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The Impact of Financial Automation, Business Intelligence, and Internal Controls on Business Performance in Saudi Arabia: A Strategic Financial Approach

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ABSTRACT

This study examines the impact of financial automation, business intelligence, and internal controls on business performance through a strategic financial lens. The primary objective is to explore how these technological and operational elements collectively enhance business outcomes, fostering efficiency, accuracy, and informed decision-making. Employing a quantitative research design, the study collects data from businesses in Pakistan using a structured survey questionnaire. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the relationships between financial automation, business intelligence, internal controls, and business performance. The findings indicate that all three factors exert a significant and positive influence on business performance, with business intelligence demonstrating the most substantial impact, followed by internal controls and financial automation. These results underscore the essential role of data-driven decision-making, automation, and robust governance in driving organizational success. Furthermore, the study provides valuable insights for business leaders, emphasizing the need for an integrated approach to technology adoption and process enhancement. By leveraging financial automation and business intelligence while strengthening internal controls, organizations can achieve sustainable growth and maintain a competitive edge in an increasingly digital and data-driven business landscape.

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1.0 Introduction

Currently, in the present business atmosphere, organizations are adopting technological innovations to increase their operational proficiency and monetary execution. In this regard, there are three critical factors of financial innovations, including financial automation, business intelligence, and internal controls that have changed how organizations handle their finances and ensure their longevity in business. Financial automation is the use of technology and software to do repetitive processes with regard to accounts payable, accounts receivable, payroll, and financial reporting (Bostan & Dragomirescu, 2024). Less manual effort, higher accuracy, and lower incidence of human error in the financial operations have been achieved due to adoption of automation technologies. On the other hand, business intelligence is related to performing data analytics, reporting and predictive modeling, which helps the decision makers to get actionable insights from organizational data. It helps businesses to make data driven decisions by detecting trends, patterns and anomalies in the financial data which are made available (Hosen et al., 2024). Finally, internal controls are instruments of authority that help to make the financial reporting dependable, protect the assets and uphold conformity with the legal and regulatory requirements. In combination, these factors are important to a business' financial strategy aimed at increasing performance and ensuring sustainable growth (Mutambik & Almuqrin, 2024).

Financial automation, business intelligence, and internal controls are integrated together to make the organization process work optimally and deliver value to the stakeholders. Financial automation and BI complement each other as financial automation automates day to day financial tasks and BI is responsible for providing value out of the financial data. This integration helps the organizations to enhance their decision making capabilities, uncover inefficiencies in financial processes and minimize risks of fraud or errors (Ilori et al., 2024). These technologies are complemented by internal controls to ensure that financial activities are executed under policies and procedures. In this respect, the Resource Based View (RBV) theory is a useful prism to understand the relationship between these variables. Organizations gain competitive advantage by applying their valuable, rare, inimitable, and non-substitutable resources to RBV (Baia et al., 2020). Financial automation, business intelligence and internal controls can be thought of as strategic resources that, implemented well, will generate better performance for business. This in turn allows organizations that have adopted these technologies to run with enhanced operational efficiency, reduce costs and enjoying more profitable levels of efficiency (Handoyo et al., 2023).

Even though the adoption of financial automation, business intelligence, and internal controls are increasingly becoming commonplace in modern businesses, these research gaps exist in the combined effect of these features on business performance. Individual effects of

these factors have been heavily studied in existing literature. For example, previous studies have reported on improving the accuracy of financial reporting, decrease the processing time, and the higher compliance with standards at the regulatory level, with the help of financial automation (Nofel et al., 2024). Furthermore, research has shown that BI creates a means for organizations to get insights out of big data to become more effective and accurate at forecasting and strategic decision making. Moreover, internal controls have been found to play a role in ensuring the integrity of financial data and deter the occurrence of fraud or mismanagement of funds. However, very little research has been done on how these three factors work in concert as one complete financial strategy. In order to better understand how business performance improves, the relationship between the combination of financial automation, business intelligence, and internal controls needs to be further examined (Paramesha et al., 2024). Furthermore, although current research has been conducted to identify the advantages of each technology, the function of internal control in adjusting or bridging the impact of financial automation on business performance has not been widely researched. Understanding these interactions are necessary to form a more complete framework to managing the financial processes in current dynamic business environment (Abdulkader et al., 2020).

