International Journal of Leading Research Publication (IJLRP)

E-ISSN: 2582-8010 ● Website: www.ijlrp.com ● Email: editor@ijlrp.com

Exploring the impact of Business Intelligence on e-commerce performance: An analysis

Rajeshwari S N[1], Dr. Nikhil Rathod[2]

[1]Research Scholar, [2]Assistant professor
[1,2]Department of commerce, Sabrmati University, Ahmedabad, Gujarat.

Abstract:
This study explores the role of Business Intelligence (BI) in enhancing e-commerce performance by focusing on its impact on decision-making, process optimization, and organizational efficiency. BI has emerged as a transformative tool, influencing key areas such as customer intelligence, supplier relationships, internal efficiency, and competitor analysis. The findings underscore BI's ability to optimize supply chain management, streamline operations, and enable data-driven decision-making. By leveraging BI, e-commerce organizations can improve market responsiveness, enhance customer satisfaction, and maintain competitive advantage. The study also highlights the role of BI in fostering collaboration and knowledge sharing within organizations, creating a data-driven culture essential for sustained growth. Furthermore, BI's integration into e-commerce workflows supports improved business process performance, contributing to strategic organizational outcomes. The research emphasizes that while BI is not a one-size-fits-all solution, its tailored application can significantly enhance performance, positioning BI as a critical resource for success in the dynamic e-commerce landscape.

Keywords: Commerce, Management, Business Intelligence, e-commerce, Customer satisfaction, BI.

INTRODUCTION

With the advent of the digital age, Business Intelligence (BI) systems have become an essential component that significantly affects the growth and success of e-commerce enterprises. With an explosion of digital data and technological advancements, there is a tremendous opportunity for businesses to enable BI tools to leverage their business operations, improve the customer experience, and facilitate informed decision-making. With e-commerce growth fast on the global scene, organizations seek to understand how BI systems interact with organizations and affect key parameters of performance in an increasingly fluid and competitive space. Business Intelligence refers to a variety of platforms which utilize tools and technologies to help organizations in collecting, analyzing, and presenting data to facilitate decision support. Its importance interaction with bi systems is that these systems help in providing tools to extract actionable insights from a large amount of structured and unstructured data which in turn helps organizations to improve operational efficiency and drive revenue growth and improved customer engagement (Keegan, Canhoto, & Yen, 2022). For e-commerce, BI tools are crucial to managing and optimizing various aspects of the business, including inventory management, supply chain optimization, and growing customer relationships. In such contexXt, BI systems are of utmost importance in enabling agile decision making processes for catering real-time, personalized experiences to customers, as businesses fight to meet such demand (Yasmin et al., 2020). Extensive research has demonstrated that the level of Business Intelligence adoption is directly associated with the caliber of organizational performance. For instance, Yasmin et al. (2020) investigate the moderating role of Big Data analytics capabilities on the influence of data analytics on the firm performance and contend that firms can capitalize on data-driven insights to enhance their operational effectiveness and foster competitiveness. In a similar vein, Yu et al. (2021 explore the impact of enterprise digitalization on financial performance, emphasizing the way digital transformation fueled by Bl systems can promote sustainable growth and profitability. By

implementing such digital tools, like Al and BI, in their businesses (in the e-commerce space), businesses can witness remarkable growth in performance analytics like revenue generation, customer acquisition, customer retention, etc.

REVIEW OF LITERATURE

Keegan et al. (2022) how power negotiation impacts the adoption of AI in B2B marketing Their paper, "Power Negotiation on the Tango Dancefloor: The Adoption of AI in B2E Marketing" examines how organizations adopt AI technologies into their marketing practices while navigating the power negotiation between human decision-makers and AI-lik mechanisms. It is more strategic and cultural than simply a technical issue, and the success of AI in the field of B2B marketing will depend primarily on how human marketer's car navigate and survive the tensions and changing power balance between human skills ano intelligent technologies. Keegan et al. (2022) contend despite improving the efficiency and granularity of marketing campaigns, the deployment of AI systems leads to new issues around control, enduring decision-making power, and organizational reconfiguration In closing organizations will have to work to create an environment where their people trust the AI tools they're using, and have the skills and knowledge to work with Al systems effectively. The study makes important contributions to understanding the interplay between power dynamics, organizational behavior, and Al adoption business marketing strategies. Digital Innovation Performance (2022) Challenges for organizations to achieve successful digital innovation published the paper in Digital Innovation Performance (2022). This study also offers insight into what can be considered as a recipe for failure in organizations that fai to address key factors in their digital transformation endeavors. The authors investigate the prospects of digital innovation initiatives failing despite the massive promise of technologies like AI, big data, and cloud computing. The research identifies a number of these critica success factors which need to be present in order for digital transformation to occur successfully such as having strong leadership, developing an appropriate strategy and having the right technology infrastructure. In Digital Innovation Performance (2022) contends tha the absence of these factors results in failed digital innovation initiatives that squander: resources and subvert organizational objectives. Well-defined digital strategy; Internal capabilities this is about building your people to take on work with machines Organizational readiness from changing your working model to moving to cloud platforms to taking on distributed work, readiness for more agile tech adoption is key. The study serves as a warning that while digital innovation holds immense promise for improving businesses and industries, embracing it also entails a risk of failure if not pursued with due diligence research, and planning.

