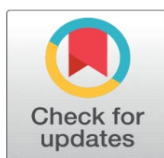
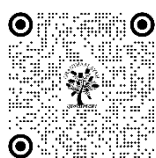


A BUSINESS INTELLIGENCE STRUCTURAL EQUATION MODEL ON MEASURING THE RELATIONSHIP BETWEEN CUSTOMER INTELLIGENCE, MARKETING INTELLIGENCE, AND EMPLOYEE INTELLIGENCE, AND ITS EFFECT ON OPERATIONAL PERFORMANCE OF ORGANISATION

Geetha N¹✉, U M Gopal Krishna²

¹School of Business, VIT-AP University, Andhra Pradesh, India

²School of Business, VIT-AP University, Andhra Pradesh, India



ABSTRACT

Integration of enterprise applications in real-time represents a new data management challenge for businesses with a large number of direct customers. This challenge arises as a result of the proliferation of channel-oriented applications, such as e-commerce support and call center support, among other examples. A growing number of companies are implementing Business Intelligence (BI) systems and tools in order to gain insight from the past and make accurate projections about the future. Companies have realised the importance of utilising business intelligence concepts like Customer Intelligence, Marketing Intelligence, and Employee Intelligence to ensure the achievement of the objectives outlined in their business strategies. Examining the business requirements provides insights into the role and necessity of real-time BI. The paper investigates the “relationship between the customer intelligence, marketing intelligence, employee intelligence and its impact on operational performance”.

Corresponding Author

Geetha N, gopalakrishna.gks@gmail.com

DOI

[10.29121/shodhkosh.v5.i1.2024.3144](https://doi.org/10.29121/shodhkosh.v5.i1.2024.3144)

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Copyright: © 2024 The Author(s). This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

With the license CC-BY, authors retain the copyright, allowing anyone to download, reuse, re-print, modify, distribute, and/or copy their contribution. The work must be properly attributed to its author.

Keywords: Business Intelligence, Customer Intelligence, Marketing Intelligence, Employee Intelligence



1. INTRODUCTION

The increasing use of channel-oriented applications, such as e-commerce and call center support, presents a new challenge for businesses that have direct contact with a large customer base: integrating enterprise applications in real-time. This integration is crucial for ensuring smooth and efficient operations across different channels. To address this challenge, many businesses are adopting Business Intelligence (BI) systems and tools. BI allows companies to analyze past data, gain insights, and make informed predictions. It helps organizations understand their business performance, identify trends, and make data-driven decisions to achieve their strategic objectives.

Within the realm of BI, various variables help companies analyze their data effectively. These variables include customer intelligence, marketing intelligence, and employee intelligence. Customer intelligence focuses on gathering and analyzing data about customers, their preferences, and behaviors. Marketing intelligence involves collecting and analyzing data related to marketing campaigns, customer segmentation, and market trends. Employee intelligence pertains to data about employees' performance, engagement, and skills. BI tools also assist in monitoring operational performance within an organization. They provide insights into key performance indicators (KPIs) and metrics related to sales, production, finance, and other operational areas. By tracking and analyzing these metrics, businesses can identify areas for improvement and optimize their operations. Designing and implementing a business intelligence strategy requires careful consideration of the organization's specific requirements and goals. It involves selecting the right BI tools, establishing data governance processes, integrating data from various sources, and creating meaningful dashboards and reports to visualize insights effectively.

There are numerous methods and approaches to BI that can be used to analyse and interpret data. In this context, "analytics" refers to "the examination of historical data," "diagnostic analytics," "identifying patterns and causes of events," "predictive analytics," "forecasting future outcomes," and "prescriptive analytics," which refers to "providing recommendations and optimised decision-making." In summary, businesses are turning to BI systems and tools to address the challenges of integrating channel-oriented applications and to gain valuable insights from their data. By leveraging variables like customer intelligence, marketing intelligence, and employee intelligence, organizations can make informed decisions, improve operational performance, and achieve their business objectives. The design and implementation of BI strategies involve selecting appropriate tools, integrating data sources, and employing various analytics techniques to derive meaningful insights.

2. LITERATURE REVIEW

Studies of customer segmentation employ demographic and psychographic, product, and spatial characteristics to divide customers into distinct groups. Segmentation based on demographics, psychographics, and/or behavior has been the subject of several academic investigations in recent years (Montibeller & Ferretti (2016), Jankowski & Keenan (2019), Y. Li et al. (2017), Pick, (2017), Griva. A (2021) and Subramanian (2014). For brick-and-mortar shops, these methods of categorization are adequate. As online shopping increased in popularity during COVID-19, it became clear that spatial/location features should also be considered when dividing consumers into distinct groups. Online merchants were urged to divide their clientele not only by what they bought but also by where they lived so that they could tailor things like inventory and specials to local tastes. Recent research (Montibeller & Ferretti (2016), Jankowski & Keenan (2019), Y. Li et al. (2017), Pick, (2017), has shown Intelligent customer targeting is crucial because spatial characteristics can improve insights into customer behavior. So, a new school of thought suggests we use spatial characteristics to divide up geographic customer contexts. (Zhang & Fan, 2009; Kieu., 2018), but so far only a small number of contributions have been made.

