

Designing Logistics Operations to Support Company Strategy to Improve Efficiency Distribution of Confectionary and Non-Food Product in Convenience Store Channel

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ABSTRACT: Based on data of more than 3000 store customers and 1000 SKUs extracted from big data of FMCG company, the model of Mathematical Model and Simulation Model to approach for designing logistics operations. The finding is a significant contribution to the FMCG supply chain management distribution. Particularly, the picking strategy & cross dock model is found, it is a very important contribution not only to improve efficiencies, but also to increase customer service level while cost in operations was reduced.

KEYWORDS: Picking strategy, Cross dock model, FMCG Supply Chain management

1. INTRODUCTION:

Due to the dramatically growing scale of the market, the modern supply chain must adapt to accommodate operational problems, and logistics operations are a crucial path for the supply chain to prepare ahead to keep things running smoothly. Throughout the logistics operations network, a mix of customer demands, more routes to market, international uncertainties and other variables poses major challenges.

Profit margins are under pressure in the distribution network as costs impact. These costs come from many sources, and a lack of information and accountability to minimize them can contribute to an increase in operating costs.

Consumers buy products across multiple channels, and as routes to market increase, the underlying logistics must adapt. Logistics operations need to develop variations on logistics processes to address increasing of store and customer requirement. Customers have never had so many options, and transformation is facing every business. It is important to concentrate every touchpoint with an end user on the provision of excellent goods and services. When it comes to buying products, quality and speed are becoming as important as pricing.

Not only variability and complication cause issues at a particular point in the supply chain, but the effect can also ripple through the entire infrastructure instead. Managers of logistics operations must deal promptly with these problems before they cause delays, backlogs, bottlenecks, and other challenges.

The difficulty is the number of stores and orders is increasing but volume and value orders are small, but logistics operations must serve that in an efficient way. We must clarify these factors to deeply understand the reason and design operations to accommodate with growth of Convenience Store (CVS).

The market size and requirement are changing rapidly. The number of stores has increased more and more. Customer and chain increase dramatically so author needs to revisit quantitative data to understand the key factor impact or driven efficiency of logistics operations to business result. Taking all this into account, the authors recognized the need for a quantitative and qualitative analysis on this subject, considering the viewpoints of the organization and carefully examining them. The author will combine literature and empirical works to design logistics operations follow company strategy ensure customer service and benefit gaining in financial result for enterprise.

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2. LITERATURE REVIEW

Definition of supply chain management

Supply chain management (SCM) is the wide definition of approaches involved in the most economical way possible to design, control, and operate the flow of a product from raw materials to finished products to distribution (Richard E. Crandall, 2015).

In order to maximize the flow of goods, information and resources in functions that generally include demand forecasting, procurement, manufacturing, inventory management and logistics or storage and transportation, SCM includes the integrated planning and execution of necessary processes. To build a competitive edge, businesses use always incorporated supply chain strategy and sophisticated Enterprise Resource Planning (ERP) in management.

Management of the supply chain provides advantages such as new efficiency improvements, increased margins, reduced cost, and increased cooperation. SCM helps businesses to handle demand better, bring the correct quantity of inventory, cope with problems, keep costs to a minimum and satisfy consumer demand in the most productive way possible. By choosing sufficient strategies and suitable ERP to handle the increasing complexities of SCM increase because of customer requirement, these SCM advantages will be achieved.

Activities in supply chain management can enhance quality of service. If the supply chain operations is done perfectly, it will ensure consumer loyalty by ensuring that the requisite items are accessible at the right place at the right time. Enterprises can create and strengthen customer loyalty by increasing customer satisfaction levels.

By minimizing operational costs, SCM also offers a significant advantage for businesses. The cost of procurement, production, and the overall supply chain can be minimized by SCM operations. Cost reduction enhances the financial position of a business contribute to increase profit and cash flow, In addition, best practices in supply chain management will reduce unnecessary of large fixed assets in SCM like distribution center and truck by encouraging employee who are leaders and expertise in supply chain, in particular, to design supply chain operations network to maintain customer service levels while operating in the limit number of big size distribution center rather than the large scale of small warehouse, that will help to minimizing the redundant expense of maintenance in additional facilities.

The critical position of SCM in society is probably less known and underappreciated. By enhancing healthcare, shielding individuals from climate extremes, and preserving life, SCM will help ensure human survival. In order to deliver essentials such as basic requirements for people like drinking and eating as well as medications and health protection, people depend on these activities in SCM. In order to provide electricity to homes and businesses, the supply chain is also essential, supplying the energy required for light, heat, air conditioning and refrigeration.

