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The Power of Demand Chain Management In Supply: A Focus on Perishable Items in Bangladesh During COVID-19

Abstract

Much has been discussed about the resilience factors of supply chain management of trade organizations after the global pandemic. We have observed how each and every step of supply chain management is very critical for the resilience of businesses globally, especially in healthcare and food recently. This article focuses on illustrating the benefit of retailer and customer interaction, and the downstream supply chain, for perishable items during the global pandemic. Respondent interviews were captured and analyzed from mobile retailers and customers involved in the buying and selling of perishable items. We find that mobile retail sales have grown when the retailer or 3PL is operating with the demand-side customers in mind during the global pandemic – a theory referred to as demand chain management. Customers purchase perishable items from mobile retailer entrances, while accounting for social distancing, while the retailers are able to sell their products to the customer through this channel during the crisis.

Keywords: Demand Chain Management (DCM), Perishable items, Bangladesh, Mobile retailers, Supply Chain Management (SCM)

1. Introduction

1.1.Background

The evolution of human civilization has highlighted a series of crises generated by pandemics, wars, cataclysms or other natural phenomena, which have brought social revolutions and led to the occurrence of severe economic problems, societal change, behavioral change, and material changes of society (Jarus, 2020). And these changes have made our business strategy different in increasingly competitive ways globally. The COVID-19 pandemic has fundamentally changed the world people live in; specifically, in terms of lifestyles, where people are living, different buying patterns / behaviors, etc. We have observed that people have now limited their activities, not only due to government alerts and guidance, but also as self-consciousness has arisen to protect themselves and others. People are more likely preserving very necessary nonperishable groceries for cooking in home. The food industry has proven to be an essential industry and plays a vital role in providing basics and necessities for supporting different human activities and behaviors. The supply chain has proven to be critical for human life globally. Food should be stored, delivered, and sold as soon as harvested or produced. so that fresh food can reach the final customers by due date. This phenomenon has often been dubbed 'farm to fork.' It was reported by Gustavsson (2011), that about one-third of the produced food in the world, which is approximately 1.3 billion tons, is wasted yearly. Two-thirds of the wasted food (about 1 billion tons) is occurring in the supply chain in operational areas such as harvesting, shipping and storage (Fritz and Schiefer, 2008). We do understand that there is a lack of integration and distribution of food and other items, consequently leading to imbalances to occur between even abundant food sources and supplies and consumers. Handfield and Nicholes (2015) define supply chain management (SCM) as the integration of these activities through improved supply chain relationships, to achieve a sustainable competitive advantage.

The density of the population of the Bangladesh capital, Dhaka, a cosmopolitan city, is increasing day by day but the number of retail grocery shops, and bazars offering perishable foods are not sufficient to cater to the total demand. There is huge deficit between demand and supply of items in Bangladesh. In the existing traditional supply chain, there are some people involved as agents (middle-men) which cause a gap between farmers and customers. As perishable items like fruits, vegetables and meat are an important source of essential vitamins, minerals and fiber, people need these items on a daily basis. In this supply chain, farmers suffer due to waste from

system processing loss and retailers suffer due to frequent changing of customer demand and excess inventory cost. This leads to consumers suffering due to non-availability of fresh products and unpredictable price fluctuations. The traditional market has been afflicted with a lot of bad practices such as using different types of harmful chemicals as preservatives to keep the products looking fresh or extending their shelf-life to make them available during the off-season at high prices.

Fundamental tasks like pricing and cost management are usually the responsibility of supply chain managers (and buyers / purchasing agents). When those individuals have a better understanding of consumer demand, usually by forecasting or customer communications, they can make better sourcing decisions. Therefore, we find that a better understanding of the demand chain can lead to more accurate ordering behavior and less food waste. To be more specific, factors to adapt such supply chain terms like transportation, physical facilities (such as warehouses and terminals) should be integrated with information and communications technology at an affordable cost to better align supply and demand. There have been many scholars who have published articles about supply chain, but very few scholars or administrators have provided specific guidelines to help navigate the new domain of the demand chain. There are substantial implications on logistics and transportation management through adapting new technologies and processes in a smart supply chain system (Mir et al., 2018; Wu et al., 2016). Given that the concept of a smart supply chains and demand chain, as well as the corresponding literature, are still at a preliminary stage of development, there is an urgent need to discover what specific curricular items should be considered now to meet the customers' expectations by real-world practitioners.