Due to the rapid growth of ICT in both the private and public sectors, a new digital marketing ecosystem has emerged in recent years (Miklosiki., 2019, Murthi and Shah., 2021). Rapid developments in IT have allowed for the collection and analysis of vast quantities of marketing data, yielding useful insights. Companies need to process and analyze this data using data-centric approaches before they can make smart marketing decisions. Machine learning (ML) is a method for predicting consumer behavior and informing marketing decisions by drawing insights from large datasets. Therefore, there is a lot of interest in how ML and AI can be used in the business world of marketing. Goleman (1998) defined employee intelligence as the "skills in self-awareness, self-motivation, and the healthy regulation of one's own and others' emotions, both within oneself and in one's interpersonal relationships. Udayar et al. (2018) say that intelligence in the workplace is "the ability to monitor your own and other people's mental and emotional health and to use the information to motivate your thoughts and actions ". One definition of employee intelligence is showing evidence of skill in managing one's own and other people's feelings. Daniel Goleman, in his book of the same name, defines employee intelligence as "the ability to feel one's own emotions and the emotions of others" (Coetzee & Harry, 2014). It is a competency or skill in an individual that may or may not be manifested in daily functions, and it is conceptualized as a latent trait with four dimensions: employee perception, self-employee regulation, understanding other people's emotions, and employee utilization (Titis Novia Lestari & Rahardjo, 2013). Workers with employee intelligence are perceptive of their own and others' feelings and able to make informed decisions based on what they learn. A construct

that can be thought of as a latent trait is a capability that resides in an individual but isn't always evident in their day-to-day actions (AKBAR, 2018).

Krishna, U. M. G., & Deepthi, S. (2024), Good decisions are crucial in today's fast-paced, competitive business environment. Financial planning, forecasting, fund management, and internal auditing influence decisions. BI improves Business Intelligence Systems, which are crucial to business success. This is where academics and practitioners are focusing. Better business performance requires business intelligence. This study examines how BI systems improve decision-making. Like an IT project manager, BI tool, Financial Forecasting, Fund Management System, Financial Planning, and Internal Audit Management System data were analysed. To test the theoretical model, we surveyed 420 Indian IT professionals who use Financial Performance and Business Intelligence tools. Many Indian IT companies had valuable data. They help with Business Intelligence System implementation. Internal Audit Management System, Financial Planning, Fund Management, Forecasting. Successful decision-making requires business intelligence. Excellent financial forecasting, fund management, planning, and internal audit management. Business Intelligence System implementation requires financial and performance measurement skills. Good business intelligence tools boost competitiveness. This study examines Financial Capabilities and BI implementation. Companies should promote BI for these reasons. Business intelligence tool implementation requires financial expertise. BI systems benefit Indian IT companies, according to a study. These systems have improved operational decisions, giving them an edge. BI strategy must match long-term company goals to maximise ROI. Research shows that strong financial skills can help implement a business intelligence system. Research shows that strong financial capabilities improve operational performance, decision-making, and data availability. Data-driven decisions require BI.

U M Gopal Krishna (2024), This study measured the economic independence of Andhra Pradesh women entrepreneurs. Empowerment was measured at government, professional, and social levels. The scale measured measurement levels as high, medium, and low. Positive, moderate, and negative responses advanced to higher, medium, and lower levels, respectively. The empowerment analysis found that 67% of government employees, 45% of professional employees, and 69% of social employees felt empowered by entrepreneurship. The empowerment level analysis as a whole suggests that women business owners in Andhra Pradesh have a positive view of entrepreneurship and that it empowers women. U M Gopal Krishna (2024), The researcher's empirical study shed light on the banking sector's green practices in India, a developing nation with growing environmental concerns. Through analysis, the study confirms the importance of "a) Commitment and Support from Management, and b) Pressure from competitors and customers," in Indian banks adopting green practices. The study also establishes the structural relationship between these factors and Indian banking sector environmental sustainability. This research also shows that top management and owners' active participation is most important. They should be convinced of green banking's benefits and enthusiastic about green program implementation.

Prathyusha, P., Madhavi, B., Velpula, T., Sujatha, M., & Krishna, U. M. G. (2024), suggests that SVR is a practical and adaptable strategy that may help the customer overcome distributional properties of key components, data geometry, and model overfitting in this rainfall estimation project. SVR display bit capacity must be chosen carefully. Clearly, SVR outperforms MLR as an expectation strategy. In datasets where MLR cannot detect nonlinearity, SVR is useful.

Sri Vardhan, Y. S. D. S., Krishna, U. M. G., Tejaswini, I., Samuel Johnson Israel, K., & Prathyusha, P. (2024), Overall, the study suggests that blockchain technology improves business processes and solves problems in the IT industry. Effective security reduces security risks in these industries. To achieve this, blockchain technology's benefits and drawbacks for IT businesses were briefly discussed. Secondary qualitative data was used to organize this article. Therefore, relevant research journals were examined and the necessary information extracted. Additionally, block chain systems' role in digital technology and food supply chain management systems has been thoroughly examined.

Sruthi, M., Sravanthi, T., Shaik, M. A., Padmaja, C., & Krishna, U. M. G. (2024), To protect private data, the research covered data security in depth. The study required secondary data collection and analysis to find flaws and improve data security. Past studies informed the study, and the researcher's opinion is included. The article suggests that integrating the right tools and technologies can reduce cyber security threats. Organizations can secure employee data with firewalls and antivirus software. This feature would help organizations comply with data security protocols.

3. RESEARCH OBJECTIVES

- To study the Influence of Business Systems on Operational Performance.

- To study the measuring of the relationship between Customer Intelligence, Marketing Intelligence, and Employee Intelligence.