By promoting job development, providing a base for economic growth, and raising living standards, SCM can also boost the quality of life. Because supply chain expert plan, monitor, and control all SCM in an organization as well as managing inventory management, Distribution center, packing goods, and logistics operations, it offers a multitude of job opportunities. In addition, their lack of established supply chains is a common characteristic of most developing nations. Societies with solid, advanced supply chain infrastructures, such as large railway networks, interstate highway systems and a range of airports and seaports, can efficiently trade goods at lower prices, enabling customers to purchase more goods, thus generating economic growth and raising living standards.

All major steps of the movement of a product from materials to production and distribution across the supply chain has differentiates in process requirement and regulations. Those originated as theoretical and manual process decades ago but are now commonly managed in ERP.

The SCM process starts with the early stages of demand planning, historically considered one of SCM's two overall categories, associated supply chain execution, to find out what goods consumers want.

SCM included demand forecasting, a method to collect historical data such as sales historical, and the EPR will generate the baseline calculation to provide the estimation demand of customer in the future. This information will share with the commercial team, and they will analyst, consider adding in market intelligence, promotion, and seasonality of product this can be defined as demand forecasting. This information will be shared to the operating departments such as production, commercial, and logistics operations. Forecasting will provide details of SKU and quantity can be consumed in the future. The formalized process is S&OP, the company will organize forecasting, review forecasting and balance between forecast and supply and this information will be compared with finance target finally it will be approved by management where all the function have to revise or adjust plan for common goal of company. In modern SCM because crucial of this process and it integrated strongly with business results in the future and functional is more linkage to gather, they improve this process into the next level as IBP - Integrated Business Planning. Modern SCM have flow of information and these information will flow across function detail in SKU level and can be grouped as brand or aggregate level depend on definition of company, these flow of information is critical path of ERP and can directly linked

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to gather from advanced planning optimization to inventory management and production planning, based on information flow was aligned across function can revise plan support to delivery business result in the top side and bottom side.

MRP in apart of ERP to perform the calculation get the input from forecasting and inventory and the output is the quantity to be ordered for production. This information is computed based on bill of material which includes components and hierarchy of product in part of production. It is purely in volume perspective however to produce semi-finish goods or finish goods the resource like machine or schedule, or human resource is critical of input path. Furthermore, linkage directly with financial perspective for costing of buying, inventory as well as investment, etc.

Nowadays SCM included two dynamic processed as crucial element of SCM, it is inventory management and logistics. Inventory management consist different strategy and formulas to ensure sufficient supply with least expenditure of time and effort from component in production will be scheduled by MRP until finish goods will be produced and transfer to consumer point. Computation in MRP like science base on stock available on hand and forecasting, this information will be combined with order lead time or production lead time, a series of master data need to be maintained for calculation of MRP to ensure sufficient inventory.

Logistics is all about shipping and storing goods from the beginning of the supply chain, supplying parts and components to suppliers, delivering finished products to retailers or directly to customers, and even beyond the process called reverse logistics for product distribution, return and recycling. The management of inventory is threaded in the logistics process.

Procurement is the process of evaluating suppliers of products, handling such relationships, and economically purchasing the goods relating to all correspondence, tender application for vendors, and documents, including orders, commercial invoices, etc. Given how much is procured and sold at all points in the chain, it is an important process of supply chain management. Most vendors, producers, dealers, and retailers in the supply chain have dedicated sourcing employees.

Procurement needs to leverage long term relationships with vendors and build strategies for sourcing; it is critical to maintain supplier relationship and use economic scale to take advantage of procurement process.

Strategic sourcing is an elevated and more advanced form of purchasing aimed at maximizing the purchasing process of a organization by taking advantage of its centralized buying power and aligning it with overall business objectives. System wise have SRM to store buying historical, payment term, incoterm....support for critical process of SCM.

Logistics management

Logistics-a quite new and young field of human activity and economies. Logistics includes tasks such as the sharing of information, transportation, inventory control, distribution, cargo handling and packaging, and is an integral part of SCM (Michael H. Hugos, 2011). The day-to-day logistics sector is seen as a dynamic mechanism aimed at reducing total costs. As far as output growth is concerned, which has led to a sharp rise in costs, entrepreneurs have stopped seeking ways to reduce circulation costs. The use of innovative technology and new approaches to transportation and warehousing operations are at the center of effective logistics. The strategic benefits of modern logistics technologies and ways to incorporate them are seen by many entrepreneurs. The logistics specialist is currently known as the person responsible for shipping and storing goods. In reality, the processes related to the distribution of goods (transport, customs procedures) should be coordinated, regulated and optimized by a real expert. The specialist must build the raw material supply chain, manufacturing planning, as well as transport and marketing issues for finished goods. All feasible, convenient, and cost-effective ways of distribution, processing, storage, and selling of goods should be seen by logistics. Optimization of logistics processes and systems is a simple logistics challenge. When we consider the effect of logistics on the creation of business relations because its output for industrial use, the logistics criteria for monitoring and evaluation of material movement, organizations, and management adopt contact between suppliers and product recipients. They are interested in improving the collection of indicators over their duration by arranging and evaluating material flow over its entire length; consider them not only on their input or output of material flow, but also the related output and input figures of the partner.

