affecting the E-Commerce adaptation, some investigated about the purchase intention from the E -Commerce, some researches evaluated the E-Commerce supported activities, some researches evaluated the challenges of the E-Commerce market, etc. However, developing countries should increase the e-commerce activities wholeheartedly, because it will enhance their economic and social development, lead to gain commercial productivity lower the operating costs, and enhance the presence of local and international markets (Alyoubi, 2015). There are few types of research carried out value chain analyse in different industries such as apparel, supply chain, agriculture, healthcare but not in the E-Commerce, especially fewer numbers of researches were carried out the integration of both virtual and physical value chain for E-Commerce in outside Sri Lanka.

To get a competitive advantage over the emerging E-Commerce market businesses in Sri Lanka should look at the marketspace and marketplace together because of the new economics way of doing business in the world of information. Everywhere in any industry is harvesting the power of VVC before implementing any major changes at a global scale, it avoids costly mistake before the ship out product and services to the end-users (Gopalakrishna & Subramanian, 2008). The literature explains that in E-Commerce environment organizations must play both roles in the space and place. Activities in marketplace such as purchasing, production, marketing, distribution, and after sales services can be done faster, better, cost effective, and in efficient ways than before, using “information”. However, the physical value chain has had difficult to explain companies’ behaviour in the context of virtual economic environment like E-Commerce. Therefore, the purpose of this study explores the competitive advantages that organizations can get after integrating the PVC in VVC both together in the E-Commerce market.

2.0 METHDOLOGY

The research follows a deductive approach in which explanations and arguments are built with empirical evidence and associated theories. A deductive method is used for this research because the conclusion is arrived at by a logical generalization of known facts (Sekaran, 2003). The Literature has been reviewed under four main topics: Value Chain, Virtual Value Chain, E-Commerce, and Competitive Advantage in E-Commerce. The relevant topics have been searched through ScienceDirect, Emerald Publishing, Google Scholar, JSTOR, Taylor Francis

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Online, and ResearchGate databases in the time frame 25th of December 2020- 30th of January 2021. In this paper, the author has highlighted few Multi-National Enterprises, who are successful in the E-Commerce market in Sri Lanka. Sri Lanka is selected because the E-commerce market is an emerging market and expected to grow tremendously within five years (Daily Mirror Online, 2020). This paper is organized as a concept paper and next section described the literature about the physical, virtual and integration of the value chains both together. The Discussion and Conclusion section discussed how companies can succeed by using "information" throughout their value chain process in the E-Commerce and highlights few future research areas.

3.0 EMPERICAL REVIEW ON PHYSICAL AND VIRTUAL VALUE CHAIN

Businesses and their functional activities have changed significantly in the last 20 years and successful organizations are now replacing internally focused-development models with alternatives, that allow a broader view of the businesses as part of the world around it (McPhee & Wheeler, 2006). Gopalakrishna & Subramanian (2008) stated that today marketers are challenging the conventional marketing practises and rewrite the marketing rules across the boardroom to throughout the world. With the rapid development of ICT and globalization, marketing landscape has been transformed into different way of doing business, hence it creates an opportunity for firms to do business across borders and for consumers to buy products\services from other countries.

The value chain can be defined as a methodology developed for all operational activities in a synchronized way to reduce the production cost by increasing the efficiency of the production cycles and maximizing the perceived value by the end-users, by breaking down barriers between departments and areas (de Moura & Saroli, 2020). Organizations, which exist in the E-Commerce market should operate in the physical world and virtual world, but the processes of creating values in the two worlds are not the same. Integrating those two chains are a very tactical challenge, but those who understand how to master both can create and extract value efficiently and effectively (Rayport & Sviokla, 1995)

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3.1 Importance of Physical Value Chain in Marketplace

According to Porter's value chain definition, it is a model interconnecting with the primary activities of the Supply-side such as In-Bound Logistics and Operation with Demand-side activities such as Outbound Logistics, Marketing, Sales, and After Sales Services. Four supportive activities are helped to the functionalities of the Primary activities such as Procurement, Technology, Human Resource, and Firm Infrastructure (See Figure 1) (Porter, 1985). Porter (1985) described the physical value chain as the activities that organizations perform within and around the firms, those activities use to make the competitive strength of the organizations. It arranges all the related activities in a systematic way that helps organizations to produce the products or services for the customers, who are willing to pay a price. Also he argued that with the value chain activities, the organizations ability to perform the set of activities and can manage the linkages between these activities to make a competitive advantage. (Porter, 1985).