Yao et al. (2022) address the impact of entrepreneurial capabilities and prior knowledge orn the emergence of new digital venture ideas from a digital perspective. The authors claim that while tech tools such as Al enable the creation of innovative digital ventures, its successful implementation hinges on the entrepreneurial skills of individuals, and their previous familiarity with the digital tech landscape. Yao et al. (2022) offer that the deeper an entrepreneur's expertise in digital tools and trends, the more these entrepreneurs tend to be opportunity driven toward new digital ventures. AI can support the entrepreneurial process. It helps to analyze the market more accurately and find existing solution gaps, as well as automate routine tasks where the process of creating a venture is needed. But the authors also write that digital initiatives need more than Al; they need creativity, entrepreneurial drive, and a deep knowledge of digital ecosystems. The research underscores the importance of coupling Al with such entrepreneurial expertise and domain knowledge for successful exploitation of digital opportunity, and showcases the complex interplay of tech and human ability in the process of digital entrepreneurial venture.

IMPORTANCE OF BI FOR E-COMMERCE

Business Intelligence (BI) is a vital instrument for e-commerce that has become integral to the operation of many organizations and affects their performance and decision-making process, as well as their strategic

planning process, especially in today's world of huge data. The effects of business intelligence on e-commerce performance can be examined at several levels, including its role in driving efficiencies, improving customer experience, informing marketing strategies, and facilitating growth. With the constant growth and adaptation of the e-commerce industry, the ability to leverage and analyze vast amounts of data is critical for a competitive advantage, and BI is the backbone of this data-driven approach. The essence of BI's role in enhancing e-commerce efficiency lies in its capacity to optimize processes and make better-informed choices. Every day, e-commerce businesses accumulate and generate large volumes of data, such as customer interactions, transaction histories, product inventory, and supply chain dynamics. BI tools enable companies to be able to collect, analyze, and convert this unprocessed data into insights for actionable business decisions. For instance, business intelligence can improve the inventory management system by forecasting demand patterns based on historical buying trends, seasonal changes as well as other external variables. By using this predictive capacity, businesses are less likely to experience stockouts and overstocking and, as a result, can maintain optimal levels in their inventory at minimum unnecessary costs. Additionally, BI tools also assist e-commerce businesses in improving their supply chain management. By aggregating data from multiple touchpoints suppliers, warehouses and distribution networks businesses can decongest the real-time performance of their supply chains. This visibility enables organizations to discover inefficiencies, bottle necking and processes for improvement (Pinheiro et al., 2021), which will increase operational performance and decrease costs. Other than this, BI can also help in demand forecasting that is important in the proper supply and demand chain where business can deliver the products to customers on time and avoid the holding of additional stock that increases the cost. Research framework Since BI systems are recognised as an essential component of e-commerce success, the increasing focus on customer-centric strategies in e-commerce has increased BI needs. The preference, behavior, and buying patterns of customers are crucial data for any business that aims to lock in customers effectively. Through BI tools, companies can segment users based off their purchase trends to identify high-value customers and tell them how they can be targeted within special segments with offers and recommendations. Leveraging historical information and conduct, e-commerce

LOCATION OF THE STUDY AREA

This study is centered on E-commerce organizations operating in the Delhi National Capital Region (NCR), a thriving hub for small and medium-scale enterprises. The Delhi NCR region, encompassing Delhi and neighboring areas such as Gurgaon, Noida, Ghaziabad, and Faridabad, was chosen for its dense concentration of E-commerce businesses actively leveraging Business Intelligence (BI) tools. The research utilized convenience sampling to select organizations that were accessible and relevant to the study's focus. Field visits were conducted to engage directly with businesses across various sectors and sizes, ensuring a diverse sample. The dynamic nature of the E-commerce ecosystem in Delhi NCR provides valuable insights into the adoption of BI tools, their integration into business operations, and their role in driving improved performance and decision-making in this competitive industry.

STATEMENT OF THE PROBLEM

The rapid growth of e-commerce has transformed the retail landscape, emphasizing the need for businesses to adopt advanced technological tools to remain competitive. Business intelligence (BI) systems have emerged as pivotal tools in this transformation, providing actionable insights through data analysis, visualization, and decision-making support.