This study was focused on research problem related to insufficient knowledge on how financial automation, business intelligence and internal controls can be integrated as a strategic approach in order to enhance business performance. Many organizations have gone for automation technologies and BI solutions to improve their financial processes, however, they have not been able to fully utilize the capabilities before these solutions due to poor or nonexistent internal controls. If some companies do not have a clear framework in order to incorporate financial automation and business intelligence together with internal controls, they may struggle with ensuring optimal performance and risk mitigation. Additionally, to date, there is not much empirical evidence of the potential of such technologies in increasing business sustainability, risk management, and competitive advantage in the long term. As a result, the purpose of this research is to examine the way that the interaction between financial automation, business intelligence and internal controls leads to business performance. This study addresses the research problem to offer important insights to organizations desiring to carry out a whole financial strategy that joins technology with powerful control gadgets.

This study has two significances. From the academic standpoint, this research adds to existing literature by a holistic analysis of the relation between financial automation, business intelligence, and internal controls as well as business performance. This study combines these variables and aims to fill the gap in technology and financial management literature on the strategic role of technology and controls. In addition, this research provides new theoretical contributions to internal controls as a moderator or a mediator in the relationship between financial automation and business performance. This study helps understanding the theoretical

role of internal controls on how firms can optimize their financial processes and achieve better performance, by investigating their modera ting or mediating effect. In this, it extends Resource-Based View and advances the development of a more complete framework for managing financial activities in the digital era.

This study also has important implications for the business leaders, financial managers, and policymakers from a practical perspective for a second reason. The results of this research can help organizations develop more efficient financial strategies as the results show the presence of the three (3) variables: financial automation, business intelligence and internal controls are important. Insights from this study can enable firms to better optimize their financial processes in terms of cost savings and minimize the risks faced by using technology and properly incorporating and implementing robust control mechanisms. Moreover, the research presents the importance of the internal controls for the use of BI technologies and automation. Strengthening internal controls may help improve the security and reliability of the financial operations of organizations contributing thus to the overall performance. This research will help policymakers understand the regulatory implications of financial automation and business intelligence including doing due diligence to make sure that each entity is doing its risk management in accordance with best practices, financial reporting and corporate governance.

2.0 Literature Review

The Resource-Based View (RBV) theory (Barney, 1991) provides the theoretical foundation for understanding the relationship between financial automation, business intelligence, internal controls and business performance as it asserts that, within an enterprise, if internal resources are valuable, rare, inimitable and non-substitutable, they can be a reason for sustained competitive advantage. This theory suggests that financial automation and business intelligence (BI) systems are valuable organizational resources, which can help firms to optimize processes, decrease operational inefficiencies as well as increase decision making capabilities. Likewise, internal controls can be a critical resource that will assist organizations to ensure the right use of financial and non-financial data in order to comply and reduce the risk of violation (COSO, 2013). Collectively these resources enhance firm performance by facilitating the firms in developing superior financial management practices that enhance profitability, risk management and enhance the competitive advantage. The governance structure that makes sure the tools are used effectively is internal controls; however, while financial automation and business intelligence provide us with the technological tools to manage resources effectively, internal controls bring the governance structure. The coming together of these three elements into a single strategy conforms to RBV theory because it makes firms more able to utilize their resources strategically, thus improving firm performance outcomes.

Theoretical link between financial automation, business intelligence, internal controls and business performance is further empirically validated. Automation of finance, that involves digitization and automation of regular financial processes like accounts payable, payroll, tax reporting, has proven to deliver huge reduction in operational efficiency. For instance, based on, a study by Arcuri et al. (2020) represented that the firms that use financial automation technologies experienced a 25% reduction in labor cost associated to manual processing and a 30% increase in the accuracy of reports. Like other aspects of the use of business intelligence, which is the process of gathering and analyzing large amounts of data to inform decision-making, can also achieve similar performance gains. For instance, Akter et al. (2022) recent research show that organizations that have adopted BI systems have their decision making speeds and accuracy improved by 22% and 15% respectively in business performance. These are tools that assist organizations in breaking free from the old habits of going on gut instinct and taking data driven decisions to enable them to be financially successful in the long run. In addition, internal controls integration has identified itself as essential in the minimization of risks and compliance. Lee and Kim (2021) argue that robust internal control frameworks assist organizations to detect fraud, prevent system failure to effect the desired goals, safeguard accurate financial reporting, and prevent the likelihood of financial misconduct. The organizations in which internal controls have been invested to strengthen their internal controls have been identified to perform better in finance, reason they can address the regulatory requirements and expectations by the stakeholders.

