

## An Analysis of Factors Influencing Big Data Analytics Adoption in Nepali Bfis

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### Abstract

The banking and financial industry in Nepal is undergoing rapid changes due to technological progress and evolving consumer trends. Within this dynamic environment, the integration of big data analytics (BDA) has become crucial for banks and financial institutions (BFIs) aiming to boost their competitive edge, streamline operations, and improve decision-making abilities. The objective of this study is to investigate the factors influencing BDA adoption in Nepali BFIs and provide valuable insights for practitioners, policymakers, and researchers. Drawing on a comprehensive literature review and empirical data collected from a sample of Nepali BFIs, this study examines the interplay of technological infrastructure readiness, data quality, BDA skills, and top management support in shaping the adoption landscape. The results indicate that Nepali banking and financial institutions acknowledge the significance of adopting Big Data Analytics (BDA), yet encounter obstacles such as technological constraints, data quality concerns, and organizational barriers. Moreover, the study identifies significant positive correlations between BDA adoption and factors such as IT infrastructure readiness, data quality, BDA skills, and top management support, highlighting their critical roles in facilitating successful adoption.

**Keywords:** *Big Data Analytics, Nepali Banking and Financial Institutions, Big Data Analytics Adoption, IT Infrastructure Readiness, Data Quality, BDA Skills, Top Management Support, Decision-making Capabilities, Strategic Decision-making*

### 1. Introduction

In Nepal's banking and financial sector, the influx of data driven by technological advancements and changing consumer behaviors has underscored the importance of adopting big data analytics (BDA) for gaining insights into market trends, customer preferences, and operational efficiencies. However, BDA adoption in Nepali banks and financial institutions (BFIs) faces multifaceted challenges across technological, organizational, and regulatory domains. Critical factors such as IT infrastructure readiness, data quality, BDA skills, and top management support play pivotal roles in determining the success of BDA initiatives (Phan & Tran, 2022). While research suggests a positive correlation between BDA adoption and improved decision-making, risk management, and customer experiences, Nepali BFIs encounter unique hurdles inherent in emerging economies like Nepal, including navigating technological limitations, organizational dynamics, and regulatory constraints (AL-Khatib, 2022). To fully capitalize on the potential benefits of BDA, Nepali BFIs must address these challenges and leverage key factors to maintain competitiveness and agility in the dynamic financial landscape (Al-Dmour et al., 2023).

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## 2. Problem Statement

Despite the growing recognition of the importance of big data analytics (BDA) adoption in banking and financial institutions (BFIs), there remains a lack of comprehensive understanding regarding the specific factors influencing the successful implementation of BDA initiatives (Hajiheydari et al., 2021). While previous research has identified various determinants of BDA adoption, there is limited empirical evidence on how these factors interact and impact the adoption process within the context of Nepali BFIs (Tseng et al., 2023). Therefore, the problem statement of this research article is to investigate the key factors that influence the adoption of BDA in Nepali BFIs and to understand their interplay in shaping the adoption landscape (Saleh et al., 2023). By addressing this gap, the study aims to provide valuable insights for BFI stakeholders to effectively implement BDA strategies and enhance their competitive edge in the dynamic financial sector of Nepal (Sahani & Thakur, 2021).

## 3. Research Questions

- How does the readiness of IT infrastructure within Nepali BFIs influence the implementation and utilization of big data analytics initiatives?
- How does data quality impact big data analytics adoption in Nepali BFIs?
- What is the significance of big data analytics (BDA) skills and their impact on the effective utilization of BDA tools within Nepali Banks?
- How does top management support influence the adoption and utilization of big data analytics within Nepali Banks?

## 4. Objectives of the Research

- To analyze IT infrastructure readiness and its impact on BDA utilization in Nepali BFIs.
- To analyze impact of data quality on BDA adoption and effectiveness in Nepali BFIs.
- To analyze importance of BDA skills and their impact on BDA tool utilization in Nepali BFIs.
- To analyze role of top management support in driving BDA adoption and utilization in Nepali BFIs.

## 5. Significance of the Research

The significance of this study spans multiple domains, offering valuable contributions to research, business strategy, and societal welfare. In the realm of research, it addresses critical gaps by examining the adoption and utilization of big data analytics (BDA) within Nepali Banks and Financial Institutions (BFIs), providing insights into unique influencing factors. Methodologically, the study advances the field with a robust framework and empirical evidence, guiding future research endeavors. From a business standpoint, the findings offer strategic direction for decision-makers in Nepali BFIs, aiding resource allocation and driving operational efficiency and customer experience enhancements. Societally, the study promotes financial inclusion and data governance, facilitating economic development while upholding ethical and regulatory standards for data security and customer trust (Abdelwahed & Abu-Musa, 2020).