This research endeavors to make a scholarly contribution to the expanding field of knowledge regarding organisational operation performance and Customer Intelligence, Marketing Intelligence, and Employee Intelligence. In doing so, it seeks to provide practical implications and theoretical insights that can assist organisations in navigating the dynamic environment of data-driven decision-making.

4. RESEARCH HYPOTHESIS

The study seeks the following hypothesis

CUSTOMER INTELLIGENCE

Both the tourism industry and cultural institutions have been badly hit by the COVID-19 pandemic. In order to better serve and retain visitors, museums now need to understand their behaviour. The creation of a four-step customer intelligence process for intelligent marketing—acquisition, commitment, experience, and lifetime value—with three crucial stages—data, analysis, and key performance indicators—is one way that this study makes a contribution. Managers of museums need to monitor visitor experiences on the internet in order to create strategic touchpoints, foster relationships, and establish trust. This groundbreaking study closes a gap in the field of marketing and the cultural sector and gives scholars and practitioners new directions for their research. (Le Dinh, 2024).

Customer Intelligence variables have several different constructs, as shown in the following table 1.

Table No.1 Constructs in Customer Intelligence

Factor	Constructs
Customer Intelligence	Customer demography
	Web Analytics
	Customer insights in real-time
	Transactional Information
	Mobile Analysis

H₀: There is no significant relation between constructs of Customer demography, Web Analytics, Customer insights in real-time, Transactional Information, Mobile Analysis, and Operational Performance of the Organization.

H₁: There is a significant relation between constructs of Customer demography, Web Analytics, Customer insights in real-time, Transactional Information, Mobile Analysis, and Operational Performance of the Organization.

MARKETING INTELLIGENCE

Following that, the measuring model for each of the elements studied in turn is presented (Convergent Validity Test). Consider Marketing Intelligence second, and then examine the following hypotheses. Marketing Intelligence variables have several different constructs, as shown in the following table 2.

Table No.2 Constructs in Marketing Intelligence

Factor	Constructs
Marketing Intelligence	Customer consultative group
	Sales cloud
	Purchase dynamics
	Marketing cloud/internet
	New-tech potential

H₁: There is no significant relation between constructs of Customer consultative group, Sales cloud, Purchase Dynamics, Marketing cloud, New-tech potential, and Operational Performance of the Organization.

H₃: There is a significant relation between constructs of Customer consultative group, Sales cloud, Purchase Dynamics, Marketing cloud, New-tech potential, and Operational Performance of the Organization.

EMPLOYEE INTELLIGENCE

Following that, the measuring model for each of the elements studied in turn is presented (Convergent Validity Test). Consider Employee Intelligence Third, and then examine the following hypotheses.

Employee Intelligence variables have several different constructs, as shown in the following table 3.

Table No :3 Constructs in Employee Intelligence

Factor	Constructs
Employee Intelligence	Empathy
	Employee self-control
	Adaptability
	Performance appraisal
	Organizational effectiveness

H₂: There is no significant relation between constructs of Empathy, employee self-control, Adaptability, Performance Appraisal, Organizational Effectiveness, and Operational Performance of the Organization.

H₄: There is significant relation between constructs of Empathy, Employee self-control, Adaptability, Performance Appraisal, Organizational Effectiveness, and Operational Performance of the Organization.

5. RESEARCH METHODOLOGY

Probability sampling and other sampling methods were employed in this investigation. A structured questionnaire was utilised for data collection. Statistical Analysis: SPSS version 21.0 and SPSS AMOS version 21.0, Structural Equation Modelling (SEM).

5.1 SAMPLE SIZE

In research studies, determining an appropriate sample size is a crucial consideration. The sample size should be large enough to provide reliable and accurate results, but it should also be practical in terms of feasibility and cost. The general guideline says that a representative sample of less than 30 people might be too small because it might not be a good representation of the whole population. However, this guideline may vary depending on the specific research field and study design.

If the population under investigation is huge, a representative sample size of 100 or more is often recommended to ensure a representative sample and reduce the margin of error. A larger sample size generally leads to more accurate research results as it provides a greater level of confidence in the findings. It is worth noting that the determination of an appropriate sample size involves considering various factors, such as the research objectives, research design, statistical power, desired level of precision, and available resources. The cost of data collection is an important component to consider, as larger sample sizes may require more time, effort, and resources.

In the context of structural equation modelling (SEM), the sample size is crucial for interpreting the results accurately. A larger sample size allows for a more reliable estimation of model parameters and helps reduce sampling error. Adequate sample size is particularly important when dealing with complex models or when investigating relationships among multiple variables. In summary, while there are general guidelines regarding sample size, the determination of an appropriate sample size depends on several factors. Balancing the need for accuracy and representativeness with practical considerations such as cost and feasibility is essential in research design and decision-making. For the sample size, we used the following criterion (Table).

6. DATA ANALYSIS & INTERPRETATION

For an instrument to measure what it is intended to measure, it must be dependable. The consistency of an instrument or test is guaranteed. measuring the specified parameters. To ensure that the research questions were understood and the questionnaire was relevant, a pre-test was conducted. To determine the respondents' willingness to participate in the survey and to assess the survey's reliability—a quality criterion that entails minimizing errors and obtaining consistent data collection results—a pilot test was deemed necessary. This was completed in two weeks. The study employed Cronbach Alpha coefficient analysis because it made use of a five-point Likert scale. Using SPSS, the Cronbach Alpha coefficient was discovered. This study made use of primary data. Information from those who completed the questionnaire was obtained. IT employees were the ones to receive the questionnaire.

