Availability of tesco's fresh vegetables supply chain

1. Introduction

Supply chain which now is recognized as a typical complicated network is formed by a vast number of suppliers and subcontractors (Derek L. Waller, 2003). They transport product to consumer through value-add processes in attempt to create superior customer value (Martin Christopher, 2005). There are three interdependent flow streams (Derek L. Waller, 2003) involved in supply chain to guarantee its functions running well. Material flow stream which stars from the upstream supplier to final consumer takes a responsibility of conveying finished goods from raw materials to finished goods. Therefore, it is the most crucial element in supply chain. Another one is information flow stream which is a two-way flow stream. High efficient supply chain is based on the fluent interchange of information. The better communication, the better collaboration and the faster responses supply chain has. For example, suppliers could satisfy their changeable customers quickly with the help of timely and accurate information about demand. The third one is financial flow stream of which direction is opposite to material flow. It plays like a carrier of profit to stimulate everyone in supply chain performs better. Besides, a well-run financial flow reduces the risks in account receivable, consequently, increase reliable in relationship between supplier and subcontractor. (Warren H. Hausman, no date). Supply chain place a significant position in developing organization itself and enhanced its market reputation. It helps company provide right product at right time in right place and response change quickly.

Tesco and Marks & Spenser, who have 2282(2009) and over 600 stores (2009) respectively around UK are two of the most popular retailers. They

compete advantageously on field of fresh vegetables sector through providing convenient, safety and low price goods. Traditional farm markets and vegetable stores which can be found everywhere in past time now have nearly been replaced by various supermarkets. Tesco, the British retail giant, occupies an significant role in grocery market in the UK. It was the 56th in fortune 500 list of 2009, according to 94, 300. 4 million revenue (Fortune, 2009). Taylor Nelson Sofres World Panel market share data (2009) stated that Tesco's market share in grocery increasing to 30. 7% in November, 2009.

Fresh food, such as vegetables, meat, fruit, because of it's highly amount of consumption every day plays an increasing contribution in supermarket profit. Discussing the prime reasons what cause fresh food shortage on shelves is valuable because retailers only can create profit when their product are consumed by customers (Ronald H. Ballou, 2004). What's more, it is easy to be annoyed that a customer come into a supermarket and found what he/she wants is empty. Whatever the customer choose to buy another replaceable product (supermarket still earn profit) or to go to another shop which can meet their demand well (supermarket lost profit), his/her loyalty would be damaged. Such decrease of loyalty is a great uncountable loss for supermarket.

2. Data collection

This research was carried out on the 07, November, 2009 by visiting Tesco. Data was recorded at two different times during that day. What are organized in the following tables are the running-out items we collected at half past one and at a quarter to four in Tesco. It aims to study the on-shelf

unavailability as well as the efficiency of replenishment on sector of vegetable in Tesco.

Table 1 collected at half past one

Item name	price	status	promotion
Asparagus Large Bundle	□3	Contemporary out of stock	N
T. Organic Asparagus Bundle 200g	□1. 99	Contemporary out of stock	N
Tesco Casserole Vegetables 450g	□1. 5	Contemporary out of stock	N
Tesco Spinach 260g	□1	Contemporary out of stock	N
Market Value Broccoli catchweight	□1. 48/kg	unavailable	N
Leeks Loose Class II	□1. 98/kg	unavailable	N
Runner Beans 225g	□1	Contemporary out of stock	Save 50p
Tesco Hand Shelled Garden	□1	Contemporary out of	3 for□2.

