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Study on Supply Chain Rearrangement to Improve Supply Chain Performance of Sambal Sauce in Company X Case Study using the Enterprise Architecture Design method that utilizes Industrial Revolution 4.0 Technology based on Hybrid Technology

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Abstract. Company X is a large enough producer of Sambal Sauce to supply Meatball traders in Indonesia. Many problems in this supply chain include the occurrence of unhealthy competition between internal networks, both between agents and other networks that intersect between supply regions, market prices are not uniform, the availability of field products is not maintained, the uncertainty of delivery from the previous supply from the Supply Chain, high Debts and Receivables from Distributors, the certainty of product delivery to the Supply Chain from Producers, The certainty and stability of the delivery of Sambal Sauce Raw Materials to the Factory, unstable quality of raw materials, and many other problems. Of course, this needs to be fixed immediately, considering that it will be a turning point for product returns if this problem continues. The following is a deeper study of what and why this happens, how to solve the problem, and concrete efforts to solve the problem analytically using the Enterprise Architecture Design method by utilizing Hybrid Technology-based Industrial Revolution 4.0 Technology.

Keywords: Supply chain; synchronised flow, product demand; material shortage; artificial intelligent; Hybrid Model of 4.0

INTRODUCTION

PD. Surabraja Food Industries is a company engaged in the food and beverage industry. It was established in 1976 with Notary Deed No. 10,319,761 and is domiciled in Cirebon Regency, Indonesia. Because we have a long experience in the chili sauce industry, which is made from sweet potatoes, delicious chili sauce is the flagship of our product. We have marketed these superior products in Java and Sumatra, Batam, Kalimantan, and NTB islands. To improve its managerial and service to consumers, our company has obtained an ISO 9001:2015 certificate. Also, our products have a distribution permit from BPOM RI.

The vision of this company is "To become a superior company in the food and beverage industry in Indonesia to achieve common prosperity to achieve the title of Noble Person"

It also has a mission including 1, Improving the quality of service to fulfill customer needs and satisfaction. 2. Carry out a quality production process to improve production quality and cost efficiency. 3; Create an integrated marketing team in an effort to dominate the market. 4. Improve managerial to foster harmonious and moral performance

This Sambal Sedap Sauce product has advantages, including the following: 1. It is made from freshly selected sweet potatoes. Most other brands of chili sauce are of low quality and are made from cassava flour, which is commonly used for animal feed. 2. The best quality with taste is spicy, savory, and sour, which fits perfectly. This makes the dish more delicious, especially for meatballs and chicken noodles, and it is also to be eaten with fried foods or other cakes. 3. Excellent prospects, because chili sauce with raw sweet potato materials is still rare. 4. There is an increase in people's purchasing power; no longer buying low-quality chili sauce, they will buy the best quality chili sauce at an affordable price.

The marketing area of Sambal Sedap Sauce includes West Java & Dki Jakarta, Central Java & Diy, East Java, and outside Java. Such as 57 regions including Cirebon, Kuningan, Indramayu, Majalengka, Ciamis, Tasikmalaya, Sumedang, Subang, Karawang, Depok, Bandung, Bogor, Bekasi, Tangerang, Depok, DKI JAKARTA, Brebes, Tegal, Slawi, Pemalang, Batang, Kendal, Grobogan, Kudus, Pati, Magelang, Surakarta, Klaten, Yogyakarta, Bantul, Kulonprogo, Kudus, Temanggung, Banjarnegara, Purbalingga, Purwokerto, Kebumen, Wonogiri, Purworejo, Cilacap, Bumiayu, Ngawi, Madiun, Magetan, Sidoarjo, Surabaya, Gresik, Lamongan, Babat, Lampung, Dumai, Batam, Jambi, Pontianak, Ternate, Palembang, NTB

This Company Case Study has the following problems: 1. The poor image of distribution partners is due to internal competition in sales and retail. 2. The high return of goods is due to poor storage of goods, goods stored past the expiration limit of goods, color, viscosity of the product change, and product taste that changes or is not standard. 3. Loss of Profit Opportunity caused by Out-of-goods in the warehouse, Return of Goods, or Goods not delivered to the planned distribution channel because of a sudden change from the Delivery Schedule to other Distributions due to the request of the Shareholders (Owner's Family), Outstanding Payments from Distributors, 4. Non-fulfillment of production targets due to Raw Materials lacking because the quality is highly dependent on the weather, Lack of Production Capacity, 5. Lack of smooth payment of Products from Distributors due to Arrears of Distributor Payments. Distributors are Shareholders of the Company Owner Family, and the Majority of Company Management is still a relative of the Shareholder Family.

