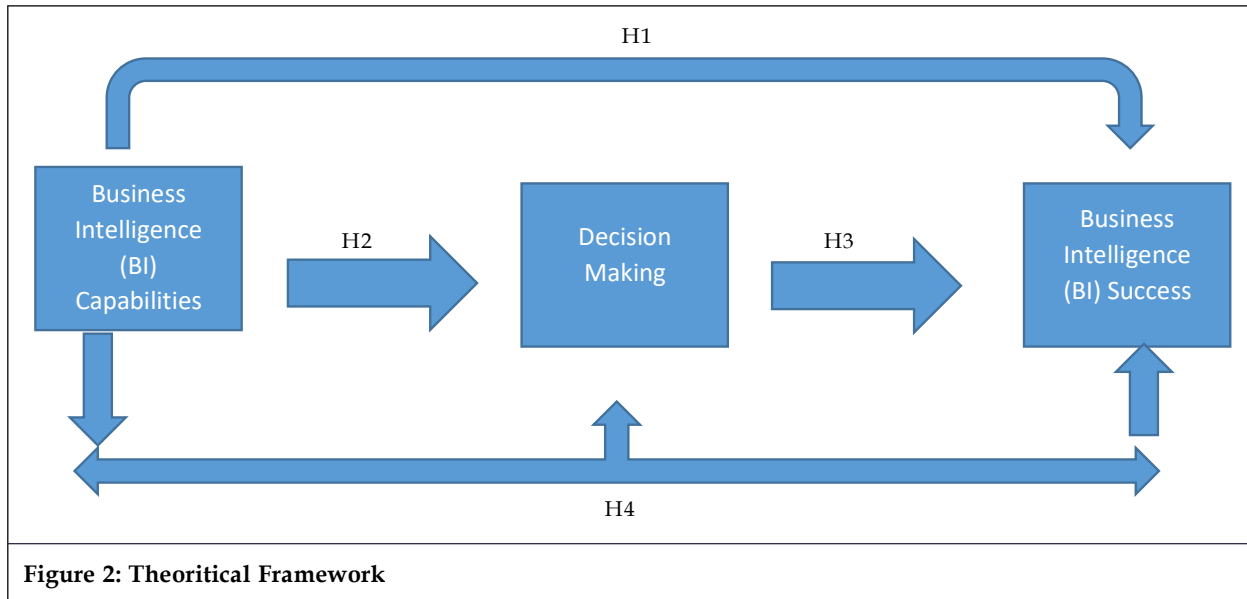
2.8. Research GAP

Because BI applications are expensive, investing in them requires a compelling business case. The study finds a knowledge gap regarding the decision-making process's mediation function between BI-capabilities and BI success (Gürses, 2014; Wieder and Ossimitz, 2015). By investigating the connection between BI-capabilities, decision-making, and BI success, this study seeks to close this gap.

3. Research Methodology

3.1. Sample Selection

The sampling criteria for this study was non-probability convenience sampling, given the limited usage of Business Intelligence (BI) tools in Pakistan, the focus was on organizations operating in the Rawalpindi/ Islamabad region that are currently using BI applications. This strategy was adopted to guarantee that the sample had pertinent respondents with first-hand knowledge of BI technologies, therefore offering insightful information on the research issues.

3.2. Population Frame

The available telecom and IT sectors in Pakistan, particularly in the areas of Islamabad and Rawalpindi, made up the population frame. The researcher previous job history was also in telecom sector which helped in collecting the Data and Sampling. These industries were chosen because, in comparison to other industries in the nation, they have higher rates of BI tool use. Organizations actively employing BI applications within these areas were the focus of the study.

3.3. Unit of Analysis

The unit of analysis for this study was decision-making managers who are using BI tools in their organizations. These individuals were chosen because they are directly involved in the decision-making processes and can provide firsthand information on the impact of BI-capabilities on decision-making and organizational success. The research relied on primary data collected through an adapted questionnaire.

3.4. Data Collection

Data was collected using a close-ended questionnaire method, the questionnaire was distributed in both printed form and via Google Docs to ensure a wider reach. Respondents were selected based on their interaction with BI tools during their careers and their experience with these tools' usage. The questionnaire included Likert scale items, with replies ranging from 1 (strongly disagree) to 5 (strongly agree), the questionnaire was adapted from the article by Gürses (2014) and other relevant literature. To broaden the area of data collecting, the questionnaire was also shared on social media sites like Facebook and LinkedIn.