Logistics approaches are a reliable instrument for improving the productivity of commodity markets. Tools for logistic management controls pursue additional outlets to expand the budgetary system. The use of a government-level logistic approach could contribute to the creation of cross-sectoral linkages between industry, transport and trade.

In the field of inter-state relations, logistics management techniques are being developed. They can also be taken into account and are commonly used in the establishment of transnational financial and industrial groups in the framework of external economic ties with other countries. Logistics is currently being considered, as the course of economic activity lies in the management of material flow in the areas of production and circulation, as well as in the interdisciplinary field of research directly linked to the quest for new possibilities for improving material flow quality.

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The primary logistics goal is to identify the right goods in the right place at the right time at the right cost and in the right condition. The organization and execution of the transportation of goods in circulation mainly involves logistics. The following characteristics are legitimately included in logistics activities: the formation of economic relations; the determination of the need for the transport of goods, their volumes and destinations; the continuity and movement of products through the storage site; the coordination of the management and transport of the operational supply chain; the formation and control of inventories of products; the distribution and organization of products

Warehouse management

Warehouses are usually large plain buildings used for commercial purposes for storage of goods and are commonly used by exporters, importers, wholesalers, manufacturers... warehousing involved two activities, there are inbound and outbound operations. Inbound refers to the sourcing, purchasing, receiving, investigating, put-away, storage, that is incoming organization. On the other extreme, outbound is tied in with picking, packing, moving, all these are leaving the association. Outbound procedure is more concentrated than inbound processes. Particularly, request picking is the most labor-intensive of the inbound processes, the worker needs to go to the storage location, search for it and pick it (Villivalam Rangachari Rangarajan, 2022). The warehouse is a very important part of logistics operations.

In most modern supply chains, warehouses are vital components. They are likely to be involved in different stages of procurement and goods delivery, from raw materials handling and work-in - progress to finished products. They are essential to the provision of high standards of customer service as the dispatch point serving the next client in the chain. The primary objective of most warehouses is to facilitate the movement of products from manufacturers to the final user across the supply chain while satisfying the demand of customers in a timely and cost-effective manner.

Warehouse management is the process, control, and optimization of warehouse operations from the entry of inventory into a warehouse or multiple warehouses until items are moved, sold, or consumed.

Distribution logistics

Logistics for delivery ensure that produced products enter the client rapidly and efficiently. The preparation activities, monitoring and all processes related to the movement of products and information between manufacturing firms and customers compose the distribution logistics (John Gattorna and Friends, 2009).

You want the right distribution strategies in place to reach far and wide. You will not sell a product to the end consumer and then not produce the product. As you spend money on your ads, this is a pure loss of money, and the loss of opportunity is also immense. Not to mention, when the consumer tries to buy the item but cannot find it, the damage to the company.

Distribution by a corporation can be a major competitive advantage for the enterprise. The majority of businesses target their clients far and large. Because of the rising costs, businesses are seeking to grow in different markets in order to have a higher turnover and therefore a higher margin.

Thus, making proper distribution plans for a business is of great importance. This is also the reason why Position is one of the big 4P's in the marketing mix (which primarily consists of distribution). In the case of goods as well as services, the position is considered.

The relation between manufacturing and the market is distribution logistics (also known as transport logistics or sales logistics). All processes involved in the delivery of products-from manufacturing firms to consumers-are covered by this region. Either final consumers, manufacturers, or processors are customers. Specifically, distribution logistics covers the processing of goods, transport, and temporary storage. This makes the topic a central component of additional logistics and closely connects it with packaging technology (in order to be able to distribute the product safely, packaging must, after all, be tailored to transport requirements). For the implementation of effective transport logistics, sustainably organized knowledge, decision-making and control processes are important.

Logisticians of distribution essentially follow three objectives:

- Availability: They must always ensure that consumers have enough goods available. Customers should be able to receive goods without great effort and promptly.
- Minimization of costs: The manufacturer's high-quality standards enable sales logisticians to keep shipping and distribution costs as low as possible. Specifically, the goal is to reduce costs associated with shipping, storage, shortages and the processing of orders. However, distribution is intended to become quicker, more energy-efficient and more environmentally sustainable at the same time.
- Influence: In the promotion of their goods, for example, distribution logisticians want to have the highest possible say. It is about answering the "how product available on the shelf?". and the goods must be present in the competition.

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Distribution logistics must optimize its logistics services: high quality demands should be met by distribution efficiency, delivery flexibility, delivery time and delivery conditions. Only then will consumers be happy at the end of the supply chain and use the service again.

