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# ANALYSIS OF INTERNAL BUSINESS FACTORS INFLUENCING BIG DATA ANALYTICS ADOPTION: CASE OF ALBANIA

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**Abstract**

*Big Data Analytics (BDA) has emerged as an essential component of contemporary corporate strategy, allowing firms to utilize extensive data for enhanced decision-making and operational efficiency. Technological improvements and the growing accessibility of varied data sources propel this transition. BDA has become an important domain in business context, employing advanced analytical techniques for the management of data from diverse sources. This research seeks to clarify the correlation between the adoption of BDA and several internal parameters relevant to business. The analysis examines whether the readiness of businesses to embrace BDA is affected by characteristics including: expertise in data analytics, level of analytical knowledge, duration of business operation, firm size, IT infrastructure, or employee training. Data obtained through a survey from businesses in Albania were utilized for the analysis. The results indicate that the identified internal characteristics, including experience in data analytics, knowledge level, and IT infrastructure, influence firms' propensity to adopt BDA. Simultaneously, other variables lack significance.*

*Keywords: Big Data Analytics, Readiness to adopt Big Data Analytics, IT infrastructure, internal factors*

## INTRODUCTION

Contemporary organizations consistently gather user data to enhance their operational efficiencies and approaches. Substantial quantities of recorded data or data on electronic transactions are utilized to facilitate decision-making, as managers, policymakers, and executives increasingly adopt technology to convert this extensive raw data into valuable, enlightening insights. Advancements in social networking, e-commerce platforms, sophisticated mobile technologies, search engines, and emerging digital technologies have led to a growing volume of big data, facilitating enterprises in data production and acquisition. Big Data Analytics is widely regarded as a crucial business asset, prioritized by decision-makers to acquire timely insights and achieve elevated revenue levels (Gonzales et.al, 2015). BDA commences with data analysis and predictive modeling, subsequently yielding new organizational competencies for decision-making and competitive advantage (Akter et al., 2019). From a pragmatic perspective, BDA can create new opportunities, such as enhanced operational efficiency, refined strategic directions, superior customer service, and the identification and development of new products, services, customers, and markets (Lutfi et al., 2023). Organizations containing robust BDA capabilities, encompassing data management and analytical proficiency, exhibit a substantial positive correlation with successful decision-making (Hamzeh & Aburub, 2024). The effectiveness of an organization's acceptance of an invention is primarily contingent upon how its workers apply the innovation (Talukder, 2011). The effective execution of BDA necessitates a strategic methodology, highlighting the importance of knowledge and proficiency across all organizational layers. The adoption of BDA in organizations is affected by numerous internal business factors that influence decision-making and operational preparedness. Comprehending these determinants is essential for effective execution and optimizing the advantages of BDA. Internal business factors affecting the adoption of big data analytics encompass the organization's culture, management support, staff expertise, and current technology infrastructure, all of which substantially influence implementation success in the retail industry (Youssef et.al, 2021).

## LITERATURE REVIEW

Irrespective of their size, the majority of businesses are striving to harness the potential of BDA to improve decision-making and develop innovative approaches for data utilization and activities that may facilitate knowledge discovery (Storey & Song, 2017). To effectively employ data analytics in decision-making, individuals must have the necessary technology expertise and guarantee in the data. Their lack of understanding of analytics may result in managerial confusion about the data and outcomes generated by BDA (Liu et al., 2018). Lamba and Singh