The " Margin" of the organization is profit, which depends on their ability to manage the link between all the activities in an efficient and effective way. The purpose of the value chain model is to assist the organization to evaluate their activities and select the optimum set of activities and methods to perform them to sustainable in the competitive market (de Moura & Saroli, 2020), but in the modern world, companies should maximize the value for the customer through the coordination of the functions involved and be improving the interaction between their vendors, by taking advantage of the Internet.

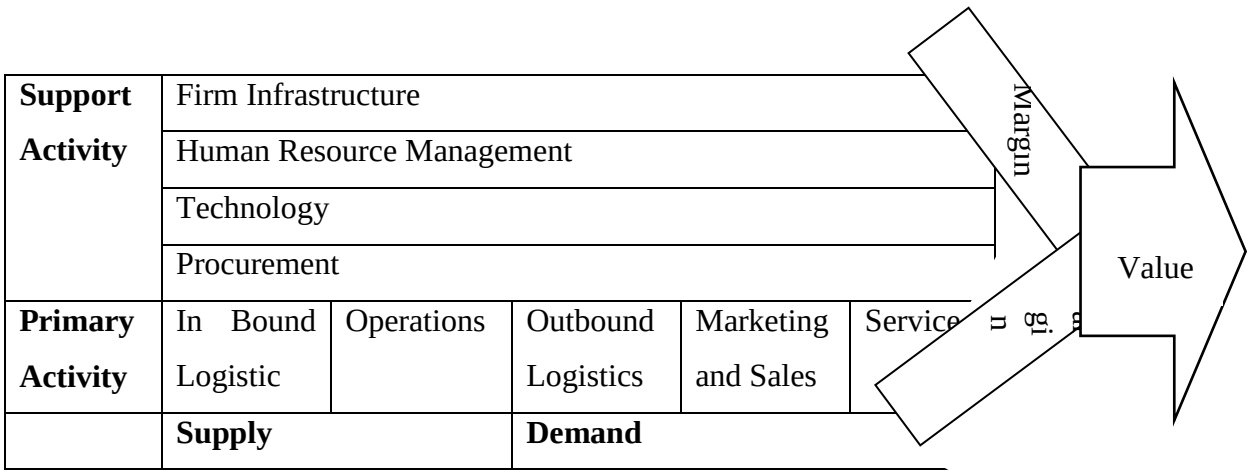

Figure 1: Michael Porter's Value Chain Model (Porter , 1985)

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E-Commerce has huge potential to use new technologies, the Internet, and the World Wide Web to transfer transaction specific information to all the stakeholders (Bhatt & Emdad, 2001). Customers get many advantages due to lowering search costs, whilst the firms can benefit from the economy of production because they can attract more customers by providing products and services at a lower cost. Also, businesses can attract more customers for the customized products services for customer specific specification. In E-Commerce, the environment is completely performed based on the " information" therefore the virtual value chain provides an important line of thinking and getting a number of advantages by performing in the virtual world.

3.2 Importance of Adapting Virtual Value Chain in Marketspace

VVC is defined as the value chain system formed by information-based value activities in which companies operate in the virtual world, and these activities help to speed-up the Electronic Commerce market space. It enables to conduct electronic transactions with any business partners along with their value chains and creates opportunities to make interactive relationships with business partners such as suppliers, logistics partners, wholesalers, distributors, service providers, and end-users (Lee, Lee, & Lin, 2007). Virtual Value Chain starts with Content (what is offer), then goes to infrastructure (enablers of the transaction) to distribution and transactional support, then to the context (how is offered?), then Customer supplying user interface and customer interactions.