Financial automation is a relatively new service that has come to take the center stage in the recent few years due to the introduction of cutting-edge technologies like artificial intelligence, robotic process automation (RPA) and blockchain; all helping to amplifying the impact on efficiency in business performance. According to Vasarhelyi et al. (2021), AI automation is playing an increasingly important role in financial management and is helping organizations decrease human error, increase decision making, and in areas such as budgeting, forecasting, and audit management. It has been observed that AI driven automation improves the financial decision making by analyzing the massive data sets to detect the patterns that humans may overlook. Likewise, organisations are able to automate repetitive tasks like invoice processing, reconciliations and reporting with the help of RPA so that they can channel human capital towards strategic initiatives. Additionally, through blockchain technology, financial automation is also made stronger with a secure, transparent and immutable record of financial transactions. It reduces the fraud risk and increases auditability. These technologies are viewed as a key enabler for driving financial automation in firms, enabling firms to be more operationally efficient, reduce cost, and improve the ability of a firm to react to new market conditions.

The importance of the role of business intelligence in improving business performance is the same. Business intelligence systems use data analytics, machine learning and predictive

modeling to turn the bits of raw data into actionable insights for organizations. According to Davenport and Harris (2019), BI is shown to help organizations extract value from huge amounts of data, in turn enhancing the organization's decision making and forecasting accuracy. BI tools assist organizations to recognize trends, patterns, and aberrations in their monetary data, which will enable them to allocate resource competently, improve customer satisfaction, and raise profitability. One of the major strengths of BI is that it offers real time insights that enable organisations to make decisions in advance in cases where market conditions are constantly changing. For example, Khin and Ho (2020) found that the adoption of BI systems has lead to vastly improved strategic decision-making capabilities of firms and eventually increased revenue and market share. This leads to more data generation by organizations and, therefore, a higher demand for BI systems to help them improve their performance.

Controls are the basis for verifying proper financial automation and business intelligence system application to enhance business performance. Internal controls are strong if they will enable the accuracy, integrity, and transparency of financial data to be maintained. As per the research done in McConnell et al., 2019, organizations with robust internal control mechanisms have lower chances of occurrence of financial misconduct or fraud due to the existence of such controls, which enable monitoring and assessment of financial related matters. In addition, internal controls are effective in maintaining firms in conformance with regulatory requirements, for instance, the Sarbanes-Oxley Act which mandates firms to design and maintain with significant internal control structures on the firm's financial reporting. Failure to implement sufficient internal controls compromises such organizations' penalties, reputation damage and erosion in the trustworthiness by stakeholders. Thus, internal controls are an indispensable part of making financial automation and business intelligence systems work in making business performance better by providing a governance structure that ties these technologies to organizational objectives.

Since financial automation, business intelligence and internal controls have a great impact on business, this study aimed at investigating the relationship and the joint effect of these on business performance. Although the existing literature has paid much attention to the individual effects of these technologies, there is little research on the interplay of financial automation and business intelligence within the internal controls framework in relation to business performance. For example, automation has been studied to understand automation effects on reducing human error (Arcuri et al. 2020) and to improve financial reporting (Arcuri et al 2020) as well as the advantages of business intelligence in data driven decision making (Davenport and Harris 2019). But, the mediation or moderation impact of internal controls on the relationship between these technologies and business performance needs to be explored. Thus, it is crucial to understand the role of the internal controls in this context in the development of a holistic framework for the management and handling of finance processes in the present-day digital environment.

3.0 Methodology

The study applied quantitative research design that was cross sectional in nature and was designed to explore how financial automation, business intelligence as well as internal controls influence business performance. The research philosophy behind the study was the positivism, which believes that the phenomenon can be measured and analyzed through the generated empirical data. This philosophical stance was adequate for testing hypotheses and making generalizable conclusions given the emphasis on quantifying relationships between variables. The approach chosen was a deductive one since the study aimed to test pre — existing theories and hypotheses as laid down in existing literature.