Operational control: Operational activities relate to order collection, shipping, management of returns, preparation of routes and customer service.

Tactical control: Tactical tasks include the management of the fleet, the specification of minimum procurement amounts, the definition of the quality of service and the determination of whether the company can handle its own transport logistics or turn to external suppliers.

Strategic control: Strategic tasks include marketing campaign preparation, delivery network creation, location choice and both horizontal and vertical networking. Strategic control.

3. RESEARCH METHODOLOGY

Data Collection

Many sources of proof can rely on the collection of evidence. Two types of data are generally: primary data and secondary data. The concept of primary data involves the processing of information by means of direct information collection. Observation, interviews with experts, conversation, and actions. Secondary data definition is the study of the article, biographies, web pages and other associated data in data warehouse records or documents for the subject studied. We will have both forms of data collection in our studies.

Data is analyzed by SKU profiling and the area of delivery mostly use Pareto Principle, collect, and filter transaction data sale to customers. Analyze sales data and product portfolio based on that we can review picking profile.

Collect transaction cost in operations activities for analysts which included cost of picking, packing and delivery. The company author is working for have state in the art of IT system, we have ERP to record all the transaction of customer order in historical data, we record how the goods is moving insight the warehouse, how many unit of this item was picked or packed, what types of products are most popular, how often customer typically purchase from product and more and how product was planned and delivery to customer, the transactional data is easy to collected by extracting information in ERP, transactional data can give you valuable insights about your customers and your logistics operations activities.

In this paragraph, we address the subject of validity and reliability in order to reassure the readers how reliability our conclusion is. The degree to which the results agree with truth is distinguished by validity. Two components, internal and external, consist of validity. Internal validity is concerned with the research itself and the direct relationship between empirical findings and the theoretical context. In other words, the interviews will be done with the required individuals and the experiment. During thesis writing, the author works and interacts daily with senior leaders of the company as well as peers in the same position working in company so that the data will be validated, discussed, and monitored until they get the results.

External validity concerns the research in a broader context with all its contents. Opinion, that is, if it is possible to generalize from the analysis. Our review of the nature of logistics activities is at the strategic stage. Starting from the current analysis of the market climate, backed by theoretical findings and the comparison of actual cases, we believe our conclusion of the thesis may be useful in making strategic decisions for our targeting classes.

Concerns of reliability whether a prospective investigation follows the exact same methodology as that established by previous researchers and whether the same case study is repeated in the same manner, leading to the same conclusions and outcomes. The precision of the instruments or techniques of measurement depends on reliability. For example, incorrect samples, the problem of standardization in interviews, the problem of interpretations, etc., are things that can make reliability low.

In order to have a highly accurate result and minimize the negative impact created by oral communication misunderstandings, the author has the ability to address or ask the question again to explain that after listening to the interview, the information from interviews is sorted again.

Senior leaders and individuals with extensive knowledge of company processes and logistics are our interviewees. Before our discussion and interview, we scheduled to confirm the meeting with interviewees in order to remind them of the purpose of our study, as well as the result that we expected from the interviews. All these measures increased the consistency of our interviews and reduced the likelihood of interview questions being confusing.

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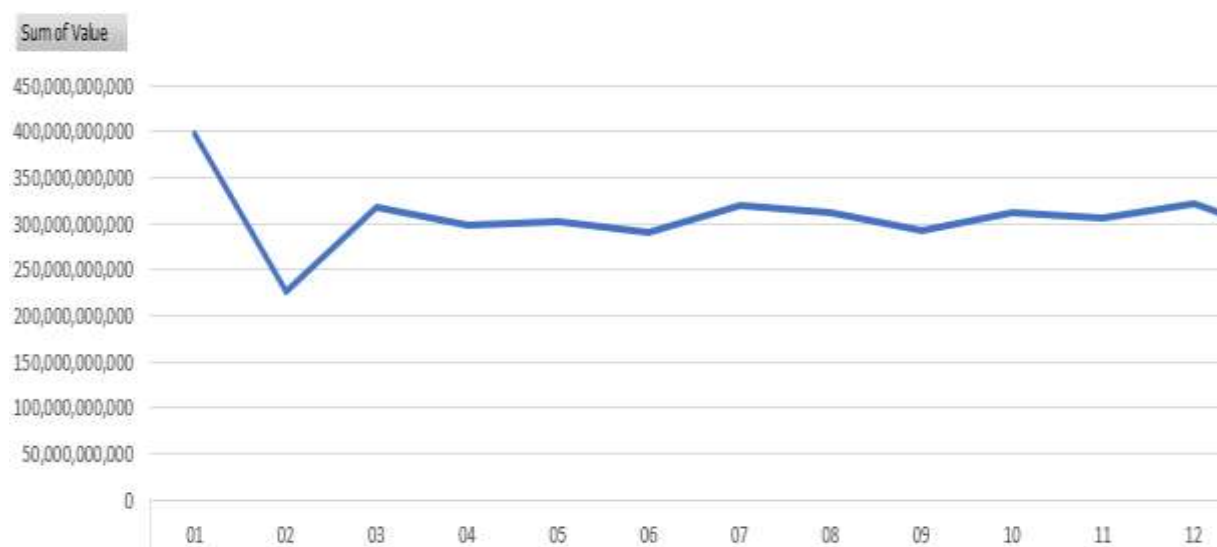