Table 4: "Cronbach's Alpha" statistics on reliability

Variables	Cronbach's Alpha
Organisational Performance	0.863
Customer Intelligence	0.886
Marketing Intelligence	0.839
	0.822

The Cronbach's Alpha statistics, which assess the dependability and internal consistency of the study's variables, are shown in Table 5. Higher reliability is indicated by a higher Cronbach's Alpha value. Organisational Performance has a high degree of reliability, as indicated by its Cronbach's Alpha of 0.863. Likewise, Customer Intelligence has the highest alpha value of all the variables, 0.886, indicating strong internal consistency. The scales used for Marketing Intelligence and Employee Intelligence are likewise dependable and consistent, as evidenced by their Cronbach's Alpha values of 0.839 and 0.822, respectively, both of which are above the generally recognized cutoff of 0.70. The Cronbach's Alpha values show that all of the study's constructs were measured with reliable instruments overall.

Following that, the measuring model for each of the elements studied in turn is presented (Convergent Validity Test). Consider Customer Intelligence first, and then examine the following hypotheses.

Table No:6 CFA Model Fit Indices-CI, MI, EI

	χ^2	DF	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMS
Operational Performance	209.225	102	0.000	7.87	0.879	0.838	0.834	0.817	0.875	0.189	0.77

Confirmatory Factor Analysis (CFA) results are shown in Table 6 for a construct associated with "Operational Performance." The model is statistically significant, according to the chi-square statistic (χ^2) of 209.225 with 102 degrees of freedom (DF) and a p-value of 0.00. However, in CFA, a significant p-value may suggest that the model needs to be improved. The chi-square divided by the degrees of freedom, or the normed chi-square (χ^2/DF), is 7.87.

An overview of the model's fit is provided by the other indices. Close to the 0.9 threshold, which is regarded as a good fit, are the Goodness of Fit Index (GFI) of 0.879 and the Adjusted Goodness of Fit Index (AGFI) of 0.838. In this regard, a good fit is indicated by the Normed Fit Index (NFI) of 0.834 and the Tucker-Lewis Index (TLI) of 0.817, with the TLI falling below the acceptable threshold (≥ 0.90). The acceptable range (≥ 0.90) is close to the Comparative Fit Index (CFI) of 0.875. Lastly, the Root Mean Square Error of Approximation (RMS) of 0.77, and the Root Mean Square Residual (RMR) of 0.089.

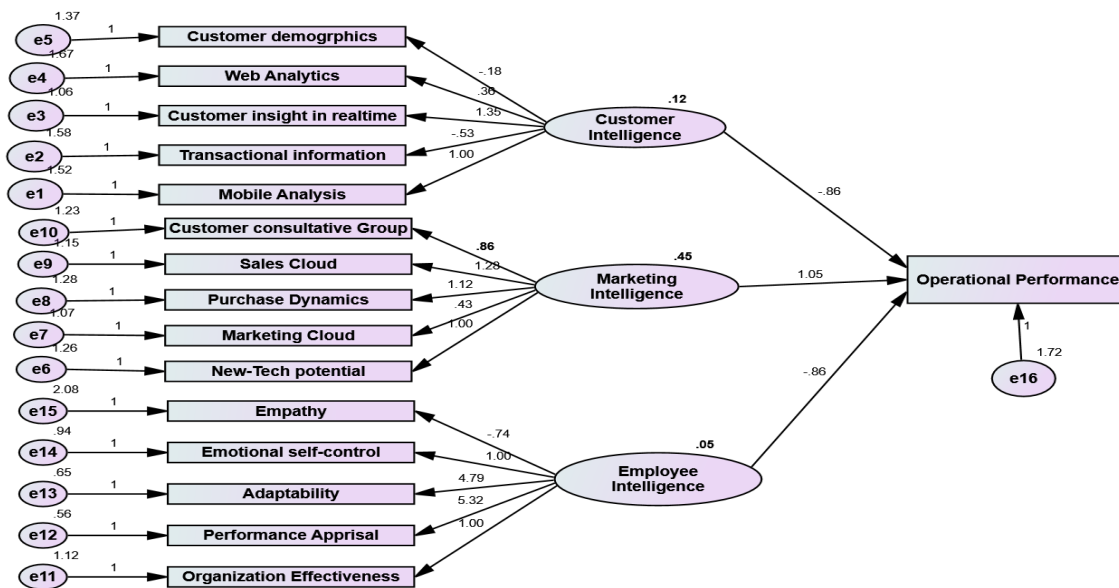
Table No:7 Regression Coefficients

Factors (Dependent Variables)	Construct (Independent Variables)	Regression Coefficient	SE	CR	P
Operational Performance	Mobile Analysis	1.000			
	Transactional Information	.532	.655	.811	.041
	Customer insight in real time	1.349	1.529	.882	.037
	Web Analytics	.363	.605	.601	.054
	Customer Demography	.184	.511	.360	.051
	New-tech Potential	1.000			
	Marketing Cloud	.425	.159	2.680	.007
	Purchase Dynamics	1.121	.252	4.442	***
	Sales Cloud	1.276	.276	4.628	***
	Customer Consultative Group	.861	.214	4.030	***
	Organization Effectiveness	1.000			
	Performance appraisal	5.321	2.128	2.501	.012
	Adaptability	4.793	1.884	2.544	.011
	Employeeself-control	1.005	.517	1.944	.052
	Empathy	.741	.589	1.258	.028

