

## NEED FOR ENABLING ICT IN SUPPLY LOGISTICS AT GSCSCL: A CASE OF SURAT CITY

### **Daisy Shaileshbhai Tamakuwala**

Student, M. E. (Town & Country Planning) II,  
CED, Sarvajanik College of Engineering and  
Technology, Surat, Gujarat  
([tamakuwaladaisy@yahoo.in](mailto:tamakuwaladaisy@yahoo.in))  
+91-94298-59176

### **Bhasker Vijaykumar Bhatt**

Assistant Professor, Civil Engg. Dept.  
Sarvajanik College of Engineering and  
Technology, Surat, Gujarat  
([bhasker.bhatt@scet.ac.in](mailto:bhasker.bhatt@scet.ac.in))  
+91-98258-35364

### **Abstract**

With increasing acceptance of SCM concept by all the transport providers, services based on logistics are now in need of advanced technology in services. It majorly includes ICT enabling showing connectivity among the leaders of SCM and transport contractors. In comparison to any other businesses, transport based logistics services focus on innovative ideas of ICT. It adds to the capability for active collaboration in supply chains of stakeholders of logistics. The ICT based services are increasing because of value-added services, distribution services and transport services of goods inclusive for raw, semi-finished or final products through cargo tracking and tracing services. There is also the insertion of Automatic Vehicle Location Systems to trace the movement of cargos including its speed, time and position that may be made available by GPS. The various ICT tools consist of LIS, RFID, GPRS, GIS, and software are becoming essential tools for supply chains. Gujarat State Civil Supplies Corporation Ltd (GSCSCL) gives efficient procurement, storage and distribution of essential commodities under Government welfare schemes and Public Distribution System (PDS). Corporation has the storage capacity of about 2.84 lakh MT. However, with increasing need for commodities more storage capacity is required for PDS scheme. Corporation utilizes the warehouses of Gujarat State Warehousing Corporation (GSWC), Central Warehousing Corporation (CWC), and private godowns on a rental basis depending on the case. The increase in the ability of warehousing is to reach around 24,500 MT for that the work is in progress through R&B Department. As a result in order to manage the storage capacity for supply logistics need of ICT came forward. In Surat, there are 12 warehouses under the GSCSCL and 1065 Fair Price Shopkeepers (FPS) which mainly provides wheat, rice, and sugar. The total capacity of warehouses is 18,830 MT. About 7,16,626 BPL card holders take benefits from the works carried out by GSCSCL, Surat. Under FCI/CWC, monthly inflow of food-grains is around 12,000 MT and supply of foodgrains to the respective FPS is around 11,685 MT. As such in Surat branch of GSCSCL there is no usage of any ICT-based tools in transition vehicles used for the SCM and is creating demand. The paper is an attempt to study insights and draw recommendations towards fostering environment to multiply overall system efficiency for Surat city.