Figure 1: Logistics operations indicator and revenue per channels distribution (monthly)

Source: Internal data warehouse

The revenue of south Vietnam is more than 300 billion per month, it is contributed by all the distribution channel which included convenience store, general trade and modern trade where in the contribution of revenue per channel by percentage is show in figure, data of value contribution by channel is calculated by average contribution rate yearly of each distribution channel, we can see that the revenue of CVS in only 14% revenue of South Vietnam, General Trade (GT) and Modern Trade (MT) channel take in to account more than 80% of total revenue but this rate will change year on year due to number of convenience store will increase significantly in urban area of south Vietnam, contribution of CVS channel will increase as well.

Revenue by channel

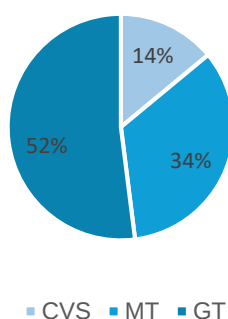


Figure 2: Sale contribution by channel in South

Source: Internal data warehouse

As discussed, earlier CVS store status shows trendline increasing and we can see how convenience store is raising and dominating distribution channel now regarding indicator workload logistics data show the opposite information of revenue status

Table 1: Logistics operations indicator

	CVS	GT	MT
Line	48%	14%	38%
Volume	7%	62%	31%
Weight	7%	68%	25%
Value	14%	52%	34%
Drop	65%	12%	23%

Source: author compiled from internal data warehouse

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Line pick data: Line pick date represent for the content number of line in an order need to be picked to fulfill customer order, this implied how many storage bin location need to be traveled to for complete picking process, in table 4.1 number of line pick of CVS channel is 48% it took nearly a half of workload picking in logistics operations, the supporting indicator for picking is volume, even though that number of line pick is mostly however data of volume is small, it support for characteristics of CVS order is piece picking with small quantity in which totally different with MT & GT channel.

Volume: volume of channel will be calculated by number of quantity multiply with quantity and dimension of product, assuming that product order from different channel is the same so the volume of CVS channel is only 7% present for odd item picked and handling, it is more meaning to transportation and delivery that does not need big space of handling it can be quickly sorted and reclassify.

Weight: weight per channel is also an indicator in logistics operations it is supplement for volume data and it represent correlation between volume and weight, weight of product percentage in channel is nearly the same with volume mean that we do not have bulky product but less weight, then product portfolio handle for transportation and distribution does not costly for handling space and easy to handover or rearrange from vehicle to other vehicle.

Data drop point shows the number of stores will receive orders, it is also number of location customers will receive product, it is also indicator support for trendline in the market. Number of drop convenience store were considered 65 percentage of total drop what we handle now in south Vietnam. It is clearly shown that the workload for transportation and delivery CVS channel is high due to the number of drops is high.

The value of the contribution for revenue is small while logistics operations indicator shows that CVS channels have more workload than other channels, that means we have to find the solution to accommodate with these situation and characteristics of CVS order from customers.

Observation is made inside distribution center and discussion with workers and supervisors who worked on ground floor also realized there is only few lines pick, few cartons and few items per order from CVS channel. The average carton per order from CVS channel is around 3 cases while the order from GT and MT channel is multiple lines, volume, case is huge per order the visualization process support for data derived from data warehouse.

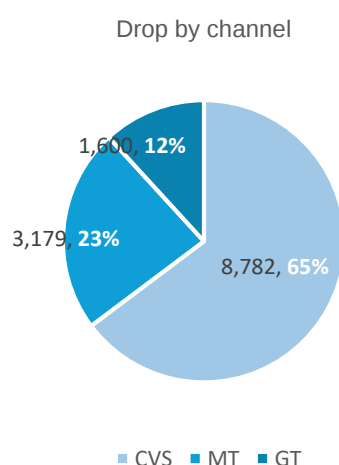


Figure 3: Drop delivery contribution by channel in South

Source: Internal data

Based on these data analyst and observation was made in distribution center and delivery and composition of CVS channel in total coverage of distribution author discussed issue with expert and ask for the opinion of data meaning expert also align that the CVS channel is more in piece picking, small volume handling but high workload for picking and delivery, then need solution design to handle the situation of CVS channel to minimize workload with huge time consumption,

Next topic will break data into the area of the South show more detail regarding the volume handling of CVS channel per area compare the other channel, it will show issue and complexity workload in logistics operations have to handle and how it will impact to cost to serve for serving customer requirement.

