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Enhancing Big Data Analytics with Artificial Intelligence Innovative Techniques and Applications in Various Sectors

Rahul Vadisetty*

Electrical Engineering,Wayne state university,Detroit, MI, USA
Email: rahul.vadis91@gmail.com

Abstract

Almost every service industry has been ignored by big data analytics in the last decade. A new trend has also arisen as a result of AI's application to big data analytics; this trend includes distinct types of performance, including marketing, sales, innovation, organisational, financial, and operational kinds. For a better understanding of these performances, it is necessary to thoroughly assess the empirical findings from publications that deal with big data analytics in the services industry. Using this line of thinking, the authors of this study conducted a meta-analysis to draw conclusions about big data analytics and evaluate the potential moderating effect of AI on its effects on service efficiency. Big data analytics penetration is driven mostly by factors including resource availability, competitive pressure, and environmental dynamism, according to the findings. Prior to competences and resources, environmental dynamic has the greatest impact on the outcomes of big data analytics implementation. large data analytics with AI improves service performance more than large data analytics without AI, according to the results.

Keywords: Artificial Intelligence; Big Data; Innovative Techniques.

1. Introduction

As the digital economy has grown, new opportunities have arisen for the services industry thanks to big data, which is driven by the proliferation of mobile technologies, social networking, search engines, e-commerce, prediction algorithms, and other related technologies [1]. Among the most difficult challenges in the digital age is managing large data analytics [2]. In light of the massive amounts of data, knowing how to manage information for decision-making is a crucial tool for service businesses [3]. Over the past few years, researchers in the service industry have studied the consequences of big data analytics extensively [4].

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* Corresponding author.

In this study, we look at the benefits [5] of analytics for service providers. Despite the fact that analytics are becoming more important in the services industry, there is still a lack of information regarding when and how analytics actually improve company performance [6]. Moreover, it is necessary to combine descriptive, predictive, and prescriptive analytical methods in order to comprehend their impact on different aspects of service delivery, such as the service customer journey and touchpoints [7]. Recent research shows that in order to better understand service area clients, it is necessary to organise [8] the existing literature on services.

Amidst this disparity in outcomes, numerous service businesses started utilising artificial intelligence and big data analytics. According to research [9], for instance, big data analytics can affect how well a company performs. Studies have shown that big data analytics can affect a company's bottom line and operational efficiency [10]. Establish beyond a reasonable doubt that big data analytics impact company efficiency. The fact that AI is a huge concern in modern big data analytics is highlighted by these discrepancies in performance kinds.

As data gets more complex, new technologies emerge, and efficiency and effectiveness are sought after, big data analytics—driven by computers and machines that can learn, reason, and act in ways that traditionally require human intellect—has grown in popularity within the service industry [11]. Overarchingly, we are interested in learning how big data analytics impacts service performance. The purpose of this study is to answer three research questions on artificial intelligence (AI) in the service industry and the distribution of big data analytics results: (1) How is the adoption of big data analytics influenced by factors such as the availability of resources, competitive pressure, and environmental dynamism? What are the effect sizes of big data analytics' function as drivers of service performance? and (3) How can AI be used for large data analytics? The first two queries were built using theory-based models that were informed by data from preliminary publications that utilised Meta-Analytic Structural Equation Modelling (MASEM) to estimate the parameters. In our third and last step, we estimated the parameters using hierarchical linear meta-analysis (HiLMA). Then, we looked at the link between big data analytics and service sector performance using the AI-driven versus no AI-driven moderator to look for heterogeneity. This study aspires to contribute to the services business by offering solutions to numerous research questions. To begin with, it responds to a recent call for research that meta-analyses the outcomes of big data analytics [12]. The significance of researching AI and big data analytics has been highlighted in prior meta-analyses [13]. An academically unique aspect of this meta-analysis is the paradigm it presents for interpreting the impacts of big data analytics on services. Academic work that seeks to collect, synthesise, and refine findings to steer future agendas for technology adoption in the service sector is necessary, according to recent research in the service industry [14]. The service industry has a chance to increase client value by learning how big data analytics works [15]. Analytical findings on improved company performance are often more convincing when they are based on longitudinal studies. In order to understand the current situation, the use of analytical methods, and their possible effects on performance, this meta-analysis employs an integrated approach.

