INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

www.ijprems.com
editor@ijprems.com

Vol. 04, Issue 01, January 2024, pp : 458-464

e-ISSN : 2583-1062

Impact Factor : 5.725

STRATEGIC INSIGHTS: UNLEASHING THE POWER OF BIG DATA ANALYTICS FOR CREDIT INVESTIGATION AND RISK MITIGATION IN COMMERCIAL BANKING

Dr Burra Ramanuja Srinivas[1], A P C V Gopala Rao[2], Sai Srinivas Vellela[3]

[1]Professor, Dept. of BS&H, GVR&S College of Engineering and Technology, Budampadu, Guntur, AP, India.

[2]Asst. Professor, Dept. of BS&H, Chalapathi Institute of Technology, Guntur, AP, India.

[3]Assoc. Professor, Dept. of CSE-Data Science, Chalapathi Institute of Technology, Guntur, AP, India.

ABSTRACT

The banking industry has undergone substantial transformations, adapting to the evolving needs of an expanding global population and the surge in online transactions. This shift has generated vast amounts of data, prompting banks worldwide, including those in the US, to leverage Big Data Analytics (BDA) for enhanced operational efficiency and strategic decision-making. This paper explores the paradigm shift in the banking sector from a traditional credit risk management approach to a holistic risk management methodology. Banks today grapple with risks emanating from diverse systems and channels, necessitating sophisticated data analysis and interpretation. Big data technology emerges as a pivotal tool for managing this complex data landscape, offering insights and efficiency crucial for effective risk management applications.

This analysis delves into the architecture of a banking credit investigation and integrated risk management system based on big data principles. Through thorough comparisons and analyses, the study demonstrates the superior performance of the proposed system. The findings unequivocally indicate that the integration of big data analytics has significantly improved efficiency and security in credit investigation and risk management within the banking industry. This research contributes to our understanding of the transformative impact of big data in shaping the future of banking operations.

Keywords: Big Data Analytics (BDA), Credit Investigation, banking, transactions, Commercial Banking

1. INTRODUCTION

The introduction provides a comprehensive overview of the concept of big data analytics (BDA) and its significance in various industries, with a particular focus on the banking sector. Here's a breakdown:

1.1 Definition and Purpose of Big Data Analytics:

The passage defines big data analytics as the process of analyzing large amounts of information to gain insights into multiple industries, including banking, e-commerce, and insurance. The primary purpose of BDA is highlighted: to bring about effective changes resulting in better commercial decisions, increased profitability, and enhanced customer satisfaction.

1.2 Necessity of Big Data:

The necessity of big data is emphasized; pointing out those conventional tools cannot provide the depth of information required by customers from banks. Big data is portrayed as a solution developed to manage vast amounts of data, facilitating the acceleration of corporate growth.

1.3 Benefits in Banking:

The banking sector is identified as a critical beneficiary of big data analytics, particularly due to the rapid growth of bank data and its impact on service levels. The passage explains how big data enables efficient analysis of current customer information, simplifying processes, and allowing banks to consolidate operations for time and cost savings.

1.4 Challenges in Conventional Approaches:

Two fundamental challenges in conventional approaches are highlighted: the inability to evaluate large amounts of data and the prevalence of story-driven biases in result interpretation. Modern context series clustering techniques are introduced as a solution to simultaneously examine customer spending over time.

1.5 Global Attention to Big Data in Credit Reference:

Worldwide financial services and government regulators are noted to be increasingly focusing on big data credit reference, recognizing its advantages in forming public credit reporting systems.

The application of big data credit referencing is seen as a means to lower costs, enhance credit risk management, and improve the allocation of credit resources for financial institutions.

www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 04, Issue 01, January 2024, pp : 458-464

e-ISSN : 2583-1062

Impact Factor : 5.725

1.6 Application in Indian Banking:

The passage transitions to the application of big data analytics in Indian banks, citing its role in analyzing client behavior, measured values, and overall improvement of customer service.