3.5. Type of Study

Because it involved deductive research and the testing of pre-existing models and assumptions, positivism was the research paradigm, which used a quantitative research approach. Utilizing modified Gürses (2014) questionnaires, a quantitative methodology was adopted. The research type adapted by researcher was descriptive, focusing on the relationships between BI-capabilities, decision-making, and BI success as variables, the study includes three variables: BI-capabilities (independent variable), decision-making (mediating variable), and BI success (dependent variable).

3.6. Reliability Analysis

The research showed that all the constructs had Cronbach's Alpha within the acceptable limits, hence verifying the reliability and consistency of the items of measurement. An assessment of internal consistency was done to validate the reliability of the constructs. Reliability assessment of the instruments was done through Cronbach's Alpha, and the internal consistency among items was thereafter verified. George and Mallery (2010) assert that a Cronbach's Alpha score ranging from 0.6 to 0.7 is considered acceptable. The conducted reliability analysis indicated that all constructs exhibited satisfactory Cronbach's Alpha values.

3.7. Descriptive Statistical Analysis

Descriptive statistics were used throughout deductive analysis and investigation of existing models and hypotheses to describe the data efficiently. The procedures involved included the computation of the mean and SD (standard deviation) to determine the tendency and dispersion of the variables, respectively. Skewness and kurtosis analyses were also determined as tests of shapes of the distribution of the data, from the results it was found that skewness and kurtosis indices fell in the range of -2 and +2, which indicate that the it distribution is normally distributed. This normality assumption is crucial to keeping all successive statistical tests accurate. Such descriptive statistics would therefore give preliminary insight into the dataset, thereby enhancing the accuracy and reliability of the resultant inferential statistics and the hypothesis testing.

3.8. Correlation Analysis

In order to analyze the relationships among the variables, a correlation analysis was conducted. Pearson's correlation coefficients were calculated in order to establish the directionality and strength of these relationships. The results indicated strong positive associations between decision-making, BI capabilities, and BI success. This implies that when BI capabilities increase, the process of decision-making improves, and so does BI success. The results emphasize the interdependent characteristics of these variables and point out the importance of enhancing business intelligence capabilities for the realization of organizational success.

3.9. Regression Analysis

Regression analysis also assessed the inter-links that exist among the variables. This study tested various hypotheses to identify the impact of BI capability on the success of the BI, using decision-making as a moderating aspect. The regression analysis provided the output of the nature and the strength of such relationships, thus proving that decision-making is an important moderator in influencing the impacts of BI capabilities on organizational success. By investigating these hypotheses, this research explained how increased BI competence leads to higher quality decisions and, ultimately, better BI success.

- **H1:** BI-capabilities have a significant relationship with BI success.

- **H2:** BI-capabilities have a relationship with decision-making.

- **H3:** Decision-making has a relationship with BI success.

- **H4:** Decision-making mediates the relationship between BI-capabilities and BI success.

3.10. Mediation Analysis

The mediating effect of decision-making was investigated using the Andrew F. Hayes model 4. From the output of mediation analysis, it was found that the decision-making significantly mediates between BI capabilities and BI success. This also leads to the hypothesis that 34% of variance in BI success is contributed by the BI capabilities. The analysis underlines that the potential effectiveness of BI capabilities in driving BI

success is in essence realized through enhanced decision-making processes. This does indicate the crucial importance of embedding strong decision-making frameworks into an organization for full exploitation of the potential of BI capability to optimize organizational outcomes.

3.11. Conclusion

This approach made sure that the results were reliable and valid. The use of different quantitative approaches includes reliability analysis, descriptive statistics, correlation analysis, regression analysis, and mediation analysis, which therefore gave a solid framework in examining the relationship between BI capabilities, decision-making, and BI success. These approaches therefore enabled a detailed assessment of how the capabilities of BI influence organizational performance and emphasized decision-making as a key linchpin within that dynamic. The comprehensiveness of the methodology not only strengthens the credibility of the findings but also offers useful insights on how best to optimize BI investments for enhanced organizational outcomes.