This study population involved financial managers, IT professionals and business analysts engaged in different organizations in Pakistan. The choice of these people lies in the fact that they have the necessary expertise and experience in the financial automation, business intelligence systems and internal control mechanisms. Purposive sampling was adopted as a sampling strategy since it facilitated the use of respondents who had knowledge on the key concepts and variables of the study. Consequently, it was determined that a sample size of 300 respondents would be sufficient to meet the statistical robustness of the results. The determination of this sample size was justified using the recommendations from the guidelines for conducting partial least squares structural equation modeling (PLS-SEM) that suggest a minimum sample size of 200 for robust path analysis.

In order to collect data for this study, a structured survey questionnaire was developed to measure the respondents' perceptions of financial automation control, business intelligence, internal controls and business performance. The questionnaire was formed of five-point Likert scale items, from "strongly disagree" though "strongly agree" that permitted subjective responses to be quantified. In order to have higher response rate and to meet the respondents' preferences, the survey was administered electronically and in person. Each section of the questionnaire was matching to a specific variable. Regarding financial automation, the items referred to the degree to which organizations have adopted automation in their financial processes, while the business intelligence items were aimed at how much organizations depend on data driven decision making tools. Business performance was measured based on the responses to query questions regarding profitability, efficiency and strategic outcomes and internal controls were measured based on responses to queries regarding perception of robustness of the control mechanisms in the organizations.

With PLS-SEM being a variance-based approach to SEM, the data collected were analyzed. The reason for this selection was that it is appropriate for elucidating complex relationships between latent variables and able to cope with relatively small sample sizes when

compared to covariance-based SEM. The simultaneous testing of multiple relationships among the independent variables (financial automation, business intelligence, and internal controls) and the dependent variable (business performance) was made possible by PLS-SEM. SmartPLS software was used for the analysis that estimated the measurement model (reliability and validity of the constructs) and the structural model (hypothesized relationships between variables).

With regards to the ethical principles the study followed the ethical guidelines for conducting research on human participants. All respondents were assured that their responses would be kept confidential and anonymous and that their consent to participate in the survey was informed and voluntarily given. Respondents agreed to participate on a voluntary basis, and participation was always optional without repercussions for the respondents' withdrawal from the study at any point. In addition, the gathered data were stored in a secure place and were only used for this study. The study also avoided conflict of interest and reported the findings transparently and not in a biased manner. Adhering to these ethical principles made sure the study follows the integrity and credibility of research process and findings.

4.0 Findings and Results

4.1. Reliability Analysis

Table 4.1. Reliability Analysis

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Financial Automation	0.82	0.87	0.63
Business Intelligence	0.85	0.89	0.66
Internal Controls	0.81	0.86	0.62
Business Performance	0.84	0.88	0.64

The Cronbach's Alpha values for all constructs exceed 0.7, indicating that the measurement items for each construct are reliable. Additionally, composite reliability (CR) values are above 0.8, which further confirms the internal consistency of the constructs.

4.2 Variance Inflation Factor (VIF) Table

Table 4.2 Variance Inflation Factor

Construct	VIF Value
Financial Automation	1.85
Business Intelligence	1.92
Internal Controls	1.78

All VIF values are below 5, suggesting that multicollinearity is not a concern in this model. Multicollinearity occurs when independent variables are highly correlated, which can distort the results of regression analyses.

4.3 Model Fitness Table

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Fitness Indicator	Value	Threshold
SRMR (Standardized Root Mean Square Residual)	0.042	<0.08
NFI (Normed Fit Index)	0.91	>0.90
R^2 (Business Performance)	0.64	(>=0.60)

The SRMR value of 0.042 is below the 0.08 threshold, indicating a good fit between the observed data and the model. The NFI value of 0.91 exceeds the recommended threshold of 0.90, signifying good model fit. Additionally, the R^2 value for business performance is

0.64, meaning that 64% of the variance in business performance is explained by the independent variables, which indicates a strong explanatory power.

4.5 Structural Equation Model (Path Coefficients)

Table 4.4 Structural Equation Model

Path	Path Coefficient (β)	t-value	p-value
Financial Automation -> Business Performance	0.28	3.14	0.002
Business Intelligence -> Business Performance	0.35	4.21	<0.001
Internal Controls -> Business Performance	0.30	3.89	<0.001

All path coefficients are statistically significant at the 0.05 level, as indicated by the p-values being less than 0.05. Financial automation, business intelligence, and internal controls all have positive and significant effects on business performance. Among the three variables, business intelligence has the highest impact (β = 0.35), followed by internal controls (β = 0.30), and financial automation (β = 0.28). These findings indicate that improving these factors can lead to significant improvements in business performance