1.7 Foundation of Risk Management:

The foundation of risk management is introduced, emphasizing the importance of accurate measurement and identification of risks.

Traditional risk management systems are critiqued for their focus on response measures rather than prevention and management.

1.8 Focus on Small and Medium Enterprises (SMEs):

Big data technology is presented as a risk control approach for SMEs, offering financial institutions a mechanism to monitor and manage credit risks.

1.9 Recent Developments and Case Studies:

Recent developments in risk management, including the application of big data technology by PayPal and Zest Finance, are discussed.

The impact of big data technology on information gathering, analysis, and risk assessment is highlighted through case studies.

1.10 Integration of Social Media and E-commerce:

The passage touches upon the increasing integration of social media and e-commerce in banking services, emphasizing how big data technology combines structured and unstructured information for comprehensive insights.

1.11 Enhancement of Decision-Making and Regulatory Compliance:

The concluding part of the introduction underscores how big data technology can significantly improve decision-making, automate financial management, and fulfill the functionality of regulatory, control activities, and operational risk administration platforms. The introduction sets the stage for a detailed exploration of big data analytics, its applications in banking, and its transformative impact on various aspects of financial services.

2. LITERATURE SURVEY

The literature survey provides insights from various studies on big data analytics (BDA) in the banking sector. Here's a summary of the key points from each source:

Liu, Qing et al. [3]: Discusses the importance of advance warning in assessing a business's financial situation, account behavior, and credit information. Emphasizes the need for real-time monitoring using an indicator system based on rules.Stresses the gathering of fundamental information about customers and organizations.

Zhao Zhiyong et al. [4]: Defines big data with four characteristics: large amount of data, fast data flow, variety of data types, and low value density. Highlights the use of credit information integration to address credit adverse selection in transaction processes.

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

Impact Factor : 5.725

www.ijprems.com
editor@ijprems.com

Vol. 04, Issue 01, January 2024, pp : 458-464

3. METHODOLOGY

The methodology section outlines the approach and procedures used to conduct the Credit Investigation and Comprehensive Risk Management System-based Big Data Analytics in Commercial Banking. Here's a breakdown of the methodology:

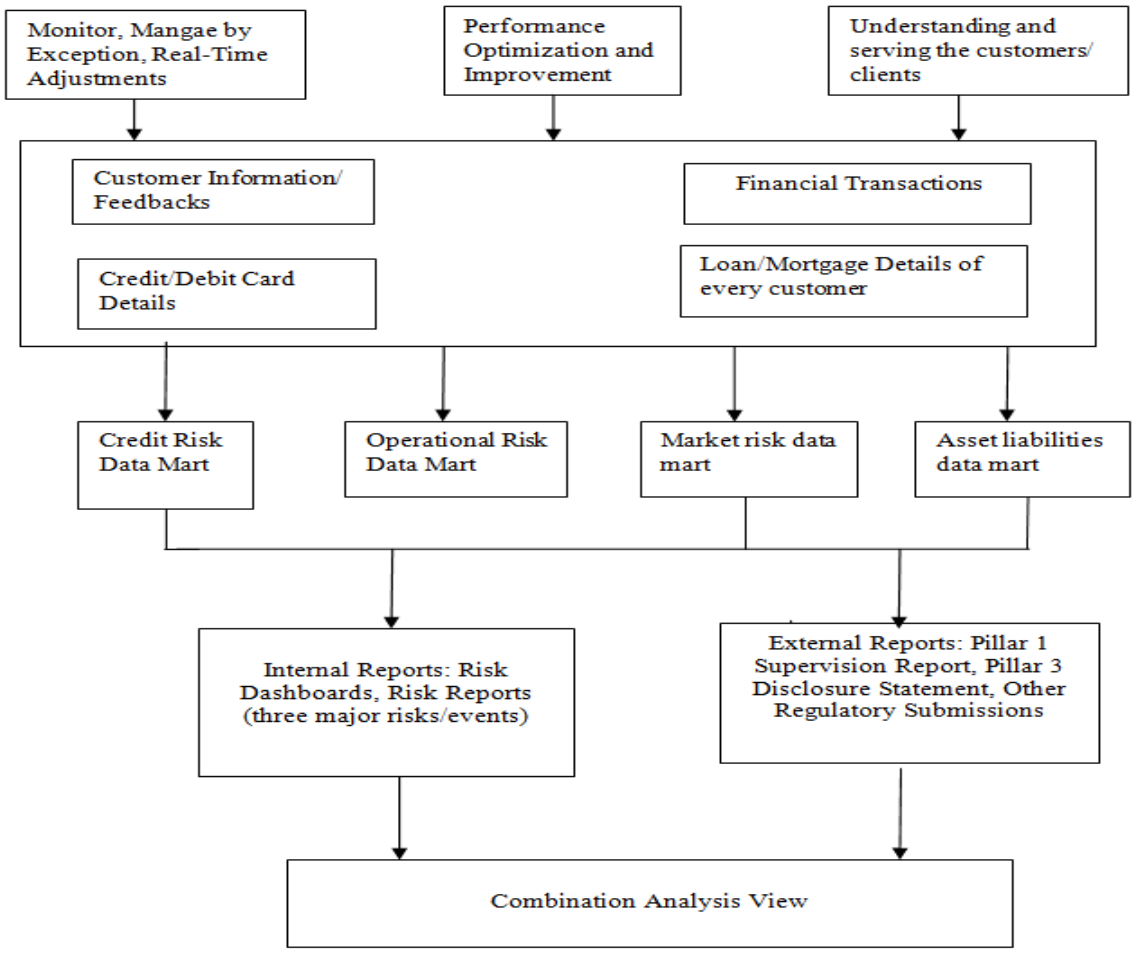

Figure.1: Unleashing the Power of Big Data Analytics for Credit Investigation and Risk Mitigation in Commercial Banking

3.1 Data Collection:

Scope: The study encompasses every bank in India.

Data Sources: Information is collected from various services offered by banks, including credit/debit card transactions, loan details, financial transactions, and customer information.

Data Tracking: The study relies on specific sites to keep tabs on the vast datasets in banks.

Big Data Analytics (BDA) Implementation:

Objective:

The primary goal is to enable Indian banks to analyze client behavior, measured values, and other factors for enhanced customer service. Monitoring Transactions: BDA is utilized to monitor and analyze transactions, credits, and efficiently process withdrawal limits.

3.2 Performance Tracking:

The study aims to track the percentage of banking data broken down by task and client deposits categorized by year into different schemes.

Challenges and Security Concerns:

Objective: Address the challenges faced by major financial institutions, especially the limited use of BD technologies in India.

Security Enhancement: The focus is on using BDA to ensure no unwanted access or payments occur, thereby raising overall security requirements in the financial sector.

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

www.ijprems.com
editor@ijprems.com

Vol. 04, Issue 01, January 2024, pp : 458-464

e-ISSN : 2583-1062

Impact Factor : 5.725

3.3 Data Collection and Analysis:

Information Collection: Banks actively collect information and feedback from customers, including details of debit and credit cards, financial transactions, and loan/mortgage details.

Archived Historical Data: The study involves reviewing archived historical data for planning future strategies and utilizing data patterns to anticipate business outcomes.

Structured and Unstructured Data Processing:

Types of Data: Credit risk data includes both structured (S) and unstructured (uS) data.

Processing Methods: Common business technology is used to handle structured data, while unstructured data, including corporate certifications, requires careful processing.

4. RESULT ANALYSIS

The result analysis of a credit Investigation and comprehensive risk management system based big data analytics In commercial banking is demonstrated in this section. The efficiency has improved in this model. The security also improved in this architecture.The table.1 describes the performance analysis of the presented a credit investigation and comprehensive risk management system based big data analytics in commercial banking.

