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IMPACTS OF ARTIFICIAL INTELLIGENCE AND BIG DATA ANALYTICS ON ACCOUNTING PRACTICES AND PROFESSIONAL ROLES

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ABSTRACT

The accounting processes and the role of the profession is undergoing radical transformation with the fast-paced development of Artificial Intelligence (AI) and Big Data Analytics (BDA) especially in the Industry 6.0. The paper focuses on the effects of AI and BDA in accounting in five key areas such as automation and accounting process efficiency, accounting professional role and skill demands, professional judgment and decision making, ethical, governance, and data security implications, and value creation driven by strategies and sustainability. The study is in the form of the survey data of 574 accounting and finance professionals where the proposed connections are tested on the basis of the reliability analysis, correlation analysis and multiple regression methods. The results indicate that AI and BDA can play a very important role in the accounting outcome and BDA can somewhat more effectively predict the accounting outcome than AI. The most relevant of the two models is generation of strategic and sustainability-oriented values and the decision-making and professional judgement improvement is second. The findings reveal that the ethical governing and data security is required even though the operation is becoming more efficient, the responsible use of technology, which is embraced by use of automation, is required. The current research could be used to supplement the existing literature in the accounting and information systems field by offering empirical evidence of the possible impact that smart technologies have on influencing the professional functions and value creation within the Industry 6.0 environment. The results can provide practical lessons to policymakers, educators, and practitioners who are striving to bridge the gap between accounting competencies, governance system, and sustainability goals and the current digital transformation.

KEYWORDS: Artificial Intelligence; Big Data Analytics; Accounting Profession; Industry 6.0; Professional Judgement; Digital Transformation; Sustainability; Ethical Governance

1. INTRODUCTION

The accounting profession is undergoing a radical shift that is fuelled by the fast movement in Artificial Intelligence (AI) and Big Data Analytics (BDA). The technologies are altering the way

accounting information is being generated, processed, interpreted and utilised in organisational decision making. As the revolution of accounting ceases to be concentrated on bookkeeping, conformity and historical reporting, the profession is becoming increasingly entrenched in the forefront of strategic, analytical and value-creation activities by AI and BDA. This change is especially greater concerning the Industry 6.0 where the characteristics of human-centred innovation, sustainability, ethical governance, and smart human-digital coexistence prevail (Chourasia et al., 2022; Almusaed et al., 2023). Artificial intelligence technologies used to automate data-driven, complex accounting processes that were previously performed by humans using their judgment and manual labour include machine learning, natural language processing, robotic process automation, and expert systems (Andreassen, 2020; Holmes and Douglass, 2022). BDA enables drawing actionable information using big amounts of structured and unstructured data, permitting accounting experts to graduate to predictive and prescriptive analytics (Chu and Yong, 2021; Arnaboldi et al., 2017). The application of AI and BDA is transforming the accounting practices and tasks of the occupation and brings up some essential issues related to efficiency, expertise, ethics, and the future of the profession. Automation of accounting processes and its enhancement is the greatest effect of AI and BDA in the accounting field. Routine and repetitive assignments are also being implemented with the use of AI-based technologies to process transactions, reconciliations, matching invoices, audit sampling, and compliance. Previously conducted studies reveal once again that automation will increase the speed of processing, human error, and operational costs so that organisations become more efficient and accurate (Afsay et al., 2023; Dai and Vasarhelyi, 2017). The AI-based analytics when applied to an auditing process will enable an auditor to process large groups of transactions instead of using the traditional sampling technique, which enhances the risk identification process and the quality of the audit (Commerford et al., 2022). Nonetheless, despite being a massive advantage when it comes to the operations, automation alters the character of the accounting operations. The vast majority of the routine work that sustained the process of professional learning has been relieved by intelligent systems, an issue that concerns the loss of skills and experience in junior accountants (Andreassen, 2020; Greenman, 2017). This duality shows the necessity to treat automation as a technological innovation, but as a paradigm shift in the direction of professional development in accounting.

The fact that the development of the automation is rather closely connected with the alteration of the professional roles and qualifications. The advent of AI and Big Data Analytics is likely to instigate these changes as more accountants are being anticipated to become the strategic advisors, data analysts, and strategic allies, rather than simply the record keepers (Grosu et al., 2023; Imene and Imhanzenobe, 2020). The change is a wider relocation of worth of accounting profession where analytic ability, technology ability and strategy are gaining significance beyond the technical knowledge of accounting. The literature highlights that the transformation will demand a new skillset that includes the data analytics, knowledge of information systems, critical thinking, and

communication expertise (Holmes and Douglass, 2022; Guşe and Mangiuc, 2022). The accounting process works with the use of AI presupposes the unceasing learning and adaptability as technologies advance fast and a specialist should be advanced constantly. Such a change also poses another challenge in terms of skills gap and professional inequality in the developing countries where access to higher level of training and digital resources may not be reliable (Grosu et al., 2023).

