

Impact of Digital Supply Chain – Increasing Competitive Advantage and Sustainability of Starbucks

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Abstract - The paper focuses on the goal of identifying a correlation between the implementation of digital supply chain of a specific multinational chain of coffeehouses and roasteries and its increase of sustainability and competitive advantage. Hence, the paper could offer a deeper understanding on the importance of digital supply chain and its direct and indirect affects towards a company's sustainability and competitive advantages. The correlation is identified using a desk research study where secondary data would be collected. This would minimize biasness within the research and produce highly descriptive quantitative data. The correlation is made from a correlation analysis of the company's information regarding its before and after year of implementing digital supply chain and the number of competitive advantages that they have gained. Through implementing the correlation analysis, the results show that there is a positive correlation between the relationship of implementing digital supply chain and the increase of sustainability and competitive advantages.

Keywords - Digital Supply Chain; Sustainability; Competitive Advantage

I. INTRODUCTION

Supply chain systems have evolved and transformed over the past years (Olson, 2015). These transformations include the use of digitalized processes in supply chains where it is said to most likely be able to open new markets and attract new customers for a lot of businesses (Arenkov, Tsenzharik and Vetrova, 2019). Most companies have understood that supply chains are seen as a critical aspect where it is considered as the heartbeat of the company (Dittmann, 2012). Therefore, a lot more companies have begun to implement technologies such as big data, artificial intelligence (AI), IoT (Internet of Things) (Hofmann *et al.*, 2019) which have caused a shift in supply chains, developing them from traditional to digital ones as companies perceived that these technologies are beneficial in helping their current supply chains (Insights and York, 2016).

Definitions of supply chains have been developing as well. When traditional supply chain was defined as 'which processes, coordinate, and communicate with business partners, conduct functional logistics activities, and perform managerial control of the physical flow of goods, information exchange and sharing among SC partners' (Waters, 2014). On the other hand, the digital supply chain that is well-known nowadays have been defined as 'an intelligent, value driven network that leverages new

approaches with technology and analytics to create new forms of revenue and business value, through a centric platform that captures and maximizes the utilization of real-time information emerging from a variety of sources.' smart, value-driven, efficient process to generate new forms of revenue and business value for organizations and to leverage new approaches with novel technological and analytical methods... and how supply chain processes are managed with a wide variety of innovative technologies.' (Büyükoçkan and Göçer, 2018). This could be concluded that the big difference gap that the digital supply chain has is the use and implementation of technologies within the process of the supply chain.

A lot of companies have decided to implement this digitalization due to numerous benefits such as increasing effectiveness and efficiency of information sharing between partners, controlling of information flow whether it is with the internal partners or even external (customers), not to mention real time information (Waters, 2014). Starbucks, a coffee company that has been standing since 1971 as a roaster and retailer of whole bean and ground coffee, has started to include this development of technologies inside their supply chains since the early 2008 (Starbucks Coffee Company, 2011). Further research and findings will be discussed in the later parts of the paper.

The main purpose of this paper is to fill the research gap of knowledge in the relationship of whether the implementation of digital supply chain impacts the sustainability and competitive advantage of Starbucks. The coffee company Starbucks has been chosen for this research due to the fact that it is one of the top 20 leading companies in the global supply chain in 2020. Moreover, it is said that the production and process for coffee is a little more complicated than normal supply chains as it needs more attention when it comes to any slight climate change. Knowing whether digital supply chain helps the improvement of supply chain would be helpful to see whether big companies such as Starbucks becomes more sustainable to increase its competitive advantage to other coffee companies or industries.

II. LITERATURE REVIEW

A. Evolution of Digital Supply Chain

It has been said that supply chain is always evolving on how they are managed, coordinated, and controlled (MacCarthy *et al.*, 2016). Nowadays, information

technology has been a critical aspect and part of a supply chain as increasing the use of technology has decrease the cost of information (Wang, 2012). However, in the early years of 1950s supply chains are still considered as the term 'logistics' and then developed into practices of physical distribution and logistics (Ballou, 2007). In the past, supply chains have focused on doing it individually and then has developed into integrating with partners to create one's business competitive strategy (Ballou, 2007). Nowadays, the rapid adaptations and continuous improvement of supply chains have led to the shift of digital supply chains in Industry 4.0 (Ghadge *et al.*, 2020). According to Büyüközkan and Göçer (2018), digital supply chain is defined as '*the involvement of the adoption of sophisticated and smart technological capabilities to make supply chains more connected, collaborative and efficient*'.