Peas 120g		stock	5
Tesco Butternut Wedges 150g	￼1	Contemporary out of stock	3 for￼2. 5

Table 2 collected at a quarter to four

Item name	price	Status	promotion
Celery Each	￼0. 78	unavailable	N
Tesco Lancashire Round Lettuce	￼0. 50	unavailable	N
Broccoli 335g	￼0. 50	unavailable	N
Market Value Broccoli Catchweight	￼1. 48/kg	Contemporary out of stock	N
Tesco Spinach 260g	￼1	Contemporary out of stock	N
Tesco Winter Vegetable 250g	￼1. 5	Contemporary out of stock	N
Tesco casserole Vegetables 450g	￼1. 5	Contemporary out of stock	N

T. Organic Asparagus Bundle 200g	□1. 99	Contemporary out of stock	N
Asparagus Large Bundle	□3	Contemporary out of stock	N
Runner Beans 225g	□1	unavailable	Save 50p
Tesco Bean Sprouts 335g	□0. 48	unavailable	N
Tesco Finest Tender stem Broccoli 200g	□1. 25	unavailable	N
Tesco Butternut Wedges 150g	□1	Contemporary out of stock	3 for□2. 5
Tesco Hand Shelled Garden Peas 120g	□1	Contemporary out of stock	3 for□2. 5
Chicory 180g	□1	unavailable	N

According to these two tables, it can be seen clearly that status of

contemporary on-shelf unavailable items are classified as ' unavailable' and '

contemporary out of stock'. Such classification is on the basis of fact found in

Tesco. In Tesco, some of the labels of empty shelves are informed '

contemporary out of stock' with a little red card while the rest which are

represented as ' unavailable' in tables are without any explanation.

Compared these two tables, except Market Value Broccoli Catchweight and

Runner Beans (225g), items are shown ' unavailable' in table one disappear in table two. That refers to they were replenished during two hours. Market Value Broccoli Catchweight was checked the inventory and labeled signal of stock-out after 2 hours. The most standing out items in tables 2 is Runner Beans (225g) which is still as the same ' unavailable' status as in table 1. Without considered human's error, it might be attributed to that these items sold out again after it was replenished.

Because these data was not recorded for a series time, they may be limited for appreciating the efficiency of on-shelf replenishment in Tesco. It is possible that Tesco check its inventory once five hours and we just record for the last two hours by chance. However, the Runner Beans empty again and there was no stuff working for replenishment when we were collecting data evidence to a certain extent that Tesco does not realize up-to-date on-shelf replenishment.

3. Comparisons with Marks& Spenser

Marks & Spencer (M & S), which has been grown for more than 100 years, performs well to satisfy the British middle class with high quality service as well as reasonable price. Because of reliable reputation in marketplace, M & S asserts as one of the stronger competitors to Tesco. The following data is what collected on the same day at 2. 02 in attempt to compare what are differences in on-shelf availability between Tesco and M & S.

Table 3 collected at two o'clock

Item name	price	status	promoti

			on
Chopped Tomatoes 400g	£0. 59	unavaila ble	N
Miniature New Potatoes 500g	£1. 99	unavaila ble	N
Chopin Jacket Potatoes 700g	£1. 69	unavaila ble	N
4 Jacket potatoes 800g	£1. 49	unavaila ble	N
Peas 400g	£1. 99	unavaila ble	3 for£5
Young Garden Peas 170g	£1. 69	unavaila ble	N
Peas sweet corn and broccoli layer 360g	£1. 69	unavaila ble	2 for£3
Classic Layered Vegetables 320g	£1. 99	unavaila ble	2 for£3
Carrot, Cauliflower and sprouts 400g	£1	unavaila ble	Half price

Sweetheart Cabbage & Chard Medley 160g	1. 8	unavaila ble	2 for3
Sea salt and peper new potatoes385g	o. 89	unavaila ble	N

As what was seen in M & S, all the on-shelf unavailable items were not be labeled out of stock marks. It is difficult to identify if they are out of stock or just contemporary unavailable. Based on the performances on shelves, M&S had serious shortage in potato while there was sufficient storage in Tesco. However, those contemporary out of stock items in Tesco such as asparagus, broccoli, and runner beans are available in M & S. The obvious difference between Tesco and M & S is that there are staffs to replenish to shelves continually when I was recording data in M&S. Something in table 3 was available just after recording time 10 minutes, which refers to a certain extent that shelf replenishment in M & S is better than Tesco.