Also, together with efficiency and job change, AI and BDA are prominent spheres of improvement of decision-making and professional judgement. The contemporary analytics allow the accountant to detect patterns, trends, and abnormalities that cannot be detected through conventional methods, thus, promoting informed managerial and audit decisions (Chu and Yong, 2021; Barth et al., 2022). Planning, budgeting and risk analysis are supported with the help of predictive models, and expert judgement is enhanced with AI-based decision-support systems when dealing with complex and uncertain situations (Deliu, 2024). Nevertheless, the growing dependency on the results of the algorithms brings up the issue of excessive dependence on technology. Research warns that overuse of AI-based recommendations may lower the levels of critical thinking and work scepticism, especially in cases where decision-making processes are not transparent or not properly tested (Commerford et al., 2022; Holt et al., 2017). Hence, the accounting profession has one of its greatest problems in striking a balance between the human judgment and the artificial intelligence.

The implementation of AI and BDA is associated with serious ethical, governance, and data security concerns. Transparency and susceptibility to algorithmic bias Data privacy threatens fairness, accountability, and trust of the accounting systems (Holt et al., 2017; Gunz and Thorne, 2020). AI that is developed on partial or flawed information will still perpetuate existing imbalance or present falsified information hence, challenging the ethics of auditors and other financial professionals who are supposed to practice integrity and objectivity. Moreover, the application of high volumes of data analytics enhances the risks of exposure to cybercrime and control over data security and confidentiality (Alom, 2024). Thus, effective governance, ethics, and regulatory control is essential in order to have an accountable and transparent application of AI and BDA in accounting (Farhan and Kawther, 2023).

Lastly, AI and BDA facilitate the creation of values according to the strategies and sustainability to streamline the accounting processes with the overall organisational and societal goals. Artificial intelligence makes it possible to plan long-term, manage risks, and produce environmental, social, and governance (ESG) reports and, thus, promote greater transparency and sustainable decision-making (Cokins et al., 2020; Bras et al., 2024). Industry 6.0 posits that the accounting professionals will be at the centre of the data-driven insights to improve sustainable growth, ethical governance and trust between the stakeholders (Chourasia et al., 2022; Almusaed et al., 2023). The paper examines the

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

effects of Artificial Intelligence and Big Data Analytics on accounting practice and professional roles in five aspects that are interrelated such as automation and efficiency, transformation of the professional roles, decision-making and judgement, ethical and governance, and strategic value creation. The current paper contributes to the knowledge of the impact of intelligent technologies on the accounting profession in Industry 6.0 as it summarizes the ideas of the previous research.

2.0 THEORETICAL BACKGROUND

The swift rise of the applications of Artificial Intelligence (AI), Big Data Analytics (BDA) and other similar digital technologies has led to the shift in the accounting practice and professional responsibilities. The move to Industry 6.0, which is defined by human-centricity, sustainability, ethical governance, and intelligent systems, is placing accounting at the interface of automation, analytics, and professional judgement and strategic value creation (Pattanaik et al., 2024; Srivastava et al., 2024). It is possible to understand this transformation in terms of five dimensions that are interconnected with one another, and they are automation and efficiency of accounting processes; professional roles and skill prerequisites development; decision-making and professional judgement improvements; ethical, governance, and data security implications; and value creation of strategic and long-term orientation.

2.1 Automation and Efficiency of Accounting Processes

One of the theoretical foundations of the accounting digital transformation is automation. The automation of repetitive and rule-of-thumb operations in accounting, including transaction processing, reconciliation and audit test, and compliance reporting, is now possible with the advancements in artificial intelligence, robotic process automation, and blockchain technology (Kaya et al., 2019; Kokina and Davenport, 2017). According to Dai and Vasarhelyi (2017), blockchain accounting systems improve their automation by recording and ensuring transactions in real-time and in an immutable manner, which means that there is no reason to free-hand and retrospectively verify the transactions. Empirical and conceptual research demonstrates time and again that automation enhances accounting data in terms of efficiency, accuracy, and promptness (Ebirim et al., 2024; Oncioiu et al., 2019). With AI-based systems, it is possible to process high amounts of financial data at a faster pace than the human accountant can and minimise the precision with which financial accounting information could be generated through the manual data entry process and could be utilised to give near-real-time financial reporting. The AI-based auditing systems provide the opportunity to test the populations at once and continuously monitor the changes to transform the periodic audit process into the continuous evaluation of risks (Kokina and Davenport, 2017; Farhan and Kawther, 2023). But there are also concerns about automation which are mentioned in the theoretical literature. Martinez (2011) points out that the digital control systems are linked to the growing management control and shifting the power relations within organisations. Quattrone (2016) warns that more automation makes the complex accounting reality a simplistic and shallow measure by making