Table.1: Performance Analysis

Performance metrics	Credit Investigation and Risk Mitigation in Commercial Banking Based On Big Data Analytics	Credit Investigation and Risk Mitigation in Commercial BankingSystem Based On Common Platform
Efficiency	97%	68%
Security	99%	70%

The above table shows that the performance analysis of the presented a credit investigation and comprehensive risk management system based big data analytics in commercial banking gives high efficiency and security.

Fig.2: Efficiency Comparison Graph

In Fig.2 efficiency comparison graph the efficiency for a credit investigation and comprehensive risk management system based big data analytics in commercial banking shows higher efficiency.

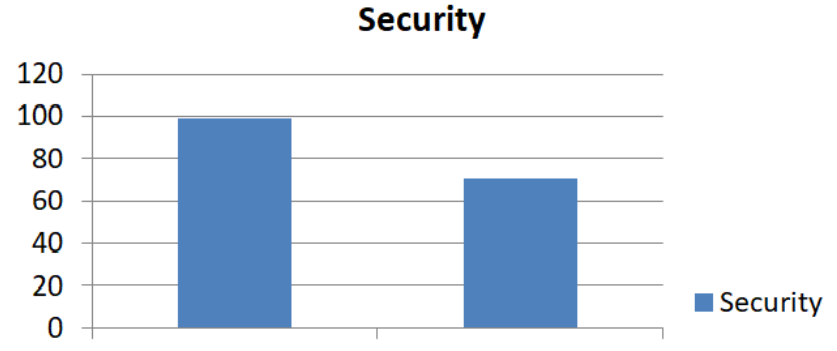

Fig.3: Security Comparison Graph

Therefore in security comparison graph shows higher security when compared with the commonly used platform.

5. CONCLUSION

The credit investigation and comprehensive risk management system based on big data analytics in commercial banking is as follows:

5.1 Sophisticated Risk Management Platform:

The study introduced a sophisticated risk management platform based on big data architecture, showcasing notable improvements. The platform integrates efficient information operations, early warning signals, an internal assessment process, and a collateral management platform.

5.2 Utilizing the Potential of Big Data:

The analysis emphasizes the importance of the Indian banking industry leveraging the potential of big data to enhance its services and operations. Recognizing the significance of big data, banks have improved their conventional technical strategies and embraced new technologies and processes to benefit from big data analytics (BDA).

In conclusion, the credit investigation and comprehensive risk management system based on big data analytics in commercial banking, as outlined in the analysis, serves as a testament to the positive impact of advanced technologies on the efficiency and security of banking operations. The proactive adoption of big data signifies a commitment to continual improvement and adaptability in the dynamic landscape of the financial industry.

6. REFERENCES

[1] Kommineni, K. K. ., & Prasad, A. . (2023). A Review on Privacy and Security Improvement Mechanisms in MANETs. International Journal of Intelligent Systems and Applications in Engineering, 12(2), 90–99. Retrieved from https://ijisae.org/index.php/IJISAE/article/view/4224

[2] Vellela, S.S., Balamanigandan, R. Optimized clustering routing framework to maintain the optimal energy status in the wsn mobile cloud environment. Multimed Tools Appl (2023). https://doi.org/10.1007/s11042-023-15926-5

[3] Vellela, S. S., Reddy, B. V., Chaitanya, K. K., & Rao, M. V. (2023, January). An Integrated Approach to Improve E-Healthcare System using Dynamic Cloud Computing Platform. In 2023 5th International Conference on Smart Systems and Inventive Technology (ICSSIT) (pp. 776-782). IEEE.