(2017) highlighted the significance of big data in acquiring critical insights for optimizing operations and supply chain management. Larger enterprises demonstrate improved economies of scale, greater robustness, and stronger resilience in managing the risks linked to the adoption of BDA (Zhu & Kraemer, 2005). Conversely, small enterprises struggle to dedicate sufficient time and resources to implement new technology. Managers must acquire sufficient relevant knowledge to properly employ BDA in decision-making. Managers possessing advanced IT knowledge and skills can play a more substantial role in the adoption process (Lai et al., 2018). Studies demonstrate that CEOs' recognition of the benefits of new technology significantly affects its adoption (Yoon & George, 2013). Managers with advanced analytical expertise employ analytics more comprehensively in their decision-making processes. This aligns with research demonstrating that enhanced technical abilities are associated with a greater intention and actual use of information and communications technology to achieve organizational goals (Liu et al., 2018). Research has identified business size as a pivotal factor influencing the deployment of IT innovation (Sharma, Gupta, and Acharya, 2020), and it was therefore anticipated to impact the perceived value of big data. Studies illustrate the significant positive effect of organizational size on the adoption of new technologies (Awa et al., 2017). Furthermore, IT infrastructure is a crucial element in the adoption of Big Data Analytics. Organizations must possess the requisite technology, software, and network infrastructure to facilitate the storage, processing, and analysis of substantial data volumes. Inadequate infrastructure can hinder the effective utilization of insights derived from BDA. Similarly, training is crucial for the adoption of BDA, empowering staff to utilize the technology proficiently and successfully. Consequently, firms must furnish their staff with the required training and instruction to comprehend the technology and apply it for deriving insights. Inadequate training may hinder employees' ability to utilize technology successfully and prevent them from fully appreciating its potential advantages (Lutfi et al., 2023).

## METHODOLOGY

The methodology employed involves data gathering through a survey, where questionnaire is used as a tool for ensuring data, regarding the analysis and application of Big Data Analytics. The data collection occurred between May and July 2024. The questionnaire was established based on the study's objective, identifying the trade sector, as one of the most important industries with significant economic contribution in Albania, particularly the most profitable businesses. Approximately 250 questionnaires were disseminated to this targeted group using the Google Form platform. The sample of enterprises yielding the largest profits in the trade sector constitutes around one-third of the total population, with representation in other

sectors throughout Albania. The study's response rate is approximately 25% of these enterprises. Five items were included in the questionnaire to assess the preparedness of enterprises for the adoption of BDA. Businesses ought to indicate their degree of agreement using a Likert scale ranging from 1 to 5, with (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree). Exploratory Factor Analysis (EFA) was employed to get the representative variable from these statements. The statistical software utilized for the analysis is SPSS 25. Correlational analysis, concretely Pearson and Spearman Coefficients, were involved to examine the relationship between readiness and various study variables. The Spearman correlation coefficient is employed for qualitative and ordinal variables, including knowledge level in analytics, data analytics experience, years of business operation, and firm size. Conversely, the Pearson correlation coefficient is utilized for quantitative variables such as IT infrastructure and training (expenses).

Table 1. Variable description

| Variables | Description |
|---|---|
| **Readiness to adopt Big Data Analytics** | Composite component derived from Exploratory Factor Analysis (EFA) |
| **Experience in Data Analytics** | Binary (1=Yes, 0=No) |
| **Level of Knowledge in Analytics** | Likert Scale - Qualitative Measurement Scale 1=No knowledge, 2=Limited knowledge, 3=Neutral, 4=Knowledgeable, 5=Highly knowledgeable |
| **Years of Business Operation** | Likert Scale 1=Less than 1 year, 2=1-5 years, 3=5-10 years, 4=More than 10 years |
| **Firm Size** | Likert Scale: 1 = Fewer than 100, 2 = 100-200, 3 = 201-500, 4 = Exceeding 500 |
| **IT infrastructure** | Quantitative (Thousand euros/Year) |
| **Training (Expenses)** | Quantitative (Thousand euros/Year) |

Table 1 presents an identification and description of the measurement characteristics for each variable. The firm's internal factors examined in the study, as illustrated in the table, comprise quantitative, binary, or Likert scale variables. Similarly, the primary variable of the study, the readiness of BDA adoption, consists of multiple statements included in the questionnaire.

## RESULTS

The variable Readiness to adopt BDA, assessing business preparedness for BDA adoption was derived using factor analysis. The Kaiser-Meyer-Olkin (KMO) score was 0.918, exceeding 0.7, indicating the suitability of factorial analysis. Chi-Square test=492.115 (df=10), sig=0.000, results which suggest that the composite factor is statistically significant. This factor accounts for 95.7% of the variance. The value of Cronbach's Alpha is 0.98, beyond 0.8, indicating that the results are reliable.