METHODS

To discuss the above problems with company X, it is necessary to limit the discussion to: a. discussing Technology Solutions to overcome the abovementioned issues; b. We were discussing Enterprise Architecture Design to overcome the problems mentioned above. The following are the stages of the research method carried out: Stage 1. Preliminary Study: It explores several theories related to the issues that will be solved in this case study—stage 2. Company Profile Study As the Object To Be Researched this case study aims to trace the company profile as the company's object to be researched. Stage 3. Identification of Main Problems: This is a stage to trace the main problems of the research object through direct observation, interviews, and discussions with the company's management. Stage 4. Problem Limitation is a stage that limits the discussion of the problem so that it does not expand the discussion too widely. Stage 5. Research Methodology is a stage that determines the stages, procedures, problem-solving methods, research tools, and instruments to be carried out. Case Study Research Method In designing this Solution Design, we will use Supply Chain Management, Cause and Effect Analysis, and Enterprise architecture—stage 6. Literature Study is the stage of a literature search of several sources or journals related to Problem-Solving Methodology or Solution Design that will be applied to this Case Study, namely related literature: Supply Chain Management, Cause-Effect Analysis, and Enterprise Architecture. Stage 7. Data Collection And Problem Analysis This is the stage of data collection from the information that has been collected, including Management Interview Results, Number of Distribution and Development, Number of Transactions and Development, Number of Warehouse Vacancy and Development, Number of Returns and Development, Number of Receivables and Development.

After the above information is collected, it is then followed up by conducting an analysis: Cause and Effect Analysis of Problems in the Company (Cause and Efficacy Analysis), Failure Mode Effect Analysis (FMEA), Quality Function Deployment (QFD), Management of Technology (MoT) with Hybrid Technology in Revolution 4.0. Stage 8. Enterprise Architecture Design: This stage uses the Enterprise Architecture (EA) method to design a solution. Conclusion The closing stage is the closing stage, which draws several findings of this research.

DISCUSSION

"Definition of the Supply chain is a network of connected and interdependent organizations mutually and co-operatively working together to control, manage and improve the flow of material and information from suppliers to end users." (Indrajit and Djokopranoto, 2003).

According to several experts, the definition of supply chain management includes: a) Supply chain management, according to Chopra and Meindl (2004), is a supply chain management that consists of the involvement of each supply chain, either directly or indirectly, to meet customer demand. b) Supply chain management coordinates all supply activities in an organization, from suppliers and partners to consumers. (Chaffey, 2002). c) Meanwhile, according to Kalakota (2001), supply chain management is an umbrella process where products are created and delivered to consumers.

Upstream Supply Chain: The upstream part of the supply chain includes the activities of a manufacturing company with its distributors (such as manufacturers, assemblers, or both) and their connection to their distributors, such as 1. Suppliers, 2. Manufacturers, 3. Distributions, 4. Retails, 5. Customers.

