

BCT for Agricultural Supply Chain Management

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Abstract: 'Supply Chain Management' is a relatively recent word. It first appeared in logistics literature in the 1980s as a method of inventory management that focused on raw material supply. Logistics managers in retail, supermarket, and other high-inventory industries realised that managing commodities that move in and out of their 'inbound' and 'outbound' routes might provide a considerable competitive advantage. The processes involved in Supply Chain Management are as follows: Integrated Planning, Implementation, Coordination, and Control are all part of the integrated planning process. As a result, SCM is the integrated planning, implementation, coordination, and control of all Agri-business processes and activities required to create and deliver products that satisfy consumer preferences and requirements as effectively as feasible. This study presents a BCT-based agricultural supply chain management system to make ASC transparent and free of corruption.

Keywords: ASC, BCT, AES, visual cryptography, SHA 256, Java, JSP, Sevlet, Web, etc.

I. INTRODUCTION

The supply chains of various agricultural commodities in India, on the other hand, are plagued with difficulties due to the agriculture sector's inherent concerns. Different economic concerns, like as the preponderance of small/ marginal farmers, fragmented supply chains, lack of scale economies, poor degree of processing/value addition, inadequacy of marketing facilities, etc., influence the country's agrisupply chain system. As a result of lower inventory and faster response times to customer demands for products and services, early processing-based supply chain management success featured enhanced interactions between warehousing and transportation within organisations. To effectively compete in the marketplace, supply chain management moved into the logistics stage, when additional functional departments inside firms joined forces to combine manufacturing, procurement, transportation, distribution, and marketing. The introduction of telecommunications, electronic data interfaces, and other technology innovations supported this stage by making information transfer more visible across functional areas.

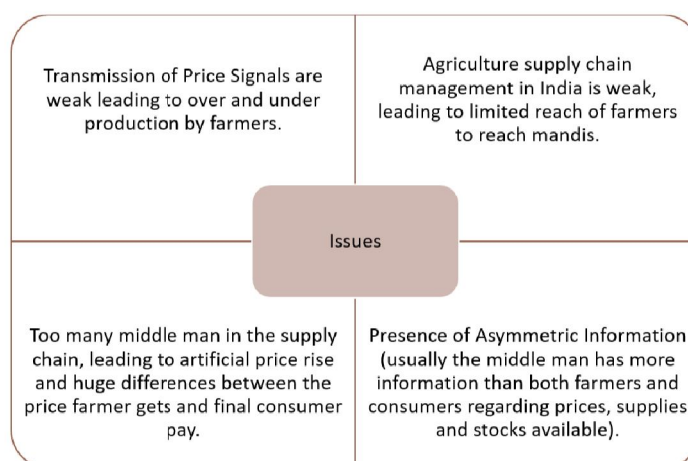


Figure: Issues in ASC

1.1 Overview of Proposed Technology

BCT: The blockchain technology allows peer-to-peer transactions to take place transparently and without the need for an intermediary like a bank or a middleman in the agriculture sector. By eliminating the need for a central authority, the

technology changes the way that trust is granted – instead of trusting an authority, trust is placed in cryptography and peer-to-peer architecture. It thus helps restore the trust between producers and consumers, which can reduce the transaction costs in the agri-food market. The blockchain technology offers a reliable approach of tracing transactions between anonymous participants. Fraud and malfunctions can thus be detected quickly. Moreover, problems can be reported in real-time. This helps address the challenge of tracking products in the wide-reaching supply chain due to the complexity of the agri-food system. The technology thus provides solutions to issues of food quality and safety, which are highly concerned by consumers, government, etc. The blockchain technology provides transparency among all involved parties and facilitates the collection of reliable data. Blockchain can record every step in a product's value chain, ranging a product's creation to its death. The reliable data of the farming process are highly valuable for developing data-driven facilities and insurance solutions for making farming smarter and less vulnerable.

II. LITERATURE SURVEY

A model in Agri-food Supply Chain Costing using ABC Costing: A empirical research for Peruvian coffee supply chain

Andrea Villalva-Cataño, Edgar Ramos-Palomino, Kelsey Provost, Eduardo Casal

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This paper analyzes basically the causes of the high logistical costs presented by the Peruvian coffee in the supply chain. A cost analysis methodology will help to explore, analyses and develop high supply chain costs so that the current coffee crisis can be stabilized. Indeed, the findings found were analyzed to improve, support, and help small-business growth in the long run.