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

quantification much more important than situational understanding. According to these views, even with the increased efficiency, automation alters the epistemological basis of the accounting task, which makes the question of over-standardisation and the absence of the freedom to take professional choices.

2.2 Transformation of Professional Roles and Skill Requirements

The automation of the accounting operations has also had a great influence on professional jobs and skills. The work related to bookkeeping and compliance is becoming less and less traditional and is being replaced or supplemented by the work related to analytics, advisory services, and support of strategic decisions (Imene & Imhanzenobe, 2020; Yigitbasioglu et al., 2023). According to Greenman (2017), the reorientation to the derivation of this shift is the redirection of the profession towards the transactional execution to the interpretive and advisory execution. Studies that show that accountants skills ought to be reconfigured during digital transformation are numerous. The researchers claim that accounting education needs to evolve and incorporate AI literacy, data analytics, and systems thinking due to the inadequacy of basic technical knowledge in accounting when dealing with the more digitally intensive contexts (Holmes and Douglass 2022). According to Jackson et al. (2023), the role of soft skills, such as communication, critical thinking, and ethical reasoning, and technological competence are increasingly gaining significance. Empirical studies in developing economies also support the same. Guşe and Mangiuc (2022), as well as Grosu et al. (2023), describe the digitalisation as the opportunity and a threat to accountants, providing them with more professional benefits and, at the same time, revealing the unprofessionalism in skills. The same shift according to Tsiligiris and Bowyer (2021) relates to the Fourth and Sixth Industrial Revolutions, which state that the future accountant must integrate the knowledge of technology and human skills. The socio-technical systems theory is applicable to the analysis of this change and to focus on the co-evolution of technology, skills and organisational structures. Literature indicates that in case professional training and technological development are not of the same purpose, certain segments of the profession can be marginalised especially at the workplace where there exists unequal access to higher learning and internet availability (Rusu et al., 2023).

2.3 Enhancement of Decision-Making and Professional Judgment

In addition to enhancing efficiency and role redesign, AI and BDA dramatically alter how decisions and professional judgement in the accounting profession are made. Ancient analytics allow accountants to detect patterns, anomalies, and correlations on top of the usual financial measures, which are utilized to make better managerial and audit decisions (Richins et al., 2017; Shalhoob et al., 2024). In management accounting, predictive analytics enhance accuracy of forecasting, in performance measurement and strategy development (Mancini et al., 2017; Barth et al., 2022). Deliu (2024) argues that AI will not substitute professional judgement, rather it enhances it by adding extra

information on the decision-making context. Under this school of thought, AI will be viewed as a cognitive promoter that will be able to increase the analytical processes without the human-professional responsibility and accountability. Empirical researches are however cautious about over-reliance on the algorithmic results. According to Commerford et al. (2022), the AI-based estimations may be excessively used by auditors and reduce professional scepticism. Janssen et al. (2022) also prove that explainability and user experience play a crucial role in the dependency of the decision-makers on the AI systems. These findings suggest that the control of human supervision and interpretation should be retained in AI-enhanced accounting settings. The theoretical conclusion is that professional judgement formation is a continuum and does not vanish but changes to the assessment, interpretation, and confirmation of the algorithm's outcomes rather than manual calculation (Tiron-Tudor and Deliu, 2022).

2.4 Ethical, Governance, and Data Security Implications

Ethics is an important component of AI and BDA theoretical framework of accounting. Algorithms bias, a dearth of transparency, and a susceptibility to data privacy are the major threats to the equity, accountability, and trust in accounting systems (Ntoutsi et al., 2020; Zhang et al., 2023). According to Holt et al. (2017), data analytics can be a source of ethical issues in the context of surveillance and monitoring, which influence the perception of equity in the workplace and the stakeholders. Lehner et al. (2022) contend that AI-based decision-making becomes an issue concerning the normative dimension because it transfers the ethical responsibility to a system, and therefore it becomes difficult to establish accountability systems. Gunz and Thorne (2020) state that technological advances can lead to the destruction of professional ethics when efficiency is promoted instead of judgement, integrity, and the common good. The government systems are critical towards the reduction of the ethical risks that are involved with the introduction of AI. A remote auditing and online labour organization needs such new forms of governance which guarantee quality, independence and professional responsibility as shown by Farcane et al. (2023). These discoveries theoretically correlate with the institutional theory as per which professional rules and regulations are expected to address the needs to legitimise new technology without the need to compromise the ethical principles (Geels, 2014).