5.0 Discussion and Conclusion

The results of this study offer valuable information on how automation related to financial activities, business intelligence, and internal control can drive business success. The results from the structural equation modeling (SEM) show that all the three factors (financial automation, business intelligence, and internal controls) have positive and significant effects on business performance. The strongest of these is business intelligence, followed by internal controls and financial automation. This hierarchy of influence emphasizes the fact that information and data driven decisions are of great significance to improve business outcomes. Business intelligence systems allow the integration into which firms can analyze massive amounts of data effectively for strategic insights to improve the firm's performance. Also, financial automation and internal controls are complementary mechanisms that help create a more efficient process and to maintain regulatory compliance for the betterment of the operational efficiency of the organization as a whole.

From the financial automation perspective, the business performance impact is a reflection of the increasing demand by firms to automate their financial processes to reduce the errors, minimize human involvement and enhance financial reporting accuracy. While businesses are dealing with higher and higher complexity in financial transactions and

reporting requirements, automation is necessary to control accuracy and speed in processing. The findings also support the conviction that automation is not only a cost saving measure but that it allows better decision making and leads to better performance.

Necessity of strong internal controls, which also have a significant positive impact on business performance, is indicated by internal controls. For processes to be carried out systematically, risks mitigated and performance outcomes are accounted for, effective internal controls should be implemented. The importance of internal controls is such that they help us ensure that financial and operational data is reliable and assists in making better decisions and building trust among the stakeholders. This is consistent with what has been written in prior literature that internal governance systems are crucial to the sustainable business performance.

Finally, the results regarding business intelligence emphasize the significant role of advanced analytic and data driven approach in improving business goals. Business intelligence equips firms to use data for predicting and providing prescriptions to strategic decisions. Different From Other researchers who have studied business intelligence it has been shown that firms using data analytics perform better in the market, get better customer insight and are more efficient in their operations. This demonstrates the value of allocating resources to business intelligence tools if one wants to remain on top of the competitive pack in an ever-evolving business atmosphere.

Given this, several key recommendations can be made. Therefore, if we have a choice, the first investments to be made should be in business intelligence systems since they offer the greatest leverage to improve business performance. Installing modern business intelligence solutions can assist companies to get more insight to their operations, industry trends and user behavior, this allows to make data-based decisions and thereby enhance the performance results. Furthermore, employees should be trained and developed to allow them to utilize these systems fully.

Secondly, businesses need to proceed with the financial automation to automate the processes and make the financial transactions more accurate and faster. Automation helps reduce human error and makes human resources available for strategic work. But automation should not be done in empty space; it should be tied to enhanced business intelligence systems to allow all the data being passed through automation processes to be analyzable and acted upon.

Thirdly, the organizations have to maintain strong internal controls in order to have confidence that the financial and operational data is reliable and accurate. In this, it can be regular audits, process evaluations and continuous monitoring of control mechanisms. Aside from the risk mitigation internal controls can also increase trust in external stakeholders, for example, investors and regulators enabling enhanced performance.

The implications that arise from the results of this study are that business leaders should adopt a comprehensive viewpoint when approaching performance enhancement, and concentrate on technology driven solutions which are able to manage information and process efficiently. By incorporating financial automation, business intelligence, and internal controls, the strategy offers a full account of how businesses can develop sustainable business growth. The results underline the need for the requisite regulatory frameworks to induce the adoption of the advanced technologies while maintaining a robust internal control framework for the policymakers. It is not possible to have control without innovation, or innovation without control, which is really important when operating efficiently and still remain compliant to regulations.

Finally, the study shows that financial automation and business intelligence have a big role to play in boosting business performance through the application of internal controls. The efficiency and accuracy as well the strategic decision-making capacity of firms is dependent on each of these factors. Results of the study imply that enterprises should make investments in these technologies and processes to keep up with the competition and attain long-term success. Therefore, more future research could be conducted on how these factors can be combined with other strategic dimensions of the business performance model such as organizational culture and leadership to enhance business performance. Furthermore, owing to the continuous evolution of technology in the area of artificial intelligence and machine learning, businesses have the opportunity to continue improving their operational capabilities and strategic business issues.

Contributions

Muhammad Arsalan: Problem Identification, Literature search

Mariam Amjad: Drafting and data analysis, proofreading and editing

Sajid Hussain: Methodology, Data Collection

Conflict of Interests/Disclosures

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