## 6. Literature Review

The literature search encompassed a comprehensive exploration of big data analytics adoption and its influencing factors across various industries and countries. It includes topics such as tools and techniques, applications in specific domains like banking, insurance, and accounting, challenges and opportunities, and the impact of big data analytics on efficiency and economic growth. The search will focus on literature published between 2014 and 2024, spanning across different countries including Jordan, Canada, India, China, Indonesia, Nigeria, and Nepal.

According to (Hajiheydari et al., 2021) found that research done in the exploration of paths leading to successful implementation of big data analytics (BDA) in the banking and financial services (BFS) sector, foundational concepts lay the groundwork by acknowledging the multifaceted nature of BDA and its potential transformative impact. Studies have recognized the value of BDA in enhancing organizational performance while also highlighting the challenges and complexities associated with BDA projects, often resulting in failures. Building upon these foundational concepts, research delves into advanced concepts by identifying key enablers of successful BDA implementation within BFS. Objectives include analyzing the interdependencies among these enablers and formulating strategies to ensure implementation success. This involves understanding the driving forces behind BDA adoption and crafting tailored approaches for BFS firms to navigate challenges effectively.

In their study, (Tseng et al., 2023), emphasize the crucial role of big data analytics (BDA) in fostering innovation and enhancing organizational performance, particularly in dynamic business settings. They frame the effective utilization of BDA tools as a form of absorptive capacity that positively impacts innovation performance, offering valuable insights for new product development and market understanding. Employing advanced methodologies like Structural Equation Modelling (SEM) and Smart PLS software, the research rigorously analyzes data, ensuring reliability and validity. Control variables such as gender, age, and BDA usage experiences are considered, enriching the analysis. Through meticulous data collection via online surveys targeting top managers across diverse industries, the study confirms the hypothesis that BDA capacity positively influences product innovation performance, moderated by environmental turbulence. This empirical investigation highlights BDA's pivotal role as an absorptive capacity driving organizational innovation performance.

In their study, (Saleh et al., 2023) investigate the influence of Big Data analytics (BDA) on financial reporting quality in the Canadian context. Through qualitative interviews with professionals from audit and accounting firms, they find that BDA positively impacts financial reporting quality by strengthening accounting reporting and expert judgment. The study emphasizes the diverse benefits of BDA implementation, such as customized goods, streamlined processes, and improved risk management. Moreover, it highlights BDA's practical implications in predicting investment returns, detecting fraud, and fostering economic growth. By addressing this gap in literature, the research provides insights crucial for auditors, financial analysts, accountants, investors, and decision-makers, enabling informed choices in the field of financial reporting.

As per (He et al., 2023), insights into the implementation of big data analytics (BDA) in enterprises, particularly focusing on its application in the banking industry for precise marketing. The paper aims to assist enterprises in improving their information management ability and achieving sustainable competitive advantages through the reuse or adaptation of the proposed method. Guided by the theory of technological frames of reference (TFR) and transaction cost theory (TCT), the paper

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presents a real-world case study demonstrating how enterprises can leverage BDA for transformative changes. The case study, closely integrated with daily banking operations and strategic planning, illustrates how the analytics team frames challenges and analyzes data using two models: customer segmentation (unsupervised) and product affinity prediction (supervised), to initiate the adoption of BDA in precise marketing (Perkhofer et al., 2019). (Bose et al., 2023), investigate the influence of traditional marketing analytics (TMA) and big data analytics (BDA) on the success of new product development (NPD), with a focus on assessing the mediating effects of big data system quality (BDSQ). The study underscores the importance of leveraging analytics for informed decision-making in NPD processes and integrates BDSQ assessment to understand its impact on analytics effectiveness. Conducted through an online survey among large manufacturing firms in the UAE, the research utilizes structural equation modeling (SEM-PLS) to rigorously analyze data, confirming the significant role of TMA, BDA, and BDSQ in determining NPD success. The findings highlight the mediating role of BDSQ, emphasizing the importance of investing in both analytics capabilities and the quality of big data systems for successful NPD outcomes. (Soltani Delgosha et al., 2021), delve into the strategic applications, drivers, and challenges of implementing big data analytics (BDA) in the banking sector. Employing a four-round Delphi study, the research gathers expert viewpoints to comprehensively understand BDA's role in banking. The findings highlight fraud detection and credit risk analysis as key applications, emphasizing BDA's critical role in mitigating financial risks. Moreover, the study identifies decision-making enhancement and new product/service development as primary drivers, underscoring the strategic importance of BDA for innovation and competitive advantage in banking. However, challenges such as information silos and unintegrated data hinder BDA effectiveness, stressing the need to address data integration issues. By offering actionable insights, the research contributes to advancing the understanding of managerial issues associated with BDA implementation in banks, enriching the literature on big data applications and challenges in the dynamic banking landscape.