However, many e-commerce businesses struggle to effectively implement and leverage BI systems, leading to missed opportunities in optimizing operations, enhancing customer experiences, and achieving sustainable growth. While some organizations invest significantly in BI technologies, the measurable impact on performance metrics such as revenue, customer retention, and operational efficiency remains unclear. Moreover, there is a gap in understanding how BI can address challenges such as data silos,

fragmented customer insights, and real-time decision-making in a dynamic online marketplace. This problem is further compounded by the complexity of integrating BI tools with existing e-commerce platforms and aligning them with business strategies. Factors such as the organization's data literacy, the quality of data analytics, and the scalability of BI solutions play a critical role in determining the success of these systems. Additionally, there is a lack of empirical evidence on the relationship between BI adoption and e-commerce performance, especially in small and medium-sized enterprises (SMEs). This research seeks to explore the extent to which BI influences e-commerce performance, identify the barriers to effective adoption, and propose strategies for maximizing its potential. Addressing these issues is crucial for helping e-commerce businesses harness the power of data to achieve competitive advantage and long-term success.

OBJECTIVES OF THE STUDY

1. To explore the role of Business Intelligence (BI) in improving decision-making processes within E-commerce organizations.
2. To assess the impact of Business Intelligence on the optimization of business processes and the enhancement of operational efficiency in E-commerce organizations.
3. To examine the relationship between the use of Business Intelligence tools and the performance of key business processes in E-commerce organizations.
4. To investigate the influence of Business Intelligence on the execution and outcomes of Business Process Performance activities within E-commerce companies.
5. To evaluate how Business Process Performance activities contribute to overall Organizational Performance in E-commerce organizations.

HYPOTHESIS

1. Ho1: There is no significant relationship between Business Intelligence (BI) and Business Process Performance (BPP) in e-commerce organizations.
2. Ho2: There is no significant influence of Business Intelligence (BI) on Business Process Performance (BPP) in e-commerce organizations.
3. H3: There is no significant relationship between Business Process Performance (BPP) variables and Organizational Performance (OP) in e-commerce organizations.
4. Ho4: There is no significant relationship between Business Intelligence (BI) and Organizational Performance (OP) in e-commerce organizations.
5. H5: There is no significant influence of Business Intelligence (BI) on Organizational Performance (OP) in e-commerce organizations. (OP) in e-commerce organizations.
6. Ho4: There is no significant relationship between Business Intelligence (BI) and Organizational Performance (OP) in e-commerce organizations.
7. H5: There is no significant influence of Business Intelligence (BI) on Organizational Performance (OP) in e-commerce organizations.

SIGNIFICANCE OF STUDY

The significance of studying the impact of Business Intelligence on e-commerce performance lies in its potential to transform how businesses operate in an increasingly competitive digital marketplace. BI systems offer e-commerce companies the ability to analyze vast amounts of data, extract meaningful insights, and make informed decisions that drive efficiency and growth. Understanding the role of BI in e-commerce can also inform policy-making and technological innovation, fostering an environment that encourages data-driven practices.

SCOPE OF STUDY

The significance and scope of studying the impact of Business Intelligence on e-commerce performance extend to both academic and practical domains. Additionally, it provides valuable insights for policymakers and technology developers to create supportive frameworks and innovative tools tailored to the unique needs of e-commerce. The findings contribute to academic literature on BI and e-commerce while offering practical recommendations for businesses to enhance their performance, sustainability, and growth in an increasingly competitively.

LIMITATIONS OF THE STUDY

The study may be limited by the availability and reliability of data from E-commerce organizations. Inaccurate or incomplete data could hinder the ability to draw meaningful conclusions regarding the relationship between Business Intelligence and Business Process Performance.

a) The research may be limited by a small or non-representative sample of E-commerce organizations. If the sample is not diverse enough, the findings may not be generalizable to all E-commerce businesses.
b) E-commerce organizations may employ different Business Intelligence tools and technologies, which could affect the consistency and comparability of the results. Variations in BI system implementation may lead to differing impacts on business process and organizational performance. The subjective nature of measuring Business Process Performance and Organizational
c) Performance may limit the precision of the study's findings. Variations in how these performances are measured across organizations could affect the accuracy of the results.
d) Other external factors, such as market conditions, competition, or economic changes, could influence both Business Process and Organizational Performance, making it difficult to isolate the specific impact of Business Intelligence.
e) The study may encounter challenges in establishing a causal relationship between
f) Business Intelligence and performance outcomes, as correlation does not necessarily imply causation. External factors might play a role in observed relationships.
g) E-commerce organizations may have complex structures and processes that could complicate the assessment of the relationship between Business Intelligence, business processes, and organizational performance. Different departments or processes may experience varying levels of impact from BI systems.
h) E-commerce companies may face limitations in the integration of advanced Business Intelligence tools due to financial, technical, or human resource constraints, which could affect the study's findings on the influence of BI on performance.

