How Miami became the gateway for flowers in the USA

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Abstract: This paper describes the supply chain for cut flowers in the USA, where 80% of all the cut flowers come from Colombia. This is multi-billion market that creates 130,000 jobs in Colombia and is estimated to generate more than 200,000 jobs in the USA related to different businesses in the floral supply chain, such as the US importers, distributors, wholesalers, and retailers ranging from small florists to mega supermarket chains. The goal was to understand the role of Miami International Airport and how it became the gateway for nine on every ten fresh cut flowers that enter the USA. A case study on the Kroger floral supply chain was performed, and data was analysed under the theory of constraints. Findings indicate that although MIA is not a central location to naturally become a logistics hub for a distribution of such perishable product, because it was able to identify an important system constraint involving cold chain, customs, time, process, and culture; exploit them and organise several of other of its process around them, MIA became the gateway for flowers in the USA.

Keywords: floral supply chain; Miami International Airport; theory of constraints; Colombia; flowers.

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Biographical notes: Janaina Siegler is an Assistant Professor at the Lacy School of Business, Butler University, Indianapolis, IN, USA. She has actively engaged the business community in her academic and professional research aiming to leverage and share the knowledge created together between academia and the businesses, for the business community, and for business students. Her research interests include supply chain resilience, buyer and supplier relationships, business clusters, and technologies related to supply chain.

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1 Introduction

The way we buy things has changed a lot over the years. We hear and read on the news every day about the new mega-merger and acquisition or how 'the Amazon.com effect'

will banish all brick and mortar stores from our neighbourhood. But have you ever wondered where the flowers that millions of Americans buy on Valentine's Day come from? Well, let's consider a few things before talking about that. The way and places we, the final customers, buy flowers changed as well. A generation or two ago, Americans used to walk into a local family-owned florist shop, chat with people who they probably knew by the first name, who on their side, probably knew the farmers who grew the flowers they were then selling. We live in a very different world today. Anyone can order flowers online and have them delivered to your doorstep anywhere in the world, or you can just walk into a neighbourhood grocery store and find a wide variety of roses, carnations, lilies, and many more. All of them fresh, beautifully packaged, ready to go, and at a very affordable price. That is the flower that I want you to consider where it comes from.

This is exactly how the interest to develop this research began. The author walked into a Kroger grocery store in the Midwest of the USA and stopped to appreciate the beautiful bouquet of flowers at the store's entrance to realise then that the majority of those bouquets had labels that said, "Product from Colombia." At that point, it was just a thought of, "Wow, they come from far away." A few months later, while preparing a Supply Chain Design class, this author remembered of this experience, went to a Kroger grocery store, bought a few bouquets, brought them to class the next day, and challenged the students to investigate and discuss those flowers' supply chain and the possible challenges related to them. The experience generated such a great discussion and valuable learning opportunities that they decided to learn more about the floral supply chain and began this research project.

In this paper, I present an overview of the floral supply chain in the world, bring some data to illustrate the evolution of the floral supply chain in the USA, and then bring the initial data of the case we are developing, which is the Kroger Floral Supply Chain. Kroger is the third world's biggest retail chain in terms of annual revenue according to a 2016 Global Report published by Delloite (Farfan, 2017, 2019) and is the world's largest florist distributor.

USA is the country that imports the most cut flowers in the world. About 20% of all cut flowers sold in the world are sold in the USA. About 80% of these flowers come from Colombia. This is a multi-billion dollars market that generates about 130,000 direct jobs in Colombia and is estimated to generate more than 200,000 jobs in the USA related to different businesses in the floral supply chain, such as the US importers, distributors, wholesalers, and retailers. One part of this supply chain caught a lot of our attention: 91% of all the imported flowers in the USA enter the country through Miami International Airport (MIA, 2015; US Trade Numbers, 2020, Sunbeam, 2020). It is not a typo, almost the total number of flowers that enter the continental USA, enter through Miami, and bring us to the research question: How Miami International Airport became the gateway for imports of fresh-cut flowers in the USA? It is essential to understand why and how this happened because logistically it does not make much sense to fly the flowers, which are so perishable and time-sensitive to Miami, which is located in the Southeastern corner of the country and then truck them to all over the USA. We really mean all over the USA, from Miami to NYC, Cincinnati, Houston, L.A, or Portland. "Most of the flowers will head to cities like Honolulu, Las Vegas, and San Francisco" (Pires, 2020). To explain how we made sense of this, we used the lenses of the theory of constraints (TOC).