Developing into the industry 4.0, more and more companies have implemented technology to support their productivity and performance of their supply chains (Barreto *et al.*, 2017).

Some highlights from the evolution of supply chains would be shown in Table 1:

TABLE 1. THE EVOLUTION OF SUPPLY CHAINS (ZUCKERMAN, 2000)

Year	Supply chain evolvement
Late 1950s	Inbound/outbound inventory flows.
1970s	MRP (materials required planning) started.
Between 1970s and 1980s	Idea to emerge of just-in-time shipping/manufacturing for allowing faster information flow.
1980s	Implementing the just-in-time system
1993/1994	The term 'supply chain' has been developed.
1995/1996	Supply chain increased popularity.
Late 1990s	Introduction of internet, transforming into web-enabled supply chain.

In addition, digital factors such as ICT has been changing the traditional supply chain systems. It has caused supply chains to eliminate some processes and gain advantages such as direct interactions with customers (MacCarthy *et al.*, 2016). Therefore, the development of this supply chain has become more and more adaptive to customer's satisfactions hence, each customer could have their own 'supply chain' (delivery methods, delivery time, communication) (Miethlich and Abasova, 2020). This has caused digital supply chain to be able to take a step closer to engage with its customers (their wants, needs, preferences) which could then increase the customers' satisfaction. Not only that digital supply chains are said to focus on customer satisfaction, it has also been recognizing the reduction of harmful emissions of companies where digital supply chains are developed to reduce carbon emissions through Internet of Things (IoT), Cloud computing, Augmented Reality, and many more (Miethlich and Abasova, 2020). Therefore, the digital supply chain has also linked itself to an environmental factor.

The evolution of digital supply chain could be clearly seen in as industries begin to also develop from industry 1.0 until now. The figure below has stated where digital supply chain has entered and where it has become more prominent.

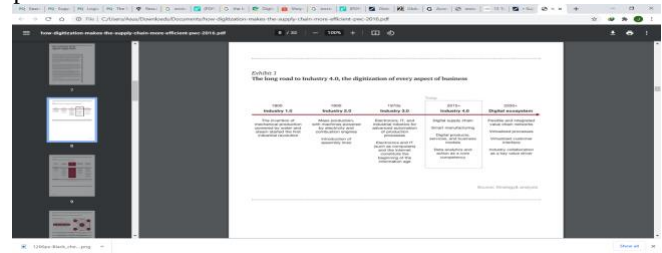


Figure 1 The long road to Industry 4.0 (Schrauf and Bertram, 2016)

In the figure above, it is visible that digitalization will keep on developing in the later years, making it a more crucial factor to implement inside the supply chain.

B. Importance of Digital Supply Chain

Digital technologies have drastically increase in usage due to 3 main reasons which are: lower computing cost, cheaper storage, and less costly bandwidth (Mussomeli, Gish and Laaper, 2015). Due to those reasons, one of the many crucial aspects of business survival is now the implementation of information technology (Wang, 2012). Digital supply chains has become one of the reasons why companies can produce more services or products through digital aspects such as having direct relationship between the goods and the customers using customer-generated designs (Huddar, Kumatagi and Latte, 2017). There are numerous ways on how to implement digitalization of supply chains, some examples of these are: Internet of Things (IoT), big data analysis, cloud computing, social media, user interface, robotics, and many more (Agrawal and Narain, 2018).

There are few advantages of digital supply chain that became important factors for companies or organizations to want to implement this digitalization. First, reducing transaction costs. With the aid of technology, companies no longer worry of the changing patterns between the suppliers or the customers as the efficiency and the power of technology could help manipulate or process these data to allow companies to have efficient and predictive networks (Mussomeli, Gish and Laaper, 2015). Second, information technology has helped to enhance successful planning and performance of the supply chain as it widens the supply chain boundaries to collaborate, coordinate, and communicate throughout the organizations (Cegielski *et al.*, 2012). Third, the information technology implemented inside the supply chain could help organizations with their decision-making process, to reduce their task uncertainty. The organizations do this with the implementation of information inside their decision making process to help increase the quality improvement of the production process and minimize any possible waste (Cegielski *et al.*, 2012).