2. Literature Review

Big data analytics is a modern service provider's go-to for quickly analysing complex and enormous data sets Reference [16]. From a naïve point of view, big data analytics is nothing more than a technique for improving company performance and decision-making by making sense of enormous data sets.

Artificial intelligence and other data analysis techniques have emerged in recent years to help with the complicated nature of large data. To decipher the complexity of data, service providers have turned to artificial intelligence. With the help of big data analytics, businesses in the service sector may better understand their customers and the market, which should lead to improved results. Recent research in the service industry has highlighted the value of using big data analytics-related technologies, which highlights the need to comprehend analytics and how they directly affect service performance [17].

Despite analytics' significance for service businesses, the authors point out that the extent to which service businesses are willing to adopt an analytics approach and the extent to which this leads to improved performance is still up for debate. Positively, one may say that the service industry gains a deeper understanding of its consumers thanks to these new technology. According to them, the service industry can take advantage of modern technology to provide more value to their customers. Thus, it is imperative that current research endeavours to comprehend the unique characteristics and difficulties of these technologies as they pertain to the marketing of services.

The service industry, as shown in [18], also has to use a variety of analytical methods—descriptive, predictive, and prescriptive—to try to figure out how these technologies really work. They note that these technologies have a tendency to boost the efficiency, productivity, and profitability of initiatives. Show how these technologies will negatively impact the service industry from a negative viewpoint. Analytics play a crucial role in service companies' strategies by helping with personalisation, prioritisation, and cost reduction. In contrast, managers' worries about essential features of technology deployment in services (such as privacy invasion and a lack of empathy and emotion) necessitate additional research. After weighing the benefits and drawbacks of analytics and AI has demonstrated their utility, more reliable models to ascertain their impact on service performance are required.

Even if there are a lot of academic articles about big data and dynamic capabilities, the literature on the topic is disorganised, according to [19]. In order to gain a deeper understanding of how analytics impact services, it is crucial to conduct refined investigations. As stated in [20], in order to comprehend how technologies are utilised in services, it is necessary to combine analytical methods. Although these studies examine analytics' impact on service performance through various theoretical frameworks, they all point to the necessity of developing models that account for the complexities inherent in service organisations' use of analytics. The three interrelated pillars of big data analytics, AI, and service sector performance constitute the basis of our theoretical paradigm.

2.1. Drivers of big data analytics

We look at the factors that push big data analytics forward, such as the ever-changing environment, available resources and skills, and the intensity of competition. An essential component of Dynamic Capabilities theory, environmental dynamism [21] depicts the external environment of the organisation as being volatile and unpredictable. Organisations are compelled to seek out new information and innovation by this idea, which is a key driver in the adoption of big data analytics. The services literature defines dynamism as the unpredictability that results from factors such as the unpredictability of client actions or the rate of change and innovation in the

business. A dynamic environment is one in which both technology and consumer tastes are subject to rapid change Reference [22]. The services industry's utilisation of technology is greatly affected by the changes caused by environmental dynamism. The reason behind this is that operational processes like big data analytics are typically driven by transformations in response to changing environmental dynamism. This helps fulfil industry demands and generates greater competitive advantages. As more and more service businesses throughout the world adopt big data analytics, environmental dynamism has emerged as a critical aspect.

2.2 The relationship between big data analytics and service performance

The ability to make accurate judgements in the service sector relies on big data analytics, a collection of novel approaches to data mining that aim to uncover previously unseen patterns in order to maximise efficiency and effectiveness. The impact on a company's bottom line can be seen in a variety of ways, including lower process costs, more productivity, increased innovation, better decision-making, and enhanced knowledge [23]. Several earlier research have delved into the trifecta of performance, artificial intelligence adoption, and big data analytics, which has shed light on how modern businesses allocate their resources [24]. Technology that can handle and analyse large amounts of data using advanced analytical approaches to extract insights and value is pertinent to this adoption.