2.5 Strategic and Sustainability-Oriented Value Creation

The final theoretical point is connected with the role of AI and BDA to aid in the creation of value in a more strategic, more sustainability-focused manner. The accounting profession is progressively anticipated to aid the sustainability targets of organisations, which has both financial and non-financial data, such as environmental, social, and governance (ESG) (Peng et al., 2023; Petcu et al., 2024). The accuracy and speed of sustainability reporting are improved through AI-based analytics, and the long-term risk evaluation and strategic planning is made possible with the help of big data analytics. The

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

literature on Industry 6.0 suggests that the technical innovation focus has to be orchestrated with human-focused and sustainability goals (Chourasia et al., 2022; Pattanaik et al., 2024). Only when the digital transformation is accompanied by the alteration in the organisational culture and the direct participation of its stakeholders, digital transformation will only result in the creation of sustainable values, as put forward by Pînzaru et al. (2022). In the same tone, Salin et al. (2024) embrace the use of competency frameworks, which are integrative of ESG proficiency and digital capabilities; hence, magnifying the strategic application of the accountants in governing sustainability. The dimension is a sign of a transition between value judgment and value creation. The accounting practitioners no longer play the roles of reporters of the yesteryears but complete participants of the strategic decision-making and sustainable development. Geels (2014) developed the regime resistance concept, which seems to be a barrier that may hinder this change, especially in the traditional accounting setting.

2.6 Synthesis of Theoretical Perspectives

The five elements described above are what constitute a comprehensive theoretical framework to comprehend the effects of AI and BDA on the accounting process or professional responsibilities. Automation will increase efficiency and power positions and professional roles will shift to advisory and analytical tasks; decision-making will be streamlined but will still require human oversight; ethical and governance will need some heavy follow-through; and value creation at the strategic level will be a combination of accounting and sustainability and Industry 6.0 aspirations. The future of accounting according to the literature lies not only in technology but in the capacity of the profession to combine intelligent systems and ethical instinct, everlasting learning and being strategic. The analytical methodology of the present research is the theoretical synthesis, and offers a framework on how to conduct research on the influence of AI and BDA in accounting in various organisational and institutional contexts.

3.0 RESEARCH METHODOLOGY

It is a quantitative study that considers the implications of Artificial Intelligence (AI) and the Big Data Analytics (BDA) on accounting practices and professional responsibility in the industry of Industry 6.0. Primary data through the structured survey technique were obtained by targeting various professionals in accounting and finance in organisations, which are in the public sector, those in a private enterprise and in an audit or consulting firm. It has been suitable in the cases of describing the perceptions and experiences of practitioners regarding the new digital technologies as well as conducting empirical tests of the relations that are based on hypothetically based constructs. The questionnaire as a self-administered survey was built based on the multiple sources of literature on the topic of digital change, artificial intelligence, big data analytics, and profession of an accountant. The questionnaire consisted of two massive parts. The former one was the demography of the respondents and the latter included the measure of the five latent constructs which included automation and

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

efficiency of the accounting processes, transformation of the professional roles and skill requirements, improvement of the decision making and professional judgment, ethical, governance and data security implication, and strategic and sustainability-oriented value creation. Each of the items was rated on a five-point Likert scale in which one (strongly disagree) equated to one point, five (strongly agree) equated to five. The number of valid respondents who were analyzed was 574. The Cronbach alpha was used to determine reliability and the loading factor of the measurement scales determined the construct validity. To simplify the data, descriptive statistics were calculated and Pearson correlation analysis was performed to determine how the relationship between the variables of the study is with one another in order to determine whether multicollinearity can occur. The multiple regression analysis was then used as the explanatory power of the AI and BDA dimensions to the accounting-related results. The statistical calculations were done using SPSS. All in all, the implemented methodological framework provided the research with strength, dependability as well as adequacy to reach the research goals and provide the analytical model with an empirical validation.