[4] K. N. Rao, B. R. Gandhi, M. V. Rao, S. Javvadi, S. S. Vellela and S. Khader Basha, "Prediction and Classification of Alzheimer's Disease using Machine Learning Techniques in 3D MR Images," 2023 International Conference on Sustainable Computing and Smart Systems (ICSCSS), Coimbatore, India, 2023, pp. 85-90, doi: 10.1109/ICSCSS57650.2023.10169550.

[5] VenkateswaraRao, M., Vellela, S., Reddy, V., Vullam, N., Sk, K. B., & Roja, D. (2023, March). Credit Investigation and Comprehensive Risk Management System based Big Data Analytics in Commercial Banking. In 2023 9th International Conference on Advanced Computing and Communication Systems (ICACCS) (Vol. 1, pp. 2387-2391). IEEE [6]

[6] S Phani Praveen, RajeswariNakka, AnuradhaChokka, VenkataNagarajuThatha, SaiSrinivasVellela and UddagiriSirisha, "A Novel Classification Approach for Grape Leaf Disease Detection Based on Different Attention Deep Learning Techniques" International Journal of Advanced Computer Science and Applications(IJACSA), 14(6), 2023. http://dx.doi.org/10.14569/IJACSA.2023.01406128

[7] Vellela, S. S., & Balamanigandan, R. (2022, December). Design of Hybrid Authentication Protocol for High Secure Applications in Cloud Environments. In 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS) (pp. 408-414). IEEE.

[8] Vullam, N., Vellela, S. S., Reddy, V., Rao, M. V., SK, K. B., & Roja, D. (2023, May). Multi-Agent Personalized Recommendation System in E-Commerce based on User. In 2023 2nd International Conference on Applied Artificial Intelligence and Computing (ICAAIC) (pp. 1194-1199). IEEE.

[9] Vellela, S. S., Balamanigandan, R., & Praveen, S. P. (2022). Strategic Survey on Security and Privacy Methods of Cloud Computing Environment. Journal of Next Generation Technology (ISSN: 2583-021X), 2(1).

[10] Vellela, S. S., & Krishna, A. M. (2020). On Board Artificial Intelligence With Service Aggregation for Edge Computing in Industrial Applications. Journal of Critical Reviews, 7(07), 2020.

[11] Madhuri, A., Jyothi, V. E., Praveen, S. P., Sindhura, S., Srinivas, V. S., & Kumar, D. L. S. (2022). A New Multi-Level Semi-Supervised Learning Approach for Network Intrusion Detection System Based on the 'GOA'. Journal of Interconnection Networks, 2143047.

[12] Madhuri, A., Praveen, S. P., Kumar, D. L. S., Sindhura, S., &Vellela, S. S. (2021). Challenges and issues of data analytics in emerging scenarios for big data, cloud and image mining. Annals of the Romanian Society for Cell Biology, 412-423.

[13] Praveen, S. P., Sarala, P., Kumar, T. K. M., Manuri, S. G., Srinivas, V. S., &Swapna, D. (2022, November). An Adaptive Load Balancing Technique for Multi SDN Controllers.In 2022 International Conference on Augmented Intelligence and Sustainable Systems (ICAISS) (pp. 1403-1409).IEEE.

[14] Vellela, S. S., Basha Sk, K., & Yakubreddy, K. (2023). Cloud-hosted concept-hierarchy flex-based infringement checking system. International Advanced Research Journal in Science, Engineering and Technology, 10(3).

[15] Rao, M. V., Vellela, S. S., Sk, K. B., Venkateswara, R. B., & Roja, D. (2023). SYSTEMATIC REVIEW ON SOFTWARE APPLICATION UNDERDISTRIBUTED DENIAL OF SERVICE ATTACKS FOR GROUP WEBSITES. Dogo Rangsang Research Journal UGC Care Group I Journal, 13(3), 2347-7180.

[16] Venkateswara Reddy, B., Vellela, S. S., Sk, K. B., Roja, D., Yakubreddy, K., & Rao, M. V. Conceptual Hierarchies for Efficient Query Results Navigation. International Journal of All Research Education and Scientific Methods (IJARESM), ISSN, 2455-6211.