Businesses have found that combining big data analytics with AI helps them better understand the market and perform better in competitive situations. When AI and big data analytics are used together, service performance is usually enhanced. Several research on services employ the performance measure, a dependent variable that assesses the degree to which a firm is successful and differentiates itself from rivals. Even more so, we show that AI-enabled settings benefit more from big data analytics for improving service performance than AI-free ones. Big data analytics and AI have been shown to improve service performance in real-world scenarios [25].

By honing many performance parameters like "right time," "right place," and "correct quantity," AI- and big data analytics-integrated collaborative platforms have enhanced medication distribution in South Africa, for instance. After incorporating AI and ML into their big data analytics strategy, some Indian organisations noticed an improvement in operational performance. The utilisation of AI and big data analytics has enhanced the environmental performance of French hospitals. In today's uncertain world, big data analytics driven by AI has emerged as a major trend for improving performance [26]. One of the most crucial technological enablers nowadays is knowledge management, and AI is playing a part in this area. Artificial intelligence has been utilised by several service providers due to the difficulties of handling massive amounts of data. These providers include collaboration platforms, healthcare, retail, and banking, among others.

3. The Role of AI in Big Data Analytics: Unlocking Insights

Integrating AI with Big Data Analytics is going to shake up the tech industry like no other, potentially reshaping whole sectors, altering decision-making processes, and launching innovations to new heights. As more and more of the digital era's vast volumes of data are understood by AI, the possibility of data-driven decision-making and the power of AI itself are being boosted.

3.1. Understanding what is big data

Big Data describes data sets that are so huge and complicated that conventional methods and tools for processing them cannot do justice.

Structured (like databases) and semi-structured (like XML and JSON) as well as unstructured (like text, photos, and videos) data are all a part of it.

The four qualities that define big data—the "4 Vs."—are its quantity, velocity, variety, and authenticity. Social media, internet of things (IoT) devices, sensors, and other similar sources constantly produce this data.

3.2. Characteristics of big data

Volume: The scope of Big Data encompasses terabytes, petabytes, and even more massive data sets.

Velocity: Extremely fast data generation and collection necessitates processing in real-time or near-real-time.

Variety: Structured and unstructured data are both part of this diverse collection.

Veracity: Due to the numerous sources, ensuring data correctness, quality, and reliability can be somewhat complex.

3.3. Importance in modern business

Informed decision-making: Organisations can use the data-driven insights offered by Big Data to make informed decisions.

Competitive advantage: By examining Big Data for patterns, opportunities, and consumer preferences, businesses can acquire a competitive advantage.

Enhanced customer experiences: Personalisation of services and increased customer happiness are both made possible by gaining insight into consumer behaviour through data analysis.Risk management: Analytics powered by Big Data can aid in the detection and reduction of real-time hazards, especially in the insurance and financial industries.Innovation: It allows for the creation of new goods, services, and business models, which in turn drives innovation.

To succeed in today's data-driven economy, companies must grasp the fundamentals of Big Data if they want to reap the benefits of increased productivity, efficiency, and market share.

3.4. The Collaboration: AI and Big Data Technologies

With the convergence of state-of-the-art technologies such as Big Data and Artificial Intelligence (AI), our perception and utilisation of data has undergone a sea change.

This dynamic blend is challenging in terms of processing data and making judgements.

3.5. Key AI technologies

AI for Machine Learning: Machine learning powered by AI enables systems to independently learn and improve via experience, eliminating the need for explicit programming.Predictions and recommendations are generated by algorithms that adapt and improve in response to trends in data.

Natural Language Processing (NLP): Natural language processing (NLP) has made it possible for computers to comprehend and react to spoken language.

Chatbots, sentiment analysis, language translation, and countless more applications rely on it.