Some of the characteristics of digital supply chains that could be considered as important advantages are pointed out in the figure 2.

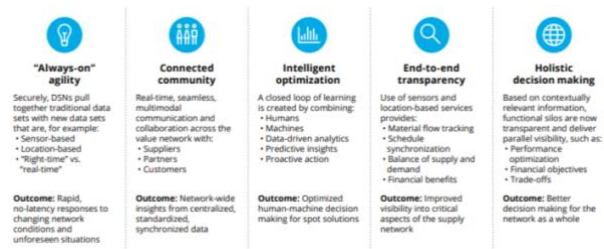


Figure 2 The Characteristics of Digital Supply Chains (Mussomeli, Gish and Laaper, 2015)

A clear example of a company gaining advantages after the implementation of technology is Coca Cola. Coca Cola decided to adapt its machines with technology to produce a self-serving machine that could make over 100 different varieties of soda. To do this, they used RFID (Radio Frequency Identification) so they could identify the quantity of flavour of the soda and transmit it back to Coca Cola to make the specified drink. With this system, not only that Coca Cola could make their drink service faster and more efficient, but the company could also gather more information regarding their customer preferences such as what they buy and how much they drink it. The information could be turned into data that could be helpful for any future products Coca Cola is going to make.

C. Sustainable Supply Chains

When talking about purposes and goals of sustainability, there are numerous understandings and definitions that could be placed. According to Schaltegger et al. (2012, 2016; Lüdeke-Freund, 2009), the purpose of sustainability is '*Integrating ecological and social activities into an organization's core business so that business success is achieved through solving sustainability problems*' (Bals, Lydia, Tate, 2019). Commonly, the Triple Bottom Line (TBL) is implemented when to assess sustainability. TBL includes 3 aspects in the supply chain's sustainability which are: environment, economic, and social, where these aspects help gain better understanding to how sustainability is perceived and measured. Therefore, to understand better the perceptions of supply chain, this section will discuss various sustainability issues that most organizations face in their supply chain within their 3 different factors.

Environment:

A lot of companies have dealt with climate change and this is one of the most crucial factors that have usually influence a supply chain's sustainability in the environmental aspect. Climate change is defined as the accumulation of man-made greenhouse gas that leads to having more heat trapped in the atmosphere (Kane, 2014). Hence, these factors have made the environmental factor

indirectly leading or affecting other factors such as the economic factor as it is generally perceived as the management that aids the efficiency of the supply chain performance where good environment aspect would reduce and minimize waste and cost. The minimization of waste and cost would then lead to the increase of productivity in the supply chain (Pereseina et al., 2014).

Economic:

For the past 20 years of supply chain sustainability research, most of them has addressed the economic factor as a more important factor compared to social and environmental (Beske-Janssen, Johnson and Schaltegger, 2015). This is said to be crucial as the economic factor influences greatly the sustainability of supply chain as it affects supply chain's ability to improve and to become more transparent for communication and information sharing (Morana, 2013).

Social:

As much as the economic factor is important, the social factor also holds key points to make a supply chain sustainable. It can be said that when the development of economic factors does not positively influence the social consequences, it'll become even more costly to fix both factors as the economic factor should be well grounded in the culture and society (Mulligan, 2014). Not to mention that the social factors would also help companies engage in a long-term perspective to see how humans adapt to changes needed to be done to make a supply chain sustainable (Rao and Research, 2021).

However, it is said that IT would be one of the key features of digital economy which allows machines to interact and coordinate to produce and use quantity of data and information (Belvedere and Valeria, 2017). When trying to implement technology or IT systems into the supply chain, there are important things that must be considered such as the readiness of the company and its members to accept the transformation of the supply chain. Therefore, the understanding and transparency of the supply chain should be maximized as IT systems should make the supply chain effective, but not defining all the operational process (Husby and Swartwood, 2009).