[17] Sk, K. B., Roja, D., Priya, S. S., Dalavi, L., Vellela, S. S., & Reddy, V. (2023, March). Coronary Heart Disease Prediction and Classification using Hybrid Machine Learning Algorithms. In 2023 International Conference on Innovative Data Communication Technologies and Application (ICIDCA) (pp. 1-7). IEEE.

[18] Sk, K. B., & Vellela, S. S. (2019). Diamond Search by Using Block Matching Algorithm. DIAMOND SEARCH BY USING BLOCK MATCHING ALGORITHM", International Journal of Emerging Technologies and Innovative Research (www. jetir. org), ISSN, 2349-5162.

[19] Yakubreddy, K., Vellela, S. S., Sk, K. B., Reddy, V., & Roja, D. (2023). Grape CS-ML Database-Informed Methods for Contemporary Vineyard Management. International Research Journal of Modernization in Engineering Technology and Science, 5(03).

[20] Vellela, Sai Srinivas and Chaganti, Aswini and Gadde, Srimadhuri and Bachina, Padmapriya and Karre, Rohiwalter, A Novel Approach for Detecting Automated Spammers in Twitter (June 24, 2023). Mukt Shabd Journal Volume XI, Issue VI, JUNE/2022 ISSN NO : 2347-3150, pp. 49-53 , Available at SSRN: https://ssrn.com/abstract=4490635

[21] Vellela, Sai Srinivas and Pushpalatha, D and Sarathkumar, G and Kavitha, C.H. and Harshithkumar, D, ADVANCED INTELLIGENCE HEALTH INSURANCE COST PREDICTION USING RANDOM FOREST (March 1, 2023). ZKG International, Volume VIII Issue I MARCH 2023, Available at SSRN: https://ssrn.com/abstract=4473700

[22] D, Roja and Dalavai, Lavanya and Javvadi, Sravanthi and Sk, Khader Basha and Vellela, Sai Srinivas and B, Venkateswara Reddy and Vullam, Nagagopiraju, Computerised Image Processing and Pattern Recognition by Using Machine Algorithms (April 10, 2023). TIJER International Research Journal, Volume 10 Issue 4, April 2023, Available at SSRN: https://ssrn.com/abstract=4428667

[23] Vellela, Sai Srinivas and Basha Sk, Khader and B, Venkateswara Reddy and D, Roja and Javvadi, Sravanthi, MOBILE RFID APPLICATIONS IN LOCATION BASED SERVICES ZONE (June 14, 2023). International Journal of Emerging Technologies and Innovative Research, Vol.10, Issue 6, page no. ppd851-d859, June2023, http://www.jetir.org/papers/JETIR2306410.pdf

[24] Vellela, Sai Srinivas and Sk, Khader Basha and B, Venkateswara Reddy, Cryonics on the Way to Raising the Dead Using Nanotechnology (June 18, 2023). INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS), Vol. 03, Issue 06, June 2023, pp : 253-257,

[25] Vellela, Sai Srinivas and D, Roja and B, Venkateswara Reddy and Sk, Khader Basha and Rao, Dr M Venkateswara, A New Computer-Based Brain Fingerprinting Technology (June 18, 2023). International Journal Of Progressive Research In Engineering Management And Science, Vol. 03, Issue 06, June 2023, pp : 247-252 e-ISSN : 2583-1062.,

[26] Gajjala, Buchibabu and Mutyala, Venubabu and Vellela, Sai Srinivas and Pratap, V. Krishna, Efficient Key Generation for Multicast Groups Based on Secret Sharing (June 22, 2011). International Journal of Engineering Research and Applications,Vol. 1, Issue 4, pp.1702-1707, ISSN: 2248-9622

[27] Kiran Kumar Kommineni, Ratna Babu Pilli, K. Tejaswi, P. Venkata Siva,Attention-based Bayesian inferential imagery captioning maker,Materials Today: Proceedings,2023,ISSN 2214-7853,https://doi.org/10.1016/j.matpr.2023.05.231.