**Keywords: SCM, GSCSCL, ICT, ICT tools, Supply Logistics, Warehousing**

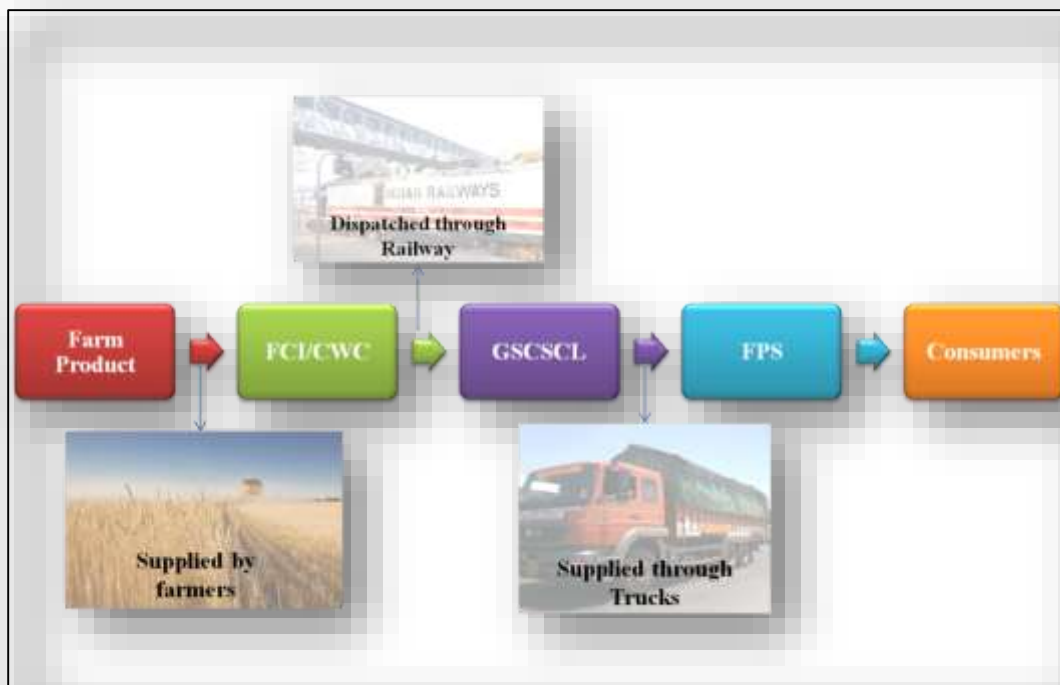
### **1 INTRODUCTION**

Logistics means flow of goods between the points of origin up to the point of consumption to meet the demands of consumers/corporations. It includes physical items, such as food, materials, liquids, equipments, and many more. The logistics service of material goods involves a combination of flow of goods and information, material handling, packaging, transporting, warehousing, and also includes security. The complication of logistics services can be analyzed, optimized and solved by specialized software. In the field of logistics, E-Based logistics has also been initiated. It means the supply chain is more dependent on e-communications. Partially it is due to the increased application of internet and web technologies that are related to shipment tracking. It is also a result of the interdependency of

informatics and the innovations that logistics services require improving their ability to “deliver the goods”. For E-based-logistics, many software and systems are being used one of them is the use of Information and Communication Technology (ICT) which is consisting of tools like LIS, RFID, GPRS, GIS.

In Supply Chain Management (SCM) and logistics services, the activities included are to undertake and promote effective and efficient management of supply chains and its departments. Especially for Gujarat state, Gujarat State Civil Supplies Corporation (GSCSC) Limited serves as a wholly owned government company. It works under the Food, Civil Supplies and Consumer Affairs Department, Government of Gujarat. The primary activity of the organization is to procure, transport, store and distribute essential commodities to the beneficiaries through an established channel. **Food and Civil Supplies Department, Gujarat and National Informatics Centre (NIC) is the implementing agency in the supply logistics using ICT.**

In this paper civil supplies of food-grains especially of wheat, rice and sugar is been discussed for the ever increasing demand-supply under GSCSCL facility based at Surat. In the public supplies of foodgrains under GSCSCL, agricultural products are provided by the farmers to the FCI and Central Warehousing Corporation (CWC) in order to shorten the crisis related to food supply in Gujarat. FCI and CWC dispatch the foodgrains to GSCSCL through the railway in which the goods are being unloaded into the warehouses in the rail yard premises. Following the unloading, respective truck holders of GSCSCL take foodgrains to their godowns where loading/unloading process is being carried out. As per the demand-supply requirement, GSCSCL supplies foodgrains to the respective Fair Price Shopkeepers (FPS) which sales foodgrains on the basis of BPL card holders. Below Figure 1 illustrates the generalized process in the supply chain.



**Figure 1 Process of Civil Supply at GSCSCL**

## 2 LITERATURE

### 2.1 Transportation in logistics services and the role of ICT

The number of manufacturers and retail sellers is increasing and they have adopted the supply chain system to manage their business and marketplace. For this, the delivery of supplied product has become an integral part of all the companies in which transportation and logistics receive equal valuation as that of goods under consideration. Thus, transportation provider plays a vital role. It assigns the task of synchronization and increase in rate of physical and information flows at multiple levels in SCM. It prompts for the system of logistics services to be of more well-organized form for the market changes.

Information systems and integrated transport and logistics chain are in relation to each other as proper management of information is required for a transportation company. ICT provides the control of interconnected primary information flow related to flow of goods. About the particular impact of ICT on the transport industry, Crowley (1998) stated for ICT influence on transport in at least three different ways:

- i. The increased information content of many products has influenced the nature of the goods being transported;
- ii. The use of ICT has improved supply chain integration and has redefined the role of freight transport; and
- iii. ICT has provided much new management and control tools for transport companies themselves.

In the sector of carriage, the use of ICT is irregularly distributed among various modes. Vanroye and Blonk (1998) identified the following endogenous and exogenous factors, which hinder greater flow of ICT within the sector:

- a. The habitual opposition of transport operators to change;
- b. The small size of transport firms that have insufficient resources to finance investments in ICT;
- c. The lack of user-friendly ICT; and
- d. The use of proprietary standards by the most prominent persons in the transport industry. It aims to protect information as far as possible without giving rise to processes of sharing with suppliers and customers, which prevents real supply chain integration.