2 Theoretical background

2.1 The theory of constraints

Eli Goldratt proposed the TOC through a series of books and texts in the mid-1980s and the 1990s (Goldratt and Cox, 1984; Goldratt and Fox, 1986; Goldratt, 1990, 1993, 1994). It radically rejects the efficiency paradigm as a measure for managing a productive system and assumes that a system's global optimum is not equal to the sum of the optimum parts. The TOC sees systems as chains or networks of processes within chains. All systems aim to achieve a specific goal through the accomplishment of interrelated and interdependent links (Dettmer, 1998; Dutra et al., 2020; Sirias, 2020). The TOC aims to improve a process, allowing better flow and productivity focusing on continuous improvement through the identification and exploitation of constraints, as known as bottlenecks.

The TOC has two main components. One is a logistical system focusing on the production floor for a more efficient material flow called drum-buffer-rope (DBR). Over time, the concepts evolved, the constraints were then seen not just as physical, but managerial and policy-related as well.

The TOC's second approach is called 'thinking process', which is the current paradigm of the TOC (Rahman, 1998). To improve a process, allow better flow and productivity, TOC focuses on the continuous improvement through the identification and exploitation of constraints or bottlenecks. For it, there is a cycle of five steps. The first is identify the system constraint(s). Second, decide how to exploit the system constraint(s). Third, subordinate everything else to the decision number two. Fourth, elevate the system's constraint(s), and finally, if any of the previous steps is broken, go back to step number one. With this in mind, we analysed the floral supply chain, through the lenses of the TOC.

3 Methods and data

According to Yin (2013) to answer research questions aiming to understand how and why the case studies are the more appropriate methods. We performed a multi-level case study. We looked at the worldwide floral supply chain, at the US floral supply chain, and at the Kroger floral supply chain, which is the largest single company floral importer in the world.

This study relies on quantitative and qualitative data obtained through primary and secondary sources. Interviews with managers and directors of several different levels and tiers of the Kroger floral supply chain were conducted in addition to tours on their facilities.

3.1 The floral supply chain in the world

Traditionally, European countries have been on the cutting edge of the floral industry, especially the Netherlands. The vast majority of cut flowers and bulbs destined to Europe, the Middle East, and Asia make their way through Amsterdam's Schiphol Airport. These flowers come from many different countries. Some as far away as Latin American countries, such as Colombia, Ecuador, and Costa Rica, along with countries in

Africa, such as Kenya, South Africa, and Zimbabwe (Buchmann, 2016). From the airport, the flowers go to the massive computerised bidding system that is the Aslsmeer flower auctions, now named FloraHolland after merging with the auctions of Naaldwijk and Rinsburg in 2008. Impressive by itself, FloraHolland building is the largest single building by its footprint in the world with 10,750,000 square feet, located just eight miles away from the airport. In addition to the auction centre, the complex serves as a logistical hub for a massive cold chain of truckloads where 21 million of flowers are sold on average every day. This volume increases by 20% on Valentine's Day and Mother's Day. Table 1 shows the countries with a more significant percentage in both imports and exports of cut-flowers in the world.

Table 1 Countries with higher percentage in the cut-flowers industry

Main exporters	*%*	*Main importers*	*%*
Netherlands	42	USA	19
Colombia	16	Netherlands	15
Ecuador	9.1	Germany	14
Kenya	7.8	UK	12
Ethiopia	7.3	Russia	6
Belgium	1.8	France	4.6
Israel	1.5	Japan	3.6
Italy	1.3	Belgium	2.3
China	1.1	Italy	2.2
Thailand	1.1	Switzerland	2.1
Lithuania	0.95	Austria	1.3

Source: Based on http://atlas.media.mit.edu/en/profile/hs92/0603/

Figure 1 places the leading importers and exporters in a world map for location reference. The main exporters are represented by an icon of a purple flower and the main importers by an icon of a green heart.