A Theoretical Implementation: Agriculture- Food Supply Chain Management using Blockchain Technology

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This paper presents a fully decentralized blockchain based traceability that enables to build blocks for agriculture that continuously integrate with IoT devices from provider to consumer. To implement, we introduced “Provider-Consumer Network” - a theoretical end to end food traceability application. The objective is to create distributed ledger that is accessible by all users in the network that in turn brings transparency.

Blockchain in Agriculture by using Decentralized Peer to Peer Networks

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To address the problems arising from the farmers related to agriculture, the blockchain technology plays a major role in the agriculture industry by improving transparency and food provenance in the supply chain, which is featured by the distributed ledger, centralized servers, P2P (Peer to Peer) networks, As in [1] [10] RFID (Radio-Frequency Identification) tag, consensus verification. Hence, the proposed work explores the different problems faced in agriculture production and the solutions to those problems are addressed by using blockchain technology.

Blockchain technology in current agricultural systems: from techniques to applications

WANG1, HAINING YIN4, DEWEI YI5, AND LAIHUNG YAU6

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In this paper, we provide a survey to study both techniques and applications of blockchain technology used in the agricultural sector. First, the technical elements, including data structure, cryptographic methods, and consensus mechanisms are explained in detail. Secondly, the existing agricultural blockchain applications are categorized and reviewed to demonstrate the use of the blockchain techniques. In addition, the popular platforms and smart contract are provided to show how practitioners use them to develop these agricultural applications. Thirdly, we identify the key challenges in many prospective agricultural systems, and discuss the efforts and potential solutions to tackle these problems.

Blockchain-based Data Traceability Platform Architecture for Supply Chain Management

Yihang Wei

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This work proposes a data traceability platform architecture design plan for supply chain management based on the multi-disciplinary knowledge and technology of the Fabric Alliance chain architecture, perceptual identification technology, and cryptographic knowledge. At the end of the paper, the characteristics and shortcomings of data traceability of this scheme are evaluated.

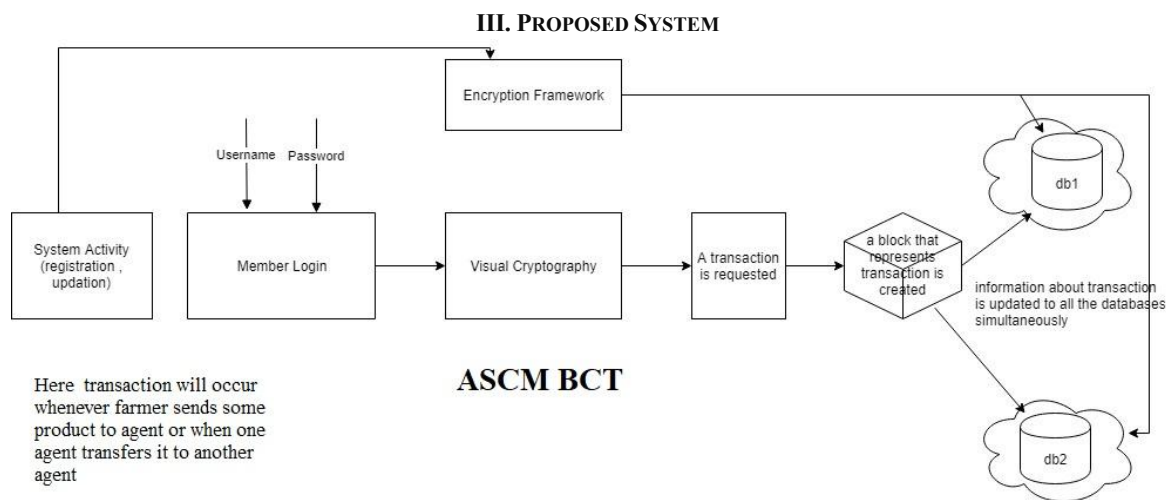


Figure: Proposed System

IV. CONCLUSION

Thus we are going to implement an ASCM using BCT, the system with BCT will be an effective solution to solve the problems in ASCM. The system will be developed using java as a programming language using JSP & Servlet technology.

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