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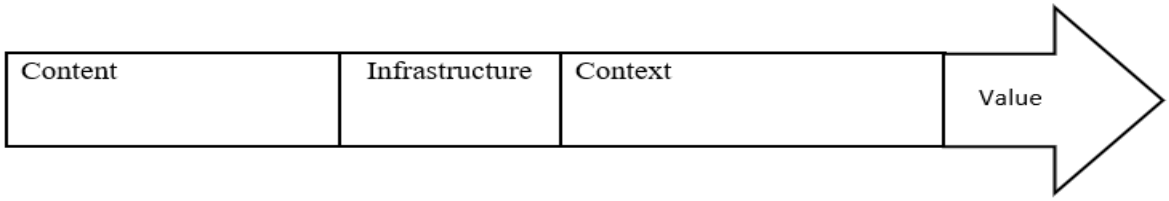

Figure 2:Virtual Value Chain framework

Virtual value chain involves a sequence of five activities to convert raw information into value-added information such as: *Gathering, Organizing, Selecting, Synthesizing, and Distributing* (Rayport & Sviokla, 1995). Organizations should gather raw information, organize it, then select valuable information, synthesize, and distribute it, in order provides new value to the customer. If applies these activities with Inbound Logistics, businesses can get the raw

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information of the supplier such as quality, designs, volumes or quantities, supply or delivery times and organize the data into more valuable information, select the information, synthesis and distribute it to deliver superior value for the customers (Swierczek & Kaspersky-Moron, 2016). If companies move into the information-based world to perform the value-adding steps, there is potential for top-line growth increases. It gives considerable opportunities to managers to increase visibility, mirroring capabilities, and develop a new relationship with customers at a very low cost. (Rayport & Sviokla, 1995)

3.3 Integration of Physical and Virtual Value Chain using Value Matrix

In a physical setting capturing customer information is not an easy, in a virtual setting customer are more willing to provide information. Dell Computer, Amazon.Com, and E-Trade capture the public attention by enhancing the customer value (Bhatt & Emdad, 2001). Dell Computer owner Michel Dell explained at the interview "You actually get to have a relationship with the customer and that creates valuable information, which in turn, allows us to leverage our relationships with both suppliers and customers. Couple that information with technology, and you have the infrastructure to revolutionize the fundamental business models of major global companies." (Magretta, 1998). Integration of Virtual Value Chain and Physical Value Chain will increase the visibility, mirroring capabilities, and new customer relationships of the organization in the virtual world. Magretta (1998) stated that Dell Company use technology and information to blur the traditional boundaries in the value changing among manufacturers, suppliers and end-users and company combine each piece of strartegy such as customer focus,supplier partnership, mass customization, just-in-time manufacturing with innovative information-based technology to achieve new levels of efficiency and effectiveness (Gopalakrishna & Subramanian, 2008).

Visibility-It allows organizations to "see" physical operation through information. Many organizations use IT systems to coordinate, measure, and sometimes control the business process, those information help managers to plan, execute, evaluate results with greater precision and results (Gopalakrishna & Subramanian, 2008). In recent years, organizations operate in an E-commerce environment use Information throughout the physical chain, not as an individual activity. Many companies like Fed-Ex, Wal-Mart, and Frito- Lay transfer this visibility into a competitive advantage. (Rayport & Sviokla, 1995).

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Mirroring capabilities – This mean substitute virtual activities for physical ones for marketspace (Gopalakrishna & Subramanian, 2008) .After implementing the visibility of the infrastructure of the physical value chain, an organization can implement the value-adding steps in market space by providing faster, better with flexible, efficient, and effective products and services at a lower cost (Rayport & Sviokla, 1995). When companies move activities from marketplace to marketspace, they begin to create a virtual value chain with the parallel improvement of the physical value chain (Kumar & Rajeev, 2004). However, Bhatt & Emdad (2001) argues that performing both the physical and virtual value chain activities is more important, but in E-Commerce, more and more activities are information-based performing them electronically becomes far more important than conducting these functions physically.

New customer relationship - Companies create more value in the marketspace and create a space-based relationship with the customer. In the E-Commerce market, building customer relationships are more important because of customer's repurchase through the same website in future after building good relationship with the organization. By mining customer information, companies can build and forge a long-term relationship with their customers.