3.2 The floral supply chain in the USA

Until the early 1970s, the USA cut-flowers market was basically supplied by the species grown on the coastal valleys of California, some parts of Florida, and the Seattle Bay region. In 1971, the USA imported about 7.7% of the 1.3 billion cut flowers sold by them, the majority being roses, carnations, and chrysanthemums. The domestically produced cut flowers are still a significant part of the market, representing a wholesale value of $374 million in 2015, representing an increase of 4% from the year before. California represents about 78% of the total produced in the country (USDA, 2016). However, by 2003, a reverse on the trade balance was witnessed; the USA imported 91% of the 2.2 billion cut flowers sold in the country.

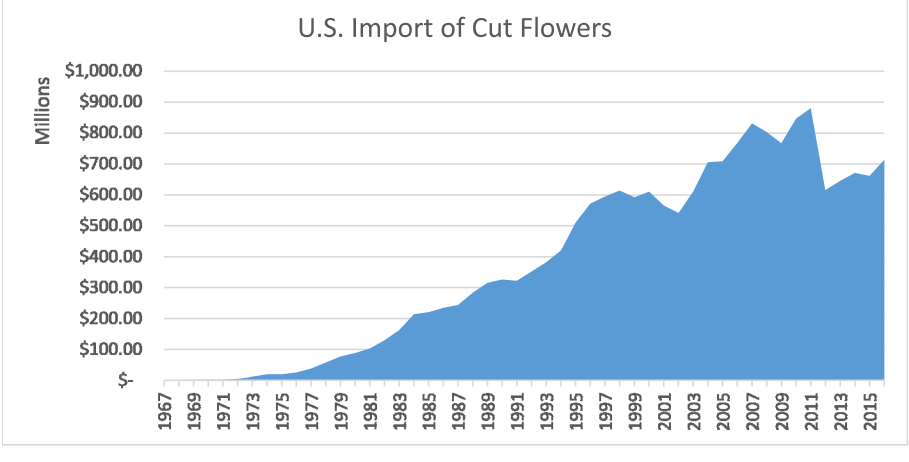
In 1977, the Growers Division of the Society of American Florists and Ornamental Horticulturists filed a petition to the United States International Trade Commission arguing that cut-flowers were "being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry." An investigation was conducted, and public hearings were held.

However, the commission determined that the fresh-cut flowers were not being imported into the USA in such increased quantities as substantial causes of serious injury. The adverse determination was based on the lack of evidence supporting the "serious injury" criteria (decline in sales, a higher and growing inventory, downward trend in production, profits, wages, or employment) [USITC, (1977), p.4–7). Figure 2 illustrates the changes in millions of dollars imported of fresh-cut flowers in the USA since 1967.

Figure 1 Main importers (green heart) and exporters (purple flower) cut-flowers industry in the world (see online version for colours)

Source: Based on http://atlas.media.mit.edu/en/profile/hs92/0603/

Figure 2 Trend of US import of fresh cut flowers (1967–2016) (see online version for colours)

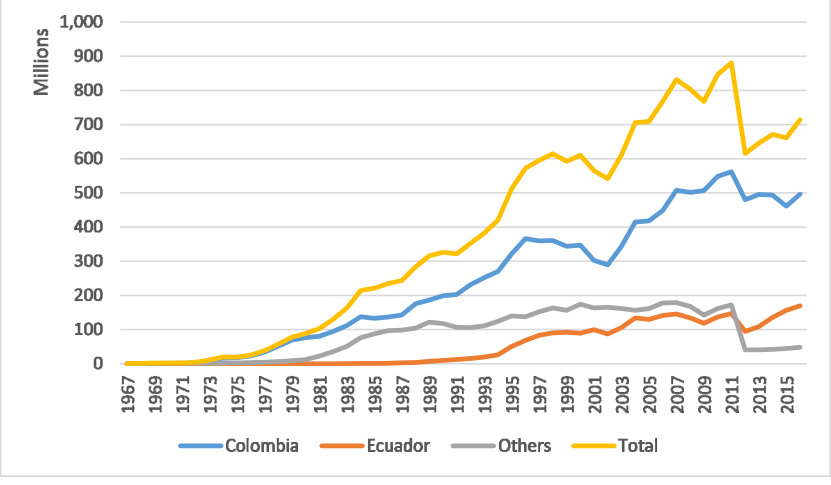


Source: US Census Bureau Trade Data

The vast majority of the cut flowers imported into the USA come from Latin American countries. From those, Colombia leads with about 70% to 80% of the USA market share.