The regression coefficients for the factors affecting operational performance are shown in Table 7, where the independent variables are different constructs. With a coefficient of 1.0, the baseline constructs are Mobile Analysis,

New-tech Potential, and Organization Effectiveness. With a critical ratio (CR) of 0.811 and a p-value of 0.041, the construct Transactional Information displays a regression coefficient of 0.532, indicating a moderate impact, but also suggests a statistically significant but less significant relationship. With a coefficient of 1.349 (CR = 0.882, $p = 0.037$), Customer Insight in Real-Time shows a stronger influence than Web Analytics and Customer Demography, which show weaker effects with coefficients of 0.363 and 0.184, respectively. Regarding new technologies, Purchase Dynamics (coefficient 1.121, CR = 4.442, $p < 0.001$), Marketing Cloud (coefficient 0.425, CR = 2.680, $p = 0.007$), Sales Cloud (coefficient 1.276, CR = 4.628, $p < 0.001$), and Customer Consultative Group (coefficient 0.861, CR = 4.030, $p < 0.001$) exhibit a noteworthy influence on operational performance. Lastly, when it comes to organizational effectiveness, Adaptability (coefficient 4.793, $p = 0.011$) and Performance Appraisal (coefficient 5.321, $p = 0.012$) both show significant effects, while Employee Self-control (coefficient 0.052 and 0.028, respectively) exhibit lower coefficients but are still statistically significant. Overall, these findings show that different constructs have varied degrees of influence on operational performance.

CONCEPTUAL FRAMEWORK OF THE STUDY:



7. FINDINGS OF THE STUDY

The study's conclusions show a strong correlation between employee, marketing, and customer intelligence and how each affects an organization's operational performance. The impact of customer intelligence constructs on operational performance varies, and these include transactional information, real-time customer insights, web analytics, customer demography, and mobile analysis. In particular, mobile analysis makes the least positive contribution, whereas transactional information has the largest positive impact. In terms of marketing intelligence, elements such as purchase dynamics, sales cloud, marketing cloud, and customer consultative groups all exhibit strong positive relationships and have a significant impact on operational performance. Performance evaluation, adaptability, and empathy are important factors in the realm of employee intelligence; performance evaluation and adaptability have the biggest effects. The study also demonstrates how these constructs work together to influence organizational effectiveness, suggesting that improved operational performance can result from a comprehensive integration of employee, marketing, and customer intelligence.

8. IMPLICATION

The study's practical implications underscore the pivotal role that intelligence pertaining to customers, marketing, and employees plays in enhancing an organization's operational performance. Businesses can improve customer satisfaction and operational efficiency by utilizing transactional data and real-time customer insights. To further hone their marketing strategies, businesses should also give careful consideration to comprehensive web analytics and demographic data. Purchase dynamics and sales cloud tools are two examples of marketing intelligence that can improve

customer engagement and boost sales. Fostering flexibility and regularly conducting performance reviews on the part of employees can directly increase organizational efficiency. Businesses can adopt a more data-driven strategy and make decisions that are in line with employee competencies, market trends, and customer needs by incorporating these insights into their operations. This will ultimately improve operational effectiveness and provide them a competitive advantage in the marketplace.

9. SUGGESTIONS

Based on these results, several directions for future research can be investigated. First off, even though the study highlights the value of employee, marketing, and customer intelligence in improving operational performance, more research could look at the interactions between these constructs in diverse industries or at different organizational sizes. To further optimize the predictive and prescriptive capabilities of customer, marketing, and employee intelligence, research may also concentrate on integrating cutting-edge technologies like artificial intelligence (AI) and machine learning into business intelligence systems. Considering the limited impact of mobile analytics in this study, another area of interest might be examining the long-term effects of mobile analytics and figuring out whether new mobile technologies could increase its significance in operational performance. Ultimately, a cross-cultural examination of these intelligence constructs may provide light on how businesses across various geographies use intelligence systems to improve performance, giving rise to a more global viewpoint on the application of business intelligence.

10. LIMITATION

The focus of this study is the influence of Business Intelligence Systems (Customer Intelligence (CI), Market Intelligence (MI), and Employee Intelligence (EI)) on Hyderabad's IT industry.

- The study paves the way for future research to uncover perceptive patterns in other industries.
- As a result of the operational performance system's emphasis, the benefits of the B I System have been evaluated in terms of the operational system, and the scope of the subsequent study must focus on financial and competitive factors.
- Due to limited resources, the focus of this study is on the effect of the B I System on operational performance, while future research should concentrate on supply chain management and strategic decision-making statements.
- The study is based on IT industry employees in Hyderabad, with the potential to extend to other industries.
- The scope of future research on predictive analytics and business intelligence systems has been exhausted by the presented study.

11. CONCLUSION

Customer Intelligence (CI), Market Intelligence (MI), and Employee Intelligence (EI) all have a substantial effect on the Operational Performance of the Hyderabad IT industry in today's highly competitive business environment. In recent years, business practitioners and academic researchers have paid a great deal of attention to this topic because it adds value to the implementation of CI, MI, and EI, which remains a key to business success. This is because BI helps businesses achieve greater success. We hope to gain a deeper understanding of how CI, MI, and EI systems can improve operational performance with the aid of this study. We analysed the data for Customer Intelligence (Customer demographics, Web Analytics, Real-time Customer Insights, Transactional Information, and Mobile Analysis) and Marketing Intelligence (Customer consultative group, Sales cloud, Purchase dynamics, Marketing cloud/internet, and New-tech potential) and Employee Intelligence (Empathy, Employee self-control, Adaptability, Performance appraisal, and Organizational effectiveness) as well as the relationship between the Business Intelligence and the Customer Intelligence. We surveyed 700 IT professionals in Hyderabad who work with Business Intelligence tools and the Operational Performance system in order to validate the theoretical model.