Many researchers have written articles on supply chain management in retail operations, but few have addressed how retailers can serve the customers' desire for perishable products delivered to their homes. Many Dhaka residents are not familiar with using either mobile phones or internet to place orders in the retail stores. In addition, residents are also afraid to go out due COVID 19, hence customers' expectation really have changed to get perishable products into the consumers' homes. In Dhaka, the three wheels Rickshaw vans move around in the residential areas but do not offer a wide range of product varieties which people need on a daily basis. In this article, retailers are being encouraged to consider innovative ideas to better serve customers while they are at home.

1.2.Objective

To analyze the supply chain system in this Pandemic situation.
To find the innovative ideas of delivering perishable products at consumers door.

1.3.Methods

The context of this study is in northern portion of Dhaka, the capital of Bangladesh which is one of the most crowded cities in the world. Although a significant portion of the population settled here, Dhaka is referred to as a model town with a colossal number of facilities. The sample area is in close proximity to the international airport and contains many schools, colleges, community halls, restaurants and chain supermarkets. There are more than ten chain supermarkets, and many local Bazars, at each corner point of the area containing perishable items and providing services for customers.

The study sample consisted of six respondents including three mobile retailers and three customers who are included in this supply chain. The respondents were selected where retailers are continuously selling the products to customers and customers are buying the perishable products from the mobile retailers. Prior research suggests that interview results from the respondents show a strong reaction rate and substantial results (Denscombe, 2003). This is an exploratory research study aimed at identifying the benefit from both the supply and demand sides during the global pandemic. Judgmental sampling methods were used for selecting the respondents both from retailers and customers. Each interview has given us both formal and casual information where we have a few casual discussions more recently following the quick formal interviews. We have used journal articles, newspaper articles, and website information related to the topic as secondary data in this study.

2. Literature Review

Demand chain management is a documented, but relatively young discipline (Bumblauskas et al., 2017). The food processing industry includes primary activities such as agriculture, zoo technics, forestry and fishing as well as those composed of businesses dedicated to the transformation of raw materials and semi-finished products (Cousins & Scoones 2014). Coltman,

Devinney & Midgley (2011) state in their article that depending on raw material availability, business performance may be perceived as the ability of an enterprise to meet its goals which are predetermined. According to obtained results at the end of a business period, the level of fulfilled tasks within the aims of the business or targets also have an impact (Yıldız, 2010). Due to the incentive systems of individual businesses, owners and/or managers are responsible for ensuring that businesses operate as efficiently and effectively as possible (Nguegan & Mafini, 2017). However, to improve the efficiency and effectiveness of the business, rationality is one of the most important drivers to enhance business performance within organizations, coupled with the willingness to apply procedures to increase sales and meet customer demand. A number of scholars (Revilla & Sáenz, 2014) acknowledge that business performance and success is increasingly associated with supply chain management, because this leads to improvements in the flow of information, product distribution, services and/or finances. This connotes that most problems in supply chain management would lead to business performance-related difficulties (Kherbach & Mocan 2016).

Farmers often must confront output and market challenges due to production disruptions, while few buyers have a willingness to wait for perishables items. Commodities with high income elasticities such as fruits, vegetables, meat, fish, milk, and eggs are facing significant declines in demand due to unstable incomes, job losses, and price escalations especially in urban areas (Abhishek et al. 2020). Industry 4.0 and smart supply chains have been rapidly expanding to advocate for an industrial movement towards a smart factory operating environment (Hofmann and Rüsch, 2017) which can be scaled to agricultural and farming operations. Glas and Kleemann (2016) studied the impacts of smart factories and Industry 4.0 on procurement and supply management using a much more developed methodology.

3. Strategic Implication for Modified Supply Chain

Though there are many problems and issues that we confront in the business world, people need necessity items for their daily life. In fiercely competitive markets, business people may adapt to consider new policies where customers also get the opportunity to shop without fear, anxiety and tension. The following new strategy may be adapted by business people globally for demand and supply chain management.