"If you buy a bouquet in a supermarket, big-box store or airport kiosk, it probably came from the Bogotá savanna" (McQuaid, 2011). The floral industry in Colombia started in the early 1960's and grew to what is an estimated 350 flower growers and packers that employ about 130,000 workers, who helped to produce and ship 200,000 tons of flowers in 2013 worth about $1.3 billion (Wyss, 2015). Figure 3 illustrates the changes in millions of dollars imported of fresh-cut flowers in the USA separated by Colombia, Ecuador, other countries combined, and the total, from 1967 to 2016.

Figure 3 Trend of US import of fresh cut flowers per main countries (1967–2016) (see online version for colours)



Source: US Census Bureau Trade Data

3.3 Why Colombia?

3.3.1 Once upon a time…

Interesting enough, this multi-billion industry that generates thousands of jobs in multiple countries, had its official start with a master thesis written by a Colorado State University student at the department of horticulture named David Cheer (Cheer, 1967). In his thesis, Cheer defended that the Savanna region near Bogota, the capital of Colombia, was a perfect place to grow flowers. It was a former-lake-bed, almost nine thousand feet above sea level, with dense clay-rich soil, pleasant climate with little temperature variance, consistent 12 hours of daylight all year round that would make it a perfect place to grow flowers of high quality that anyone would want 365 days a year (Buchmann, 2016; McQuaid, 2011; Wyss, 2015).

Cheer had two main influences on his work. One was Edgar Wells, a Colombian-English entrepreneur who perceived an opportunity for Colombian flowers once he saw the "astronomical flower prices in Washington, DC, and recognised the business opportunity" (Wyss, 2015). Wells business premise was that flowers should neither be rare, expensive, nor reserved for special occasions. He returns and establishes a business in Colombia, whose first shipment to Miami occurs in October 1965. Meanwhile, this was also a favorable political time to strengthen commercial ties

between Colombia and the USA In 1961, President John F. Kennedy launched a Cold War Policy named the Alliance for Progress, to prevent the communist threat in the continent by reinforcing USA-Latin America countries cooperation. Colombia was a key country for that effort (Wyss, 2015), which brings the other major influence on Cheer's work. In the 1960s, the US Agency for International Development (USAID) spent millions of dollars to help Colombia develop its agricultural industry, focusing a lot of these resources on non-traditional exports. "In 1966, USAID sponsored the 'Nebraska Mission', which brought US university researchers and agricultural experts to Colombia to provide technical assistance. Among that group was a Colorado State University student named David Cheever. Inspired by Wells' work, Cheever wrote his Master's thesis in 1967, put his ideas into practice opening his own business and sharing his knowledge with the others who came after him (Cheever, 1967). "Cheever is this revered figure because he had these critical insights," said US Ambassador Kevin Whitaker, who visited flower farms near the city of Medellin early 2015. "It's a remarkable story" (Wyss, 2015).

Commercial treaties also played important roles in boosting the Colombian floral exports to the US. In 1991, the US suspended import duties on Colombian flowers to help the country create more formal and decent-paying jobs aiming to help combat the cocaine industry in Colombia and its violent impact in the USA. Although we do not have data to share in terms of how much this action helped to decrease the impact of the Colombian drug cartels both on that country and in the USA, as a result of this policy, the floral industry in the USA has been changed once and for all. More recently, a new agricultural free trade agreement was signed between USA and Colombia, reinforcing the importance of commercial ties between these two countries (TPA, 2012).

3.4 The floral industry in the USA today

As much as Amazon.com is changing the way we buy our day-to-day grocery needs, grocery stores completely changed the way we buy flowers. Differently from some decades ago, cut flowers can now be found in most grocery stores all over the country, displaying high-quality fresh-cut flowers planted and harvested thousands of miles from that place. To get there, the flowers were moved from one place to another in temperature-controlled airplanes and trucks to cold warehouses, in what is called cold-chain.

