ANALYSIS OF FOREIGN EXPERIENCES IN TRANSPORT AND LOGISTIC SYSTEM COOPERATION

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ABSTRACT

The effectiveness of the proposed coordination mechanism is based on foreign experience in coordinating the activities of the transportation and logistics system, as well as the possibility of significant cost savings in transportation and warehousing by coordinating the return on investment of a common IT platform and Radio Frequency IDentification or barcode system.

KEYWORDS: Transportation, Logistics, Fuel, Operation, Trucks, Environment, Transit, Coordination & Inventory.

INTRODUCTION

Over the past ten years, consumer concerns about the ecological, sociocultural, and financial constraints connected with traditional food distribution networks have drastically raised demand for domestically produced food. Many individuals favor and are prepared to pay more for food that is grown in their own back gardens. Several people believe that consuming food grown in the area is good for their health and well-being as well as the welfare of society as a whole. Regional food systems improve social sustainability by enabling consumers to interact with local producers, visit their farms, and learn about their farms [2].

Horizontal coordination through shared infrastructure can drastically reduce shipping and warehousing expenses, enabling participants to collaborate to build a more efficient and reliable transit system[3]. This type of efficiency can reduce fossil fuel consumption and significantly reduce the impact on the environment through greenhouse gas emissions [4]. For example, Driftless Organics, an organic vegetable farm in Wisconsin, USA, has simplified its distribution through its relationships with nearby farms and supply chain partners. Without this strategic partnership, Driftless Organics can sell to markets that it can effectively enter on its own.[5]

Although coordination efforts can boost food delivery centers' productivity, the resultant interdependence might turn every contributing cafeteria less effective. Putting coordinated food courts under a common management structure also could make sense [6].

Teri Craven, Anuj Mittal, and Caroline Krejcilar researched the work of food delivery centers in Iowa in an article titled “Effective Coordination in the Local Food Supply Chain” at Iowa State University. All have a unique business plan and is situated in a different area of the state. Nourishment Centers 1 (O-OM1) is an online grocery store with a distribution center in downtown Iowa. Both consumers and wholesalers can purchase goods from this food court. O-OM1 doesn't own a truck and relies on suppliers and clients to deliver its products. Food
court 2 (O-OM2) has no commercial clients and only sells to consumers directly through its website.

He distributes groceries from Iowa state and doesn't have a truck. Food court 3 (O-OM3) is much different than O-OM1 and O-OM2. It delivers its products by refrigerated truck to eateries, supermarkets, and other food courts in Iowa in addition to offering transportation services to nearby farmers. FOOD HUB 3 also operates a warehouse in West Iowa and sells products to its customers. Local farmers are the source of the food that Food Court 4 purchases and offers to both clients and traders. O-warehouse OM4’s is in northeastern Iowa, and it transports the goods with its own vehicle. The location of the four food courts on the map is shown in Figure 1.

Figure 1: shows The Positions of Four Nutrition Centers on a Map.

The four Nourishment Stations' activities are not always connected. The concept of cooperation was related to the lack of milk producers at the Iowa Center, where O-OM2 is located. O-OM1 and O-OM4 in the state's east are home to the majority of Iowa's dairy farmers. Inability to properly supply their customers' demand for dairy goods led the O-OM2 manager, O-OM1 manager, and FOOD HUB 3 manager to discuss the problem in the summer of 2014.

Although FOOD HUB 3 was only transporting food to farmers at the time, the FOOD HUB 3 manager suggested that O-OM2’s dairy be included in the existing route from eastern Iowa to central Iowa. This location action included O-OM1 on a voluntary basis to create temporary refrigerated storage areas for O-OM2 dairy products, as well as other Iowa products headed for O-OM2. This has saved several eastern Iowa manufacturers from traveling to central Iowa to deliver their products to Food Hub 2.

Figure 2 depicts the flow of goods across this organized network. Manufacturers possess circular that match the food companies they market. Food prepared to a factory or food delivery center in each bullet. The matching number on each axis shows the sequence of occurrences, and the producers' products that are being shipped are indicated in the parentheses.

The entire warehousing and transportation capabilities for all participants were proved by this well-coordinated logistics system, which increased efficiency and increased the amount of food produced in the area that could be dispersed throughout the state. However, participants' poor physical and information infrastructure is creating issues as they continue to add more nodes (such as restaurants and manufacturing) to their networks.