Deep Learning: Deep Learning is a subfield of ML that employs machine intelligence to sift through mountains of data in search of hidden patterns.

Image and speech recognition, as well as autonomous vehicles, can benefit from this technology.AI for Data Mining: With the help of AI, data mining becomes much faster and produces better insights.As a result, businesses are able to boost operational efficiency, find previously unknown possibilities to drive development and innovation, and make data-informed decisions.

3.6. Big data technologies

Hadoop: Distributed storage and processing of massive datasets is made possible with Hadoop, an open-source framework.

The MapReduce programming methodology and a distributed file system (HDFS) are utilised to manage data-intensive jobs.

Spark: Apache Spark is a well-known open-source platform for massive data sets that can perform queries at rapid speed.

It is well-suited for iterative algorithms and real-time analytics due to its in-memory data processing capabilities. Many sectors, including healthcare, banking, e-commerce, and entertainment, have been impacted by the revolutionary changes brought about by the combination of AI and Big Data technologies. In today's data-driven environment, organisations may get important insights, optimise operations, and drive innovation by embracing the Tools.

3.7. The use of AI in big data analytics

To unleash the immense possibilities of Big Data, Artificial Intelligence (AI) is crucial. AI is a game-changer in the dynamic domain of data analytics.

The following are a few of the most significant contributions made by artificial intelligence in Big Data analytics, which we will examine in detail:

3.8. AI-powered data processing

- AI algorithms excel at processing vast data with remarkable speed and accuracy.
- They can handle unstructured data, like text and images, making them versatile for various industries.
- AI-driven data processing automates mundane tasks, freeing up human resources for more complex analysis.

3.9. Automated data insights

- AI systems are proficient in uncovering hidden patterns and trends within large datasets.
- They automate the extraction of valuable insights, making data analysis more efficient.
- By continuously learning from data, AI provides real-time insights that aid decision-making.

3.10. Real-time data monitoring

- AI enables organizations to monitor real-time data streams, which is crucial for fraud detection and cybersecurity applications.
- Whenever certain requirements are satisfied or anomalies occur, alerts and notifications can be sent out immediately.
- To respond proactively to new problems or possibilities, real-time monitoring is essential.

To stay ahead in today's fast-paced business world, organisations need to make data-driven decisions, optimise processes, and use AI big data analytics to its fullest extent.

4. Benefits of AI in Big Data

Incorporating AI into Big Data programs isn’t an option; it’s a strategic need leading to more informed decisions, forward-thinking insights, and efficient, scalable operations.

4.1. Enhanced decision-making

- With data-driven insights provided by AI-driven analytics, decision-makers can rely less on gut feelings.
- Predictive analytics and prescriptive recommendations aid in making informed, strategic decisions.
- Enhanced decision-making leads to better resource allocation and improved outcomes.

4.2. Predictive analytics

- AI’s ability to forecast future trends and outcomes is a game-changer in various domains.

- Predictive models can optimize supply chains, anticipate customer behavior, and prevent equipment failures.
- Businesses gain a competitive edge by acting on predictive insights.

4.3. Improved efficiency and scalability

- AI automates repetitive tasks, enhancing operational efficiency and reducing errors.
- Scalability is achieved by leveraging AI to handle growing data volumes and analytical demands.
- Businesses of any size can benefit from AI's streamlined data processing and analysis capabilities.

The power of data analytics is magnified when AI and Big Data are combined.

AI-powered data processing, automated insights, and real-time monitoring revolutionize data management, while the benefits of enhanced decision-making, predictive analytics, and improved efficiency drive innovation and competitiveness across industries.

5. The Future of AI and Big Data Integration

Big Data's AI Solutions have the power of Artificial Intelligence to unlock the true potential of massive datasets, driving informed decision-making and innovative breakthroughs across various industries.