In the combined process of transport and logistics services, the use of ICT and its tools plays a significant role. For an SCM, ICT is necessary for the transport service providers as well as Logistics Company.

### 2.2 Trends of ICT in logistics services and SCM

In today's SCM there lies a successful strategy depending on the work of 3PLs. Logistics providers play a vital role in bridging the different supply chain elements by proper management of information flows in connection with the entire delivery process of goods.

Logistics and SCM practices mean a group of activities promoting effective and efficient management of supply chains. There is a need for inclusion of partnership among the suppliers, physical movement of goods, information and customer demands. Many of the logistics centres and SCM practices give performances related to estimation of customer needs, effective and efficient delivery system, integration and collaboration in the entire supply chain. It is so by sharing of information and vision using ICT as well as informal methods and use of specialists for performing particular jobs across the supply chain. These all practices affect logistics and supply chain performance. As ICT is becoming one of the main drivers of change, it is posing new strategic challenges.

As per Digital Supply Chain, some of the trends that are shaping the future of logistics which are as below:

- **Information technology:** The growing complexity and dynamic role of supply chains require increasingly advanced Information Technology solutions;

- **Multi-channel sourcing:** End-consumers increasingly sourced via multiple channels, ranging from brick & mortar shops to e-commerce. The logistics industry needs to support multi-channel strategies of their customers;
- **Flexibility:** Fulfilling consumer's requirements at multiple locations with multiple transport modes at different times require a flexible supply chain that can adapt quickly to unexpected changes and circumstances;
- **Continuity:** To be able to secure speed to market and by reducing the delay risk, alternative transport modes and routes for supporting the continuing trend of transfer management of logistics services;
- **Sustainability:** Customers increasingly prefer products that are made and sourced in 'the right way'; minimizing business under social, economic and environmental impact on society and enhancing positive effects;
- **Partnerships:** Manufacturers continuously search for supply chain related innovative concepts and gains fair dealing with logistic service providers;
- **End-to-end visibility:** Complete visibility aspires to achieve truly demand-driven planning, supply, capacity building, allowing efficient response to changes in sourcing; and
- **Complexity:** Supply chains are becoming complex and dynamic. Also, the locations are changing increasingly, quickly and purchase orders becoming smaller and more frequent.

### 3 SUPPLY LOGISTICS AT GSCSCL, SURAT

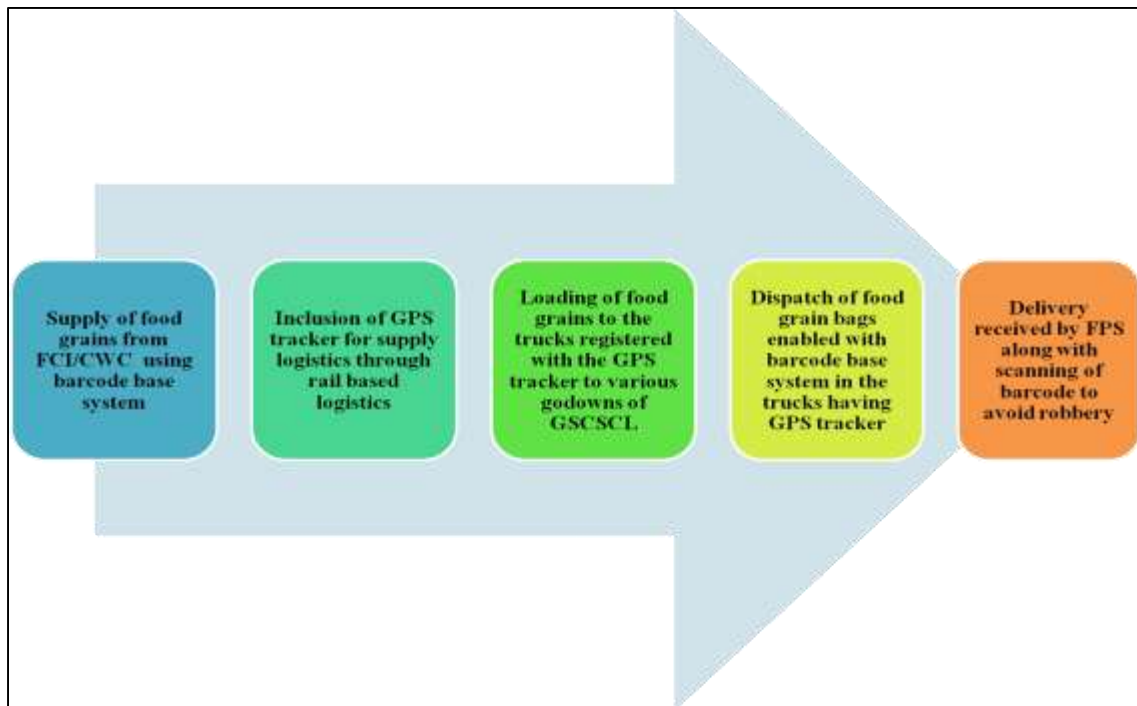
Surat city has a district office in Navagam area established under the Gujarat State Civil Supply Corporation. The supply logistics process taking place includes transport, storage and distribution of commodities mainly comprising of wheat, rice and sugar. Facility of storage is through a total of six godowns having 2800 MT of capacity. The entire process takes place in an orderly and systematic manner beginning from the storage till stacking. As per the available data, monthly about 12,000 MT of commodities is received through FCI/CWC, further the commodities are dispatched to the respective FPSs of about 11,685 MT of stock. The total capacity of godowns for Surat district is 18,830 MT. Hiring contract to 3-trucks is carried out through e-tendering towards this SCM. At times, depending on the case as may be, up to 20 trucks are hired on rent.