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4.0 DISCUSSION

4.1 The significance of virtual value chain to reveal the competitive advantage in E-Commerce

Integration of Virtual Value Chain with physical value chain harness the two different economic of benefits. First advantage is, it tightly coordinates the traditional supply chain and secondly, it benefits from the focus and specialization that drive the virtual corporations. With the virtual integration, companies have potential to achieve both focus and coordination (Magretta, 1998). In a competitive environment like E-Commerce, the way that organizations generate, manipulate, select, and make use of information about their customers potentially affect the companies an edge over competitors. Cost Leadership and Cost differentiations are the main competitive advantages that companies can build over their competitors (Porter, 1985). But in the E-Commerce market, organizations can get the permanent advantages of cost leading and differentiation by applying information-based integration with PVC and VVC. The Market-Based View (MBV) and the Resource-Based View (RBV) theories were explained by Barney in

1991, those methods also explained the competitive advantage firms can achieve. RBV mentioned that resources are valuable, rare, inimitable, and non-sustainable (Barney, 1991), but companies can utilize these resources to get the competitive advantage for superior performance.

Few years ago, founding companies had to produce all the components for themselves and various components of the industry vertically integrated with one firm, as the industry grew more specialized companies developed to produce specific component (Magretta, 1998) , therefore firms assembled all the specialized component together and provided value addition to the customers. If firms want to get higher profit, should invest capital on activities where they can add value for the customers not everything should be done in same roof (Gopalakrishna & Subramanian, 2008).

By integrating VVC with the PVC, organizations can reduce the total cost of production of the interdependent activities. According to Magretta, (1998) Virtual Value chian integration help firms to stiching with the partners and treat them as partenrs inside the company. The VVC can improve the efficiency of the information communication technology across all the departments, it will increase labour productivity, increase the inbound logistics activities, increase the relationship with the suppliers, planning operation based on the information, then it will be decreased the cost of production (Gopalakrishna & Subramanian, 2008). Rayport & Sviokla (1995) are argued that organizations can create value with digital assets and they can harvest them through a potentially infinite number of transactions, thus can be created competitive dynamics in their industries.

By applying the VVC throughout the management process it can sharply reduce the cost of management in transportation, communication, finance, and operations. By managing Information throughout the Physical Value chain process companies can enhance the effectiveness and efficiency of the managers and can reduce the huge expenses of managers and related equipment of process and technology is booseted the values of information sharing (Magretta, 1998). It will help to increase the level of coordination between departments, thus companies can reduce the cost of production. VVC in the context of EC helps small companies to increase the Economic of Scale by producing products at the lower cost of production and

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services in markets dominated by big companies (Rayport & Sviokla, 1995), also companies can redefine Economic of scope by using a single set of digital assets to provide the value to many desperate and different market.

In the context of EC, transaction and coordination with the external partners are playing a very important role. By applying VVC with the PVC to serve in the EC environment can decrease the transaction cost, synchroniz increase the ability to coordinate with other value chain partners, thus gain huge competitive advantages in the succeed of competition. (Rayport & Sviokla, 1995)

In the context of EC, continuous improvement of the network of inner information management and the penetration of the extranet and internet between companies, their suppliers, customers, and competitors in efficient information channel will help to decrease the principal-agent cost. If the company provides products and services to the customer with something unique, it has achieved operation differentiation different from its competitors. If companies operate in an EC environment they can integrate VVC with PVC to increase the differentiation by innovating existing value activities and rebuilding the value chain. Virtual value chain adds the value of the products and services by providing additional information on products and services. Companies that are performing virtual activities of production and operation in the marketspace encourage customers to take part in their production process to improve the speed of responses to change the market, communicate with the customer more quickly, more economically, and more credibility, and create more communication channels with which is good for stabilizing them.

By integrating the VVC with PVC in the context of EC, companies can rebuild the value chain by integrating resources and an innovative management model. Companies can rebuild the value chain by integrating horizontal and vertical integration. Companies should fulfil the value addition process so quickly and effectively, by integrating the value-adding resources and Business Process Reengineer (BPR); it also integrates value addition by integrating the resources of activities connected; use collaborative supplier management system and customer to rebuild the virtual value chain system

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Rebuild value chain breaks the limitations of space and time. It could make consumers visit and download digital products anywhere at any time. Ordering and delivering the products can be achieved with limited time in the fastest route. VVC can innovate the selling, running closer to real time based on ability to track market swing very closely, communication, and coordination channels, and ways of sale (Gopalakrishna & Subramanian, 2008). Companies can use video, audio, and images to publish product-related information and help customers to get the required information so quickly to improve mutual communication.