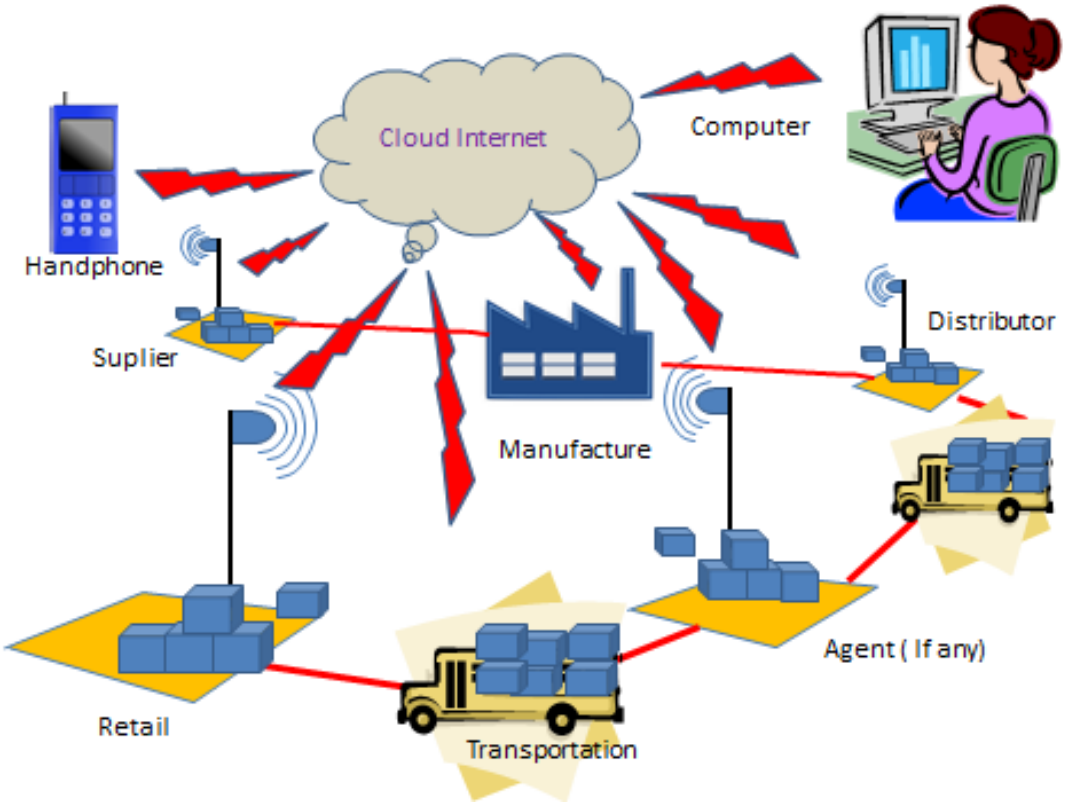
There are three subjects in supply chain management: information, goods/products, and money. These three subjects are interrelated and cannot be separated from each other. The following is a practical description in the field as follows: Retailers will place orders from Distributors regarding the number and type of products ordered by sending information in the form of Order Letters/Product Requests. Distributors prepare products to be sent to Retail by preparing their Products and Transportation. The distributor communicates, ensuring that the payment is made through a payment system agreement, whether Credit, Debt, deposit, cash, and Carry, or Transfer. The distributor provides the delivery address according to the Order Letter made by the Retailer. The Distributor delivers the Products to Retail as ordered. If several places are in one day, delivery can be carried out simultaneously in a more effective and efficient route. The retailer will accept the product, inspect it, and inform the Distributor that it has been received correctly. If there is a product that it receives that cannot be accepted (Rijeck), then the retailer can return it to the officer sent by the Distributor. Likewise, if there is a product that is improved because it is considered unsuitable for sale if it has expired (Ordinary Food Products), in the event of a return of this Product, it will be a note to the Distributor to be returned or replaced with the latest product for the following order.

If we observe the above process between Retail and Distributor, it is almost exactly the same as the previous Supply Chain actors, such as between Distributors and Manufacturers and between Manufacturing and Row Material Suppliers. In the above case, three types of displacement occur: 1. information, 2. products, and 3. money.

Enterprise Architecture Design

E-Supply Chain Management (E-SCM) is a management concept where companies try to utilize internet technology to integrate all of the company's partners, especially those related to the supply system of materials or resources needed in the production process. (Indrajit and Djokopranoto, 2013). According to Turban (2004), e-supply chain management (E-SCM) is the combined use of technology to improve supply chain operations and management. E-SCM collaborates or combines technology to expand B2B processes and improve speed, agility, real-time control, and customer satisfaction (e.g., planning, coordination, and control).

According to Indrajit and Djokopranoto (2003), there are three basic principles that must be considered in planning an e-supply chain management (E-SCM), namely; 1. Seeing that the essence of the information, in this case, must be a substitute or substitution of the existence of inventory (the highest cost of the company's average), then the information must be treated the same as inventory management, 2. Of these three elements (price, speed, and quality), the real competition lies in the speed and accuracy of information. The information that flows from business partners to the company and vice versa must be such that it provides significant benefits to creating and disseminating products or services (creating value). Management must consider that the relationship between business partners is a strategic asset of the company that must be fostered seriously.



