Dr. Ashok Kumar

Pedagogical innovation: Product Development in group

Pedagogical innovation through group-based product development fosters collaboration, creativity, and critical thinking. By working together on real-world projects, students apply theoretical knowledge to practical situations, enhancing problem-solving skills. This approach encourages peer learning, teamwork, and communication, while preparing students for future challenges in dynamic, industry-focused environments.

Assessment Innovation: Sample of Case Study

Assessment innovation through case studies promotes critical thinking and problem-solving skills. By analyzing real-life scenarios, students apply theoretical concepts to practical situations, developing analytical and decision-making abilities. Case studies encourage deep engagement, stimulate discussion, and provide valuable insights into how students approach complex issues, enhancing learning outcomes.

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Blockchain-based food supply chain traceability: a case study in the dairy sector

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ABSTRACT

Traceability has become a critical element in supply chain management, particularly in safety-sensitive sectors like food, pharmaceuticals, etc. Upstream (manufacturers, producers, etc.) and downstream (distributors, wholesalers, etc.) supply chain members need to store and handle traceability-related information for providing proof of regulatory compliance to both state authorities and more demanding customers. Consumers also place high expectations on food supply chains (FSC) with specific emphasis on facets related to safety. However, the complexity of modern FSC networks and their fragmentation act as barriers for the development of sound traceability mechanisms. In this paper a distributed trustless and secure architecture for FSC traceability is developed and tested. For assessing the feasibility of the proposed approach, a food traceability case study from a dairy company is presented. The applicability of the model is further illustrated by the development of fully functional smart contracts and a local private blockchain. Moreover, the various links between the proposed blockchain-based model and its managerial implications are presented. The overall benefits of the proposed model are discussed along with fruitful areas for future research. The results are of significant value to both practitioners and researchers.

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1. Introduction

Food traceability captures, stores and transmits adequate information about a food, feed, food-producing animal or substance at all stages in the Food Supply Chain (FSC) so that the product can be checked for safety and quality control, traced upward and tracked downward at any time, as claimed by Aung and Seok Chang (2014). It includes product, process, genetic, inputs, disease and pest and measurement traceability, as suggested by Zhu et al. (2018). There are three essential characteristics for traceability systems: (i) identification of units/batches of all ingredients and products, (ii) information on when and where they are moved and transformed and (iii) a system linking these data, as stated by Aung and Seok Chang (2014).

Traceability is considered as a new quality index in the food industry, according to Bosona and Gebresenbet (2013). Storing and handling sensitive case information for tracing in FSC becomes mandatory worldwide. Regulations are imposed in order to enable tracking and identification of all raw materials used in food products as claimed by Dabbene, Gay, and Tortia (2014). These requirements tangle many FSC participants, some of them still depending on non-automated information managing methods, as mentioned by Rabah (2018) and Gromovs and Lammi (2017). The food industry uses traceability systems for the improvement of FSC and the facilitation of the traceback for food safety and quality. Traceability is viewed as a strategic tool to improve food safety systems, the quality of raw materials, inventory management and as a source of competitive advantages, according to Aung and Seok Chang (2014), Dasaklis, Casino, and Patsakis (2019), Dasaklis and Casino (2019). Traceability systems help firms identify the cause and extent and resolve safety or quality control problems.

Traceability-driven FSC management is based on novel technologies like the Internet of Things (IoT). IoT-related applications provide real-time information about products as well as contamination information throughout production and distribution. IoT applications address practical problems/monetary constraints and (re)design/optimise food supply networks, as stated by Zhu et al. (2018). IoT-enabled applications and relevant technologies such as Radio Frequency Identification (RFID) could revolutionise the industry by digitising information to be queried and controlled in real

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Digital Innovation: Response Surface Methodology

Digital innovation through Response Surface Methodology (RSM) enhances data analysis by optimizing processes and systems. RSM uses statistical techniques to model and analyze relationships between multiple variables, helping in decision-making and problem-solving. It aids in identifying optimal conditions for various processes, improving efficiency and accuracy in research and development.