Data Analysis

Table 1. Demographic Profile of the Respondents

Demographics Category		Freq-uency	%age	Demographics Category		Freq-uency	%age
Gender	Male	356	62.02%	**Organization Type**	Public sector	174	30.31%
	Female	218	37.98%		Private sector	287	50.00%
	Total	**574**	**100.00%**		Audit / Consulting firm	113	19.69%
					Total	**574**	**100.00%**
Age Group	Below 25 years	74	12.89%	**Education Level**	Bachelor's degree	238	41.46%
	25–34 years	221	38.50%		Master's degree	256	44.60%
	35–44 years	164	28.57%		Professional qualification	63	10.98%
	45–54 years	87	15.16%		Doctorate	17	2.96%
	55 years and above	28	4.88%		**Total**	**574**	**100.00%**
	Total	**574**	**100.00%**				
Professional	Less than 5 years	148	25.78%	**Employment**	Entry-level	136	23.69%
	5–10 years	206	35.89%		Mid-level professional	248	43.20%
	11–15 years	132	23.00%		Senior Managerial	190	33.10%

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

	More than 15 years	88	15.33%		**Total**	**574**	**100.00%**
	Total	**574**	**100.00%**				

The demographics of the respondents offer much information on the representation and its quality of the study sample. There were five hundred and seventy-four analysed responses. The sample consists primarily of males since there are 356 respondents (62.02%), and 218 respondents (37.98%). This can be compared to the distribution of gender composition that is largely witnessed in the accounting and other related professional services, especially in the emerging market situations. The age group of 25-34 years (38.50) is the most represented and then there is 35-44 years' group (28.57%). There are 12.89% professionals in the under 25-year bracket, 15.16% in the age between 45-55 years and above, and 4.88% in the age between 55-64 years and above. It means that it will be largely constituted of early-career and mid-career individuals who are actively engaged in the digital transformation initiatives in the accounting profession.

The majority of the respondents were those that possessed Master degrees (44.60%), then those who possessed the Bachelor degrees (41.46%). The percentage of people with professional accounting qualifications is a very small percentage (10.98% of the professionals) and a very small percentage form the number of people with doctoral degrees (2.96%). This reflects a highly educated population that is knowledgeable enough in accountancy technology on an advanced level. With regards to professional experience, 35.89% percent of the respondents are experiencing 5-10 years and 25.78 years' experience of less than 5 years. Based on the organisational allocation, half of the respondents are in the private sector followed by the public sector, 30.31% by the last category audit or consulting businesses at 19.69%. The demographic representation is indicative of an interdisciplinary sampling, which is professionally viable to study how AI and Big Data Analytics can change accounting.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

Table 2. Factor Loadings and Reliability Statistics of factors of AI and BDA

No.	Factor Name	No. of Items	Factor Loadings	Cronbach's Alpha (α)
1	Automation and Efficiency of Accounting Processes	6	0.714 – 0.876	0.883
2	Transformation of Professional Roles and Skill Requirements	5	0.693 – 0.849	0.865
3	Enhancement of Decision-Making and Professional Judgment	5	0.724 – 0.881	0.894
4	Ethical, Governance, and Data Security Implications	4	0.706 – 0.856	0.852
5	Strategic and Sustainability-Oriented Value Creation	5	0.737 – 0.875	0.912

Table 2 shows the results of the measurement model that are persuasive to indicate construct reliability and internal consistency of all the five factors employed in the study. The values of the factor loadings and the value of Cronbach alpha are to show that the items of the assessment scale are highly correlated with their respective latent constructs, and could be applied to the further multivariate analysis. The construct Automation and Efficiency of Accounting Processes, has a scale factor loading of between 0.71 and 0.86 which is by all standards a lot higher than 0.60 the well-known mark. It implies that the items continue to be a symbol of the central idea of automation and efficiency that is facilitated by increased digital technologies. The alpha Cronbach 0.88 is high indicating that the measure of the items represents the same construct with high consistency. This finding can be said to be valid based on the results obtained to determine how smart technologies can enhance the efficiency of the accounting processes.