RESEARCH GAP

Although much has been studied regarding BI, its role in contemporary business practices, and overall impact, there remains a significant gap relative to BI impact on e-commerce performance. Although extant research emphasizes the capacity of BI tools to enhance decision-making and operational workflow, few studies quantitatively assess their impacts on key e-commerce outcomes, including revenue generation, customer retention, and supply chain efficiency. In addition, the literature has been dominated by the study of large organizations with the resources to implement the best of BI solutions to support data-driven decision-making, rather than small and medium-sized enterprises, who tend to have neither the financial wherewithal implement the solutions in full, nor the economies of scale to justify a more expensive one. A second pertinent gap exists in researching the issues preventing companies from successfully embracing BI in e-commerce. The complexities of integrating data, technology constraints, and the organizational resistance to change are common issues mentioned in literature but seldom critically analysed with useful recommendations. Additionally, the impact of emerging Business Intelligence technologies, including predictive analytics and machine learning, in informing e-commerce strategies is not well understood. Moreover, there are few studies which attempt to relate BI adoption with the enhancement of customer

experience which is becoming an increasing common theme in e-business. While the online marketplace is characterized by dynamic and highly competitive conditions that require up-to-the-moment decision making capabilities, little research has examined the extent to which BI systems enable this agility. This study seeks to address these gaps by offering empirical insights into the quantifiable effects of BI on e-commerce performance, examining the impediments to its adoption, and suggesting ways to fully leverage its potential across a range of business environments.

ANALYZING SAMPLE CHARACTERISTICS

This study adopted the Statistical Package for the Social Sciences (SPSS) Version-19 and Microsoft Excel to analyze the sample characteristics. Various respondent characteristics such as gender, age, education, specialization and years was used for analysis. These characteristics were analyzed to assess the demographic characteristics of the sample and their potential influence on the perceptions and experiences of the Business Intelligence (BI) impact on e-commerce performance. Here we describe the sample characteristics of the key features.

Gender:

The gender distribution of respondents among the 332 valid questionnaires was analyzed. The findings showed that male respondents constituted 65.06% (n=216) of the sample, whereas female respondents comprised 34.94% (n=116). The results show a significant gender difference, with 71.37% male respondents (N=770) and 28.63% female respondents (N=308). The percentage of males pn 65.06% is above 50% thus confirming that there were a higher number of men actively partaking in the research process. This is likely due to the gender distribution in e-commerce companies, especially in technical function or Business Intelligence (BI), typically more male-dominated. On the other hand, 34.94% of female respondents, but it should also be noted that such a prominent representation of women in the e-commerce sector means female participants are significantly involved in decision-making and strategic procedures as well. As such, the gender composition of the respondents needs to be considered from the outset; this contributes to early baseline understanding of any differences in BI adoption and the positive effect that BI has on the performance of e-commerce it serves. Comparative assurance seems to be a significant relationship since gender should differences with BI tools, data analysis processes and choices might vary for the e-commerce organizations. Thus, by examining the gender distribution, we set the stage for analysis on gender based differences in Bl's contribution to enhanced business outcomes. We will analyze the study general relation between BI practices and e-commerce performance trends among the groups according to these demographic variables and other characteristics so that we can have a clear perspective about how different demographic groups interpret and use BI in their organizations.

Age:

Analysis on the Age Range of 332 Respondents to Data on Thoughts of BI Impacting E-Commerce Performance The results showed the following breakdown by age:

- 21 out of respondents above the age of 45 (6.32%).
- 35-45 years 12.65% (n-42)
- 39.76% (n=132) below 25 years of age.
- 41.27% (n=137) are 25-35 years old.

Most of them (41.27%) are from age 25-35, and the second biggest group (39.76%) is the younger age group (18-24). These two groups alone account for more than four-fifths (81%) of all those surveyed. Interestingly, this distribution of age indicates to us that the sample mainly consists of young, energetic, and tech-savvy employees. The more recent age brackets, especially the 25-35 year bracket, will be really accustomed to the newest trends in • 41.27% (n=137) are 25-35 years old. Which includes the implementation of Business Intelligence tools and systems in e-commerce backgrounds. As they will be

working in e-commerce organizations they would be comfortable with the technology and therefore would also have a fair idea about how BI can solve business problems and improve performance and decision making. These age groups are typically more willing to adopt new technologies and innovations, lending such responses to the analysis of the effects of BI on e-commerce performance. They are more familiar with the potential benefits and challenges that come with implementing a Bl system, including real-time analytics, customer insights, and competitive intelligence all of which are essential to optimizing business performance in the e-commerce industry. To show whether such research results would be an accurate representation of the organization's ability to embrace and drive success within e-commerce organizations that are more tech-savvy, the sample was surveyed for the number of younger individuals. Their insights are essential to evaluate the usefulness of BI tools with regard to their adoption in enhancing both operational efficiency and customer engagement, as well as its impact on overall e-commerce performance.

Education:

Here we analyzed the education of the 332 respondents to measure the knowledge of the BI in e-commerce performance. The findings showed educational background as follows:

- 49.40% (n=164) of the participants were graduates.
- 45.48% (n=151) had postgraduate degrees.
- Others 5.12% (n=17).