Data record was broken to two main area it is HCMC and Province in south Vietnam, the reason why author divide in two areas because of revenue contribution between HCMC and south province is mostly the same and other factor of organization like sale and marketing team also divided by HCMC and province to managerial.

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Broke data by HCMC and province area also meaning of current transportation coverage network, HCMC is combined to gather for delivery, and province order also grouped for delivery, order cannot be combined between HCMC and province to delivery due to the geographical status, data of workload and order contribution by channel also support for this approach.

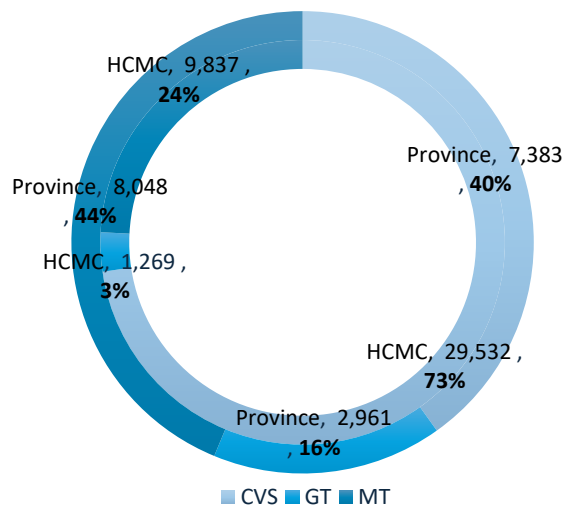


Figure 4: Order contribution by channel and area

Source: Internal data

We also analyst rate of each channels between HCMC and province to see what more contribution to workload of logistics operation is. Base on the figure 4.6 we can conclude that the main area lead to increase workload for delivery in CVS channel is in HCMC. It considered 80% of order CVS channel in south VN, it also took 74% order of HCMC area when compare to other area

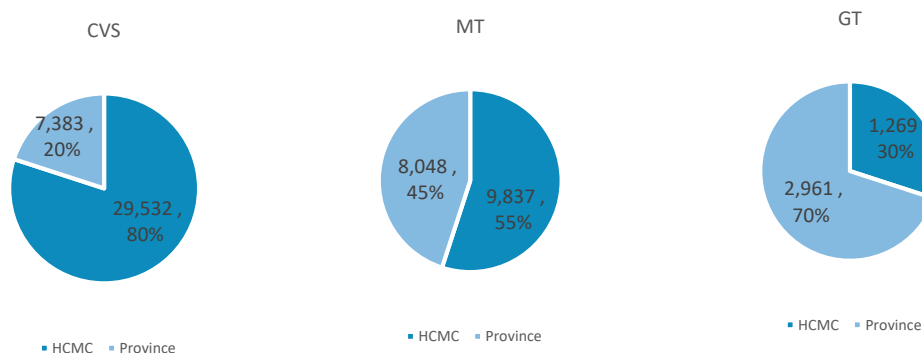


Figure 5: Order contribution of each channel in HCMC and province

Source: Internal data

Product is grouped by food, nonfood and pet food then in each product category it is considered to split by temperature control as air conditional product and normal product. The air conditioning product has to storage and delivery under 25oC the normal product does not require temperature control. Based on transactional record of picking profile it is realized that food AC product and nonfood normal product is mostly ordered by customer other group product is less than 20%. This data also provides supporting tools for author to check and study what is warehouse layout and slotting for SKU now.

Table 2: Product category rationalization

Category	Percentage
Food	53.1%
Air conditional product	35.7%
Normal product	17.4%

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NonFood	46.7%
Air conditional product	4.7%
Normal product	42.0%
Pet Food	0.2%
Normal product	0.2%
Total	100.0%

Source: Internal data

The picking profile of CVS customer in transactional sale record also show that quantity order of one product does not big due to the constraint space in CVS so order from customer often divided to smaller part rather than order huge quantity volume per one product, customer also request replenishment inventory frequently to ensure stock available for consumer it lead to the number of product to be ordered by customer not too much then the subsequence effect is line in the pick requirement will be limited, historical record show that average 3 lines per order from customer in CVS channel.

There are more than 1000 products distributed which are classified by group in table 4.3 author sort product by quantity and sequence of contribution to total quantity was order by customer base on that we can find sequence or list of items is most favorable to customer. It's clearly indicated that only 196 SKUs equal to 16% of total product order by customer is favorable to store. The quantity order of these products takes more than 80% of total unit order from customer equivalent more than 1,4 million units. This means that customers focus in a group product of company and the order from customer is reiterate for one product again and again from this store to another store.