The instrument Transformation of Professional Roles and Skill Requirements is also measured using 5 items, and the factor loadings are 0.69 to 0.84. These values indicate that the relationship between the measured variables and the latent construct is very strong, which proves that the chosen items are effective to measure the changes in the professional roles and the shift in the skills requirements. Another fact which proves the reliability of this construct is the Cronbach's alpha of 0.86 which means that respondents unanimously admitted that the accounting functions were developed in the digital age. Enhancement of Decision-Making and Professional Judgement is a rather strong concept in terms of psychometrics. It has demonstrated to have outstanding internal consistency, convergent validity as deemed through factor loading between 0.72 and 0.88 and Cronbach alpha of 0.89. The results demonstrate that a respondent opinion regarding the AI- and data-based decision-support system

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

remains stable, which means it increases professional judgement and analytical competencies. The factor loading of the four items that comprise Ethical, Governance, and Data Security Implications lies between 0.70 and 0.85 with a Cronbach's alpha of 0.85. This means that ethical and governance related issues are never considered apart and they are one construct. Lastly, Strategic and Sustainability-Oriented Value Creation is highly dependable since it has a factor loading 0.73 - 0.87 and Cronbach's alpha of 0.90 which is a good achievement in terms of internal consistency. All these results support the measurement model and give a good background of additional inferential and structural research.

Table 3 Correlation of factors of AI and BDA Dimensions

No.	Construct	1	2	3	4	5
1	Automation and Efficiency of Accounting Processes	1				
2	Transformation of Professional Roles and Skill Requirements	0.612**	1			
3	Enhancement of Decision-Making and Professional Judgment	0.648**	0.671**	1		
4	Ethical, Governance, and Data Security Implications	0.534**	0.589**	0.621**	1	
5	Strategic and Sustainability-Oriented Value Creation	0.667**	0.693**	0.718**	0.642**	1

The correlation table 3 shows the correlation between the five most important constructs being studied in the study and gives the initial hints of the correlation between automation, professional transformation, decision-making, ethical considerations and sustainability-based value creation in the accounting field. The findings indicate that all the constructs are comparatively related to each other at the level of the 0.01 which implies that the correlations between the variables under study are high. Automation and Efficiency in Accounting Processes have strong positive relationship with the Transformation of Professional Roles and Skill Requirements ($r= 0.612$, $p < 0.01$), and the Enhancement of Decision-Making and Professional Judgement ($r= 0.648$, $p < 0.01$). The findings indicate that the greater the automation of the accounting processes could be related to the professional functions and formation of analytical and judgement skills. Besides, the automation is closely associated with the strategy and Sustainability-Oriented Value Creation ($r= 0.667$, $p < 0.01$), which proves that the rise in efficiency of digital technologies has positive implications on the strategy and sustainability results.

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

The relations between the Transformation of Professional Roles and Skill Requirements and Enhancement of Decision-Making and Professional Judgement ($r= 0.671$, $p < 0.01$) and Strategic and Sustainability-Oriented Value Creation ($r= 0.693$, $p < 0.01$) are high. This brings to the fore the urgent need to develop skills and responsibilities in which accountants will be able to utilize smart technologies to accomplish the strategic objectives. The constructs positively relate to ethical governance ($r= 0.621$, $p < 0.01$) and sustainability value creation ($r= 0.642$, $p < 0.01$) in a moderate to strong way, which is a sign of interdependence between ethical governance and effective utilisation of digital technologies. All the correlation coefficients are below 0.80 and this indicates that there is no problem of multicollinearity. It is the results of the correlation that confirm the theoretical framework of the research and support further regression and structural analysis to determine the cause relationships between the constructs.

Table 4. Regression Results for Big Data Analytics (BDA) Dimensions

Predictor (BDA Dimensions)	**β (Standardized)**	**t-value**	**p-value**
Automation and Efficiency of Accounting Processes	0.251	5.98	0.000
Transformation of Professional Roles and Skill Requirements	0.296	6.87	0.000
Enhancement of Decision-Making and Professional Judgment	0.334	7.92	0.000
Ethical, Governance, and Data Security Implications	0.172	4.11	0.000
Strategic and Sustainability-Oriented Value Creation	0.359	8.46	0.000
R^2	**0.680**		
Adjusted R^2	**0.670**		
F-value	**224.63**		**0.000**

Table 4 contains the results of the multiple regression analysis that was conducted to identify the effects of the aspects of Big Data Analytics (BDA) on the accounting-related outcomes. The explanatory power of the model is also high since the $R^2 = 0.680$, which means that on average 68.0 percent of the variation in the dependent variable is attributed to the five predictors relating to BDA. Another statement that the strength of the model takes into account is also supported by the improved R 2 of 0.670. The model is statistically significant with F-value of 224.63 ($p < 0.001$) to demonstrate that the regression model is appropriate to test the hypothesis. Strategic and Sustainability-Oriented Value Creation is the most influential predictor with the standardised beta value of (**β=** 0.359, $t = 8.46$, $p = 0.001$). The discovery underscores the need to make BDA critical in facilitating accountants to produce sustainable strategic knowledge to aid in the making of sustainability-related decisions. The

International Journal of Research in Commerce and Management Studies

ISSN 2582-2292

Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

significant positive influence of sophisticated data analytics on the analytical abilities and professional judgement in accounting is strong and broadly significant (The Enhancement of Decision-Making and Professional Judgement (**β**= 0.334, t = 7.922, p < 0.001).