This educational breakdown indicates that significant proportions of respondents have been through higher education for education, with nearly half (45.489%) possessing a postgraduate degree. This well-educated workforce suggests that, alongside being skilled in certain technical skills, it is well versed in analytical concepts, problem-solving, and information technology, all of which should aid understanding of and engagement with Business Intelligence systems in online businesses. The role of workforce with a high level of education is especially important as we investigate the effect of BI on e-commerce performance. The knowledge level required for BI tools, especially at the postgraduate level, makes the employees more prepared and more qualified to handle the complexities that come with business intelligence such as data mining, predictive analytics, and real-time data visualization. They could potentially interpret and apply BI insights to improve e-commerce strategies, make better decisions, and optimize business processes. Furthermore, an educated workforce is in a better position to utilize the powers of Business Intelligence systems, embedding data-driven decision-making, and enhancing business drivers like customer segmentation, market analysis, and competitive intelligence. And, these employees also tend to add to a culture of innovation and constant improvement, helping e-commerce companies stay ahead of market trends and technological advancements. The education level of the respondents indicates that the workforces within the studied e-commerce organizations are capable and well qualified in understanding the implementation of Business Intelligence tools. It is only with this kind of expertise that businesses will be able to improve their bottom line by leveraging BI to lead the way for the organization to use its data as a competitive advantage, streamline operations, focus on improving customer experience, and drive sustainable business growth in the e-commerce space.

Specialization:

Specialization of the respondents was analyzed in terms of their knowledge and applicability in the fields that contribute toward increasing understanding and use of Business Intelligence (BI) in the e-commerce organizations. Of the 332 respondents:

- 21.70% (n=72), field: management (possessing a Master in Business Administration (MBA)). Master of commerce (M. Com) = 16.60% (n=55)
- Master of Computer Science (M.CS) 6.32 % (n=21)
- 0.60% (n-2): Master of Technology (M. Tech)

There were also a number of respondents with undergraduate degrees in other fields, illustrating the breadth of common background:
•9.93% (n=33) > Computer Science Bachelor.
•6.62% (n=22) a Bachelor's in Marketing,
•7.53% (n=25) had Bachelors in Business Administration.
• 2.71% (n=9) were graduates with a Bachelor's in Hotel Management.
•7.83% (-26) were Bachelor's in Technology.
•3.61% (n=12) Bachelor in Tourism.
•6.32% (n=21) Bachelor's in Fashion Design.
•3.61% (n=12) hold a Bachelor in Retail Management.
• 0.90% (n=3) were bachelor's in Engineering and Technology.
• Other specializations: 5.72% (n=19)

The data reveal that the sample consisted of respondents with relatively high post-graduate levels of education; 150 out of 332 respondents (45.18%) had post-graduate qualifications particularly in the management and commerce disciplines, which are highly relevant to the strategic application of Business Intelligence within e-commerce organizations. It also indicated some form of experience in the field, which normally comes from any background that includes Business Administration, Commerce, or Technology. The varied specializations that respondents claim also indicate that you'll be bringing different perspectives and skills to the role. Such diversity is particularly important to our research on e-commerce performance impacting BI as it ensures that the respondents are perhaps not only more critically oriented towards use cases of BI tools and data, at the likes of strategic decisions, operational effectiveness, customer analytics, with technology constraints, but they also likely adopt a more holistic perspective towards BI. Additionally, degrees in computing and technology related subjects (ex: Master in Computing Science, B. Tech) suggest that the respondents would comprehend technical features of BI tools, analyzing data and integrating it with systems very well. With this technical knowledge, one can even better comprehend the implementation of BI in e-commerce scenarios that lead to better efficiency, customer experience, and overall business health. The respondents are educational specialists, a considerable proportion of postgraduates in the relevant fields. By specializing in this field, they have gained the expertise needed to play a key role in providing valuable feedback on the effectiveness of Business Intelligence on e-commerce performance, which helps in investigating how can BI enhance the performance of this domain.

Experience:
There is a large variation in experience level among the respondents in this study, which is key to predicting how Business Intelligence (BI) impacts e-commerce success. In this survey, among 332 respondents, 35.35% (n=117) of the participants are less than 3 years of experience, indicating that many new, young professionals join the e-commerce industry remarkably. 43% (n=142) of respondents have 3 to 6 years of experience which indicates a relatively young workforce that has obtained a good knowledge base for e-commerce dynamics. In addition, 20.48% (n-68) have 6 to 12 years of experience, suggesting a decent proficiency in the domain. Only 1.51% (n=5) have experience more than 12 years, probably giving them more insights into how e-commerce and BI practices have evolved. The distribution from this survey showcases that young professionals are taking over the e-commerce industry, which aligns with BI tools in e-commerce being decently new. Data professionals, especially those with less than 6 years of experience account for 78% of the workforce, which is consistent with the proliferation of BI technologies and the more integral part of data-driven decision-making. Their familiarity with modern BI solutions like data analytics and predictive modeling (which helps optimize e-commerce performance) is also likely to be greater. With the evolution of BI, these new employees have very valuable experience to bring on board as they begin to comprehend of how new BI systems that are dynamic and highly responsive can impact