Table 2. Correlation Coefficients

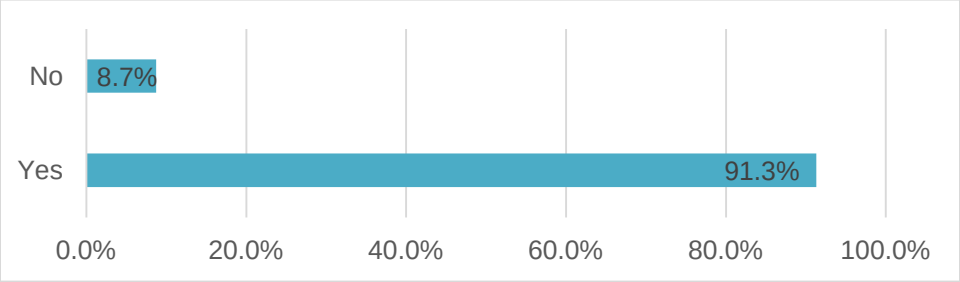
| Variable | Correlation Coefficient | Sig. (2-tailed) |
|---|---|---|
| **Experience in Data Analytics** | 0.673 | 0.000* |
| **Level of Knowledge in Analytics** | 0.586 | 0.000* |
| **Years of Business Operation** | 0.136 | 0.346 |
| **Firm Size** | 0.116 | 0.421 |
| **IT infrastructure** | 0.336 | 0.017* |
| **Training (Expenses)** | -0.197 | 0.170 |

* statistically significant at 5% level

Table 2 presents the correlation coefficients on the relationship between the variable of readiness to adopt BDA and several internal business characteristics, along with the importance of each coefficient. The Correlation coefficient quantifies the strength of the association between two variables, ranging from -1 to 1. The resulting value indicates whether the relationship is positive or negative, as well as its strength, whether strong or weak. The findings indicate that the readiness of businesses to adopt Big Data Analytics correlates positively with their experience in data analytics, their knowledge level regarding analytics, and the IT infrastructure, validated by the significance level of sig<0.05. The table results indicate that all coefficients are positive, except training. Throughout, the operational years in the market, the staff headcount and training expenses are insignificant, as the significance level exceeds 0.05. The Pearson correlation coefficient is mainly based on experience in data analytics. The significance score of sig=0.000<0.05 indicates that this link is substantial and r=0.673 exhibits a significant positive correlation.

The examination's results concerning the internal factors affecting businesses' readiness to adopt BDA in Albania are additionally confirmed by the responses regarding whether data analysis is conducted by employees or supported by an external organization for the inspection of structured and unstructured data.

Figure 1. Data Analysis in Businesses




In response to the question "Does the company analyze data from employees within the organization?", almost 91.3% of organizations affirmed "Yes," while merely 8.7% responded "No". These statistics demonstrate that the majority of organizations have established the requisite IT infrastructure and possess expertise in data analysis.

## CONCLUSIONS AND RECOMMENDATIONS

The adoption of BDA in organizations is significantly influenced by various internal business factors. Key determinants include organizational readiness, and technological infrastructure, which collectively shape the successful integration of BDA into business processes. The correlation analysis, which considered internal factors such as experience in data analytics, knowledge level in analytics, years of business operation, firm size, IT infrastructure, and training, revealed that in Albania, based on questionnaire results from businesses, the factors influencing their readiness to adopt BDA are experience in data analytics, knowledge level in analytics, and IT infrastructure. The correlation coefficients for these parameters are positive, indicating a positive association between readiness and these characteristics. The most significant link is with experience in data analytics (r=0.673), followed by knowledge in analytics (r=0.586) and IT infrastructure (r=0.336). The correlation coefficient for firm size and years of business operation was positive; nonetheless, their significance beyond the 0.05 threshold, indicating that the association is not substantial. Simultaneously, training (expenses) exhibit a negative correlation coefficient of r=-0.218; meanwhile, the link is not important as the significance level is 0.128, which exceeds 0.05. The examination of the questionnaire data revealed that approximately 91.3% of the businesses in the research engage in data analysis, whilst just 8.7% do not conduct data analysis within their organizations. It is important to acknowledge that the findings related to each factor examined in the adoption of a particular technology cannot be generalized, as other influencing factors exist, including the type of the technology, the firm's size, and the particular context of the study.