3.1. Generating Goodwill

Goodwill is certainly an intangible asset which is associated with the purchase of one item or company by another. Goodwill is a "black box" description of sorts. One reason for this is that after a theoretical definition of what goodwill is, and instructions on how to account for it, interpretive action can be found (Hines, 1988; Thompson, 1990). Companies may focus on customer loyalty measures by reducing the gaps between their expectation and perception in relation to delivery time, mode of transportation, and keeping promises. One way to accomplish this is by means of conducting a gap analysis (Fitzsimmons, Fitzsimmons, & Bordoloi, 2008). In addition, companies may invest money and resources on different technologies where the entire supply chain, and also consumers, can shop online safely. This is especially helpful as demand for online goods and services has been increasing in an exponential way due to the COVID-19 pandemic. Nowadays, it is not merely a factor of finding customers to sell to, but retaining customers in the competitive markets (i.e., customer loyalty).

3.2. Authentication

Since no one knows how long the virus will keep people in fear, business people may adapt information communication technology (ICT) to run their operations smoothly or without interruption. The world of business is going to rely on ICT, data, online transactions, supply chain, distribution, and delivery notifications for perishable goods more and more. Therefore, it is necessary to have authentication for every transaction that business people will make. Authentication is very helpful in multiple ways such as being a tool to prevent identity theft, destruction or access to data, transmission of propaganda, spam, malicious code, stolen user credentials (also referred to as credential stuffing), key logging, phishing, pharming, brute force, and man-in-the-middle (MITM) attacks.

3.3. WYSIATI

Dr. Daniel Kahneman is noted to have coined the acronym WYSIATI ("What you see is all there is") as the notion that we form impressions and judgments based on the information that is available to us (Saltzman, 2013). It is one of the human biases that we explore when we describe how human decision-

making is not entirely based on rational, rather situational, behavior. Because the on-going COVID-19 Pandemic may remain prevalent for an undetermined amount of time, the means of supplying foods and others essential items may not be fruitful depending on deliberative thought, but instead influenced by knee-jerk reactions and tactical decisions.

3.4.New Goals

Supply chains should be reviewed in terms of current demand, i.e., demand chain management, and how people like to have their essential products purchased and delivered. We may set up our new goals to develop adaptive new technological processes to sustain in the aforementioned fiercely competitive online marketplace. As we know, the COVID-19 pandemic has shown us the many different ways to conduct business with effective communication and management within a remote working environment. Advances in artificial intelligence and new technologies may present opportunities for further supply chain innovation by adapting block chain (Bumblauskas et al., 2019) as one example. Moreover, there is an argument about supply chain's mechanism by which businesses can create positive impact in the world. Those looking to improve supply chain change should consider the environment, controlling food waste, transportation systems, labor rights (e.g., responsible and sustainable sourcing), and so on. Indeed, those companies or operations lacking strong digital infrastructure cannot perform at the highest level and be a truly sustainable business when compared to those who are willing to invest in technology.

4. Findings

4.1.Overall Findings

Alternative food distribution techniques must be considered to permit individuals to get basic items from retail shops, as social distancing has become more important during the pandemic. Customers go to the retail shop and purchase the products as per their requirements through traditional supply chain management where there are thousands of products including perishable items. The need to go to stores frequently for their daily necessity items leads a customer to travel to site (or initiate a mobile retail interaction). The modified supply chain management network, with additional steps in the

supply chain, in which the customer does not need to go to retail shops for their perishable items, is presented in Figure 1.

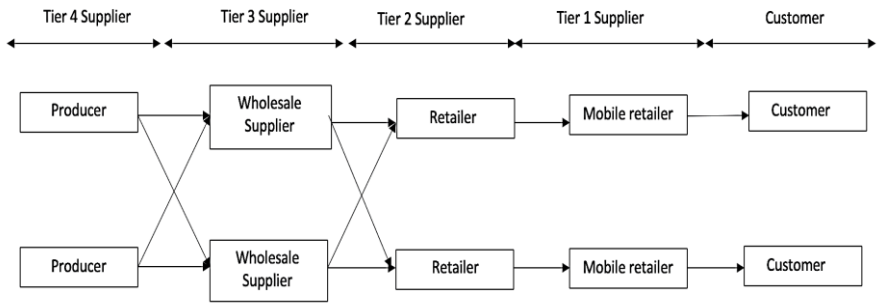

Figure 1: Additional steps of supply chain management of perishable items

Retailers or third-party logistics (3PL) suppliers can utilize their logistics systems in which all the perishable items such as different types of vegetables, fruits, fish, meat, etc. are in their product and service portfolio. Customers can then purchase effectively at a location of convenience to them. As items are accessible and ready for regular home delivery service, customers can reduce stress by ordering these items at their home. It is not conceivable to store an unlimited selection of items as mobile retail houses have limited space and capacity, so retailers can overcome this issue by having multiple mobile houses for different products as per the category of items. Retailers know what items should be replenished for consequent number of days and can start to construct customer-based forecasting models as they specifically come in contact with all the clients in physical space.