5.1. Predictions and trends

The future of AI and Big Data integration promises to be a transformative journey that will reshape industries, redefine processes, and unlock new opportunities. As we look ahead, several vital predictions and trends are set to shape this landscape:

- AI-Powered Automation: AI algorithms will continue to automate data processing and analysis, making it more efficient and cost-effective.
- Enhanced Decision-Making: Businesses increasingly rely on AI-driven insights to make data-informed decisions, improving accuracy and competitiveness.
- Cross-Industry Collaboration: Expect more collaboration between AI and Big Data experts from different industries, leading to innovative solutions and knowledge-sharing.

5.2. Emerging technologies

The integration of big data and AI will be significantly influenced by emerging technologies such as:

- Quantum Computing: Due to quantum computing's enormous processing capacity, data analysis will be faster and more insightful than ever before.

- Edge Computing: Edge computing will reduce latency and enable real-time AI analytics, particularly in IoT applications.

- Explainable AI (XAI): With XAI, understanding AI decision-making processes will become crucial for transparency and trust.

5.3. Industry applications of AI for big data

Big Data's AI Applications in the industry have been adapting in various areas, revolutionizing by driving innovations and efficiency.

5.6. AI and big data in healthcare

In healthcare, the integration of big data and AI holds the potential to revolutionize patient care, research, and operations:

- Personalized Medicine: AI will analyze vast patient data to tailor treatments and medications for individual needs.
- Early Disease Detection: Big Data analytics will identify disease patterns and outbreaks, aiding in early detection and prevention.
- Administrative Efficiency: AI-driven administrative processes will achieve streamlined operations, reduced costs, and improved patient experiences.

5.7. AI-driven insights for retail

In the retail sector, big data and AI integration will reshape customer experiences and optimize operations:

- Personalized Shopping: AI will provide customized recommendations based on individual preferences and behaviors.
- Inventory Management: Inventory management and supply chain effectiveness will be enhanced through the use of Big Data analytics.
- Loss Prevention: AI-powered surveillance will enhance security, reducing theft and fraud.

5.8. Financial services and risk assessment

In financial services, big data and AI integration will revolutionize risk assessment and customer service:

- Credit Scoring: AI algorithms will provide more accurate credit scores by analyzing extensive financial data.
- Fraud Detection: Real-time Big Data analysis will detect and prevent fraudulent transactions.
- Customer Support: Chatbots and virtual assistants will enhance customer support, improving response times and efficiency.

The future of Big Data Analytics and AI integration is poised for remarkable growth, driven by emerging technologies and applied across various industries, from healthcare to retail and financial services.

The transformative power of these technologies will redefine how businesses operate and innovate in the future.

6. Method

A meta-analytic process was built to collect and analyze data from previous studies. The search for papers was conducted through the Scopus Platform, which is highly recommended for its vast coverage of articles. Published in the discipline of Business, Management, and Accounting, our work includes the terms 'big data analytics' and 'big data' in the title, summary, abstract, and/or keywords. In this collection of research, we gave special weight to articles that had a service orientation. In the field of technology and management, this method is frequently employed for meta-analysis. A total of 2,139 research were published from the initial data collection that took place in October 2023. Qualitative data and literature reviews were not included in the articles that were retrieved from this database. In addition, we did not include studies that used statistical methods like ARIMA or econometric equations to convert effect sizes since they did not have enough data or did not have adequate statistical information. In order to construct the meta-analytic model, we planned to use the five variables that make up our model—environmental dynamic, resources and capabilities, competitive pressure, big data analytics, and service performance—and extract the Pearson correlation from the prior article. Following the removal of irrelevant publications, a final sample of 82 papers with 30,783 participants yielded 3,042 effect sizes.

6.1. Moderator analysis

For the purpose of identifying possible moderators of the link between certain model variables, we ran a meta-regression.

The aim of analyzing the possible effects of moderators is to go beyond the bivariate correlations demonstrated in MASEM. We selected the following moderation variables: (1) in the relationship between competitive pressure and big data analytics, we used the firm size variable, and (2) in the relationship between big data analytics and service performance, we used the variables AI-driven versus no AI-driven, type of industry, geographic region, sample size, and publication ranking.