customer experience, boost better operations, and expose optimally function business models within the e-commerce industry. Young professionals dominate the user base of BI tools, meaning that they are more likely to be receptive to new technologies that can help gain a competitive advantage in the market place. Analysis of the Frequency Distribution, Percentages, Mean, and Standard Deviation for All Variables. This section of the research paper conducts the study of the key variables used in the study on Business Intelligence (BI) and its effect on e-commerce performance using the frequency distribution technique, percentages with the help of mean and standard deviation of the samples collected. These statistical methods assist in comprehending the distribution and variability of responses over analyzed variables that is critical for deriving significant insights of the data. Frequency distribution gives a summary of how the respondent sp across each categories of the variables in terms of count and percentages of those that under the given category. It allows to know which are the most typical features and within the data. The frequency distribution will illustrate the distribution of BI tools type frequency distribution among e-commerce organization, therefore giving you a better variability of responses over analyzed variables that is critical for deriving significant insights of the data. Frequency distribution gives a summary of how the respondent spread across each categories of the variables in terms of count and percentages of those that falls under the given category. It allows to know which are the most typical features and trends within the data. The frequency distribution will illustrate the distribution of BI tools type e.g frequency distribution among e-commerce organization, therefore giving you a better understanding on how often certain tools or practice have been embraced used. This allows narratives to state that it was only a percentage of respondents in each variable, and if interest, a meaningful percentage of each variable in the replies. This enables a distinct elucidation on how various drivers (customer intelligence, supplier relations or internal efficiency) are perceived as well as acted upon in e-commerce companies.

CONCLUSION

This study presents important insights regarding effective use and the enabling factors relevant for BI application in e-commerce performance. Drawing on data from 332 valid responses spanning a cross-section of professional fields with differing educational backgrounds, specializations, and experience levels, the data collected has unveiled interesting findings on how BI is impacting its most important areas of business, such as customer intelligence, supplier relationships, internal efficiency and competitor intelligence. The sample also sees a majority of its respondents (40 percent) belonging to the age group of 25-35, which indicates that these participants are all well versed with the available technology and there is a greater acceptability of the paradigm shift that BI can provide in the field of e-commerce. The advent of BO has created an increase in professionals who have been familiar with digital tools and data-driven decision-making, this cohort is involved in the development and testing of BI. Also, the high percentage of postgraduates and people with specialized qualifications in business management and technology suggests that these respondents are well placed to understand the technicalities and subtleties of BI as it is applied in a business environment. The second part of this sentence refers to integrating BI into the ecommerce ecosystem, which takes both technical expertise and strategic business acumen that they would either already know or soon learn. Respondents with are highly anticipated to understand the pros and cons of using BI tools in development if they have 3-6 years of experience in the field of e-commerce. I find this level of experience particularly important because it shows familiarity with the fast-paced e-commerce world, where decisions based on data can have a significant effect on the actions of an organization. Since these individuals are already engaged in e-commerce procedures, they are likely to have experienced the challenges that BI was designed to solve the need for better customer engagement, the ability to execute internal operations, and the desire for enhanced competitive intelligence. This direct approach gives them the first-hand knowledge they need to understand how businesses can leverage BI systems to help tackle these problems and develop value for e-commerce businesses.

can drive supplier management, sourcing decisions, performance assessment, and quality consistency. By leveraging BI tools, the negotiation process becomes informed, and the management teams can make decisions accordingly, leading to better collaboration with suppliers and an overall better supply chain management system. Internal efficiency showed a positive correlation with BI, as the study concluded that BI not only improves business

processes but also streamlines operations and minimizes operational expenses. Providing the ability for organizations to devise decisions to optimize operational workflows, real-time decisions, and impact on organizational workflow through BI by automating data collection and analysis leading to increased efficiencies and savings. For e-commerce organizations in particular, speed and accuracy as part of their operational processes are critical to remaining competitive, which is a notable aspect of the above BI versus internal efficiency relationship. Moreover, the intelligence of a BI at last was used 6 times and BI plays a vital role in the competitor intelligence, with respondents concurring those tools of BI offer important insights into the strategies and models as well as the general structures of the market of their competitors. The e-commerce landscape is ever-evolving, with technology and consumer preferences changing at a fast pace, giving e-commerce businesses the opportunity to stay ahead by understanding competitors' strategies. Comment on the competitive environment:

BI systems enable tracking and analysis of competitors' activities, allowing businesses toadapt quickly and make data-driven decisions that help maintain or improve their market position. Customer intelligence and BI, another important research element covered in this study. BI significantly helps to enhance customer knowledge, which refers to the understanding of customer behavior, preferences, and buying patterns in e-commerce. Through utilizing customer data, businesses are able to tailor their marketing efforts, enhance customer satisfaction, increase rollback rates. This features a vital role that BI plays to improve E-Commerce performance, since being customer-centric is what truly makes e-commerce successful. The positive effects of BI on ROI, sales growth, and business process efficiency are underscored in the data analysis, which show improved organizational performance as well. 95% of respondents concurred that functional Bl goes hand in glove with measuring and enhancing performance within the larger organization (through better decision making, for example and by monitoring essential market indicators). This relationship between organizational performance and Bl again emphasizes the necessity of BI tool adoption in e-aroelk bir bore +he ability can drive supplier management, sourcing decisions, performance assessment, and quality consistency. By leveraging BI tools, the negotiation process becomes informed, and the management teams can make decisions accordingly, leading to better collaboration with suppliers and an overall better supply chain management system. Internal efficiency showed a positive correlation with BI, as the study concluded that BI not only improves business processes but also streamlines operations and minimizes operational expenses. Providing the ability for organizations to devise decisions to optimize operational workflows, real-time decisions, and impact on organizational workflow through BI by automating data collection and analvsis leading to increased efficiencies and savings. For e-commerce organizations in can drive supplier management, sourcing decisions, performance assessment, and quality consistency. By leveraging BI tools, the negotiation process becomes informed, and the management teams can make decisions accordingly, leading to better collaboration with suppliers and an overall better supply chain management system. Internal efficiency showed a positive correlation with BI, as the study concluded that BI not only improves business processes but also streamlines operations and minimizes operational expenses. Providing the ability for organizations to devise decisions to optimize operational workflows, real-time decisions, and impact on organizational workflow through Bl by automating data collection and analysis leading to increased efficiencies and savings. For e-commerce organizations in particular, speed and accuracy as part of their operational processes are critical to remaining competitive, which is a notable aspect of the above BI versus internal efficiency relationship.

Moreover, the intelligence of a BI at last was used 6 times and BI plays a vital role in the competitor intelligence, with respondents concurring those tools of BI offer important insights into the strategies and models as well as the general structures of the market of their competitors. The e-commerce landscape is ever-evolving, with technology and consumer preferences changing at a fast pace, giving e-commerce businesses the opportunity to stay ahead by understanding competitors' strategies. Comment on the competitive environment: BI systems enable tracking and analysis of competitors' activities, allowing businesses to adapt quickly and make data-driven decisions that help maintain or improve their market position. Customer intelligence and BI, another important research element covered in this study. BI significantly helps to enhance customer knowledge, which refers to the understanding of customer behavior, preferences, and buying patterns in e-commerce. Through utilizing customer data, businesses are able to tailor their marketing efforts, enhance customer satisfaction, increase rollback rates. This features a vital role that BI plays to improve E-Commerce performance, since being customer-centric is what truly makes e-commerce successful.

The positive effects of BI on ROI, sales growth, and business process efficiency are underscored in the data analysis, which show improved organizational performance as wel. 95% of respondents concurred that functional BI goes hand in glove with measuring and enhancing performance within the larger organization (through better decision making, for example and by monitoring essential market indicators). This relationship between organizational performance and BI again emphasizes the necessity of BI tool adoption in e-commerce contexts, where the success of the company largely hinges on its ability to utilize data for competitive advantage. Further, the regression analysis shows that BI accounts for substantial variance in BPP and internally, in terms of efficiency and supplier relations. This means that the incorporation of BI systems into e-commerce workflow serves to enhance business processes in daily operations, and, correspondingly, contributes to positive long-term outcomes by promoting more efficient and effective management practices overall. The results imply that BI is more than an operational improvement tool it is a strategic resource and basis for sustained business growth. According to the findings of this study, BI plays a key role in knowledge sharing and collaboration among organizations. The finding also shows, strong agreement that BI systems enable employees to share their knowledge and improve their data management. Given how data driven e-commerce companies make great business decisions, creating a conducive atmosphere to share insights and best practices across the company is fundamental for a sustainable ecosystem. BI tools facilitate this process) by enabling data visualization, reporting, and communication from one central platform so that information can be shared across departments, which in return helps individuals at every level make confident, educated decisions. Supplier relationship management (SRM) is significant and emphasized for successful e-commerce. A large percentage of respondents stated that SRM is essential to enhance sourcing processes, manage supplier performance, and ensure quality consistency. These findings indicate that if SRM is combined with BI tools, it can improve supply chain visibility, optimize sourcing decisions, and create more sustainable relationships with suppliers. This not only streamlines procurement processes but also builds long-term relationships with partners that can offer better rates, enhanced quality and increased dependability. The findings of this study align with the literature on BI, which demonstrated that having an effective BI can lead to performance in different domains and sectors including e-commerce. A competitive advantage can thus be attained in a dynamic market by improving the customer intelligence, optimizing the internal organization, the supply and suppliers' relationship and the insight on the competitors through and based on data for e-commerce organizations. The same can be said about the fact that BI is not a one-size-fits-all solution, but needs to be adjusted to the specific requirements of the organization to extract the most out of it. This study finding highlight the importance of Business Intelligence for Better Performance of e-commerce. These correlations indicate that there is a strong relationship between BI and other aspects of the e-commerce performance measures, including supplier relations, internal efficiency, customer intelligence, and competitor data for competitive advantage. Further, the regression analysis shows that