4.2.Retailer Perceptions

There has been no traffic inside and outside the district for the transportation of goods during the countrywide lockdown, so the suppliers have struggled to provide the goods to the retailer in time and the retailer, in turn, to provide the items to the customer in time. There are exceptionally few chances to waste items as retailers have the opportunity to know the customer perception and retailers can reorder and refill their mobile van every day as per the customer

requirements. A mobile retail shop can be refilled from the retail shop within a very short time as it is not logistically faraway. It may also offer a cost reduction as a retailer or 3PL can use the three-wheeler paddle van instead of the motor van. Mobile retailers can cover more area as they can fix their schedule on a geographic basis, so customers know at what time(s) they can reach them. The proposed model has developed the added step of the supply chain, so retailers or 3PL can recruit and retain customers as people are potentially losing their job(s) and/or income during the global pandemic.

4.3.Customer Perceptions

Customers can effectively purchase food from their homes from mobile retailers and they can keep social distancing, which is important to keep themselves protected from the virus. Customers have the ability to purchase food every day from home, so they do not have to be overstocked or stockpile as there is an opportunity to purchase fresh products more readily. If the items are not available, customers can place the order with the mobile retail shops for the next day and customers can easily buy fresh foods rather than frozen or preserved foods. In some instances, customers tend to spend a lot more than planned when buying items from the retail houses and end up buying items that are not exactly what they wanted. Meanwhile, customers can get precisely what they want and need from the mobile retail houses.

5. Discussion

This article examines the additional steps of supply and chain management for perishable items to provide fresh foods to customers. A compelling demand and supply chain management strategy and approach can provide trade value including policy and market benefits, quality benefits, and management supply review benefits. There is a significant difference that has emerged between modified supply chains, demand chains, and conventional supply chain management for retailers and customers for perishable products during the COVID-19 pandemic and crisis period. Another important result of this paper is that the retailer or any third party can work to add these valuable steps to the supply chain.

As social distancing is one of the most important and effective public health tools officials prescribe to slow the spread of the disease, the modified supply chains would be best for both the retailer and customer during the global

pandemic. This may lead to lower inventory levels, more frequent restocking, changing the decision of perishable products as consumer demand choices vary with the conveyance of items of the right quality at the right place and right time. We have particularly modeled the supply chain for the perishable items, and note that this essential food supply chain is highly connected with vitamins and nourishment needed during the widespread pandemic period. We also note that for the perishable goods that have a high probability or rate of waste over time, the model we develop can aid in minimizing the waste of food by utilizing this supply chain management approach.

6. Conclusion and Future Research

Supply chain management is characterized as a network including the purchasing of raw materials, producing finished products by using raw materials and intermediate products, planning for the production needs of local markets, and the logistical distribution of the products to customers (Lee, 1993). Therefore, each step of the supply, and demand, chains are quite important for the long-term sustainability of the operations. Further research about perishable items through a modified supply chain will not only enable added retailer benefit, but also a modified analysis of suppliers, producers, distributors and customers. This can lead to further development of more efficient solutions, reduced waste and thought provoking more innovative services to customers. Further research work could include the incorporation of lean and six sigma methodologies to improve agricultural operations in Bangladesh. In addition, as mentioned above, as customer data is tracked over time, more sophisticated forecasting models can be developed to improve demand accuracy.

Reference

Abhishek, B., Vaibhav, G., Puneet, K., Manu, Kishore, A., Kumar, R., Sharma, A., & Verma, S. (2020). India's food system in the time of COVID-19. *Economic and Political Weekly, 55*(15), 12–14.

Bloom, M., (2008). "Double Accounting for Goodwill- a Problem Redefined", Routledge.

Bumblauskas, D., Bumblauskas, P., & Sapkota, K. (2017). Is Demand Chain Management the New Supply Chain Management? Will the Demand Channel Trump the Supply Channel? *Journal of Strategic Innovation and Sustainability*, 12(1), 30-40.