According to Oakland and Tanner stated (2006, as cited in Gopalakrishna & Subramanian, 2008, p.265) most of the Multinational companies like HP, Cisco Systems and Dell have outsourced manufacturing of their products\parts to contract manufacturer and focusing on other important areas such as sales and marketing and R&D. This is possible, because these companies us information throughout the value chain process. As mentioned by Gopalakrishna & Subramanian,(2008)

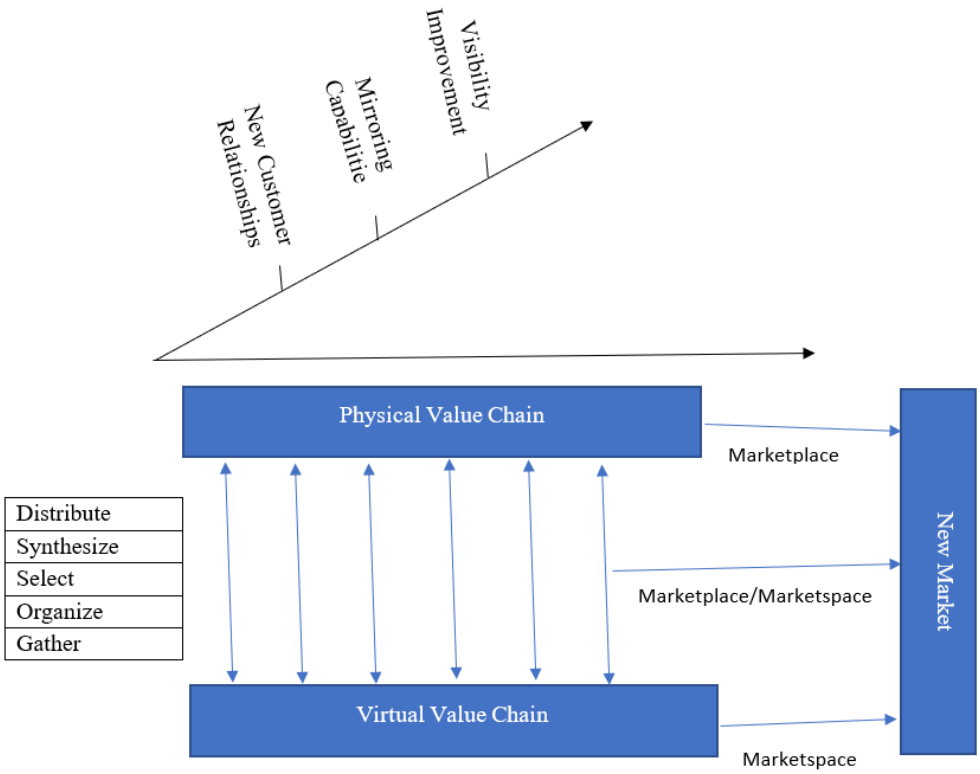

Figure 3: The suggested path from the physical to the virtual value chain

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Ikman. lk and eBay.com have been ranked among the top ten E-Commerce sites in Sri Lanka in 2016 (Withanagamage & Wattegama, 2017), but now the trend is slightly changed to Kapruka.Com, Daraz.lk, Ikman.lk, Takas.lk (The CW and EDB Sri Lanka, 2020) but dominant players of the E-commerce in Sri Lanka by few Multinational Enterprises (MNEs) such as Daraz, eBay, Alibaba, and Amazon in merchandise sales, Uber in the taxi service industry, Uber Eats, KFC, McDonald's, and Pizza Hut are dominated in food industries and some in other areas too. Especially Federal Express, UPS, and DHL dominate in the parcel delivery service industry, and capitalise the information to get the business's competitive advantage by allowing customers to track package delivery online, free of charge, thus increasing customer loyalty in a crowded marketplace (Hamilton & Willem, 2006).MNEs landscape continuing to shift from developed to emerging economies. The tremendous growth of global e-commerce and the widespread expansion of information technologies has fuelled the explosion of E-Commerce (Benmamoun & Singh, 2019). Daraz. lk is the fastest-growing multi-products E-Commerce channel in Sri Lanka, Pakistan, Bangladesh, Nepal, and Myanmar (Palash, 2018). Daraz uses "information" more effectively thought out its value chain by providing multi-products category, developing a convenient delivery channels to the customer, improving the online transaction, responsible to the customer, virtual images of products, after sell service, issuance of refunds, flawless and on-time delivery (Palash, 2018). When customer logs in to the system it evaluates the customer purchasing behaviour with the purchase history and suggests the new products available with his/her preference. Daraz runs ads on Facebook daily that reach out to 32 million users on Facebook, Twitter, and on Instagram (Palash , 2018) .