Accordingly, this research has its independent and dependent variable. The independent variable would be the supply chain practices that the coffee company, Starbucks has before and after the implementation of the supply chain while the dependent variable would be the advantages that Starbucks gained in the factors of sustainability and competitive advantage of the supply chain when it has implemented the digital supply chain into its system.

D. Competitive Advantages through Digital Supply Chains

When talking about competitive advantages, it is said that companies that have deep, collective, and determination to achieve the same goals or objectives would be able to obtain more resources, recognitions, and awards in compared to their competitors (Liao, Hu and Ding, 2017). Furthermore, companies gain these competitive advantages by using its competitive strategy within the company. Competitive Strategy in this case means ‘the set of customer needs that it seeks to satisfy through its products and services’ (Chopra, 2015). Most often, for companies to achieve competitive advantages, they get to know their market and what type of product is going to be produced. Hence, this is where supply chain comes into the picture, where the supply chains would be the main role in creating the new product developments, the operations team would help transform the input of the new product specifications into an actual output, and then distribute it until it arrives to the customers (Chopra, 2015).

Through the help of digital supply chains, these are a few competitive advantages that are gained when implemented within organizations or companies. The first one would be gaining better visibility and traceability within the organization (Haddud and Khare, 2020). This would differentiate the company and their competitors as a more efficient flow of supply chain would be achieved and faster production and better communication would be achieved. Moreover, it could give a better and more accurate maintenance predictions and error identifications, helping the company to improve the overall company performance.

E. Digital Supply Chain Effects Towards Revenue

Nowadays, companies have implemented digital supply chains not only to improve its supply chain effectiveness and efficiency, but also to help generate more potential revenue within the company. To take a few examples, the system of IoT (Internet of Things) could transfer real-time information as well as tracking, identifying, and managing products. Hence, the RFID (Radio Frequency Identification) is now commonly implemented within supply chains as it can automatically gather product data which could indicate specific number of demands hence enabling the supply chain to reduce time costs within the transportation (Yan, 2017). This would overall increase the revenue within the company as with the help of the technology, it reduces a few extra costs that could be eliminated within the supply chain process.

Moreover, to increase the benefits of implementing digitization to the supply chain is to focus on a specific aim (Zaki, 2019). This specific aim usually deals with what the end consumers or customers would be attracted or interested to. Hence, this specific goal or outcome would be communicated to every member within the supply chain to develop the products that would gain the customers satisfaction. To take an example, the clothing wear, Zara has been using big data to monitor fashion trends and have

their supply chain to become highly responsive to the latest fashion trends. Zara also enables getting the right clothes for the customers at any time they want using Big Data and have their supply chain to become super responsive to the customer wants and needs (Zaki, 2019).

Conceptual model:



This conceptual model proposes a hypothesis where implementing a digital supply chain practice in Starbucks brings positive impact to the company's competitive advantage. The effect of the increase in competitive advantage should also positively impact or increase the whole Starbucks sustainability. These are the few factors that would be taken into account as the hypotheses inside the research.

H1. Digital supply chain positively influences the competitive advantage of Starbucks.

H2. Starbucks increase of competitive advantage positively influences the whole company's sustainability.

III. METHODOLOGY

A. Data Collection

This research will undergo a positivist approach. A positivist approach would be defined as ‘looking at the social phenomena as a world of causal relations where there is a single truth to be assessed and confirmed’ (Takahashi and Araujo, 2019). The primary advantage of using this approach is that the outcome could be implemented and widespread into different cases (Lin Chih, 1998). Moreover, this approach could generalize a bigger aspect which is useful since the findings of the Starbucks company could be studied further and implemented in a bigger aspect of food industries (Kiran Shirazi, 2015). In addition, data collection will rely on desk research which means collecting data with existing resources either from websites, research papers, or case studies that will result in a secondary data collection method. Desk research being a secondary data collection method has numerous appealing advantages which could have potentials to acquire large-scale datasets and gaining them for free or for a very minimal cost (Smith, 2008). This has made secondary data to be very accessible and time effective for researchers to collect them.