4. Problems in supply chain

The direct reasons which take account of shortage represented on shelves can be divided simply into two types. One owes to the out-of-time delivery between warehouse and shelves. Another one is because of the out of stock in warehouse. Customers only purchase goods which are displayed on shelves but which stay in warehouse or are out of stock. Whatever which reason, it results to a loss of supermarket's reputation and sales.

It is necessary to study the problems existing in supply chain, which cause on-shelf unavailability in Tesco. Supply chain is responsible significantly to address stockouts. Not only does an efficient supply chain help Tesco to

reduce costs of warehouse and of purchasing through faster goods turnover but also attract customers by providing high quality service through satisfying them at any given time. In angle of supply chain, these problems might be found in retailer (Tesco) itself, in suppliers as well as between them.

4. 1. Tesco departments

Specifically, the problems which influence availability on shelves when there are goods in store are possibly attributed to unclear division of labor or lack of shelves management even inefficient inventory control within supermarket. Indeed, advanced stock control technology like Point of Sale (POS) and modem management software enable to trace real time selling quantity and maintain stock level automatically. However, if the up-to-date data is generated without arising notice and being responded quickly, it is still useless. Take an example to explain matters of collaboration between departments. Supposed one type of item on shelves are running out and computer system reminder to replenish. Definitely it is time to delivery goods to shelves at once. However, selling department does not notice unavailability of goods on shelf or even just play Ping-Pong (Richard Bell, 2004) with stock department when it received the restoring requirement. Selling staff carry out nothing except waiting for the stock department to solve the problem while the later one are considering that selling department should take responsibility of replenishment. As the time pass, because of on-shelf shortage, customer lose.

In addition, lack of shelf management also causes ' stockouts'. What is common to be seen in TESCO is that different items on shelves are mixed

together or that one type of item is displayed at different places. Customers are difficult to find what they want exactly in such disorder display. It is quite often that goods considered unavailable is actually hidden by other goods or is exhibited at another place. In addition, the unbalancing allocation of on-shelf space is another typical reason of emptying shelf in Tesco. On the same shelf, some are running out easily while others are excess. Inadequate shelf space of fast sellers increases the frequency of replenishment and risk of empty shelf.

4. 2. Inventory management

4. 2. 1. Inventory control
The problem may exist in Tesco inventory control if stockouts happens in warehouse. There is no doubt that shelf time of fresh vegetable is extremely shorter than other regular product. Fresh vegetables attract customers to purchase on the basis of high quality physical appearances and short best-used date because these two factors can transfer information that foods are fresh and without any artificial additives (Derek L. Waller, 2003). These two safety signals are what customers concern when they are purchasing. In the case of that, supermarkets try to keep the minimum inventory of fresh food as possible. Both supplier and retailer tend to make this type of goods turnover through the supply chain quickly. On one hand, minimum inventory level is helpful to decrease the wastage costs because it reduces the risk of perishing. The less fresh food are storied in the warehouse, the more possible to sell them out before the best display day. On the other hand, minimum inventory is likely to increase the rate of contemporary out of stock. Guiding by minimum inventory management, retailer tend to reduce the amount of reorder point. It means lessen the goods which are used to

maintain sales during delivery lead time. When market demand exceeds what is forecasted, the probability of stockouts increases. Goods are easy to be sold out during a short time if there is not enough storage available in warehouse. For example, supposed Tesco decreased the reorder point from 7 to 4 and safety inventory maintain 3. The delivery lead time is 3 days. Both these two levels of stock can afford if the actual sales number is 2 per day on average during delivery period. However, if the market demand increase to 3 per day actually, the lower stock level will lead to out of stock.

4. 2. 2. Inventory order
4. 2. 2. 1. Forecasting

An inaccurate forecast result into a wrong ordering requirement directly. It is another possible reason of stockouts. Because of impossible to capture future real selling data, all the inventory order are estimated on the basis of forecasting future market demand. Undoubtedly, a pessimistic forecast quite probably results in stockouts. This mainly causes by that forecasting pessimistically is likely lower than what occurs actually. As the retailer seeks to minimize cost in a forecasted difficult market conditions, they try to reduce inventory order quantity. While the actual demand is much higher than what ordered even stock can not afford during delivery lead time, stockouts occurs.