The expansion of the flower business to supermarkets was decisive for its development in the US John Vaughan, 80, one of the pioneers of the floral industry in Colombia who was still in business by 2015 (Wyss, 2015), said that together with others in the early 1970s had a hard time trying to persuade US grocery stores like Costco and Walmart that flowers made sense to them. He mentioned that they had to help them see the value per square feet and convince them that flowers were more profitable than other commodities like canned soups, for example (Wyss, 2015).

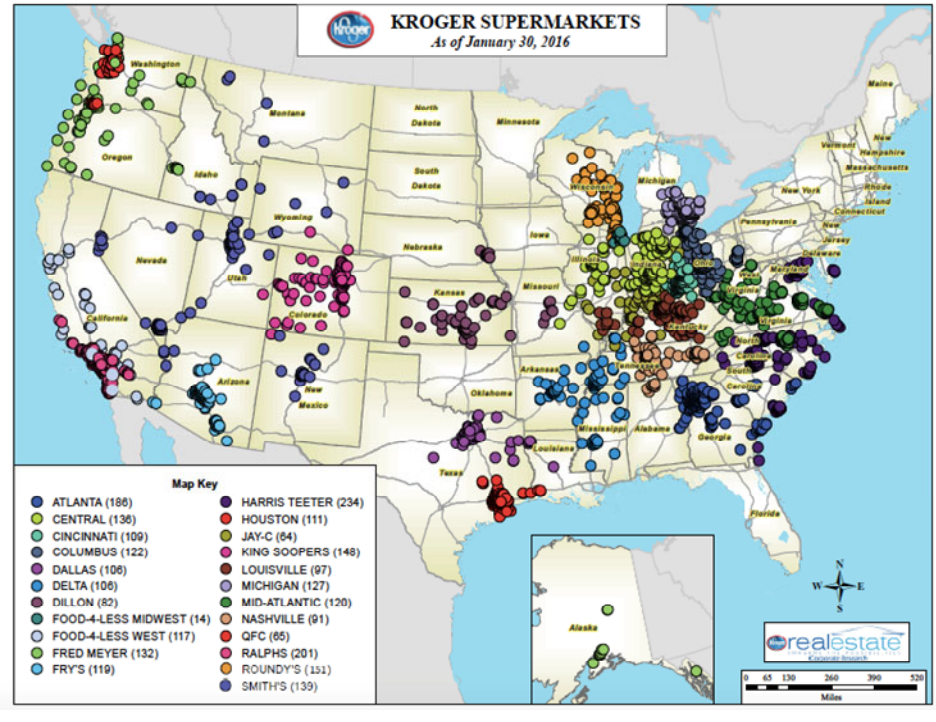
3.5 The Kroger floral supply chain case

3.5.1 Why Kroger?

The Kroger Co. is one of the largest retailers in the world. Headquartered in Cincinnati, Ohio, the supermarket chain moved from sixth to third place in 2016, following Walmart

and Costco in terms of annual revenue (Farfan, 2017, 2019) with fiscal 2019 sales of $122.3 Billion (Investor Relations, Kroger, 2020). At the end of the fiscal year of 2015, Kroger operated 2,778 supermarkets, where about 50% of them had fuel centres, and 42% were operated in company-owned facilities, 784 convenience stores, and 323 jewelry stores. These stores are distributed in 35 states plus the District of Columbia and are served by 39 distribution centres and 38 manufacturing plants that produce that Kroger brands products (Kroger, 2015). As of February 2, 2019, Kroger employed approximately 453,000 full- and part-time employees (Kroger, 2018). Figure 4 illustrates the almost 2,800 Kroger supermarkets distributed in the 35 different US states and the D.C.

