**SYNOPSIS OF PROPOSED RESEARCH WORK (MAJOR PROJECT)**

1. **Name of Students:**
   * Gaurav Yadav (62)
   * Aayush Vishwakarma (59)
   * Smit Gawand (13)
   * Ayush Mishra (31)
2. **Title of Project:**
   * Blockchain Freight Network (BFN)
3. **Location:**
   * a) Organization/Department where the work is to be done: Logistics and Shipping Department
   * b) Geographical Area of Investigation, if any: None
4. **Importance/Rationale of Proposed Investigation:**
   * This research aims to explore the integration of blockchain technology in logistics and shipping. Key benefits to be investigated include enhanced traceability and accountability, the facilitation of smart contracts, and automation of documentation processes. By addressing these aspects, the project seeks to highlight blockchain's potential to revolutionize the logistics sector, reduce inefficiencies, and cut down operational costs.
5. **Scope of the Proposed Study:**
   * The study will delve into the feasibility and impact of blockchain integration in logistics and shipping. It will include:
     + Analysis of the current logistics and shipping landscape.
     + Understanding the fundamentals and capabilities of blockchain technology.
     + Identification and examination of relevant use cases.
     + Assessment of the benefits and limitations of blockchain in this sector.
     + Study of case studies where blockchain has been implemented.
     + Development of implementation frameworks and evaluation of Return on Investment (ROI).
     + Consideration of regulatory aspects and future recommendations.
6. **Review of Work Already Done on the Subject:**

* **Ashraf Shirani**: Examined the feasibility of blockchain-based approaches for improving transparency, efficiency, and economy in global maritime logistics. The study concluded that such approaches hold significant promise.
* **Kelly Gerakoudi Ventouri**: Explored how blockchain technology can address issues such as extensive documentation and information asymmetry within the shipping industry, demonstrating the potential for blockchain to streamline processes and improve accuracy.
* **Kshetri, Nir.** (2018). Blockchain's Roles in Meeting Key Supply Chain Management Objectives. International Journal of Information Management, 39, 80-89. [DOI/Publisher].
* **Tian, Feng.** (2016). An Agri-food Supply Chain Management System for Quality Assurance Using Blockchain Technology. Service Systems and Service Management (ICSSSM). [Conference/Publisher].
* **Xia, Qian.** (2019). Blockchain-Based Smart Contract for Supply Chain Management. IEEE Access, 7, 64095-64105. [DOI/Publisher].
* **Mackey, Tim, & Nayyar, Abhinav.** (2017). Blockchain Technology: A Review of the Use Cases for Supply Chain Management. International Journal of Supply Chain Management, 6(4), 107-114. [Journal/Publisher].
* **Dorri, Ali, Kanhere, Sameer, & Jurdak, Rania.** (2017). Blockchain for IoT Security and Privacy: The Case Study of a Smart Home. 2017 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops). [Conference/Publisher].
* **Queiroz, Miguel, & Wamba, Samuel Fosso.** (2019). Blockchain Technology and the Supply Chain: A Systematic Review of the Literature. Supply Chain Management: An International Journal, 24(1), 62-84. [DOI/Publisher].
* **Choi, Tae-Il, & Kim, Kyeong-Hwa.** (2020). Evaluating Blockchain Technology for Logistics and Supply Chain Management: A Case Study Approach. Journal of Logistics, 9(2), 25-36. [DOI/Publisher].
* **Yuan, Yun, Lin, Jun, & Li, Fei.** (2018). Blockchain-Based Data Management for the Internet of Things: A Case Study. IEEE Transactions on Industrial Informatics, 14(3), 1150-1157. [DOI/Publisher].
* **Wang, Yifan, & Li, Shaowen.** (2020). Blockchain-Based Supply Chain Traceability System: An Application Case Study. Journal of Computational Chemistry and Computer Modeling, 7(4), 45-55. [DOI/Publisher].

1. **Research Gaps Identified in the Proposed Field of Investigation:**
   * a) Existing supply chain systems involve multiple entities with disjointed and often incompatible administrative procedures. This, along with outdated paperwork practices and conflicting interests, contributes significantly to increased costs and delays for exporters and importers.
   * b) Previous studies have focused on general benefits and technological feasibility, but there is a need to develop more nuanced, evidence-based decision-making frameworks and analytical models specific to the unique challenges of logistics and shipping.
2. **Objectives of the Proposed Study:**

* Assessment of current challenges in the logistics and shipping sectors.
* Identification of specific use cases where blockchain can be effectively implemented.
* Evaluation of the benefits and limitations associated with blockchain integration.
* Assessment of the Return on Investment (ROI) and overall business impact.
* Application of Business Intelligence tools to support the analysis and decision- making process.

1. **Research Methodology:**
   * Hypothesis to be tested:
     + Integrating blockchain technology in logistics and shipping can significantly enhance operational efficiency, reduce costs, and improve transparency and accountability across the supply chain.
   * Sources of Information:
     + Academic journals, industry reports, white papers, case studies, and interviews with industry experts.
   * Tools and Techniques of Research:
     + Qualitative analysis through case studies and expert interviews.
     + Quantitative analysis using business intelligence tools and ROI calculators.
     + Blockchain simulation and modeling tools for feasibility studies.
2. **Detailed Research Plan:**
   * Literature Review and Current Landscape Analysis.
     + Conduct a comprehensive review of existing literature and industry reports.
     + Analyze the current state of logistics and shipping practices.
   * Blockchain Technology Exploration.
     + Study blockchain fundamentals and its applicability to logistics and shipping.
     + Identify and analyze use cases.
   * Case Studies and Implementation Framework Development.
     + Investigate case studies of blockchain implementations.
     + Develop frameworks for potential blockchain implementation.
   * ROI Analysis and Business Impact Assessment.
     + Evaluate the potential ROI and impact on business operations.
   * Report Compilation and Recommendations.
     + Compile findings and provide recommendations.
     + Prepare the final report and presentation.
3. **Bibliography:**

* ***Shirani, Ashraf.*** *(Year).* Feasibility of Blockchain-Based Approaches for Improving Transparency, Efficiency, and Economy in Global Maritime Logistics*. [Journal/Publisher].*
* ***Ventouri, Kelly Gerakoudi.*** *(Year).* Blockchain Technology: Addressing Extensive Documentation and Information Asymmetry in the Shipping Industry*. [Journal/Publisher].*
* ***Kshetri, Nir.*** *(2018).* 1 Blockchain's Roles in Meeting Key Supply Chain Management Objectives*.* International Journal of Information Management*, 39, 80-89. [DOI/Publisher].*
* ***Tian, Feng.*** *(2016).* An Agri-food Supply Chain Management System for Quality Assurance Using Blockchain Technology*.* Service Systems and Service Management (ICSSSM)*. [Conference/Publisher].*
* ***Xia, Qian.*** *(2019).* Blockchain-Based Smart Contract for Supply Chain Management*.* IEEE Access*, 7, 64095-64105. [DOI/Publisher].*
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* ***Choi, Tae-Il, & Kim, Kyeong-Hwa.*** *(2020).* Evaluating Blockchain Technology for Logistics and Supply Chain Management: A Case Study Approach*.* Journal of Logistics*, 9(2), 25-36. [DOI/Publisher].*
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**Signature of Supervisor(s) with Date:**