BI accounts for substantial variance in BPP and internally, in terms of efficiency and supplier relations. This means that the incorporation of BI systems into e-commerce workflow serves to enhance business processes in daily operations, and, correspondingly, contributes to positive long-term outcomes by promoting more efficient and effective management practices overall. The results imply that BI is more than an operational improvement tool it is a strategic resource and basis for sustained business growth. According to the findings of this study, BI plays a key role in knowledge sharing and collaboration among organizations. The finding also shows, strong agreement that BI systems enable employees to share their knowledge and improve their data management. Given how data driven e-commerce companies make great business decisions, creating a conducive atmosphere to share insights and best practices across the company is fundamental for a sustainable ecosystem. BI tools facilitate this process) by enabling data visualization, reporting, and communication from one central platform so that information can be shared across departments, which in return helps individuals at every level make confident, educated decisions. Supplier relationship management (SRM) is significant and emphasized for successful e-commerce. A large percentage of respondents stated that SRM is essential to enhance sourcing processes, manage supplier performance, and ensure quality consistency. These findings indicate that if SRM is combined with BI tools, it can improve supply chain visibility, optimize sourcing decisions, and create more sustainable relationships with suppliers. This not only streamlines procurement processes but also builds long-term relationships with partners that can offer better rates, enhanced quality and increased dependability. The findings of this study align with the literature on Bl, which demonstrated that having an effective BI can lead to performance in different domains and sectors including e-commerce. A competitive advantage can thus be attained in a dynamic market by improving the customer intelligence, optimizing the internal organization, the supply and suppliers' relationship and the insight on the competitors through and based on data for e-commerce organizations. The same can be said about the fact that BI is not a one-size-fits-all solution, but needs to be adjusted to the specific requirements of the organization to extract the most out of it. This study finding highlight the importance of Business Intelligence for Better Performance of e-commerce. These correlations indicate that there is a strong relationship between BI and other aspects of the e-commerce performance measures, including supplier relations, internal efficiency, customer intelligence, and competitor information in the organization. BI systems empower businesses to make data-driven decisions that allow organizations to optimize processes, improve and enhance customer satisfaction, and beat the competition. With the dynamic nature of e-commerce, staying updated and using BI tools appropriately can prove beneficial and BI can easily become the backbone of any organization aspiring to be successful on the e-commerce front. The comparative study demonstrates the importance of investing in BI technologies and creating a data-led culture to harness BI's true power and drive continuous growth in the competitive world of e-commerce.

SCOPE OF FUTURE RESEARCH

The field of Business Intelligence (BI) and its implications for e-commerce performance remains an evolving domain with significant potential for future research. This study opens avenues for exploring various dimensions and contexts that can further elucidate the transformative role of BI in the e-commerce sector.

i. Integration with Emerging Technologies: Future research can investigate how integrating BI with emerging technologies such as artificial intelligence, machine learning, blockchain, and lot can enhance e-commerce operations. Studies could focus on the impact of predictive analytics and real-time data processing on decision-making and customer satisfaction.

ii. Customer-Centric BI Applications: Researchers can explore the application of BI in understanding customer behavior, preferences, and purchasing patterns. Future studies may delve into how BI tools optimize personalized marketing, customer retention strategies, and user experience.

iii. Sector-Specific BI Utilization: Examining the impact of BI across different e-commerce sectors, such as fashion, electronics, groceries, and luxury goods, could provide nuanced insights. Research might focus on identifying sector-specific BI strategies that maximize profitability and efficiency.
iv. Global and Regional Comparative Studies: Comparative studies analyzing the adoption and effectiveness of BI in e-commerce across various regions and countries can uncover cultural, economic, and infrastructural influences on its success.

REFERENCES:

1. Kumar, S., & Sharma, V. (2020). Role of Business Intelligence in improving customer experience and retention in e-commerce.
2. Zhao, L., & Tang, J. (2020). Cloud-based Business Intelligence for scalable e-commerce solutions.
3. Verma, S., & Patel, R. (2019). The impact of Business Intelligence on sales performance in e-commerce: A comparative analysis.
4. Bansal, S., & Chopra, M. (2018). The effectiveness of Business Intelligence in online retailing: Key insights from the industry.
5. Bhat, I., & Reddy, P. (2018). Evaluating the operational improvements driven by Business Intelligence in e-commerce businesses.
6. Ghosh, D., & Agarwal, A. (2017). Optimizing e-commerce strategies using Business Intelligence tools: A case study approach.
7. Gupta, R., & Kumari, M. (2017). Business Intelligence applications for enhancing the marketing strategies in online retailing.
8. Dey, A., & Sharma, S. (2016). Business Intelligence and its role in e-commerce decision-making processes: Insights from leading platforms.
9. Mehta, K., & Jain, N. (2016). Data analytics and Business Intelligence in e-commerce: A framework for small and medium-sized businesses.