According to study done by (Singh et al., 2022), delves into the significant role of big data analytics in combating financial crimes and enhancing risk management practices within the Indian banking sector. It emphasizes the increasing need for advanced analytics in addressing the escalating threat of bank fraud amid the digital transformation of financial transactions. Through a bibliometric study conducted using Scopus and Web of Science databases with Vos Viewer software, the review systematically analyzes existing research literature on big data technology deployment in Indian banks. The study's findings underscore the widespread adoption of big data analytics tools for detecting fraudulent behavior, identifying security issues, and proactively preventing financial crimes. Overall, the review contributes valuable insights into the transformative impact of big data analytics on banking operations in India and provides guidance for practitioners and researchers in leveraging these technologies effectively for risk management and operational optimization.

In the context of Nepal, study focusing on the adoption of big data analytics (BDA) within banking and financial institutions (BFIs), several research gaps can be identified based on the variables IT infrastructure readiness, data quality, BDA skills, top management support. Firstly, there is a need for research examining the relationship between IT infrastructure readiness, data quality, BDA skills, top management support, and BDA adoption specifically within the banking and financial sector. While studies exist on BDA adoption in various industries, there is a lack of research tailored to the unique context of BFIs, hindering a comprehensive understanding of the factors influencing BDA adoption in this sector (Al-Dmour et al., 2023). Furthermore, there is limited research exploring the interplay between these independent variables and their collective impact on BDA adoption within Nepali BFIs. Investigating how these factors interact and influence each other can provide valuable

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insights into the complexities of BDA adoption processes and inform targeted strategies for enhancing adoption rates within BFIs. Additionally, longitudinal studies tracking changes in IT infrastructure readiness, data quality, BDA skills, and top management support over time in relation to BDA adoption are lacking, inhibiting the assessment of causal relationships and temporal dynamics. Addressing these research gaps will contribute to a deeper understanding of the factors driving BDA adoption in BFIs and facilitate the development of effective strategies to promote adoption and maximize its benefits in the financial sector(Olszak & Mach-Król, 2018).

## 7. Methodology

Research methods, essential for uncovering new phenomena and developing fresh theories, represent a philosophical concept embodying scientific thinking techniques(Verma & Bhattacharyya, 2017). Despite their complexity, clearly outlining research methods in designs and articles enhances reliability, utility, and offers guidance for future researchers. These methods, hierarchical in nature, should align with the subject's characteristics and goals. In examining factors influencing Big Data Analytics (BDA) adoption in Nepali Banking and Financial Institutions (BFIs), this study employs a quantitative approach using structured surveys. Independent variables such as IT infrastructure readiness, data quality, BDA skills, and top management support are assessed through predefined scales, providing quantitative insights into their perceived levels within the organizations surveyed(Hafiz Oluwasola, 2017).

The chosen methodology for this research is a quantitative approach, specifically utilizing structured surveys administered to Nepali Banking and Financial Institutions (BFIs). This approach was selected to systematically investigate the factors influencing the adoption of Big Data Analytics (BDA) within the Nepali BFI sector. Quantitative methods allow for the collection of numerical data, facilitating statistical analysis to examine relationships between variables and draw objective conclusions(Ali et al., 2016). Given the need to assess key determinants of BDA adoption identified in the literature, a quantitative approach provides a robust framework for gathering quantitative data on the perceived levels of these factors within Nepali BFIs.