According to the findings of the study, it is glaringly obvious that IT companies in Hyderabad possess a substantial quantity of valuable data assets. These assets have the potential to be utilized for effective and timely decision-making, which is crucial for Business Intelligence System implementation operations. Business Intelligence Systems can be implemented more efficiently by conducting research into the influence of customer intelligence and market intelligence on an organization's ability to measure performance. How the quality of statements made during the implementation of BI tools contributes to the creation of a competitive advantage. This study examined the relationship between Customer

Intelligence (CI), Market Intelligence (MI), and Employee Intelligence (EI) and its impact on operational performance. It can be used as a theoretical basis to explain why organizations must implement and promote Business Intelligence System. It provides empirical evidence regarding the significance of CI, MI, and EI, as well as how it improves the operational performance of the organization.

According to the study's findings, effective implementation business intelligence (BI) systems are beneficial because they enable Indian information technology organizations to improve the quality of their operational decision-making, thereby enhancing their competitive advantage. To maximize the financial return on an investment in business intelligence (BI) systems, the CI, MI, and EI strategies must be aligned with the organizational strategy, and the organization's efforts in BI systems must be effectively integrated with its long-term objectives. The study highlights the benefits of CI, MI, and EI, which can facilitate the deployment of business intelligence (BI) systems. A review of the relevant literature indicates that the benefits of CI, MI, and EI include, among others, accelerated decision-making, enhanced operational performance, and timely data availability. Implementing BI systems such as Customer Intelligence (CI), Market Intelligence (MI), and Employee Intelligence (EI) has the potential to add value by enhancing the quality of operational decisions.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

REFERENCES

- Nguyen Anh Khoa Dam, Thang Le Dinh, and William Menvielle (2022)" The Quest for Customer Intelligence to Support Marketing Decisions: A Knowledge-Based Framework", Vietnam Journal of Computer Science, Vol. 9, No. 3 (2022) 349-368; DOI:10.1142/S2196888822500208349.
- Nguyen Anh Khoa Dam, Thang Le Dinh, and William Menvielle ;(2021)" Towards a Conceptual Framework for Customer Intelligence in the Era of Big Data", International Journal of Intelligent Information Technologies (IJIT)17(4);|Volume: 17 |Issue: 4 |Article: 4 |Pages: 17; ISSN: 1548-3657
- Firman Pradana Rachman, Handri Santoso, Arko Djajadi (2021)," Machine Learning Mini Batch K-means and Business Intelligence Utilization for Credit Card Customer Segmentation", International Journal of Advanced Computer Science and Applications(IJACSA), DOI: 10.14569/IJACSA.2021.0121024.
- Kok-Lim Alvin Yau¹,Norizan Mat Saad² andYung-Wey Chong ^{3,*}(2021)" Artificial Intelligence Marketing (AIM) for Enhancing Customer Relationships", Applied Science,https://doi.org/10.3390/app11188562.
- Célia M. Q. Ramos(2020)," Business Intelligence Approach and Sentiment Analysis as a Management Strategy Applied to Study Customer Satisfaction in the Hospitality Sector" *Advances in Tourism, Technology and System*, DOI: 10.1007/978-981-16-9701-2_44.
- Li, RC (Li, R. C.) [1] ; Tee, ML (Tee, M. L.) [1];(2022)" Developing an Implementation Framework for Automated Customer Support Service in Collaborative Customer Relationship Management Systems" International Conference On Industrial Engineering And Engineering Management (Ieee Ieem21), Page 1092-1096; Doi:10.1109/Ieem50564.2021.9672894
- Yang, X (Yang, Xue) [1];(2023) "The effects of AI service quality and AI function-customer ability fit on customer's overall co-creation experience", Industrial Management & Data Systems, DOI:10.1108/IMDS-08-2022-0500.
- Pustokhina, IV (V. Pustokhina, Irina) [1] ; Pustokhin, DA (Pustokhin, Denis A.) [2] ; Aswathy, RH (Aswathy, R. H.) [3] ; Jayasankar, T (Jayasankar, T.) [4] ; Jeyalakshmi, C (Jeyalakshmi, C.) [5] ; Diaz, VG (Diaz, Vicente Garcia) [6] ; Shankar, K (Shankar, K.) [7](2021)," Dynamic customer churn prediction strategy for business intelligence using text analytics with evolutionary optimization Algorithms",Information Processing &Management, Volume:58; Issue:6; DOI: 10.1016/j.ipm.2021.102706.
- Gunesen, SN (Gunesen, S. Nazli) [1] ; Sen, N (Sen, Necip) [1] ; Yildirim, N (Yildirim, Nihan) [1] ; Kaya, T (Kaya, Tolga) [1](2022),"Customer Churn Prediction in FMCG Sector Using Machine Learning Application",Advances in Information and Communication Technology;Volume:614;Page:82-103;DOI:10.1007/978-3-030-80847-1_6.