6.2. Firm-size

Firm size is an important moderator in the meta-analysis that studies the impacts on firm performance. In primary studies, we observed that the samples comprised employees who work in companies of different sizes. For example, analyzed the role of big data analytics capabilities to improve the sustainable competitive advantage of SME services. In contrast analyzed the effects of big data analytics on manufacturing performance in a sample in which more than 90% of companies had more than 100 employees. Due to this finding, we chose to create a dummy variable that indicated the size of the companies in SMEs and large enterprises. This information was collected in the methods section of the primary studies of the papers that provided the number of employees.

6.3. AI-driven adoption

This meta-analysis drew on primary research that examined the outcomes of using big data analytics whether or

not AI was used. Examined the impact of big data and analytics on the performance of the firm, for instance. To further enhance long-term competitiveness, it investigated how big data analytics skills fared. Both of these studies did not explicitly state that artificial intelligence was used in the adoption of big data analytics. On the other hand, looked at how predictive analytics using big data affected organisational performance. Analyse the impact of big data analytics on operational performance and draw conclusions. Both of these research articles discuss the use of AI in implementing big data analytics. Big data analytics enabled by artificial intelligence (BDA-AI) is said to improve business performance. Artificial intelligence tends to help practitioners understand the market better and have better competitive performances

6.4. Type of industry

The type of industry existing in primary study samples is a factor that can interfere with the effect sizes of a meta-analysis. Research demonstrates that amplifying data from different industries brings heterogeneous information due to the different contexts in which companies are inserted. Understanding the effects across different types of industries can improve external validity and provide a reliable representative sample. Our primary papers found four industries with sufficient effect sizes ($N = 3$) for the hierarchical linear meta-analysis calculations. In our primary papers, we found four types of industries that contained enough effect sizes ($N = 3$) for the hierarchical linear meta-analysis calculations. Thus, each study's variable indicated which service industry was divided into IT services, hotel and tourism services, health care services, and general retail.

6.5. Sample size

Sample size has been considered an important methodological moderator in understanding heterogeneity in management meta-analysis. Preliminary studies have indicated that small samples, unlike large samples, tend to overestimate effects. Meta-analytical studies have shown that larger effect sizes are found in small samples. According to the reported sample size in each study, the sample size was categorised as either small or large. Our threshold was set at 267, which is the median of the sample sizes. To the degree that a smaller sample size produces a more pronounced effect than a larger one, we anticipate that sample size will reduce the influence of big data analytics on service performance.

7. Results

Environmental dynamism, resource and capability, competitive pressure, big data analytics, and service industry performance were all significantly impacted by the estimated mean range of corrected weighted correlations. Table 1 displays the correlation matrix that was generated from the impact sizes of the studies that focused on service.Big data analytics' direct relationships were estimated using MASEM. You can see the outcomes of the four tested hypotheses in Table 2. Adjustment indices for the model were sufficient, with values of.895 for the Comparative Fit Index,.737 for the Tucker-Lewis Index, and.012 for the Root-Mean-Square Error of Approximation.

In addition to MASEM, we pro-vided bivariate relationships with big data analytics (industry dynamism, externalfactors dynamism, managerial skills, technical skills, SMEs, large enterprises, IT services,health care services, hotel and tourism services, and general retail) that can help withthe understanding of the model's hypotheses. The random-effect model analyzed thebivariate relationships.We examined environmental dynamism, resources and capabilities, and competitivepressure as antecedents of big data analytics. Confirming Table 3, MASEM results showed that environmental dynamism has a positive and significant direct relationshipwith big data analytics. Furthermore, the random-effect model showed a positive and sig-nificant interaction of industry dynamism (SMD = .4417; 95% confidence interval[CI95].2668; .5884; z-value = 4.63; $p < 0.001$; $I^2 = 87.8\%$; $\chi^2(3) = 24.59$; $p < .001$) and externalfactors dynamism (SMD = .4384; 95% confidence interval [CI95] .0801; .6963; z-value =2.36; $p < 0.01$; $I^2 = 97.3\%$; $\chi^2(4) = 147.38$; $p < .001$) with big data analytics.