The regression analysis reveals a significant positive contribution of the Transformation of Professional Roles and Skill Requirements (**β**=0.296, t=6.870, p=0.001), which proves the significance of the role played by data-driven skill enhancement and transformation of professional roles to maximise the benefits of Big Data Analytics (BDA). The Automation and Efficiency of Accounting Processes are also important to the model (**β**=0.251, t =5.983, p < 0.001) which confirms the fact that the more efficiency is brought into accounting processes through data analytics, the higher the overall accounting performance. Even though the Ethical, Governance, and Data Security Implications are somehow minor, the positive influence is considerably strong (**β**=0.172, t=4.114, p < 0.001). The discovery is an emphasis on the fact that good use of big data analytics involves ethical management of data, governance structures and even security measures as a necessary enabler. The regression discovery is a compelling argument in favour of the applicability of the Big Data Analytics to the accounting processes and functions revolution, especially the generation of strategic value and improvement of decision-making processes.

Table 5. Regression Results for Artificial Intelligence (AI) Dimensions

Predictor (AI Dimensions)	**β (Standardized)**	**t-value**	**p-value**
Automation and Efficiency of Accounting Processes	0.284	6.920	0.000
Transformation of Professional Roles and Skill Requirements	0.231	5.480	0.000
Enhancement of Decision-Making and Professional Judgment	0.267	6.150	0.000
Ethical, Governance, and Data Security Implications	0.148	3.670	0.000
Strategic and Sustainability-Oriented Value Creation	0.312	7.340	0.000
R^2	**0.620**		
Adjusted R^2	**0.610**		
F-value	**185.470**		**0.000**

Table 5 reflects this problem through the findings of a multiple regression analysis conducted to find out the strength of the dimensions of Artificial Intelligence (AI) on the accounting-related outcomes. The regression model is highly explanatory as the R^2 of the regression of 0.620 indicates that the five predictors of AI explain 62.0 percent of the variance of the dependent variable. Adjusted R^2 also attests

International Journal of Research in Commerce and Management Studies

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Vol. 8, No. 01 Jan-Feb; 2026 Page. No. 585-606

the stability of the model, which is obtained and which is 0.610 after the quantity of the explanatory variables was adjusted. The model also indicates statistically significance because the F-value of the model is 185.47 ($p < 0.001$) implying that the model can be utilized in a way that is commensurate to inferential analysis. The strategic and Sustainability-Oriented Value Creation (**β**=0.312, $t = 7.34$, $p < 0.001$) is the most significant predictor in the model. This observation reveals that AI-based solutions are needed in ensuring accountants make accountable strategic objectives and outcomes that are focused on sustainability with higher analytical ability. In the same way, a high positive and statistically significant effect (**β**= 0.284, $t = 6.92$, $p < 0.001$) shows that Automation and Efficiency of Accounting Processes is an effective one in the context of optimising the accounting processes and enhancing process efficiency.

The findings show that there is a significant positive effect of the Enhancement of Decision-Making and Professional Judgement (**β**= 0.267, $t = 6.15$, $p = 0.001$) since AI-based decision-support systems play an important role in enhancing analytical thinking and professional judgement. The model (**β**= 0.231, $t = 5.48$, $p < 0.001$) is impacted more by The Transformation of the Professional Role and Skill Requirements, which is why it is necessary to modify the competences and restructure the professional roles to make the benefits of the AI implementation. Ethical, Governance, and Data Security Implications, though being rather minor, also demonstrate the statistically significant positive effect (**β**=0.148, $t = 3.67$, $p < 0.001$). This observation shows that ethical issues, institutional setup, and safeguards on data are essential facilitating factors that make AI implementation in accounting successful. The outcomes of the regression give a high level of empirical evidence to the transformative character of AI in accounting practices and professional jobs, which is in line with the findings associated with the Big Data Analytics and the significance of intelligent technologies in the accounting profession.