- Sanaullah, A (Sanaullah, Asif) [1] , [2] ; Fatema, N (Fatema, Nuzhat) [1] , [2] ; Ather, M (Ather, Muhammad) [1] , [5] ; Sanaullah, A (Sanaullah, Arif) [4] ; Malik, H (Malik, H.) [3](2022), "Analyzing impact of relationship benefit and commitment on developing loyalty using machine intelligence approach", Journal Of Intelligent & Fuzzy Systems, Volume 42, Issue 2, Page: 699-712; DOI: 10.3233/JIFS-189742.
- Lies, J (Lies, Jan) [1](2022), "Marketing Intelligence: Boom or Bust of Service Marketing?", International Journal Of Interactive Multimedia And Artificial Intelligence, Volume 7, Issue 7, Page 115-124; DOI: 10.9781/ijimai.2022.10.001
- Robertson, J (Robertson, Jeandri) [1] , [2] ; Ferreira, C (Ferreira, Caitlin) [1] , [2] , " Paschen, J (Paschen, Jeannette) [3](2021) Reading Between the Lines: Understanding Customer Experience With Disruptive Technology Through Online Reviews", Australasian Marketing Journal, DOI: 10.1177/1839334921999487
- Yeni, F (Yeni, Fitri) [1] , [2] ; Mulyani, SR (Mulyani, Sitti Rizki) [1] ; Susriyanti, S (Susriyanti, Susriyanti) [1](2021), "Islamic financial literacy, spiritual intelligence, public perception and behaviour on public interest in Islamic banking services", Cogent Economics & Finance, DOI: 10.1080/23322039.2023.2175470.
- Chen, H (Chen, Huan) [1] ; Chan-Olmsted, S (Chan-Olmsted, Sylvia) [1] ; Kim, J (Kim, Julia) [1] ; Sanabria, IM (Mayor Sanabria, Irene) [1](2021), " Consumers' perception on artificial intelligence applications in marketing communication", Qualitative Market Research, DOI: 10.1108/QMR-03-2021-0040.
- Olan, F (Olan, Femi) [1] ; Suklan, J (Suklan, Jana) [2] ; Arakpogun, EO (Arakpogun, Emmanuel Ogiemwonyi) [1] ; Robson, A (Robson, Andrew) [1](2021), "Advancing Consumer Behavior: The Role of Artificial Intelligence Technologies and Knowledge Sharing", IEEE Transactions On Engineering Management, DOI: 10.1109/TEM.2021.3083536
- Xiong, Y (Xiong, Ying) [1](2022), " The Impact of Artificial Intelligence and Digital Economy Consumer Online Shopping Behavior on Market Changes Discrete Dynamics In Nature And Society" DOI: 10.1155/2022/9772416.
- Ebrahimi, P (Ebrahimi, Pejman) [1] ; Hamza, KA (Hamza, Khadija Aya) [1] ; Gorgenyi-Hegyes, E (Gorgenyi-Hegyes, Eva) [1] ; Zarea, H (Zarea, Hadi) [2] ; Fekete-Farkas, M (Fekete-Farkas, Maria) [3]; (2021), "Consumer Knowledge Sharing Behavior and Consumer Purchase Behavior", Evidence from E-Commerce and Online Retail in Hungary; Sustainability, DOI: 10.3390/su131810375.
- Rachman, FP (Rachman, Firman Pradana) [1] ; Santoso, H (Santoso, Handri) [1] ; Djajadi, A (Djajadi, Arko) [1](2021), "Machine Learning Mini Batch K-means and Business Intelligence Utilization for Credit Card Customer Segmentation", International Journal Of Advanced Computer Science And Applications, Volume 12, Issue 10, Page 218-227
- Rahmawaty, A (Rahmawaty, Anita) [1] ; Rokhman, W (Rokhman, Wahibur) [1] ; Bawono, A (Bawono, Anton) [1] ; Irkhami, N (Irkhami, Nafis) [1](2021), "Employee Intelligence, Spiritual Intelligence And Employee Performance: The Mediating Role Of Communication Competence", International Journal Of Business And Society, DOI: 10.33736/ijbs.3754.2021.
- Febrina, SC (Febrina, Sindy Cahya) [1] , [2] ; Astuti, W (Astuti, Widji) [3] ; Triatmanto, B (Triatmanto, Boge) [3]; (2021), " The Impact of Organizational Culture and Employee Intelligence on Employee Performance: An Empirical Study from Indonesia", Journal Of Asian Finance Economics And Business, DOI: 10.13106/jafeb.2021.vol8.no11.0285
- Oyewunmi, AE (Oyewunmi, Adebukola E.) [1] ; Esho, E (Esho, Ebes) [2] ; Oyewunmi, OA (Oyewunmi, Olabode A.) [1] (2021), "Spiritual Intelligence and Employee Outcomes in an African Sample", Journal Of Management Spirituality & Religion, DOI: 10.51327/ZPON7247.
- Iftikhar, M (Iftikhar, Mehwish) [1] ; Qureshi, MI (Qureshi, Muhammad Imran) [2] ; Qayyum, S (Qayyum, Shazia) [3] ; Fatima, I (Fatima, Iram) [3] ; Sriyanto, S (Sriyanto, Sriyanto) [4] ; Indrianti, Y (Indrianti, Yasinta) [5] ; Khan, A (Khan, Aqeel) [6] ; Dana, LP (Dana, Leo-Paul) [7](2021), "Impact of Multifaceted Workplace Bullying on the Relationships between Technology Usage, Organisational Climate and Employee Physical and Employee Health", International Journal Of Environmental Research And Public Health, DOI: 10.3390/ijerph18063207.
- Wati, E (Wati, Enny) [1] ; Sarita, B (Sarita, Buyung) [1] ; Zaid, S (Zaid, Sudirman) [1] ; Maharani, S (Maharani, Sriwati) [1](2023) , " Workplace Spirituality And Its Influence On Organizational Commitment And Employee Performance Of The Employees Of The Southeast Sulawesi Provincial Government With Employee Intelligence As The Moderating Variable", Quality-Access To Success, DOI: 10.47750/QAS/24.192.14.
- Malik, S (Malik, Shehla) [1] (2022), " Employee intelligence and innovative work behaviour in knowledge-intensive organizations: how tacit knowledge sharing acts as a mediator? , "Journal of information and knowledge Management system, DOI 10.1108/VJIKMS-09-2020-0158.