A quantitative approach was deemed appropriate for this study for several reasons. Firstly, it enables the systematic collection of data from a large sample of Nepali BFIs, allowing for a comprehensive analysis of factors influencing BDA adoption. Secondly, quantitative methods provide numerical data that can be subjected to statistical analysis, offering objective insights into the relationships between independent and dependent variables. Additionally, a quantitative approach allows for generalization of findings to a broader population of Nepali BFIs, enhancing the study's external validity(Saheed et al., 2022).

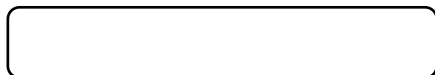
For this study focused on understanding the factors influencing Big Data Analytics (BDA) adoption within Nepali Banking and Financial Institutions (BFIs), data were sourced from these institutions operating within the Nepali financial sector. A purposive sampling approach was followed. The data collection for this study involved the administration of structured surveys to key stakeholders within Nepali Banking and Financial Institutions (BFIs), utilizing a self-administered questionnaire with two sections covering demographic information and Likert-scale items assessing participants' attitudes towards independent variables such as IT infrastructure readiness, data quality, BDA skills, and top management support. Surveys were distributed electronically with clear instructions, confidentiality assurances, and reminders to encourage participation. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), employing descriptive statistics for summarizing

data properties and inferential statistics such as regression and correlation analysis to test hypotheses and investigate potential correlations between variables.

The population under study comprises employees working in commercial banks within Nepal, characterized by a hierarchical structure including entry-level, mid-level, senior-level staff, managerial/supervisory positions, and executives. Entry-level staff typically hold positions like tellers or customer service representatives, while mid-level staff may include loan officers or branch managers. Senior-level staff occupy leadership positions, while managerial/supervisory roles oversee day-to-day operations, and executives set strategic direction. Due to the unknown or infinite population size, a convenience sampling method was adopted, conducting 388 surveys across various levels within commercial banks. This sample size was determined based on practical considerations to ensure feasibility and representativeness while capturing diverse perspectives within the population of interest.

## 8. Research Framework

This study introduces a comprehensive implementation model/framework for understanding the factors influencing the adoption of Big Data Analytics (BDA) within Nepali Banking and Financial Institutions (BFIs). The framework comprises four key independent variables: IT Infrastructure Readiness (IFR), Data Quality (DQ), BDA Skills (BDAS), and Top Management Support (TMS). IT Infrastructure Readiness evaluates the technological backbone supporting data storage, processing, and analysis within Nepali BFIs, while Data Quality assesses the governance frameworks and procedures ensuring the accuracy and reliability of data. BDA Skills represent the proficiency levels of personnel in utilizing BDA technologies, and Top Management Support signifies leadership commitment towards fostering a culture conducive to data-driven decision-making within Nepali BFIs. Through the examination of these variables, the framework aims to provide insights into the landscape of BDA adoption in the Nepali BFI sector, offering a holistic perspective on the critical determinants shaping BDA initiatives (Bansal & Shukla, 2021).