[28] Venkateswara Reddy, B., &KhaderBashaSk, R. D. Qos-Aware Video Streaming Based Admission Control And Scheduling For Video Transcoding In Cloud Computing. In International Conference on Automation, Computing and Renewable Systems (ICACRS 2022).

[29] Reddy, N.V.R.S., Chitteti, C., Yesupadam, S., Desanamukula, V.S., Vellela, S.S., Bommagani, N.J. (2023). Enhanced speckle noise reduction in breast cancer ultrasound imagery using a hybrid deep learning model. Ingénierie de Systèmesd'Information, Vol. 28, No. 4, pp. 1063-1071. https://doi.org/10.18280/isi.280426

[30] Vellela, S.S., Balamanigandan, R. An intelligent sleep-awake energy management system for wireless sensor network. Peer-to-Peer Netw. Appl. (2023). https://doi.org/10.1007/s12083-023-01558-x

[31] Rao, D. M. V., Vellela, S. S., Sk, K. B., &Dalavai, L. (2023). Stematic Review on Software Application Under-distributed Denial of Service Attacks for Group Website. DogoRangsang Research Journal, UGC Care Group I Journal, 13.

[32] S. S. Priya, S. SrinivasVellela, V. R. B, S. Javvadi, K. B. Sk and R. D, "Design And Implementation of An Integrated IOT Blockchain Framework for Drone Communication," 2023 3rd International Conference on Intelligent Technologies (CONIT), Hubli, India, 2023, pp. 1-5, doi: 10.1109/CONIT59222.2023.10205659.

[33] N. Vullam, K. Yakubreddy, S. S. Vellela, K. BashaSk, V. R. B and S. SanthiPriya, "Prediction And Analysis Using A Hybrid Model For Stock Market," 2023 3rd International Conference on Intelligent Technologies (CONIT), Hubli, India, 2023, pp. 1-5, doi: 10.1109/CONIT59222.2023.10205638.

[34] K. K. Kumar, S. G. B. Kumar, S. G. R. Rao and S. S. J. Sydulu, "Safe and high secured ranked keyword searchover an outsourced cloud data," 2017 International Conference on Inventive Computing and Informatics (ICICI), Coimbatore, India, 2017, pp. 20-25, doi: 10.1109/ICICI.2017.8365348.

[35] Sk, K. B., Vellela, S. S., Yakubreddy, K., &Rao, M. V. (2023). Novel and Secure Protocol for Trusted Wireless Ad-hoc Network Creation. KhaderBashaSk, Venkateswara Reddy B, SaiSrinivasVellela, KancharakuntYakub Reddy, M VenkateswaraRao, Novel and Secure Protocol for Trusted Wireless Ad-hoc Network Creation, 10(3).

[36] Vellela, S. S., Sk, K. B., Dalavai, L., Javvadi, S., &Rao, D. M. V. (2023). Introducing the Nano Cars Into the Robotics for the Realistic Movements. International Journal of Progressive Research in Engineering Management and Science (IJPREMS) Vol, 3, 235-240.

[37] Kumar, K. & Babu, B. & Rekha, Y.. (2015). Leverage your data efficiently: Following new trends of information and data security. International Journal of Applied Engineering Research. 10. 33415-33418.

[38] S. S. Vellela, V. L. Reddy, R. D, G. R. Rao, K. B. Sk and K. K. Kumar, "A Cloud-Based Smart IoT Platform for Personalized Healthcare Data Gathering and Monitoring System," 2023 3rd Asian Conference on Innovation in Technology (ASIANCON), Ravet IN, India, 2023, pp. 1-5, doi: 10.1109/ASIANCON58793.2023.10270407.