4. Results, Finding and Analysis

4.1. Cronbach's Alpha (Reliability Analysis)

To assess the validity of the constructs, i.e., their internal consistency, the items' reliability was checked. The analysis applied the well-established measure of Cronbach's Alpha, used for the reliability of research tools. According to George and Mallery (2010), for any tool, Cronbach's Alpha measuring between 0.6 to 0.7 levels is considered acceptable. Verification showed that all the constructs studied in this study had a Cronbach's Alpha value within the accepted range; thus, the items used were reliable (Table 1). Once there is consistency among the items, the tested constructs are assured to be valid and reliable for further analysis. Again, the high reliability of the constructs makes the general outcome of the study more credible and forms a firm foundation for future statistical tests.

- **BI-Capabilities:** The value calculated was 0.752, with four items used to run the test, mean of the items was 4.28, and the standard deviation was 0.509.

- **Decision Making:** The value calculated was 0.788, with four items used to run the test, mean of the items was 4.38, and the standard deviation was 0.508.

- **BI Success:** The value calculated was 0.779, with four items used to run the test, mean of the items was 4.48, and the standard deviation was 0.440.

Table 1: Cronbach Alpha		
Variable	**Cronbach Alpha**	**No. of Items**
BI-Capabilities	0.752	4
Decision Making	0.788	4
BI Success	0.779	4
Item Statistics		
	Mean	**Std. Deviation**	**N**
BI-Capabilities	4.28070	.509086	152
Decision Making	4.38158	.508077	152
BI Sccess	4.48026	.440305	152

4.2. Descriptive Statistical Analysis

Since the data have been summarized using descriptive statistical methods, therefore means, standard deviation, skewness, and kurtosis of the variables with regard to normality have been calculated. It was found that the values for skew and kurtosis were within the range of -2 to +2; therefore, the assumption of normality has been achieved (Table 2).

Table 2: Descriptive Statistical Analysis				
Descriptive Statistics				
Std. Deviation	**Skewness**		**Kurtosis**	
Statistic	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
0.50909	-0.973	0.197	-0.08	0.391
0.50808	-1.055	0.197	0.458	0.391
0.44031	-1.137	0.197	1.712	0.391

- **BI-Capabilities:** The mean was 4.34127, the standard deviation was 0.50909, skewness was -0.973, and kurtosis was -0.08.

- **Decision Making:** The mean was 4.39683, the standard deviation was 0.50808, skewness was -1.055, and kurtosis was 0.458.

- **BI Success:** The mean was 4.49206, the standard deviation was 0.44031, skewness was -1.137, and kurtosis was 1.712.

4.3. Correlation Analysis

Correlation analysis was conducted to determine the relationships between the variables. Pearson correlation coefficients were calculated to assess the strength and direction of the relationships. The correlation analysis showed significant positive relationships between BI-capabilities, decision-making, and BI success (Table 3).

- **BI-Capabilities and Decision Making:** The Pearson correlation coefficient was 0.439, indicating a moderate positive relationship ($p < 0.01$).

- **BI-Capabilities and BI Success:** The Pearson correlation coefficient was 0.583, indicating a strong positive relationship ($p < 0.01$).

- **Decision Making and BI Success:** The Pearson correlation coefficient was 0.514, indicating a strong positive relationship ($p < 0.01$).

Table 3: Correlation Analysis				
		BI-Capabilities	**Decision Making**	**BI Success**
BI-Capabilities	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	152		
Decision Making	Pearson Correlation	0.439**	1	
	Sig. (2-tailed)	0.000		
	N	152	152	
BI Success	Pearson Correlation	0.583**	0.514**	1
	Sig. (2-tailed)	0.000	0.000	
	N	152	152	152

4.4. Regression Analysis

Regression analysis was used to examine the specific nature of the relationships between the variables. The purpose of the regression analysis was to test the hypotheses and determine the impact of BI-capabilities on BI success, with decision-making as a mediating variable.

4.4.1. Hypothesis 1 (H1): BI-Capabilities and BI Success

- **Model Summary:** The R-value was 0.583, indicating a strong relationship between BI-capabilities and BI

success. The R-square value was 0.34, showing that 34% of the variance in BI success could be explained by BI-capabilities. The adjusted R-square value was 0.335.