O-OM1 frequently receives volumes that unexpectedly exceed the frozen items' storage capacity, which can have a negative impact on the quality and safety of the final product. For instance, the incompatibility of the labels caused the driver of the FOOD HUB 3 truck to pick up unwanted products during the stop. O-OM1 frequently receives volumes that unexpectedly exceed the frozen items' storage capacity, which can have a negative impact on the quality and safety of the final product. Additionally, O-OM2 has started to receive more product than anticipated, and the manager is worried that
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mistakes could be made with the goods he keeps in storage for his clients. The underperforming system’s frequent deliveries and faults in logistics are both results of the lack of organized data interchange. Additionally, food house managers lack a structured method for assigning and monitoring the expenditures of the storage services and general physical infrastructure necessary for a fruitful and long-lasting relationship.

3. Suggested Method We advise that four food courts implement an inventory tracking system using a shared IT application that enables Radio Frequency IDentification or barcode coding to address these problems. In order to offer visibility of deliveries across food delivery centers and allow for real-time updates on their locations, the system sends inventory data to all parties in the supply chain during transit and storage. Ensuring that food house managers have enough time to respond to incoming shipments information will help alleviate the problems associated with the lack of temporary storage facilities. The precision and speedy data capture are increased with the use of RFID or barcodes, which involves minimal work of food production workers.

![Figure 2: The Current State of Coordination Between Food Courts](image)

In addition, the use of a consistent labeling scheme by all food courts and their manufacturers will help ensure the transportation of the right products and quantities. The overall IT platform allows Nourishment Centers to distribute transportation and storage costs fairly and equitably, assisting in the development and maintenance of collaborations with each participant's reasonable objectives.

By calculating the ROI of the whole IT platform and the RFID or barcode system, the advantages of the proposed approach is evaluated. The suggested solution reduces coordination mistakes in the delivery of erroneous products, results in an increase in customer participation due to faults in customer orders, and enables the transfer of large volumes of food between food delivery centers due to product collisions, and the range of products offered in individual hubs will increase. Additionally, the technology facilitates better and quick communication among Nourishment Centers and reduces dependence on manual labor in the food warehouse due to the reduction of steps and time required to complete tasks.

We explain how horizontal cooperation across regional food courts can help them better meet demand for sustainable food items, reduce overall prices, reduce fossil fuel consumption, and improve transportation in this research. Greenhouse gas emissions are reduced. Nourishment Centers coordination not only influences revenue, but it also allows small and medium-sized food producers to gain new clients. It will be feasible to increase economic stability and quality of life by reducing their numbers. The delivery time has been shortened. While coordination through common inventory
management systems has become widespread in common supply chains, it is essentially non-existent in regional food systems, and to be effective, various financial, technical, and cultural challenges must be overcome.

The implementation of a common supply chain management will make it easier for Food Centers to list products mutually, for inventory flow to be transparent during travel and storage, for cars to be scheduled, and for participating food courts to split expenses fairly.

The use of an RFID or barcode system is seen to be a more efficient method for obtaining inventory data than depending solely on the manual entries made by each Food Center manager. The creation of an IT platform and cost-sharing system is a proposed task for the future. It will be tested with the four Nourishment Stations.

Increasing competition today is forcing businesses to focus on their core business and participate in increasingly complex supply networks (Networks). The key to establishing an effective partnership is coordination between partners, including the selection of a suitable partner, coordination and measurement. Over the years, various literatures have made interrelated efforts in providing coordination mechanisms, models, and tools to improve the overall performance of the supply chain [7]. In the marketing literature, coordination mechanisms focus primarily on pricing decisions, such as contract, demand, and advertising.

Optimal process parameters and policies, such as operational supply chain coordination, inventory policy, delivery, and order processing, are the focus of much of the research. Furthermore, work on tools and methods to facilitate coordination, such as the agency framework, attribute-based approach, or virtual electronic chain [7], has been thoroughly proven.

As previously stated, the focus in the aviation industry is typically on supply chain planning rather than coordinating models. Process coordination The study of procurement, production, and delivery, which are all important operational procedures in a supply chain, has been expanded. In interviews with over thirty companies of varying sizes, a long list of issues relating to technological or behavioral issues emerged [8].

**Figure 3: The Usual Structure of The Supply Chain**

Many models have already been proposed in scientific sources to describe logistics processes in the supply chain, and it is thought that the use of these processes will increase efficiency. In this section, we want to point out that if the processes are always "correct", problems may arise due to other aspects not included in these models. To describe the
process models, we used the ARIS formality here [9]. Here are some studies on this topic.

In the long-term coordination process, key activities can be identified. When choosing a second participant for a particular long-term relationship, the customer sets their own standards based on more and more choices. As a result, second-party participants are required to increase the number of certificates, as standard certificates are often defined by clients in their work. The customer takes into account the results of the previous relationship with the second participant, for example, through its performance indicators (service ratio, etc.) [9].

REFERENCES


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