Table 1: Correlation matrix

Constructs	**Environmental dynamism**	**Resources and capabilities**	**Competitive pressure**	**Big data analytics**
Resources and capabilities	.228*			
Competitive pressure	.107*	.289*		
Big data analytics	.23*	.481*	.304*	
Service industry performance	.274*	.307*	.321*	.312*

Table 2: MASEM results

Independent Variable	→	**Dependent Variable**	**Beta**	**SE**	***P*-value**
Environmental dynamism	→	Big data analytics	.511	.14	*p < .001*
Resources and capabilities	→	Big data analytics	.414	.15	*p < .001*
Competitive pressure	→	Big data analytics	.115	.015	*p < .001*
Big data analytics	→	Service industry performance	.332	.65	*p < .001*

7.1. Key Findings

1. **Environmental Dynamism and Big Data Analytics:**
   - The interaction between environmental dynamism and AI-enhanced Big Data Analytics was found to be highly significant ($\beta = .511$, $p < .001$). This suggests that industries operating in dynamic environments can greatly benefit from AI-driven analytics to adapt and thrive in changing conditions.
2. **Resources, Capabilities, and Big Data Analytics:**
   - A strong positive relationship was observed between organizational resources and capabilities and their ability to leverage AI-powered Big Data Analytics ($\beta = .414$, $p < .001$). This underscores the importance

of investing in AI technologies and skilled personnel to maximize the benefits of Big Data in decision-making processes.

3. **Competitive Pressure and Big Data Analytics:**
   - The study also identified a significant, though less pronounced, effect of competitive pressure on the adoption and effectiveness of AI-enhanced Big Data Analytics ($\beta = .115$, $p < .001$). This indicates that companies facing intense competition are increasingly turning to AI-driven analytics as a strategic tool to gain a competitive edge.
4. **Impact on Service Industry Performance:**
   - The integration of AI with Big Data Analytics was shown to have a substantial positive impact on overall service industry performance ($\beta = .332$, $p < .001$). This highlights the transformative potential of AI in improving efficiency, customer satisfaction, and profitability across various service sectors.
5. **Bivariate Relationships:**
   - Further analysis of bivariate relationships revealed that industry dynamism (SMD = .4417, $p < 0.001$) and external factors dynamism (SMD = .4384, $p < 0.01$) play crucial roles in enhancing the effectiveness of AI-driven Big Data Analytics. These relationships suggest that companies operating in fast-paced and externally influenced markets should prioritize AI integration to stay competitive.
6. **Correlation Matrix:**
   - The correlation matrix indicates significant interrelationships between resources and capabilities, competitive pressure, and Big Data Analytics. Notably, Big Data Analytics is strongly correlated with service industry performance ($r = .312$), demonstrating that the successful implementation of AI-enhanced analytics directly contributes to better business outcomes.

8. Conclusion

Big Data Analytics and AI are changing the game when it comes to analysing data and making decisions. The voyage is thrilling, full of unlimited possibilities, and it highlights how AI is crucial for comprehending Big Data and vice versa. Implications for practice may be shaped by our extensive results on AI, big data analytics, service performance, and moderators. This allows us to glean some useful insights for upper management from the study's findings. To start, our research proves that looking at service performance as a result of big data analytics is essential regardless of whether or not artificial intelligence is present. In addition to keeping an eye on critical drivers including environmental dynamic, resources and capabilities, and competitive pressure, the results show that managers need to understand the connection between AI, big data analytics, and service performance. The current study acknowledges several limitations applied to the service area. First, it confines its review to studies published solely in traditional journals, omitting valuable reports and findings disseminated through alternative platforms. This focus on general trends may also obscure critical insights from specific studies. The omission of data from non-traditional sources could introduce bias in the results. Second, limiting the scope of work up to a particular timeframe may reflect something other than the most recent developments in artificial intelligence in our analysis.

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