Based on the findings, the study recommends that businesses ought to enhance employees' expertise and experience in Data Analytics while establishing an IT infrastructure that facilitates analytical procedures. Strengthening IT systems to simplify data analysis processes is another valuable investment. Furthermore, enterprises should develop a culture that encourages data-driven decision-making, emphasizing the quality and relevance of training rather than the associated expenses. Addressing such considerations would strengthen the efficiency and competitiveness of enterprises.

## REFERENCES


Akter S., Bandara R., Hani U., Fosso Wamba S., Foropon C., Papadopoulos T. (2019). Analytics-based decision-making for service systems: A qualitative study and agenda for future research. *International Journal of Information Management*, 48, 85–95.

Al-Dmour H., Saad N., Basheer Amin E., Al-Dmour R., Al-Dmour A. (2023). The influence of the practices of big data analytics applications on bank performance: filed study. *VINE Journal of Information and Knowledge Management Systems*, 53(1), 119–141.

Awa, H. O., Ojiabo, O. U., & Orokor, L. E. (2017). Integrated technology-organization environment (TOE) taxonomies for technology adoption. *Journal of Enterprise Information Management*, 30(6), 893-921.

Gonzales, R.; Wareham, J.; Serida, J. Measuring the impact of data warehouse and business intelligence on enterprise performance in Peru: A developing country. *J. Glob. Inf. Technol. Manag.* 2015, *18*, 162–187.

Hamzeh, R., & Aburub, F. (2024). Big Data Analytics Capabilities and Decision-Making in Jordan's Telecommunications Sector. *IEEE*. https://doi.org/10.1109/iccr61006.2024.10532822

Lai, Y., Sun, H., & Ren, J. (2018). Understanding the determinants of big data analytics (BDA) adoption in logistics and supply chain management. *The International Journal of Logistics Management*, 29(2), 676-703.

Lamba K., Singh S. P. (2017). Big data in operations and supply chain management: current trends and future perspectives. *Production Planning and Control*, 28(11-12), 877–890.

Liu, C., Ready, D., Roman, A., Van Wart, M., Wang, X., McCarthy, A., & Kim, S. (2018). E leadership: An empirical study of organizational leaders' virtual communication adoption. *Leadership & Organization Development Journal*, 39(7), 826-843.

Lutfi A., Alrawad M., Alsyouf A., Almaiah M. A., Al-Khasawneh A., Al-Khasawneh A. L., Alshira'h A. F., Alshirah M. H., Saad M., Ibrahim N. (2023). Drivers and impact of big data analytic adoption in the retail industry: A quantitative investigation applying structural equation modeling. *Journal of Retailing and Consumer Services*, 70, 103129.

Storey V. C., Song I.-Y. (2017). Big data technologies and management: What conceptual modeling can do. *Data & Knowledge Engineering*, 108, 50–67.

Sharma, M., R. Gupta, and P. Acharya. 2020. "Analysing the Adoption of Cloud Computing Service: A Systematic Literature Review." *Global Knowledge, Memory & Communication 70(1/2)*: 114–153. https://doi.org/10.1108/GKMC-10-2019-0126

Talukder, M. (2011). Development of an enhanced model of innovation adoption by individual employees. *Journal of Asia-Pacific Business*, 12(4), 316-339.

Yoon, T. E., & George, J. F. (2013). Why aren't organizations adopting virtual worlds? *Computers in Human Behavior*, 29(3), 772-790.

Youssef, M. a. E., Eid, R., & Agag, G. (2021). Cross-national differences in big data analytics adoption in the retail industry. Journal of Retailing and Consumer Services, 64, 102827. https://doi.org/10.1016/j.jretconser.2021.102827

Zhu, K., & Kraemer, K. L. (2005). Post-adoption variations in usage and value of e-business by organizations: Cross-country evidence from the retail industry. *Information Systems Research*, 16(1), 61-84.