- Jena, LK (Jena, Lalatendu Kesari) [1] (2022), " Does workplace spirituality lead to raising employee performance? The role of citizenship behavior and employeeintelligence", *International Journal of Organisation Analysis*, DOI:10.1108/IJOA-06-2020-2279.
- Le Dinh, T., Dam, N. A. K., El Ourabi, H., Menvielle, W., Trespeuch, L., & Zouiten, S. (2024). Customer Intelligence in the Cultural Sector: The Case of a Quebec Museum. In *ITM Web of Conferences* (Vol. 66, p. 01003). EDP Sciences.
- Sukhragchaa, A (Sukhragchaa, Amarjargal) [1] ; Munkhuu, B (Munkhuu, Bilegsaikhan) [1] ; Badarch, L (Badarch, Lkhamseden) [2](2022), " Impact Of Hotel Employee's Employee Intelligence On EmployeeLabor And Job Satisfaction", *Jurnal Ilmiah Peuradeun*, DOI:10.26811/peuradeun.v9i3.622.
- Alferaih, A (Alferaih, Adel) [1](2021) " How does employee intelligence improve employee satisfaction and performance with mediating effect of employee engagement? Perspective from Saudi Arabian private companies", *International Journal Of Advanced And Applied Sciences*, DOI:10.21833/ijaas.2021.08.011.
- George Sunil D'Souza, Francis Gnanasekar Irudayasamy, Satyanarayana Parayitam (2022) "Employeeexhaustion, employee intelligence and task performance of employees in educational institutions during COVID 19 global pandemic: a moderated-mediation model", ISSN: 0048-3486.
- Suharsiwi1, Budi Imanto2, Indro Nugroho3*(2023), " Determination of Workforce Cultural Diversity, Competence, And Employee Employee Intelligence on Teamwork With Motivation As An Intervening Variable", ISSN: 0044-0477.
- panelDexiang Yin a, Minglong Li b, Hailian Qiu c, Billy Bai d, Lili Zhou b (2023)"When the services cape becomes intelligent: Conceptualization, assessment, and implications for hospitableness", *Journal of Hospitality and Tourism Management*, <https://doi.org/10.1016/j.jhtm.2023.01.001>.
- Sérgio Dominique-Ferreira, Helena Gomes, Pedro Quelhas Brito & Catherine Prentice (2023) "Exploring the Role of Employee Intelligence and Artificial Intelligence on Luxury Value and Customer-Based Outcomes", *Perspectives and Trends in Education and Technology*, DOI: 10.1007/978-981-19-6585-2_48.
- Abu Bakar, H., & Connaughton, S. L. (2022), " Ethical leadership, perceived leader-member ethical communication and organizational citizenship behavior: development and validation of a multilevel model", *Leadership & Organization Development Journal*, 43(1), 96–110. <https://doi.org/10.1108/LODJ-07-2021-0356>.
- Krishna, U. M. G., & Deepthi, S. (2024). Entrepreneurship empowers women. *7TH INTERNATIONAL CONFERENCE ON* <https://dx.doi.org/10.29121/shodhkosh.v5.i1.2024.3144>
<https://dx.doi.org/10.29121/shodhkosh.v5.i1.2024.3144>
- Mukella, G. K. U., Guddeti, K. K. R., & Kodamanchill, S. J. I. (2024). Applications of green banking practices. *7TH INTERNATIONAL CONFERENCE ON NANOSCIENCE AND NANOTECHNOLOGY*. <https://doi.org/10.1063/5.0196177>
- Prathyusha, P., Madhavi, B., Velpula, T., Sujatha, M., & Krishna, U. M. G. (2024). Digital security for securing private information. *7TH INTERNATIONAL CONFERENCE ON NANOSCIENCE AND NANOTECHNOLOGY.)* <https://dx.doi.org/10.29121/shodhkosh.v5.i1.2024.3144>
- Bhimavarapu, A., and Krishna, U.G.(2024). Fragmented Lives: Exploring The Inner Worlds of Gig Workers, *ShodhKosh: Journal of Visual and Performing Arts*, 5(1), 957–963, DOI: <https://doi.org/10.29121/shodhkosh.v5.i1.2024.2449>.
- Sri Vardhan, Y. S. D. S., Krishna, U. M. G., Tejaswini, I., Samuel Johnson Israel, K., & Prathyusha, P. (2024). Effects of business intelligence tools on financial performance of it industry. *7TH INTERNATIONAL CONFERENCE ON* <https://dx.doi.org/10.29121/shodhkosh.v5.i1.2024.3144>
- Sruthi, M., Sravanthi, T., Shaik, M. A., Padmaja, C., & Krishna, U. M. G. (2024). Predicting natural increase of water level <https://dx.doi.org/10.29121/shodhkosh.v5.i1.2024.3144>