Figure 4 Kroger supermarkets as of January 30, 2016 (see online version for colours)



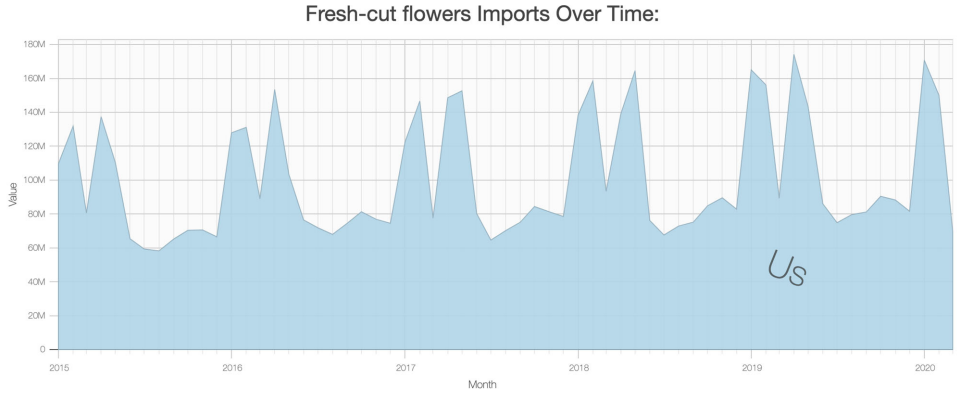
Source: Kroger (2015)

3.5.2 The Kroger floral supply chain

The USA is the major cut flower importer in the world, and Kroger is the major importer in the USA responsible for about 80% of all the cut flowers that enter the country, making it the biggest florist in the world. Cut-flowers are a very special kind of commodities to handle. It is highly perishable and temperature-sensitive. Kroger sells about 30 different types of cut-flowers, whose adequate temperature varies from 34 to 55 degrees Fahrenheit. They require special handling in every step of this cold supply chain. Forecasting and inventory management are also unique challenges. The three big holiday seasons are Valentine's Day, Easter, and Mother's Day. Kroger must also forecast nine

months in advance from the holiday and commit to buy the entire production from the growers. Figure 5 the seasonality related to sales of cut flowers in the USA.

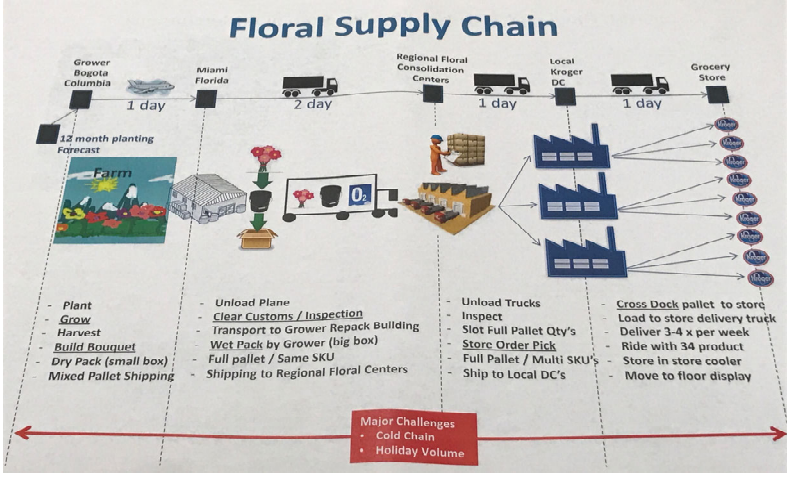
Figure 5 Seasonality of sales for cut flowers in the USA (see online version for colours)



Source: US Trade Numbers (2020)

Kroger has 39 distribution centres and four floral only regional distribution centres. The supply chain cycle lasts five days, not including forecasting. This 5-day process begins at a farm near Bogota, Colombia. Some of these farms have as many as 15,000 employees. In Bogota, the flowers are harvested, cut, built into bouquets (to cut labour cost), and dry boxed. From there, the flowers are flown to Miami, Florida. Miami is the main place they are flown to. "Over the years, Miami International Airport built an infrastructure that it is actually faster and more reliable to fly the flowers to Miami and then truck them to all over the US" (Durrough and Jessup, 2017). This is because it is quicker than flying to other airports in the USA and because it is easier to get the flowers through customs inspections in Miami.