DISCUSSION

Findings of the present study represent a serious portion of empirical data points to the disruptive character of artificial intelligence (AI) and Big Data Analytics (BDA), both in terms of the accounting process and as a profession. The overall findings of the regression and correlation researches demonstrate that the two technologies have considerable effects on the accounting results but with some level of difference in the results of different dimensions. Their results confirm the current agreement in the literature that digital transformation in accounting does not happen only in terms of operational efficiency but it also has a strategic, ethical, and professional aspect (Kokina and Davenport, 2017; Yigitbasioglu et al., 2023). The good explanatory nature of the two regression models (especially in BDA) is that data-based technologies play a key role in transforming the modern accounting processes. The advances of automation and the improvements in efficiencies became among the primary predictors following the previous research, highlighting the importance of the

intelligent system in the process of optimising the accounting processes and minimising the number of people involved (Kaya et al., 2019; Dai and Vasarhelyi, 2017). Results indicate that not all the enhancement of the role of accountants can be explained by the efficiencies improvement, but other factors of the problems such as the enhanced decision-making and value creation deserve to be taken into account.

It has transformed the character of the professional positions and skills required and has become a major factor in the AI and BDA models. The provided observation is consistent with the earlier studies that indicate that accountants shifted the role of traditional accountants, which attains a consultative and analytical character (Andreassen, 2020; Holmes and Douglass, 2022). The empirical data employed to justify this dimension helps in the assumption that the use of technology should be attended by consistent professional growth and especially, the data analytics, systems thinking and the ethical logic. Similarly, Tsiligiris and Bowyer (2021), the article dwells upon the increasing demand of the hybrid set of skills that are constituted by the technical knowledge on the one hand as well as the human perception on the other. This strengthened the decision-making and professional judgement in a huge and significant scale and especially in the BDA model. This observation confirms the argument that the information offered by analytics can be used to enhance the professional judgement, yet it does not substitute it (Deliu, 2024; Tiron-Tudor and Deliu, 2022). Nevertheless, the results warn of overreliance on algorithmic decisions, the sentiment which is also shared by Commerford et al. (2022) and Janssen et al. (2022) when it comes to overdependence on the automated systems. Interpretive vigilance and professional scepticism are the most important towards integrity of accounting decisions.

The implication of ethics, governance and data security was significant in both models with relatively smaller beta. This proves the importance of the system of morality and governance that makes AI and BDA using safe to the user (Gunz and Thorne, 2020; Lehner et al., 2022). According to Ntoutsi et al. (2020), the problem of the bias in algorithms and data privacy still casts doubt on the validity and credibility of intelligent accounting systems. These results therefore support the fact that there should be effective regulatory control and professional ethics. Lastly, value creation in terms of strategic and sustainability was the most significant predictor in both the regression models. This highlights the increasing significance of accounting, in the service of long-term organisational value and sustainability purposes, in line with Industry 6.0 principles (Chourasia et al., 2022; Peng et al., 2023). The findings indicate that accountants are becoming more strategic partners in ESG reporting, sustainable decision making and value addition to the stakeholders.

CONCLUSION

This paper has explored the Artificial Intelligence and Big Data Analytics implication on accounting

practices and the identity of the accountant in five key aspects namely; automation and efficiency, transformation of the professional role, enhancement of decision-making, ethical governance and creation of strategic value. The results indicate that AI and BDA could give a significant boost to the digitalization of the accounting profession, and the Big Data Analytics possesses a greater explanatory potential in comparison with an Artificial Intelligence. The findings indicate that although automation has a high degree of efficiency, the actual benefit of intelligent technologies is in the fact that it allows assisting the professional judgement, transforming the jobs, and encouraging the strategic and sustainability-focused results. The research article shows that the major determinant of successful adoption of technology is moral issues and control systems. The findings contribute to the accounting and information systems literature as they provide the empirical evidence in the new Industry 6.0 setting, and incorporate the technological, professional, and ethical lenses into the single analysis model.

Future Research Directions

However, despite the fact that this work deserves it, it has a number of weaknesses, which presuppose the possibilities of further research. The cross-sectional design does not give a chance to make any causal inference. In future research, the longitudinal designs can be used to investigate the temporal variations of the effect of AI and BDA on the accounting practices. Secondly, although this study was conducted on the aspects of perceptions, it may be designed to use objective measures of performance to corroborate the findings. Third, the comparative research on the developed and emerging economies would give profound information on the institutional and cultural factors that underlie the use of technology in accounting. Fourth, the model could be enhanced in future studies through the inclusion of mediating or moderating variables such as organisational culture, regulatory environment or readiness to adopt technology. Last but not least, qualitative study can be conducted to study the perception of accountants regarding the human-algorithm interaction in practice, which will assist to enhance the knowledge about professional identity transition in terms of Industry 6.0.

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