The secondary data collected from the desk research using a positivist approach would then be said to be a quantitative research in general. Quantitative research is defined as ‘Social facts which can be investigated by methodologies that utilise the deductive logic of the natural science’ (Horn, 1994). Moreover, a quantitative research brings

several advantages where it could help the researcher to not be dependent towards its subject, could create causal and effect explanations towards a topic, and could create a strong measuring descriptive (Amaratunga *et al.*, 2002). The quantitative research done would directly produce quantitative data which would make collection of data easier and faster, not only in terms of collecting the data itself but also the analysis of the data as it could happen or be done using computers. Quantitative data would also be less influenced by biased opinions of the researcher (Daniel, 2016).

However, although there are a lot of advantages on how the data is collected and the type of data collected in this research, there are also a few concerns that could be addressed. One of the most common concern is the ethical concern of the research. Educational ethics consent ethics where *'A lay out in greater or lesser detail, certain types of behaviour that are specifically favoured by the promulgating body. Any significant variance from those guidelines is ethically suspect.'* (Panter, *et al.*, 2011). However, when talking about ethical concerns, the secondary data research minimizes the chances of these ethical problems to occur as no additional data or information are collected directly from individuals. In other words, the privacy of individuals is more protected when undergoing a secondary research (Smith, 2008). On top of ethical concerns, (Mann and Stewart, 2000) argue that researchers could only observe virtual environment on the web, not real life. This could be a problem on the validity and reliability of the research as anyone has no restrictions over what they could post inside the web and who posts it (Sapsford and Jupp, 2006). There are different types of factors that could affect the validity of a research. (Cohen, *et al.*, 2011 and Winter, 2000) have identified several key factors of what affects or might be the issues of validity: appropriate statistical analysis of data, design of research tools, sample selection, and sample size. However, this research deals with a very specific sample selection and sample size, which is Starbucks, this alone could primarily increase the validity of the research. Not to mention that quantitative data is collected which means that it would most likely produce information about variables and its relationships where consistency of data could be seen and checked to come up with the output given (Amaratunga *et al.*, 2002).

Moreover, another concern said is generalisability which is considered as 'a major criterion for evaluating the quality of a study' (Kerlinger and Lee, 2000; Polit and Beck, 2008). However, quantitative research could enhance or minimize the issue of generalizability by familiarizing the sample chosen for the research- in this case would be an advantage as the scope of the research is very specific.

B. Data Analysis

The data analysis that would be used in the research would be the correlation analysis. A correlation analysis is a *'Statistic technique which aims to find relationship with correlation degree between two variables'* (Zawawi, 2012). The two variables used in this research would be the competitive advantage of Starbucks and the development of its digital supply chain. In this research, Starbucks competitive advantage would be considered as the number of achievements Starbucks attained before and after the implementation of its digital supply chain. Hence, the number of achievements in the year where the digitization is implemented or developed, the related number of achievements in that particular year would be counted.

To start off, the table below provides the digital achievements that Starbucks has developed in its supply chain:

TABLE 2 STARBUCKS' DIGITAL ACHIEVEMENTS (WELCH AND BUVAT, 2013)

2009	Created the mobile app, mystarbucks for customers to locate nearest Starbucks store, gain knowledge about the company's coffee.
2010	Used geo-location to signal customers around the area of Starbucks, notifying them of the current discounts or sale.
2011	Releasing the Starbucks Card Mobile app to allow customers to pay in Starbucks stores using their mobile phones.
2012	- Creating digitally enhanced customer experience as it booked \$3 billion in loyalty cards and double user enrolment. - Using a mobile payment system app, Square (similar to debit or credit card) where customers would be able to scan QR code and get digital receipts immediately.
Early 2013	Releasing My Starbucks Idea site where customers could submit ideas on how to develop products in Starbucks.
2013	7 billion mobile app users to collect 10% store payments via mobile.
2014	Enhances iphone app for digital paying and tipping
2015	Launching mobile pay and order across the US.
2019	Previewing a traceability Starbucks mobile app where customers could trace the journey of the Starbucks coffee they ordered.
2020	Using AI inside Starbucks

The data collected in the table above is collected from official stories presented in the Starbucks official website and journals correlated with the digital implementation that Starbucks carried out within their supply chain from 2009-2020. All the data filtered are the **digital** implementations only as this is to correspond to the main research question to prove whether digital supply chain affects the competitive advantages that Starbucks has. Other non-digital improvements or implementations within their supply chains are not considered so it does not affect the current correlation that is trying to be proven in the main research question. The table also ignored any year where Starbucks did not improve or implement anything digital within their supply chain. Hence, the years skipped or not given inside the table shows that Starbucks did not implement or improved anything new to their current supply chain in the given year.