The order quantity of SKU per category also present that the AC food product is preferred in CVS channel rather than other categories.

Data in table 2 combines with table 1 presenting for author and reader the need of split order by channel and managing the CVS order picking separated due to the volume of GT and MT channel is huge.

Picking profile tells us that picking strategy and picking area must be studied and arranged appropriately with SKUs order profiling from customers.

Table 3: Product order frequency and quantity

Category	Total product	Most order product	Quantity most order	% most order product
Food	198	77	882,045	50.5%
Air conditional product	98	45	603,908	34.6%
Normal product	100	32	278,137	15.9%
Non Food	965	119	543,008	31.1%
Air conditional product	50	14	67,235	3.8%
Normal product	915	105	475,773	27.2%
Pet Food	51	0	NA	NA
Normal product	51	0	NA	NA
Total	1214	196	1,425,053	81.5%

Source: Internal data

The current picking strategy simply picks to order and order from CVS channel mixing with order from other channel, the picker just receives pick slip and follows the indication on the pick slip to perform their job. Picking strategy do not consider factoring and frequency of order can be repeated, and which item is included in the order.

Picking strategy needs to be considered by picking profile and order profile from customer, picking process also needs to base on characteristics of order from customer channel.

The current delivery profile from warehouses in Vietnam Singapore Industrial Park 2 (VSIP2) to customers is mainly based on direct shipment to customers. Delivery areas cover HCMC and South province. In HCMC delivery model purely is direct shipment from VSIP2 to customer order from customer will be grouped into transportation zone or district, in South province direct shipment is combined with milk run methodology transportation to deliver the goods to customer, truck will be planned by volume and number of drop delivery to customer.

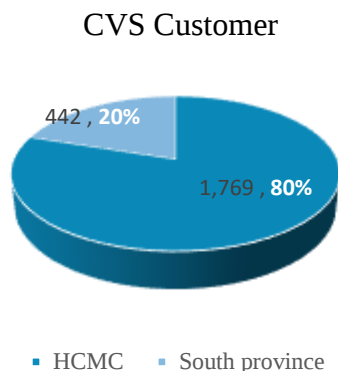


Figure 6: Drop CVS channel delivery contribution by area

Source: Internal data

Cost to serve analyst of current logistics operations

Cost to serve for order from customer included outbound cost and transportation cost of delivery order to customer, the outbound cost often included picking cost, packing material and loading cost to load the order in to truck for delivery, the picking cost is incurred due to payment of labor, workforce in outbound who directly contribute in to picking process, it is calculated by using PEC monthly divide to time spend and other fee of workforce to complete an order from CVS customer. The transport cost included PEC of transport planner and direct cost renting truck to delivery product to customer, the unit cost of transport is calculated by total cost spend for CVS channel in HCMC divide to number of drop of CVS customer monthly basic, in the table 4 we can break all cost component of unit cost to serve per drop delivery to CVS customer, the data represent mainly part of cost to serve is picking cost and transport cost, two factor contribute more than 90% of cost to serve, it support for the structure of research focus and analyst the issue or the area can be improved by using theoretical of SCM.

Table 4: Unit cost to server order delivery

Unit Cost/ Drop	
Outbound	
Picking cost (People & Productivity)	59,627
Packing material	12,960
Loading cost	963
Total Outbound cost	73,551
Transport	
Delivery from WH to customer	112,200
Total Transport Cost	112,200
Cost Composition	
Picking	32.1%
Delivery	60.4%

Source: Internal data

4. DISCUSSIONS

Picking strategy

Warehouse slotting is important but choosing picking strategy also important to increase productivity, in previous topic we realized that order from customer is reiterate and do not change from this store to other store due to Pareto principle show in picking profile. We perform trial for wave picking with these factors of picking profile and product group instead of using pick to order as what is doing now. After the complete trial for wave picking team start to extend the wave picking process for all the order of CVS channel. Other channels follow rule pick by order. This can be defined as hybrid picking strategy for CVS channel, MT & GT, the reason why we do not use the wave picking for MT & GT channel because the number of line in order from GT and MT channel is often more than 10 lines per order and the volume, quantity order is big and there is dedicated pick face for GT & MT

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channel already, using wave picking for MT & GT channel is difficult to the operations team classify product and sort it again by order while warehouse slotting and order profile support for picking strategy pick to order or GT & MT.

The company is supported by a state-of-the-art IT system which includes WMS and CRM integrated into gathering. In CRM we have customer master data, it recorded information of customers and channel of customers, all customers have customer code, and each customer code contains details of distribution channel and transportation zone.