Bumblauskas, D., Mann, A., Dugan, B. & Rittmer, J. (2019). Blockchain in food distribution: do you know where your food has been? *International Journal of Information Management*, 52.

Coltman, T., Devinney, T.M. & Midgley, D.F., (2011). Customer relationship management and firm performance. *Journal of Information Technology*, 26(3), 205–219

Cousins, B. & Scoones, I., (2014). Contested paradigms of "viability" in redistributive land reform: Perspectives from Southern Africa. *The Journal of Peasant Studies*, 37(1), 31–66.

Denscombe, M. (2014). *The good research guide: for small-scale social research projects*. McGraw-Hill Education (UK).

Fitzsimmons, J. A., Fitzsimmons, M. J., & Bordoloi, S. (2008). Service management: Operations, strategy, and information technology. New York: McGraw-Hill.

Fritz, M. and Schiefer, G. (2008), Food chain management for sustainable food system development: a European research agenda. *Agribusiness*, 24(4), pp. 440-452.

Glas, A.H. and Kleemann, F.C. (2016). The Impact of Industry 4.0 on Procurement and Supply Management: A Conceptual and Qualitative Analysis," *International Journal of Business and Management Invention*, 5(6), pp. 55-66

Gustavsson, J. (2011). Global food losses and food waste: extent, causes and prevention. Swedish Institute for Food and Biotechnology (SIK); Food and Agriculture Organization of the United Nations (FAO), Rome. ISBN 978-92-5-107205-9.

Handfield, R.B. and Nichols, E.L. Jr (2015). Introduction to Supply Chain Management, Pearson Education, Noida.

Hines, R.D. (1988). Financial accounting: in communicating reality, we construct reality. *Accounting, Organization and Society*, 13(3), pp. 251-6. Available: https://www.epw.in/journal/2020/15/commentary/indias-food-system-time-COVID-19.html.

Hofmann, E., & Rüsch, M. (2017). Industry 4.0 and the current status as well as future prospects on logistics. *Computers in industry*, 89, 23-34.

Saltzman, J. (2013). Jeffrey Saltzman's Blog. Available: https://jeffreysaltzman.wordpress.com/2013/04/08/wysiati/ (Retrieved on July 21, 2020).

Jarus, O., (2020). 20 of the worst epidemics and pandemics in history. *Live Science* (retrieved on July 20, 2020).

Kherbach, O., & Mocan, A. (2016). The importance of logistics and supply chain management in the enhancement of Romanian SMEs. *Procedia–Social and Behavioral Sciences*, 221, 405-413.

Lee, H. L. (1993). Design for supply chain management: concepts and examples. In *Perspectives in operations Management* (pp. 45-65). Springer, Boston, MA.

Light Castle Analytics wing (2020). COVID-19: A Wake-up Call for Global and National Supply Chains. Available: https://databd.co/stories/covid-19-a-wake-up-call-for-global-and-national-supply-chains-12125 (retrieved on July 20, 2020).

Mir, S., Lu, S. H., Cantor, D., and Hofer, C. (2018). Content Analysis in SCM Research: Past Uses and Future Research Opportunities. *The International Journal of Logistics Management*, 29(1), 152-190.

Nguegan Nguegan, C. A., & Mafini, C. (2017). Supply chain management problems in the food processing industry: Implications for business performance. *Acta Commercii*, 17(1), 1-15.

Revilla, E., & Sáenz, M. J. (2014). Supply chain disruption management: Global convergence vs national specificity. Journal of Business Research, 67(6), 1123-1135. Available: https://www.researchgate.net/publication/257612385_Supply_Chain_Disruption_Management_Global_Convergence_vs_National_Specificity.

Tan, K.C., 2001. A framework of supply chain management literature. *European Journal of Purchasing & Supply Management*, 7(1), pp.39-48.

Thompson, J.B. (1990). Ideology and Modern Culture, Polity Press, Cambridge.

Wu, L., Yue, X., Jin, A. and Yen, D.C. (2016). Smart Supply Chain Management: A Review and Implications for Future Research. *The International Journal of Logistics Management*, 27(2), pp. 395-417.

Yildiz, S. (2010). A study on measuring business performance in banking sector. *Erciyes University Faculty of Economy and Administrative Sciences Journal*, 36, 179–193.