The research did not look for any year before 2009 as Starbucks has only started to implement digital aspects within their supply chain starting from 2009.

As the knowledge regarding the number of Starbucks digital implementation are known, below listed are the achievements that Starbucks has gained in that year with the help of the digitization that has been done towards its supply chain. In this research, its competitive advantage would be conceptualized as 'growing' or 'increasing' when there's an additional, different competitive advantage that Starbucks achieved in the years where it is also developing digitally.

TABLE 3 STARBUCKS' ACHIEVEMENTS (STARBUCKS, 2013); (MARKET ET AL., 2012)

2009	- No.1 best coffee (Fast food and Quick refreshment categories). - No.1 most popular refreshment chain - Opened stores in Aruba and Poland. (Total: 16,635)
2010	- Expanded digital offerings (free Wi-Fi, Starbucks digital network) - Open stores in El Salvador, Hungary, and Sweden. (Total stores: 16,858)
2011	- Sustainability design award - Most ethical company, European Coffee Industry - Launches create jobs for USA for helping small-business growth. - Open stores in Guatemala, Curacao, and Morocco. (Total: 17,003) - Open farmer support centre in Mbeya, Tanzania
2012	- Opened 2nd farmer support centre to help coffee growers who represent Starbucks collective supply chain in Manizales, Colombia, and Yunnan) - Acquired La Boulange bakery brand to elevate food offerings. - Acquires Teavana to have tea category menu. - Open stores in Costa Rica, Finland, India, and Norway. (Total:18,066)
2013	- Strengthen ethical sourcing efforts with coffee farming and development in Costa Rica - Open stores in Vietnam and Monaco. (Total: 19,767)
2014	- Launching college achievement plans with Arizona State University to offer qualifying Starbucks U.S partners to complete a college degree online. - Open first Starbucks Reserve Roastery and Tasting Room in Seattle - Launched Starbucks Mobile Order & Pay - Open stores in Brunei and Colombia. (Total: 21,366).
2015	- Offers full tuition coverage for all 4 years of an undergraduate degree. - Reaches 99% ethically sourced coffee. - Open stores in Panama. (Total: 22,519)
2019	- Best company for diversity. - Best company for women. - Best company culture. - Best company work-life balance. - Best professional development
2020	- AI being able to analyse Starbucks new location - AI being able to analyse competitor presence

•	AI being able to know when machines need maintenance.
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To explain the data inside the table above, it shows the given achievements and awards that Starbucks have received or gain due to the digital implementation it has done from 2009-2020. The data is collected from Starbucks official websites and news, journals, and also the website Comparably. Comparably is an official website where it provides a platform of culture and data of public and private companies. Starbucks is an official company that is within the Comparably website where its awards and achievements could be seen inside the achievement section. The awards or achievements follow the years where digital implementations or improvements are done. Therefore, any achievements that are not within the years of digital implementation are ignored or not considered.

Similar to the data from the Table 1, none of the data in Table 2 is collected before 2009, where Starbucks first implemented its digitization.

Therefore, after finding the year to which Starbucks has implemented its digitization inside the supply chain and counting the number of competitive advantages cumulatively, a scatter plot is used to identify whether a correlation exists between the digitization of supply chain and the number of competitive advantages.