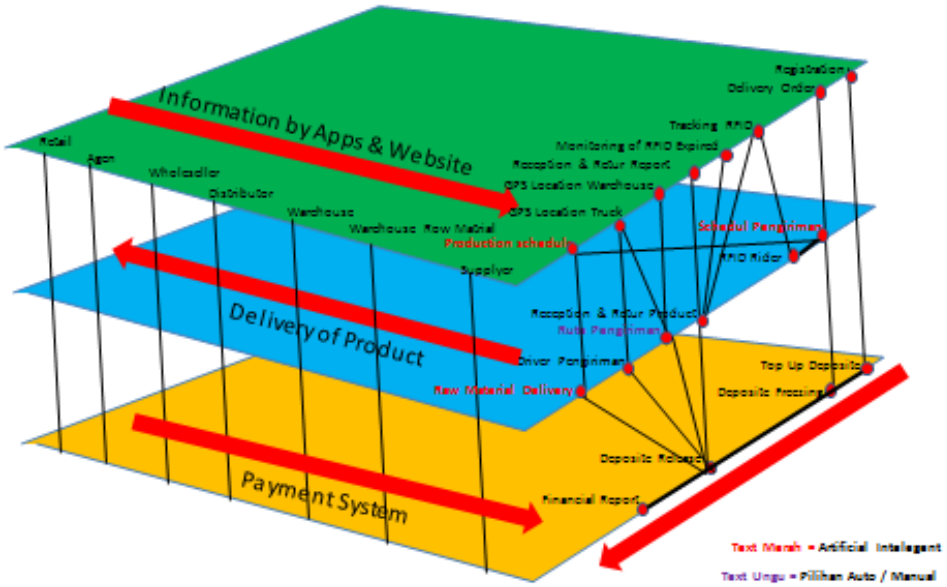
To win the Supply Chain Management competition, it is not enough to use human skills alone; technology is needed to ensure certainty in considering decision-makers. The following technology recommendations need to be implemented: a. RFID technology, b. GPS technology, c. Web Technology and Apps, d. Artificial Intelligence Technology

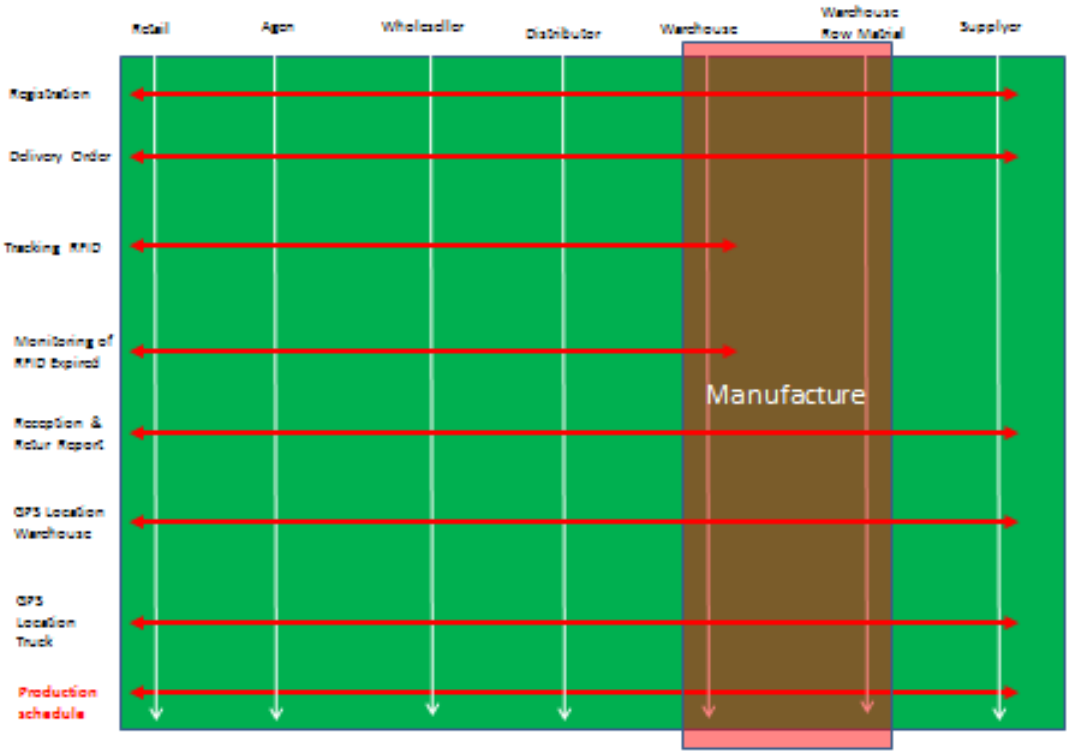
When learning more about enterprise architecture (EA), it is important to realize that none of these approaches is the most comprehensive. For some enterprises, none of these methodologies is a complete solution.