Figure 6 Kroger floral supply chain (see online version for colours)



Source: Kroger presentation, April 2017

Figure 6 offers a break-down of the 5-day process day-by-day of Kroger floral supply chain. Harvesting and dry packing stage happens on the growers in Colombia and takes one day. The inspection and wet packing stage happen in Miami, Florida, right after the plane with the flowers land from a three-hour flight from Colombia. Over the next two days, many steps happen. Some are immediate after landings, such as unloading and customs. After the flowers are inspected for bugs and cleared at customs, they are then put in wet packs (big boxes that contain water) and shipped to regional floral consolidation centres. At the consolidation centres, trucks are unloaded, and flowers are inspected once again to check for damage. Then the flowers are prepped for delivery to distribution centres based on store orders. At the distribution centres, flowers are prepared for delivery to grocery stores. These deliveries occur three to four times per week. Once delivered, they are stored in the store's cooler and then get moved out to the store floor.

Over the next section, we describe each of the main links in the Kroger floral supply chain.

3.5.2.1 Tier 1: flower growers – Colombia

Kroger has a seven-tier supply chain. We are going to analyse six of them, upstream we are excluding the seeds suppliers, and downstream, the final tier represents the final customers. The first tier considered is the flower growers. The flowers are grown and dry packaged in Colombia. There are about 30 different kinds of flowers, but the most popular are (roses, carnations, and chrysanthemums). The seeds for the majority of them come from Dutch labs in the Netherlands (Buchmann, 2016). There are roughly 350 growers in the Savanna's region in Colombia. Some of these growers are real manufacturing-like plants with as many as 10,000 to 15,000 employees executing labour intensive jobs. Long hours of repetitive work are not uncommon, especially during high peak seasons. Productivity averages 1,000 rose blooms a day per employee (McQuaid, 2011).

Although work-related health problems and the use of pesticides and other chemicals long banned in the USA have been reported (Buchanan, 2016; US/Labor Education in the Americas Project and The International Labor Rights Fund, 2007), there is evidence that the floral industry offers dignity and fair paying jobs to more than 100,000 people, many of them were living in rural below poverty conditions and under the drug cartels guerrilla wars in Colombia. On this flower farms, these people have jobs, benefits, health insurance, and in many cases, their children have schools and playgrounds in the plants, and the surrounding neighbourhoods have the vitality of working-class communities (McQuaid, 2011).

Flowers are also made in bouquets in these major farms in Colombia. The next step is to place them to 'sleep' dry packs before their first miles toward their new journey to America. Refer trucks take pallets full of flowers to Bogota International Airport. Aircrafts leave Bogota packed of flowers from many different suppliers, with a complex arrangement trying to minimise the high transportation costs, which are included in the final prices of the flower, on a Free on-Board freight system to the buyers in Miami.

3.5.2.2 Tier 2: customs Miami International Airport

After Bogota, the flowers are then flown to Miami International Airport (MIA), Florida, in temperature-controlled cargo planes. More than a dozen aircraft packed with fresh cut flowers from South America land every day in American airports. “Around Valentine’s Day, that number can increase to a frenetic 50 daily flights” [Buchmann, (2016), p.164]. MIA handles more than 91% of all the flowers imported to the USA. According to Emilio Gonzales, Miami-Dade Aviation Director, the volume on the week before Valentine’s Day is four times higher and sums up to 22 million flowers per day, making this a business on the range of $1 billion annually (MIA News Release, 2015).

But why Miami? Understandably, Miami is a fast flight from Bogota, but it is not a central location in the USA that could naturally make it a logistics hub. Kroger is the biggest florist in the world. It flies its delicate product to Miami, and then truck them all over the country. Why Miami? What makes Miami so special? Why not a central location, such as Cincinnati, where Kroger has its headquarter, or Indianapolis, for example? Why do not fly the flowers to the regional distribution centres strategically located in four different regions of the country, and then truck them to the other distribution centres? These were some of the first questions that we automatically asked Kroger Floral, Strategy, and Supply Chain teams when conducting this research.