- **ANOVA:** The F-value was 77.212, indicating that the model was a good fit ($p < 0.000$).
- **Coefficients:** The unstandardized coefficient (B) for BI-capabilities was 0.504, with a t-value of 8.787 ($p < 0.000$).

4.4.2. Hypothesis 2 (H2): BI-capabilities and Decision Making

- **Model Summary:** The R-value was 0.439, indicating a moderate relationship between BI-capabilities and decision-making. The R-square value was 0.193, showing that 19% of the variance in decision-making could be explained by BI-capabilities. The adjusted R-square value was 0.188.
- **ANOVA:** The F-value was 35.901, indicating that the model was a good fit ($p < 0.000$).
- **Coefficients:** The unstandardized coefficient (B) for BI-capabilities was 0.439, with a t-value of 5.992 ($p < 0.000$).

4.4.3. Hypothesis 3 (H3): Decision Making and BI Success

- **Model Summary:** The R-value was 0.514, indicating a strong relationship between decision-making and BI success. The R-square value was 0.264, showing that 26.4% of the variance in BI success could be explained by decision-making. The adjusted R-square value was 0.259.
- **ANOVA:** The F-value was 53.892, indicating that the model was a good fit ($p < 0.000$).
- **Coefficients:** The unstandardized coefficient (B) for decision-making was 0.446, with a t-value of 7.341 ($p < 0.000$).

4.4.4. Hypothesis 4 (H4): Mediation Analysis

To test the mediating effect of decision-making, the Andrew F. Hayes model 4 was used. The mediation analysis showed that decision-making significantly mediates the relationship between BI-capabilities and BI success.

- **Model Summary:** The R-square values for the mediation model were 0.1931, 0.422, and 0.3398, indicating the variance explained by each predictor.
- **Total Effect Model:** The R-square value was 0.3398, showing that 34% of the effect on BI success is due to BI-capabilities.
- **Direct and Indirect Effects:** The total effect of BI-capabilities on BI success was 0.5042 ($p < 0.000$). The direct effect was 0.3827 ($p < 0.000$), and the indirect effect through decision-making was 0.1215 ($p < 0.003$).

5. Summary of Findings

The findings confirm all of the four hypotheses that were set forth. Results indicate that decision-making mediates between BI capabilities and BI success; the greater the BI capabilities, the better the decision-making, and the greater the success of BI. These results are also in line with other studies that showed how organizations should therefore emphasize the role of BI capability and well-incorrect decision-making for organizational success. As Gürses said in 2014, "firms with developed BI capabilities may improve processes related to data-driven decision making and create better strategic outcomes." Moges *et al.* (2016) have also found that organizations applying advanced BI tools and techniques are considerably in a better position to make informed decisions, leading to overall gains in performance. These studies therefore suggest that BI capabilities need to be integrated into the decision-making framework if an organization is to be competitive in the prevailing context.

6. Interpretation of Findings

6.1. BI-Capabilities and BI Success

The findings of the study thus supported Hypothesis 1, postulating that BI success is positively related to the

BI capability. That is, organizations with high BI capabilities may achieve high levels of BI success. This concurs with the previous literature emphasizing how instrumental BI is in turning raw data into useful insights for better business performance (Ghasemaghaei *et al.*, 2017; Trieu, 2017). Companies can improve their decision-making processes substantially by using high-end BI tools. This will surely result in better strategic situations that will help the organization grow. By implication, investing in these capabilities will pay off when competing in today's data-intensive business landscape.

6.2. BI-Capabilities and Decision Making

The analysis indicated a moderate positive relationship between decision-making and BI capabilities; hence, Hypothesis 2 is supported. This means that an organization that is able to realize a high level of BI capability can make better decisions. In fact, integrating state-of-the-art technology, various sources of data, and reliable information really enhances decision-making since such a situation provides the manager with reliable and current data. The findings presented herein align with previous research that underscores the vital function of business intelligence (BI) in promoting data-driven decision-making and improving an organization's ability to respond to market challenges and opportunities (Koscielniak and Puto, 2015; Trieu, 2017). In addition, the capacity for rapid access to and analysis of extensive datasets enables firms to adjust more promptly to evolving market conditions, thus preserving their competitive advantage.