Another approach is blended methodology, which involves selecting parts of the methodology and modifying, combining, and structuring them for the organization's specific needs. In practice, nothing is perfect in the existing EA Framework; each has advantages and disadvantages. Even the use of the EA framework in each enterprise can be different. This depends on the characteristics of the enterprise itself, the focus to be achieved, and others.

To build an integrated information system, it is necessary to determine a framework that is per the conditions of the existing organization/institution. The main components in a framework are views, methods, and training. Below is the e-SCM Enterprise Model Architect that will be built to strengthen and improve the flow of information, product flow, and payments in the Supply Chain in the Food Industry.

ARCHITECTURE MODEL of HYBRID TECHNOLOGY APLICATION TOWARD SUPPLY CHAIN MANAGEMENT 4.0

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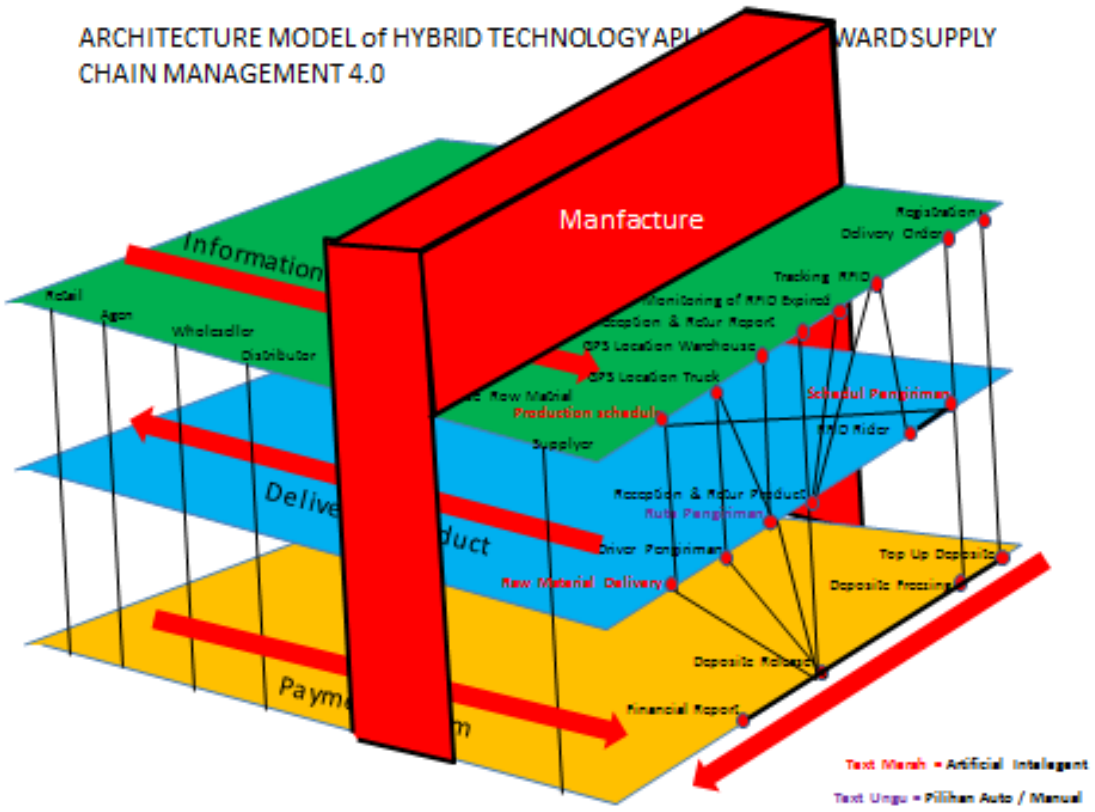
Production schedule
Manufacture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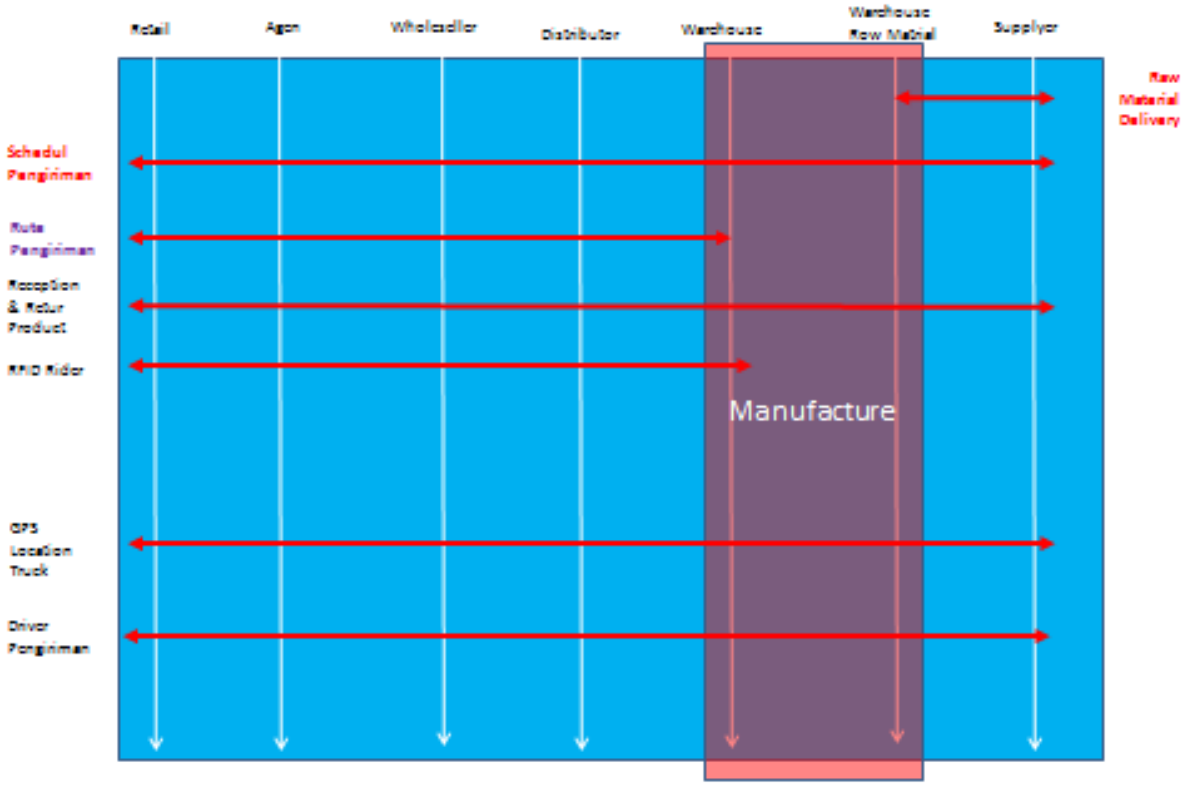
Wholesaller
Distributor
Registration
Delivery Order
Tracking RFID