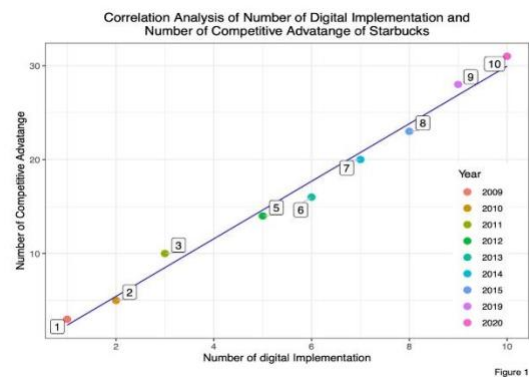


Figure 3 Correlation Analysis

The graph above shows the correlation between the number of digital implementations done and the number of competitive advantages of Starbucks. The number of competitive advantages and digital implementations are calculated in accumulation which means that the 3rd year of the number of digital implementations and the number of competitive advantages is the total addition of the implementations from the first year up to the third year and it is calculated accordingly. The exact number of the competitive advantages are shown inside the graph for more specific outcome. The colour of the circle represents the specific years to when the digital implementation is done.

To support the data collected, the secondary research question hypothesize about how the digitization of Starbucks supply chain increases the revenue to Starbucks,

the graph below shows the statistical revenue of Starbucks before the digitization (before 2009) and after the digitization (after 2009).

TABLE 4 STARBUCKS ANNUAL REVENUE

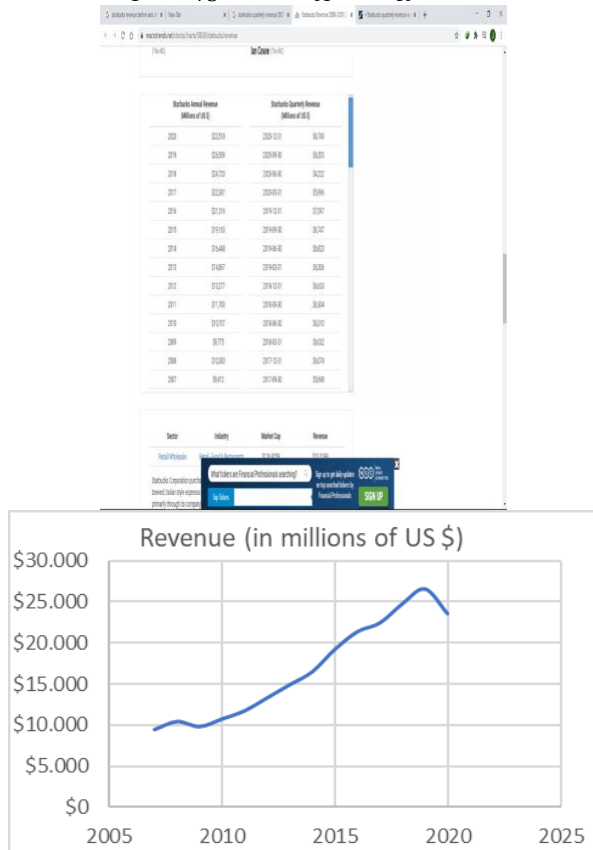


Figure 5 Starbucks Revenue 2006-2020, 2021

IV. RESULTS

A. Final Result of Correlation

The two raised hypothesis which are: 1. *digital supply chain positively influences the competitive advantage of Starbucks* and 2. *Starbucks increase of competitive advantage positively influences the whole company's sustainability* have been proven in the findings above that they both carry a positive relationship or are true, as both the hypothesis were tested to have a positive correlation. This could be visualized in Figure 3 where the graph shows the correlation between these conditions and its relationships.

To start off, in the very beginning of the conceptual model, it has raised 2 hypothesis which are whether digital supply chain positively influences the competitive advantage of Starbucks and whether Starbucks increase of competitive advantage positively influences the whole company's sustainability. Additionally, it could be seen that the number of competitive advantages of Starbucks increase as the number of digital implementations in its supply chain increases as well. In 2008, there was a drastic increase of revenue to \$10.4 billion and Starbucks production within, which resulted in its supply chain not being able to keep up with the drastic increase of demands of the customers and

since the restructure of its supply chain, Starbucks slowly digitize their supply chain for further benefits.