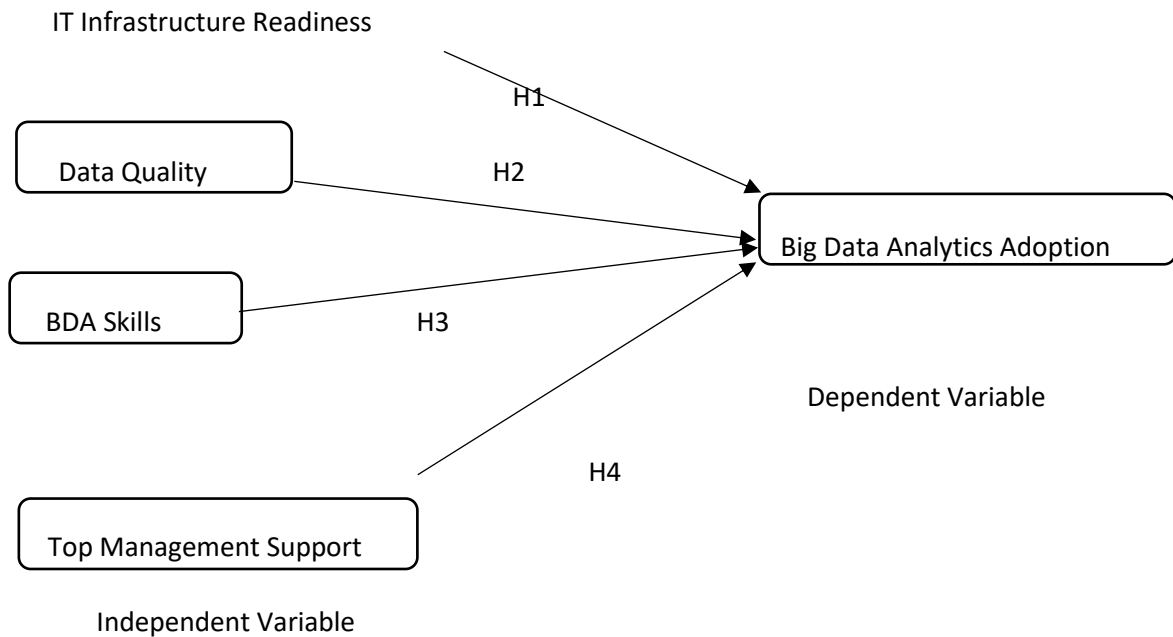


Figure 3.2: Conceptual Framework(Phan & Tran, 2022)

## 9. Research Hypotheses

H1: There is significant positive relationship between IT infrastructure readiness and BDA adoption in Nepali BFIs.

H2: There is significant relationship between data quality and BDA adoption in Nepali BFIs.

H3: There is significant relationship between BDA skills and BDA adoption in Nepali BFIs.

H4: There is significant positive relationship between top management support and BDA adoption in Nepali BFIs.

		Count	Table N %
Q1 Gender	Male	209	53.9%
	Female	179	46.1%
Q2 Age	18-25	41	10.6%
	26-35	102	26.3%
	36-45	125	32.2%
	46-55	77	19.8%
	56 and above	43	11.1%
Q3 Education Level	High School	44	11.3%
	Bachelor's Degree	226	58.2%
	Master's Degree	107	27.6%
	PhD or equivalent	11	2.8%
Q4 Position/Role in the Organization	Entry-Level Staff	53	13.7%
	Mid-Level Staff	129	33.2%
	Senior-Level Staff	138	35.6%
	Managerial/Supervisor	44	11.3%
	Executive/Leadership	24	6.2%
Q5 Employment Status	Full-time employed	243	62.6%
	Part-time employed	94	24.2%
	Retired	16	4.1%
	Internship/Trainee	22	5.7%
	Contractual	13	3.4%
Q6 Years of Experience	Less than 1 year	27	7.0%
	1-3 years	79	20.4%
	4-7 years	139	35.8%
	8-10 years	85	21.9%
	More than 10 years	58	14.9%
Q7 Size of the Organization (Number of Employees)	0-100	50	12.9%
	101-500	86	22.2%
	501-1000	102	26.3%
	1001-5000	82	21.1%
	5000 above	68	17.5%

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## 8. Data Analysis and Results

The reliability analysis yielded a Cronbach's Alpha of .973 for the 25 items included in the study. This indicates an exceptionally high level of internal consistency among the survey items, suggesting that the items reliably measure the intended constructs.

*Table 1: Reliability Testing for the Whole Question*

### Reliability Statistics



Cronbach's	
Alpha	N of Items
.973	25

Table 2: Demographic Aspects Analysis

The survey results indicate that the majority of respondents were male (53.9%) and held bachelor's degrees (58.2%). Regarding age distribution, the largest group fell within the 36-45 age range (32.2%), while mid-level staff constituted the most common position/role (33.2%). Additionally, a significant portion of respondents were full-time employed (62.6%) with 4-7 years of experience (35.8%). In terms of organization size, the most represented category was organizations with 501-1000 employees (26.3%).

		Statistics				Table 3: Summarized frequency table of the whole in Independent Variable
		ITINFRASTRUC	TUREREADINE	BIGDATAANAL	TOPMANAGE	
		SS	DATAQUALITY	YTICSSKILLS	I	
N	Valid	388	388	388	388	The statistics show that the mean scores for IT infrastructure readiness, data quality, big data analytics skills, and top management support are relatively
	Missing	0	0	0	0	
Mean		2.1345	2.1979	2.1603	2.1227	
Median		1.8000	1.8000	1.8000	1.8000	
Mode		1.80	1.80	1.60	1.60	
Std. Deviation		.81316	.95954	.96576	.85750	
Variance		.661	.921	.933	.735	
Minimum		1.00	1.00	1.00	1.00	
Maximum		4.80	4.80	4.80	4.80	

close, ranging between 2.1227 and 2.1979. The median and mode values indicate that the most common score across all variables is around 1.80. The standard deviations are relatively low, indicating limited variability around the mean scores. Overall, the data suggests that respondents generally perceive moderate levels of readiness in IT infrastructure, data quality, BDA skills, and top management support within Nepali BFIs.