Monitoring of RFID Expired
Reception & Retur Report
GPS Location Warehouse
GPS Location Truck
Production schedule
Supplyer
Driver Pengiriman
Raw Material Delivery
Financial Report
Text Merah = Artificial Intelligent
Text Ungu = Pilihan Auto / Manual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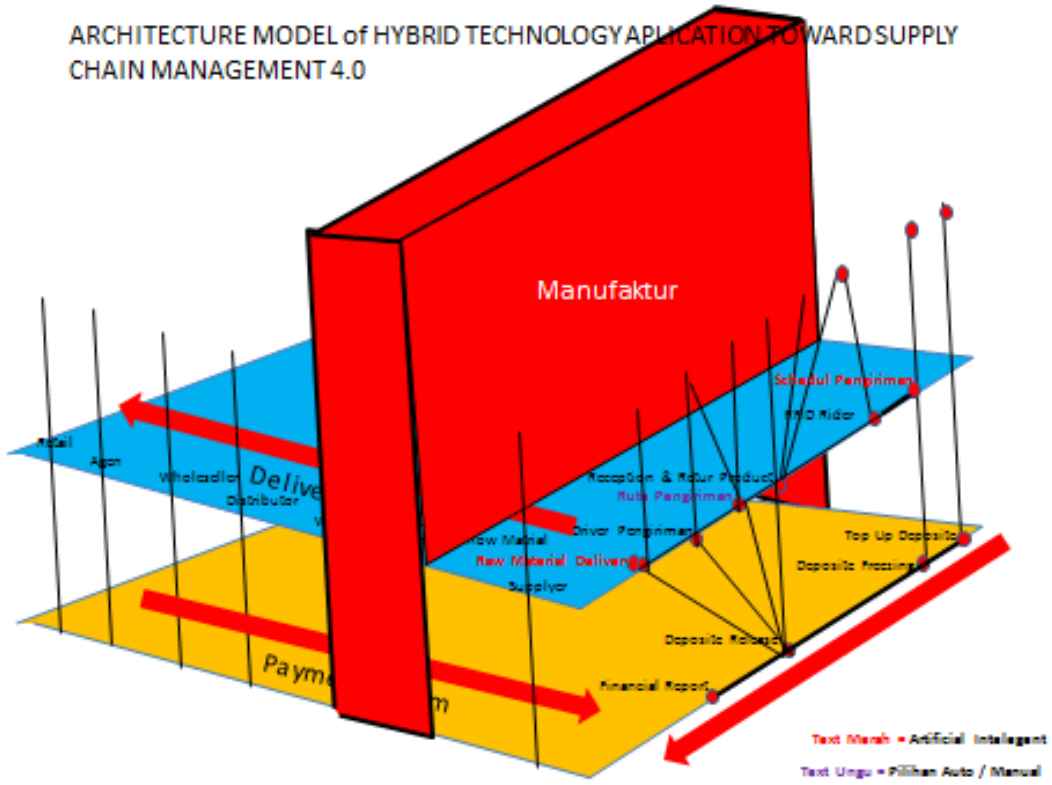
Manufacture
GPS Location Truck
Driver Pengiriman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Schedul Pengiriman
RFID Rider
Retail
Agen
Wholeseller
Distributer
Reception & Retur Product
Rute Pengiriman
Driver Pengiriman
Raw Material
Raw Material Delivery