Therefore, Starbucks has not only focused on how to visualize the company sustainable to its customers, but it also transformed its supply chain to a more sustainable one to provide Starbucks better sustainability in general. The digital transformation of its supply chain is considered successful seeing the benefits Starbucks gained each year since 2009. The most statistical data that could be seen increasing were the number of new Starbucks stores opening globally where initially, Starbucks only had 16,653 stores opened in the beginning of 2009 and added in a total of 22,519 stores by the end of 2015 alone.

In Figure 1, it is visualized that Starbucks' transformation resulted in a positive correlation between the number of competitive advantages and the number of digital implementation that Starbucks has done. With this said, the number of competitive advantages is positively impacted (increased) when the number of digital implementations increases as well. In result of the increase of competitive advantages, Starbucks has mostly gained sustainable competitive advantages. Compared to its competitors, Starbucks has gained numerous licenses from official institutions regarding their sustainability, not to mention Starbucks is now deemed as a 99% ethical sourcing coffee shop.

Therefore, not only that the Starbucks digital implementation increase, but also their competitive advantages. Every time Starbucks take a step closer towards their customers, a new competitive advantage is being formed. Moreover, what makes Starbucks gain way more competitive advantages than usual coffee shops are the fact that Starbucks focused deeply on sustainability which is now a great deal or issue for everyone in the environment. Hence, Starbucks' competitive advantages increases drastically as it focuses not only to their customer satisfactions, but also to their overall company sustainability.

This is also one of the many proofs that the implementation of the digital supply chain is helping Starbucks to gain more revenue. Although there are many factors that could be included in the increase of Starbucks revenue, it is clear to see that one of the reasons of the increase of revenue is through the implementation of digital supply chain as since 2009, which is the implementation of the digital supply chain, Starbucks' revenue has been increasing. This could also be said that the current digital supply chain has eliminated or reduced costs that were unnecessary before the digital implementation was done as the supply chain was said to be more effective and efficient for Starbucks.

B. Other Recommendations

Although the research has helped prove whether the relationship between the number of digital implementations and the number of competitive advantages of Starbucks. The findings have also shown that the relationship between them is a positive correlation. However, there are also some recommendations that could be offered into the research paper to make it even more in depth and more generalizable for other companies.

1. *Including other factors within the experimented situation.* This research paper has solely focused the main aspects of competitive advantages, sustainability, and revenue of the supply chain. However, there are also many other factors that could be considered to why Starbucks have gained all the advantages mentioned in the paper. A few examples of these other factors could be talking about Starbucks' supply chain resilience and visibility.

2. *Measuring the effects of other factors mentioned in the 1st point.* Knowing what other factors influence the competitive advantage, sustainability, and revenue is recommended, however, to provide more accuracy within the factors that should be included, providing statistical or numerical data regarding the relationships between the different factors and its affects towards sustainability, competitive advantage, and revenue would be deemed as more reliable and accurate, not to mention that the research could see more details regarding how much the digital supply chain actually affects the sustainability of Starbucks in general.

3. *Enlarging the scope for better generalization.* Not only that this research has only focused on one specific coffee shop, but also provided less examples of other coffee shops or similar situations that Starbucks have gone through. Although some similar cases could be helped by the generalization of Starbucks' situation, some improvements still need to be done to enlarge the scope of generalization of cases that are similar to Starbucks as more information and more concluded relationships of their situations need to be analysed and done.

V. CONCLUSION

The research conducted a correlation analysis to prove whether there is a positive relationship between the implementation of digital supply chain in Starbucks and the increase of sustainability and competitive advantages of Starbucks.

The positive result shows the importance of digital supply chain in today's businesses as it could be the core of how well the business will run and operate. Seeing analysis of data from Starbucks, there were major advantages and gains Starbucks received after it restructured its traditional supply chain into a digital supply chain. The proof lies in the quantitative data that this research has provided to allow better visualization towards the results.

Although generalization towards every coffee shop cannot be made in an accurate manner, it can be said that coffee shops with similar situations could pay more attention towards their supply chain to avoid or solve similar problems that this case has researched on. This could be said as this research has conducted a positivist approach to help with the idea of generalization.

Hence, through all the research done in a positivist, quantitative manner through desk research and correlation analysis, it could be concluded that a positive relationship is found in the relationship between Starbucks' implementation of digital supply chain and its increase of sustainability and competitive advantages as a company.

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