Warehouse Management Systems are powerful tools designed to allow warehouses to maximize the everyday use of warehouse resources, such as manpower, picking, equipment for material handling. A core element of a WMS, to guide and manage the picking process, is also the dimension in improving picking productivity. The support from WMS typically manages picking strategy properly follow configuration or requirement.

Technical part and internal process can be arranged however alignment with CVS customer place order centralized and define cut off time to support for wave picking is a step needed to prepare. When customers complete orders we start to run order reports from customers by channel in WMS with filter information needed to classify the channel order then release grouped order for picker to pick. Pickers come to pick total quantity by group product then they come to stage area divide group product by order level. Wave picking s picking strategy will reduce travel time to pick per order. For example, if you must pick 100 orders you have to travel to storage bin of picking area 100 times however, we use wave pick then picker just come to picking area to pick only once then they classify to order again. Wave picking typically reduces travel time from picker and matches with picking profile from CVS customer channel, so productivity is improved.

Delivery network design for CVS channel

To begin with, without knowing the current delivery network and performance, how do we perform better than the current situation? All the CVS trucks need to deliver a lot of drops per day due to the number of orders from customers is huge. However, the distance from HCMC is around 40 km, the current design the truck has to come to VSIP2 to receive the goods. The time for traveling from warehouse to area delivery already consuming 1,5 hours.

We also have a solution to design operations activities more efficiently and eliminate inefficiency in current activity, it is cross dock delivery goods to customers. Cross dock solution will provide place for quickly sorting products into transportation zones and delivery to customers, by using cross dock transportation network can also utilize advantage of truck size and capacity transfer goods from distribution center to cross dock so that transportation cost can be optimized.

To ensure cross dock is innovation to improve efficiency of delivery network to CVS customer the location of cross dock is important, it should locate between VSIP 2 and HCMC especially that Cross dock should close to HCMC and distance and time travel from cross dock to HCMC should be minimal, this mean truck is easy accessible to area of delivery, furthermore location of cross dock is close to HCMC is not expensive in term of renting cost due to geographical, cross dock in not in HCMC then the big truck easy can access as well, the expectation of location is border of Binh Duong and HCMC.

Table 5: Cost of cross dock

	Cost from VSIP 2 to cross dock	Cost from cross dock to customer
Cross dock with big van	130 million	300 million
Multi smaller struck	230 million	300 million

Source: Internal data

Two main activities contribute all most composition of cost to serve to customer was review and propose design concept to match with customer requirement and company growth strategy, it is time to quantify how improvement of productivity and distribution contribute to cost to serve and contribute to company profit.

Cost to serve review

Productivity itself reduce or keep the same input but the output is increased, the author discusses the cost perspective in the area of responsible, by the meaning of productivity we can refer to table 5.4 where reflect two main elements of cost to serve was reduced by new design operations which is transportation cost and picking cost therefore the unit cost of cost to serve was improved. We use unit cost per drop customer delivery can calculate how many efficiencies of cost to serve for all company. Unit cost of outbound reduced 12% and the unit cost of transport cost reduced 35%, transport cost efficiency is significant due to the accumulation effect of big truck and improve productivity.

Designing Logistics Operations to Support Company Strategy to Improve Efficiency Distribution of Confectionary and Non-Food Product in Convenience Store Channel

Table 6: Unit cost to serve for drop

Unit Cost/Drop			
Outbound	Current Model	New Model	Percentage
Picking cost (People & Productivity)	59,627	51,625	16%
Packing material	12,960	12,960	0%
Loading cost	963	963	0%
Total Outbound cost	73,551	65,549	12%
Transport			
Delivery From WH to customer	112,200	83,111	35%
Total Transport Cost	112,200	83,111	35%
Cost Composition			
Picking	32.1%	34.7%	
Delivery	60.4%	55.9%	

Source: Internal data - internal tracking cost

5. CONCLUSION

The baseline of cost reduction increases in profit margins, which is the most sought-after advantage. Although business is expanding the coverage distribution network to CVS clients, the company will happily earn better benefit.

Cost reduction increases productivity as the workers who have been in the comfort zone for a long time get the signal that the organization is in micromanagement and it will be processed right now, but it may also be employee micromanagement going forward.

Cost reduction helps to improve process quality when improvising processes influence the design of the work of existing processes, which improve product formation standards. Cost reduction helps to improve process standards.

Cost reduction focuses on a constant quest for change that will maximize the long-term benefits of the company's brand.

Visibility to consumer costs and quality requirements offers a structure focused on individual consumers, goods, or shipping lanes for greater segmentation. Facing margins eroding due to market pressure, SKU proliferation, and customer tastes shifting. It resulted in increased production sequence prioritization, a modern delivery strategy, streamlined paths, and greater coordination between operations and finance.

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