What's more, forecasting inventory order point is a sophisticated means which requires taking into account market demand trend, financial flow, lead time, and storage turnover etc. Under certain curriculums, it is difficulty to make sure that every element involved is as expected. For example, before Christmas day, an optimistic forecasting market demand of tomato sales in Tesco during that period is 300per day, and a pessimistic predicted market

demand is 150 per day. However, the actual demand is 500 per day which is much higher than what forecasted both optimistically and pessimistically. Supposed the delivery lead time is one day, reorder point is 300 and safety inventory is 100. Tomato is going to be out of stock whatever it is optimistic or pessimistic forecast.

4. 2. 2. 2. Information transportation

Roland Vaxelaire, the president and CEO of Carrefour Belgium maitained that almost 80 percent of these problems are driven from the matters in transportation of information such as delayed, inaccurate, and irrelevant, (Richard Bell, 2004) which also could make goods out of stock. Take information transformation delayed as an example. An excess order requirement for promotion was send from retailer to its supplier too late. It is likely that supplier could not prepare enough goods at given time. If customers' demand exceed the total that rest in warehouse, goods will be contemporary out to sock.

4. 3. Supplier

The next reason of stockouts that bear in mind is supplier's own problems such as delivering delayed or delivering less than what ordered or even delivering wrong goods. These mistakes might be driven from accident like strike or vegetables sick or poor management in supplier's organization such as inefficient working and dispatching order to a wrong object. All of these could leave supermarkets empty because retailers have not enough good to replenish for continuing sale.

In addition, what make empty in warehouse may owe to the inharmonic relationship between retailer and supplier. It is common that a company

plays as a supplier to several retailers like TESCO and ASDA at the same time. If the fresh food is limited, supplier is probably to fulfill it customer (assumed it is ASDA) who is more important and closer at first. In that case, Tesco will be out of stock. Additionally, Grocery is a kind of price-sensitive goods (Marshall L. Fisher, 1997) which is usually applied price promotion to stimulate sales by retailer. In attempt to ensure the profit and develop market at a lower price, retailer always tries to slash the purchase price of fresh foods. What they do like that is adverse to corporation with supplier. If the disagreement is too serious to be overcome, supplier will stop to proving goods. That is why poor relationship with supplier is risky to be out of stock.

5. Solution

5. 1. Optimize internal management

On-shelf availability is a crucial standard of evaluating customer service and working efficiency of a supermarket. According to passage of stockouts causes walkouts (2004), 21% to 43% customers turn to other shops for purchasing when they are facing stockouts (Daniel Corsten & Thomas Gruen, 2004). Tesco will lose profit because of their customer leaving with empty hand.

In groceries sector, TESCO has been witnessed its lack of supply chain efficiency and response. The possible problems what mentioned above absolutely result in obvious on-shelf unavailability of fresh vegetables. For beating these drawback, there are a vast of measures must be carried out by TSCO to integrate its supply chain so that minimize costs and qualify services.

It is necessary for TESCO to clear division of labor between departments to avoid confusing of responsibility. It must be made clearly that if the product is in store but out of stock on the shelves, which apartment and who should take responsibility on it. If possible, TESCO had better to appoint someone who might be the manager of selling department or of store department to manage delivering goods to shelves. In addition, Tesco should reorganize the allocation of shelf. Fast selling items which are easy to be running out should allocate more space than unpopular goods. In that case, fast sellers do not need to replenish on shelves frequently. This approach is useful to save the cost of replenishing staff and improve the on-shelf ability of popular fresh foods.

5. 2. Reorganize inventory control

Along with growing attention to freshness and healthy of food, retailers are facing challenges to implement smaller order, faster inventory turnover and increasing delivery frequencies on fresh food inventory control(Derek L. Waller, 2003).