It was found that the real-time inventory management system needing recording of various transactions like lifting of goods, receipt of goods, issue of rights is done online. It was decided to introduce Programmable Hand Held Terminal (HHT) instrument to be able to address a range of administrative matters. It may include features as to identify missing of trucks, delay of truck arrival at godowns, unnecessary deployment of manpower at FCI godowns and such. The process will enable to have on-hand records for transport pass date, time and ID, location to reach, transporter details, number of bags under transit, gross weight of commodities and so on. Figure 2 illustrates the inventory maintained manually and the HHT instrument.



**Figure 2 Details of HHT instrument**

Present use of technology in the system is not allowing certain details to be available in advance so as measures to address possible problems proactively be dealt. For examples,provision of parking space of trucks on limited land. Figure 3 illustrate the procedure for the supply logistics through web-enabled system if adopted, will help the working of GSCSCL yet efficiently.



**Figure 3 Process of Supply Logistics based on ICT tools**

### 3.1 Presumed Benefits of ICT-Based Services:

- a. Day-to-day monitoring on lifting of stock details from FCI made accessible;

- b. Day-to-day basis time gap analysis makes transporters more vigilant regarding the stock movement, and it results in a reduction of instances of diversion of stock from FCI;
- c. Tracing of lifting inspector being assigned with duty at a particular FCI godown;
- d. The physical presence of the lifting inspector (the lifting inspector's fingerprint is compulsory to write the transport pass) provides added advantage of monitoring of quality of food grains received from FCI. It also will make the lifting inspector more accountable.

Present scenario and working at the godowns and centers of GSCSCL demands for involving many real-time tracking for smooth and efficient working of supply logistics. All of the activities and related recommendations are discussed in below Table 3-1.

**Table 3-1 Recommended ICT enabling activities at GSCSCL**

Sr. No.	Activities	Recommendation for	Remarks	
			Yes	No
1	Allocation of food grains	Online data entry and forward through the mail	✓	
2	Details of ration card holders	Availability on the central server of the corporation	✓	
3	Issue of Release Order (RO) as per stock availability	Through online data generated as per barcode entry	✓	
4	Generate Barcode system during dispatch from FCI/CWC	To keep tracking on the stock released and entry to be done online on the server at central level	✓	
5	Movement of trucks registered through E-tendering	Through the inclusion of GPS tracker in vehicles hired	✓	
6	Details of stock dispatched from the godowns	Introduce barcode number to check details online	✓	
7	In-out data entry of the stocks dispatched from FCI to GSCSCL	To avoid cases of robbery/ theft	✓	
8	Details of food grains stock to meet the emergency in case of any disaster or calamity	Data entered online	✓	

To avail above features to GSCSCL, a detailed work flow analysis needs to be done followed by procurement of computers, internet services and preparation of program modules to address each of above activities.

#### **4 RECOMMENDATIONS**

For Surat branch of GSCSCL, there is lacking of ICT based services in the supply logistics. Only major online operation done is the registration of 3 trucks using E-tendering. Surprisingly, it leads to the need for extra trucks for the supply management in absence of any information about arriving stocks in advance. The system of Corporation essentially requires for ICT enabling through diverse tools. The most fundamental tool of Global Positioning System (GPS) can be included into the SCM. It will at least equip the officer having a receiver to locate position of trucks, anticipate delays in deliveries of goods, assurance on reduction in robbery. If the scale of role is considered at Gujarat state level, the company needs to improve performance through ICT enablement at the earliest. Also, the cost optimization will be observed due

to repetitive use of developed technology for one location and SCM that are existing in various location across the state.

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