6.3. Decision Making and BI Success

From these, it had been obvious that there was indeed a strong positive relation between decision-making and the success of BI, hence supporting Hypothesis 3. That means that good decision-making has an important role in the success of BI. Decision-making is something indispensable in the management, yet once combined with the usage of BI tools, it became far more superior in quality and speed because it furnishes all the insights along with a variety of alternatives. These results confirm previous studies indicating that data-driven decision-making has a great impact on organizational performance as well as competitive advantage (Arnott *et al.*, 2017; Moges *et al.*, 2016). Additionally, the ability to make timely but well-informed decisions may provide organizations with a competitive edge by enabling them to respond to shifts in the market and new opportunities more effectively.

6.4. Mediating Role of Decision Making

Hypothesis 4 was confirmed: decision making acts as a mediator between Business Intelligence (BI) capabilities and BI success; the data collected and subsequent mediation analysis supported the hypothesis that decision making as a mediator. This means that BI capabilities have been found to have some effect on solution success in part through their influence on decision making processes. The BI initiatives of companies that have progressed to the next level of BI are more effective at leading to decision making. This finding highlights that BI technologies can be fully used in decision making as part of a framework incorporating them (Gürses, 2014; Wieder and Ossimitz, 2015). The mediation analysis reveals that the effects of the BI capabilities on BI success are greatly mediated by improved decision making. Consequently, the advantages of BI tools can be maximized if such tools are embedded into the decisions making processes of the organization. This integration guarantees that the knowledge offered by BI tools is utilized in the best way, which produces better strategic results and overall organizational success.

7. Conclusion

Based on thorough empirical and theoretical review of the hypotheses (H1, H2, H3, and H4), the study concludes that Business Intelligence (BI) capabilities aid decision making process and enhance organizational success. The analysis of statistics shows that advanced BI capabilities significantly impact BI success, and that the mediating effect is through a decision making. The conclusions of the study summarize the main findings, discusses their implications and proposes possible future works in this area. Robust BI enables organizations to make more timely, informed decisions, resulting in better BI success, states the research. Considering this mediation effect, however, BI tools ought to be integrated into decision making frameworks for their use to be truly optimal. Other factors that may affect the effectiveness of BI

capabilities and decision making can be studied in future research, as well as the long-term consequences of BI on organizational performance. Second, the study of the role of organizational culture, leadership and technological infrastructure in the effectiveness of BI initiatives would shed additional light on how to optimize BI investments.

8. Implications

Managerial Implications: The study's findings have several practical implications for managers, investing in BI-capabilities is essential for organizations seeking to enhance their decision-making processes and achieve higher levels of BI success. BI solutions that can process a variety of data sources, guarantee data veracity, and offer actionable insights should be developed and integrated as a top priority for managers. Training and development programs should be implemented to enhance managers' ability to use BI tools effectively. Organizations should also ensure that BI initiatives are aligned with their strategic objectives to maximize their impact.

Theoretical Implications: The study contributes to the existing literature on BI by providing empirical evidence of the relationship between BI-capabilities, decision-making, and BI success. The findings support the theoretical framework that posits decision-making as a mediating variable between BI-capabilities and BI success. This study extends the understanding of how BI-capabilities influence organizational performance and highlights the critical role of decision-making in this process (Ghasemaghaei *et al.*, 2017; Gürses, 2014).

9. Limitations and Future Research

Despite its contributions, this study has numerous limitations. The sample size was limited to 152 respondents from the Telecom and Information Technology sectors in Pakistan, which may not be representative of all industries or regions. Future research should consider sizable and more diverse samples to enhance the generalizability of the findings. Furthermore, the analysis depends on self-reported data, which may be subject to response biases. Future research could use objective measures of BI-capabilities and success to validate the findings. Longitudinal studies could also provide insights into the long-term impact of BI-capabilities on organizational performance.

Future research should also explore the role of other potential mediators and moderators in the relationship between BI-capabilities and BI success. For example, organizational culture, leadership, and technological infrastructure could influence the effectiveness of BI initiatives. Understanding these factors could provide a more nuanced understanding of how BI-capabilities contribute to organizational success.

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