For lessen stock out in warehouse as well as satisfy new attitude trend to fresh food, Tesco must rearrange its fresh food storage and optimize inventory control computer system. What need to do principally is to understand what customers want most. Assistant with the point of sale system, up-to-date sales data is accessible. It enables to capture customers' preference. For the requirement of faster inventory turnover, improve sophisticated inventory data collect system is necessary. This system is use to calculate the stock level and replenishment status at any given time.

Secondly, it is to reclassify inventory according to ABC analysis. ABC classification is an approach which is basis on the 80/20 rule. It was developed by H Ford Dickey in 1951. ((Derek L. Waller, 2003) Customer's preference changes from period to period. Tesco should update its inventory control policy according to these changes. Guided by ABC analysis, class A which take account into 80% value of inventory is treated as the most notable part to manage, although it only occupy 20% of amount of inventory. Both fast sellers and class A need to apply ordering method as fixed ordering quantity (Economic Order Quantity). While their inventory quantity reducing to an estimated level (reorder point), inventory control system will send the order requirement to supplier automatically. The rest inventory which are classified as class B and class C are the less important ones. Most of them could implement ordering method call Economic Order Period (EOP). This approach orders at fixed time period. This method requires checking inventory quantity during a fixed time and then generating order to replenish inventory to an estimated fixed max stock level. ABC classification ensures Tesco emphasize on maintaining inventory level of items which are the most crucial and valuable. Tesco could reduce the cost as well as resources by cutting unnecessary inventory down. Also, this approach focuses on minimize the risk of empty in biggest contribution goods and of what customers concern. It is useful to avoid wastage costs and improve customer service.

5. 3. Making forecast precise

Because of the point of sale system, collecting of real-time update selling data is realized. What Tesco need to do is to forecast market demand on the

basis of actual selling trends more accurate. To develop an algorithm computer system make an exacter forecast possible. In addition, in order to take into account influence of special situation, before the orders being sent to supplier, stock manager have the right to modify it according to promotion decision and other extra information like special requirement for specific holiday.

5. 4. Integration of information and of suppliers

It is suggested that Tesco develop a type of reliable win-win relationship model with suppliers. Tesco could contract a long-term relationship with several reliable suppliers to take responsibility of different vegetables. Under such long-term partner ship, suppliers benefit from consistent orders and exact market analysis. They do not need to worry about sales of their goods and promotion of pending out-of-date goods because of capturing exact selling data from their long-term customer-Tesco. With the help of EDI system and standard barcode (Penelope Ody and Sue Newman, 1991), Tesco could communicate its suppliers with networking their computer. All of reliable suppliers allow accessing to Tesco's inventory control system freely. To develop a Vendor Manage Inventory system (VMI) stimulate suppliers replenish initiatively and frequently so that realize continuous replenishment. However, Tesco need to pay attention on reducing costs of continuous logistics. It is practical to implement that transporting vegetables together with other ordered items so that Tesco also could obtain economies of scale while frequency of transportation increases.

6. Conclusion

Customers always expect to buy whatever whenever. Every sections involved in supply chain is take a responsibility of optimizing it. Stockouts of vegetables in Tesco can be caused due to problems of Tesco itself like out of time on-shelf delivery, wrong forecasting future market demand and delayed or inadequate ordering. Otherwise it could be attributed to suppliers such as too late and too little delivering or an unreliable relationship between supplier and Tesco. It is possible to minimize these problems through integrating supply chain. Tesco need to clear its departments' own responsibility, reorder goods displayer and optimize the utilization of shelf space. What's more, based on the POS system, it should improve platform of sharing selling information and up-to-date changes of inventory with its suppliers so that supplier could look after the inventory level and plan to replenishment initiatively. Together with Tesco and supplier's effort, the whole supply chain could response changes quickly and efficiently. It enables to realize Continuous Replenishment Practice (CRP) to fulfill the customers' daily demand of fresh vegetables. Because increasing logistics cost of continuous replenishment could be offset by the reducing storage cost, Tesco could increase its availability as well as customer service at a lower costs.

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