Uber's E-Commerce platform change the way the world moves and rapidly expand the global presence and continues to bring people and their cities closer. It operates in more than 60 countries and more than 330 cities around the world (Moon, 2015) including Sri Lanka. Uber, connects the "information" of the passenger to "information" about drivers at an unprecedented scale by using smartphone technology.

Uber Eats and Pick Me Foods are the E-Commerce platforms dominated in the food industry in Sri Lanka. They are partnered with other businesses to distribute Groceries,

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Vegetables, Fruits, and Pharmaceuticals Products. These companies integrated Business Intelligence System with their E-Commerce activities. The information gathers from these systems use and evaluates to get an accurate and data-driven business decision. These companies use the information to predict the preparation and delivery time, natural language processing (NPL), text mining, recommending restaurants/foods to customers based on their location and food preference, forecast demand, and supply for each restaurant, optimize spending patterns of the customer for better offers and pricing (Shanmugam et al., 2020).

Few MNE s E-commerce sites are highlighted the above, but there are some other areas we can integrate this VVC with PVC in Sri Lanka such as Hotel Industry, Agriculture Industry, Banking Industry, Super Market Value Chain, Hospital Industry, Education Industry, Manufacturing Industry, and Service Industry. "Information" is the most crucial factor in the E-Commerce environment, it should be gathered, organized, selected, synthesized, and distributed throughout the Physical Value chain to get a competitive advantage.

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5. CONCLUSION

E-Commerce is changing the technological and the relationship landscape of the business (Ratnasingam, 2003) and it provides a new opportunity for consumers, retailers, distributors, and producers to expand their businesses without considering the geographical boundaries. Most businesses have used the internet for their business so that E-commerce participation is expected to grow at a specular level (Ratnasingam, 2003). High revolutionized technology advancement of the internet has exploded E-commerce across the borders whereas businesses should change their value chain philosophies to capitalize on cost efficiencies and product differentiation to strengthen their sustainable competitive advantage (Gopalakrishna & Subramanian, 2008).

Consumer E-commerce readiness and Business E-Commerce readiness is still at the basic level in Sri Lanka. E-Commerce is already established in Sri Lanka, but the degree of its penetration and adaptation is still limited and the country already started to expand the E-Commerce activities. currently, not more than 10% of commerce is not technology-driven, so that there are more untapped areas available in the Sri Lankan market (The Common Wealth and Sri Lanka Export Development Board, 2020). Sri Lanka government has emphasized the

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importance of the adaptation of E-Commerce and internet technologies for the business community and general population in a few years back, simply there is no other option available for Sri Lanka to move forward with its economy (Lane et. al,2004) E-Commerce in Sri Lankan seems to be developing very fast, most of the hotels, bank and travel agents already started to provide service online service (The Common Wealth and Sri Lanka Export Development Board, 2020), with the pandemic situation most the Extra Large, Large and SME businesses invested more in this area to provide efficient and effective service to customers.

Porter's value chain gives a competitive advantage in the Physical World, but doing business with E-Commerce is functioning in both the physical world and virtual worlds. Sri Lankan businesses should understand that the new economy is completely based on "information", unlike supply chain management where the focus is on inventory management. Emerging businesses in the E-Commerce market in Sri Lanka should integrate the "information" as the main factor of the virtual value chain, throughout its physical value chain to improve the visibility of the operation, mirroring capabilities, and make new customer relationships using information. Integration of both value chains increases the efficiencies and effectiveness of the businesses to get a sustainable competitive advantage over their competitors. Therefore, Sri Lankan E-Commerce businesses need to think about this concept seriously and should align their strategic plan with this concept to get a sustainable competitive advantage.

There is a limited number of studies available in this research area in Sri Lanka as well as out of Sri Lanka, so that first attempt to identify and understand the usage of value chain activities with existing Sri Lankan businesses. Then future researches also can evaluate how the existing E-Commerce businesses like banks, hotels, and service provides use "information" to get the decision in operation and to make the new customer relationships. I suggest that the next step would be to develop a practical scenario by integrating these two concepts to verify the sustainable competitive advantage.

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