## 10. Inferential Analysis

Table 4: Correlation Analysis

		Correlations				
		BIGDATAA NALYTICSA DOPTION	ITINFRAST RUCTURER EADINESS	DATAQUAL ITY	BIGDATAA NALYTICSS KILLS	TOPMANA GEMENTSU PPORT
BIG DATA ANALYTICS ADOPTION	Pearson	1	.823**	.889**	.906**	.886**
	Correlation					
	Sig. (2-tailed)		.000	.000	.000	.000
	N	388	388	388	388	388
IT INFRASTRUCTURE READINESS	Pearson	.823**	1	.849**	.842**	.823**
	Correlation					
	Sig. (2-tailed)	.000		.000	.000	.000
	N	388	388	388	388	388
DATA QUALITY	Pearson	.889**	.849**	1	.912**	.897**
	Correlation					
	Sig. (2-tailed)	.000	.000		.000	.000
	N	388	388	388	388	388
BIG DATAANALYTICS SKILLS	Pearson	.906**	.842**	.912**	1	.898**
	Correlation					
	Sig. (2-tailed)	.000	.000	.000		.000
	N	388	388	388	388	388
TOP MANAGEMENT SUPPORT	Pearson	.886**	.823**	.897**	.898**	1
	Correlation					
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	388	388	388	388	388

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The provided statements summarize the correlations between Big Data Analytics (BDA) adoption and various factors within Nepali Banking and Financial Institutions (BFIs). Each statement highlights a strong positive correlation between BDA adoption level and the respective factor, including IT infrastructure readiness, data quality, BDA skills, and top management support. The Pearson correlation coefficients range from 0.823 to 0.906, all statistically significant at  $p < 0.001$  levels. These correlations suggest that organizations with higher levels of IT infrastructure readiness, better data quality, more proficient BDA skills among employees, and greater top management support are more likely to have higher levels of BDA adoption within Nepali BFIs.

Table 5: Model Summary Analysis

Model Summary									
Model	R	Adjusted R	Std. Error of the Estimate	R Square	F	Change Statistics		Sig. F	
	R Square	Square		Change	Change	df1	df2	Change	
1	.926 <sup>a</sup>	.858	.35598	.858	577.788	4	383	.000	

a. Predictors: (Constant), TOPMANAGEMENTSUPPORT, ITINFRASTRUCTUREREADINESS, BIGDATAANALYTICSSKILLS, DATAQUALITY

The model summary indicates that the overall regression model, which includes predictors such as top management support, IT infrastructure readiness, big data analytics skills, and data quality, accounts for a substantial amount of variance in Big Data Analytics (BDA) adoption within Nepali Banking and Financial Institutions (BFIs). The coefficient of determination (R Square) is 0.858, indicating that approximately 85.8% of the variability in BDA adoption can be explained by the predictors included in the model. The adjusted R Square, which adjusts for the number of predictors in the model, remains high at 0.856. The F-test for the overall significance of the model is highly significant ( $p < 0.001$ ), suggesting that the model as a whole provides a good fit to the data and that at least one of the predictors significantly contributes to explaining the variance in BDA adoption.

Table 6: ANOVA Test

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	292.880	4	73.220	577.788	.000 <sup>b</sup>

Residual	48.536	383	.127		
Total	341.416	387			

a. Dependent Variable: BIGDATAANALYTICSADOPTION

b. Predictors: (Constant), TOPMANAGEMENTSUPPORT, IT

INFRASTRUCTUREREADINESS, BIGDATAANALYTICSSKILLS, DATAQUALITY

The ANOVA table provides crucial insights into the regression model's overall fit and the significance of its predictors in explaining the variability in Big Data Analytics (BDA) adoption within Nepali Banking and Financial Institutions (BFIs). The regression model's Sum of Squares for Regression is 292.880, indicating the variability in BDA adoption level that can be attributed to the predictors included in the model, namely top management support, IT infrastructure readiness, BDA skills, and data quality. The degrees of freedom for the regression are 4, reflecting the number of predictors in the model. The Mean Square for Regression is 73.220, denoting the average variability explained by each predictor. The F-statistic, at 577.788, is significant ( $p < 0.001$ ), indicating that the regression model as a whole has a pronounced effect on predicting BDA adoption level. This suggests that the predictors collectively contribute significantly to explaining the variability in BDA adoption within Nepali BFIs.