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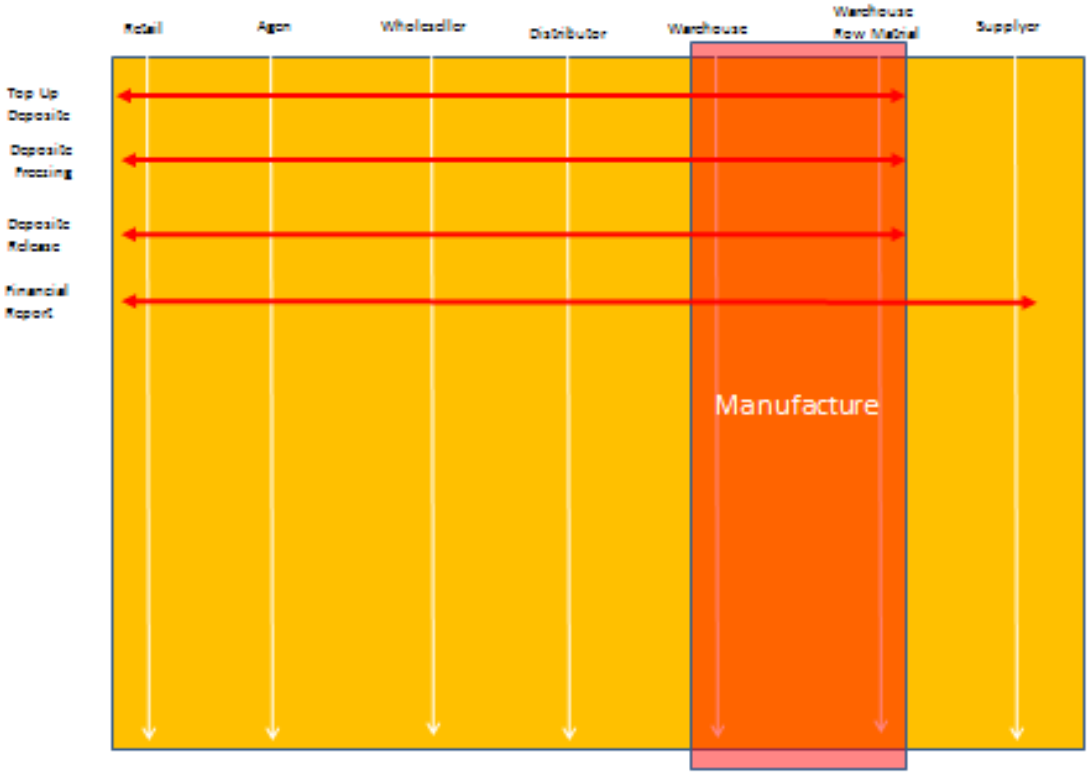
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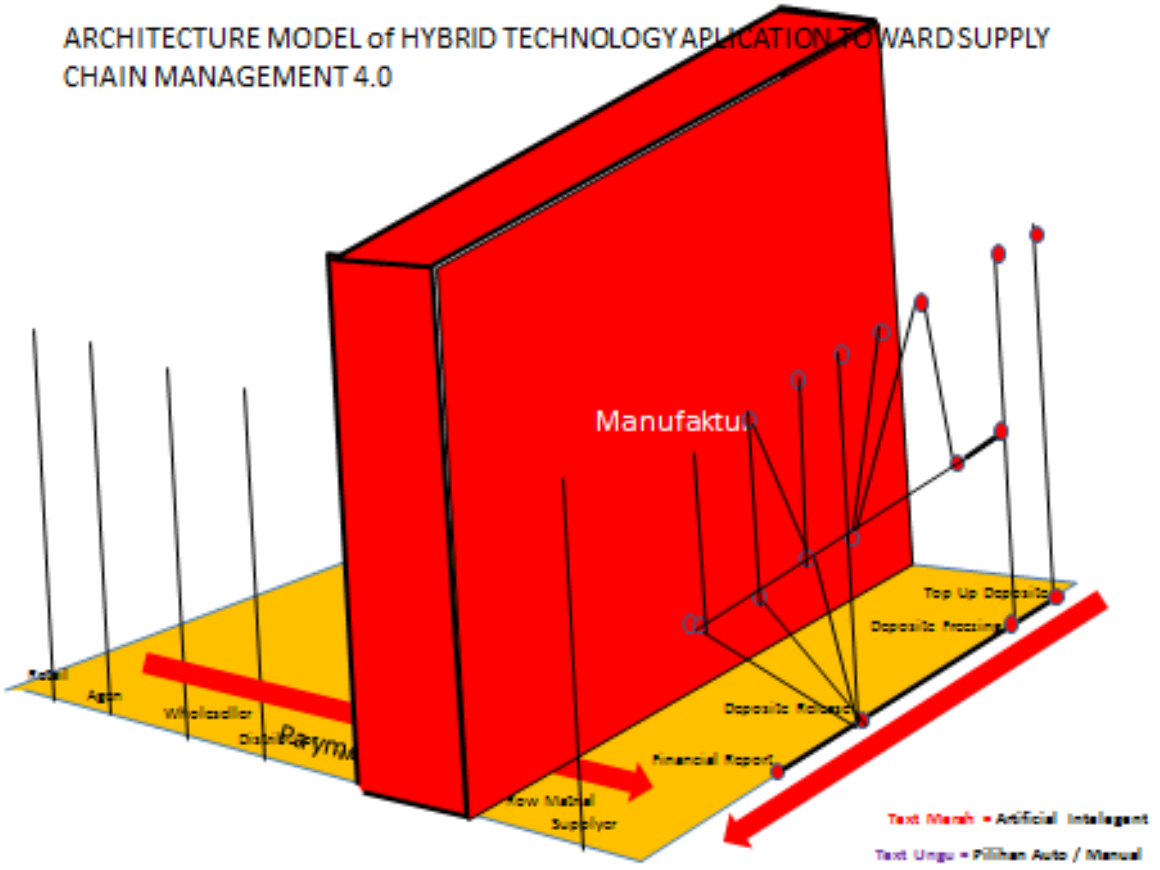
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CONCLUSION

The following are the results of our findings in identifying Supply Chain problems in the Food Industry Supply Chain. These findings and the following alternative solutions based on the Industrial Revolution 4.0 are hoped to inspire the improvement of the performance of the supply chain, especially in the food industry.

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