Table 7: Coefficients Analysis

		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.014	.052		-.266	.791
	ITINFRASTRUCTUREREADINESS	.101	.045	.087	2.242	.026
	DATAQUALITY	.208	.053	.212	3.914	.000
	BIGDATAANALYTICSSKILLS	.397	.052	.408	7.590	.000
	TOPMANAGEMENTSUPPORT	.282	.054	.257	5.244	.000

a. Dependent Variable: BIGDATAANALYTICSADOPTION

The coefficients table shows that IT Infrastructure Readiness, Data Quality, Big Data Analytics Skills, and Top Management Support have statistically significant positive relationships with Big Data Analytics Adoption ( $p < 0.05$ ). Specifically, each unit increase in these variables corresponds to increases of 0.101, 0.208, 0.397, and 0.282 units in Big Data Analytics Adoption, respectively. These findings suggest that higher levels of IT infrastructure readiness, data quality, BDA skills, and top management support are linked to greater adoption of Big Data Analytics in Nepali BFIs.

Model equation:  $BDAA = \beta_0 + \beta_1 \times IFR + \beta_2 \times DQ + \beta_3 \times BDAS + \beta_4 \times TMS + \epsilon$ .

Using the regression analysis technique, the estimated regression coefficients are:

$\beta_0$  (Constant) = -0.014

$\beta_1$  (IFR) = 0.101

$\beta_2$  (DQ) = 0.208

$\beta_3$  (BDAS) = 0.397

$\beta_4$  (TMS) = 0.282

$BDAA = -0.014 + 0.101(IFR) + 0.208(DQ) + 0.397(BDAS) + 0.282(TMS) + \epsilon \dots \dots \dots$  (eq.4.1)

Where: BDAA= Big Data Analytics adoption (BDAA)

H1: The coefficient for IT infrastructure readiness ( $\beta_1$ ) is 0.101, with a significant p-value of 0.026, indicating a statistically significant positive impact on Big Data Analytics adoption in Nepali BFIs. Thus, the data analysis supports H1.

H2: The coefficient for data quality ( $\beta_2$ ) is 0.208, with a highly significant p-value of 0.000, indicating a statistically significant positive impact on Big Data Analytics adoption in Nepali BFIs. Consequently, the analysis supports hypothesis H2.

H3: The coefficient for BDA skills ( $\beta_3$ ) is 0.397, with a highly significant p-value of 0.000, indicating a statistically significant positive impact on Big Data Analytics adoption in Nepali BFIs. Therefore, the analysis supports hypothesis H3.

H4: The coefficient for top management support ( $\beta_4$ ) is 0.282, with a highly significant p-value of 0.000, indicating a statistically significant positive impact on Big Data Analytics adoption in Nepali BFIs. Therefore, hypothesis H4 is supported by the analysis results.

## 9. Conclusion

The conclusions drawn from the study's emphasize the importance of several factors in driving Big Data Analytics (BDA) adoption within Nepali Banking and Financial Institutions (BFIs). Firstly, the results underscore the critical role of IT infrastructure readiness, indicating that investments in technological capabilities significantly influence BDA adoption levels. Additionally, the study highlights the pivotal role of data quality, emphasizing the necessity of robust data governance frameworks to support effective BDA initiatives. Furthermore, the findings underscore the significance of developing BDA skills among employees, suggesting that enhancing proficiency in data analysis methodologies is essential for maximizing BDA adoption. Moreover, the study emphasizes the crucial contribution of top management support, indicating that strong leadership commitment is instrumental in fostering a data-driven culture and driving successful BDA implementation. Overall, the conclusions drawn from the study emphasize the multifaceted nature of BDA adoption, highlighting the need for a holistic approach that addresses technological, organizational, and human capital factors to realize the full potential of BDA in Nepali BFIs.

To enhance Big Data Analytics (BDA) adoption in Nepali Banking and Financial Institutions (BFIs), it's recommended to invest in modernizing IT infrastructure, prioritize data quality assurance, provide

training for BDA skills, foster top management support, encourage industry collaboration, and continuously monitor BDA initiatives for effectiveness and ROI. These steps will empower BFIs to leverage BDA effectively, drive innovation, and gain a competitive advantage in the financial sector.

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