The next step in this process is what indeed makes MIA so unique. The flowers are an imported good, and as such, need to go through customs. MIA set up a unique process that allows the flowers, sensitive and perishable as they are, to be quickly unloaded from the cargo planes and moved directly to the suppliers’ cold storage facilities located within the perimeter of the airport. Few minutes after the planes land, crew members from the international flowers’ distributors quickly move all the pallets of flowers to the supplier’s cold warehouse, where the pallets are then separated by piles of SKU numbers (each kind of flower has its different stock keeping unit number). A sample of each pile is sent to the evaluation room, and then they wait for the customs inspection. That is when officials from the Miami-Dade Aviation Department, US Customs and Border Protection (CBP) come and “dissect” the flowers over tables covered with white table cloths searching for bugs or any other kind of material that might make those flower “inappropriate” for imports. This is a meticulous and highly secure process. However, because MIA allowed it to be performed in an environment where the flowers are already a step ahead in their inventory control and in a cold storage owned by the next tier in this very time-sensitive supply chain, the international distributors. The infrastructure that MIA built has allowed it to become the central hub where nearly all flowers industry-wide enter the USA. The infrastructure that the city has set up, including a road system for the delivery trucks, goes to show how important that industry is to the local economy.

3.5.3.3 Tier 3: wet pack – Miami International Airport area

After the approval from customs, flowers are taken out of the dry packs, bottoms are cut – about an inch, and they are put into buckets with water, which are then placed in plastic linen cardboard boxes and transported in water refrigerated trucks. Kroger chose to have the process this way because it is cheaper and more efficient to do it all in one place than to pay employees in each and every store to make the bouquets (Durrough and Jessup, 2017). After all of this, the flowers are loaded on a temperature-sensitive truck and redirected to one of the regional flower only distribution centres.

3.5.2.4 Tier 4: regional floral consolidation DC USA

One truckload of flowers is estimated to cost upwards of $100,000 when shipped to Regional Floral Consolidation Centers. This is where they are organised by SKU and then eventually transported to their local distribution centre. The four Regional Flower Consolidation D.C.s are strategically located to serve the South East, North East, Mid-West, and West Coast. In a highly complex system, the flowers that were picked two days before in Colombia, at this point, are already on their way to one of the 39 local Kroger distribution centres.

3.5.2.5 Tier 5: local Kroger distribution centre

Kroger currently has 39 distribution centres (Kroger, 2015). From there, the flowers are placed on a truck headed to its store destination based on orders of which flowers they want. The flowers are then trucked in temperature-controlled trucks to the local Kroger stores.

3.5.2.6 Tier 6: local grocery stores

Kroger has 2,778 supermarket stores in 35 States (Kroger, 2015). These will be the final stop for the flowers before final customers like you and me buy them. The flowers are kept refrigerated and have a shelf life of about fourteen days. They now enjoy prime real estate space on the expensive grocery square feet. It is usually on well-decorated displays at the front entrance of the stores.

4 Discussion

This paper aimed to understand why and how Miami became the gateway for the imported fresh-cut flowers in the USA through the lenses of the Theory of Constraints. The TOC rejects the efficiency paradigm as a measure for managing a productive system and assumes that a system's global optimum is not equal to the sum of the optimum parts. This helps to understand the first natural thought that comes to mind when the location is considered. To make the distribution system of a commodity so perishable such as cut flowers, one would assume that a main entry port for the distribution should be somewhere more in a more central location for US distribution. Examples could include Chicago, Cincinnati, and Indianapolis but probably not the far Southeast corner of the country: Miami, FL.

When considering this system's goal, an important outcome would be to have all flowers disembarked, inspected, and distributed to their final destinations as quickly as possible. Using the TOC framework, what would be this system's constraints or bottlenecks? Several points could be noted. The first bottleneck that MIA exploited and was able to leverage is the cold chain infrastructure. Due to the high perishability nature of cut flowers, they need to be moved from one place to another and stored in temperature-controlled airplanes, trucks, and cold warehouses. For reference, Latam Cargo that owns the largest cold-storage warehouse operated by a foreign air carrier at an airport in the USA, transported more than 9,000 tons of flowers worldwide, or about 16 million bouquets, from Colombia and Ecuador just in January 2017. "Eighty-seven

percent of these were transported to the USA, and the majority landed in Miami" (Flechas and Chard, 2017). MIA set up a process extremely fast and efficient to unload the flowers from the cargo planes and moved directly to temperature-controlled warehouses facilities located within the perimeter of the airport. This works so smoothly that not even Miami's high summer temperature is any sort of issue.

The second is the importance of the customs infrastructure. Miami airport was able to identify a critical bottleneck in the process and work to minimise its effects on the entire supply chain. This bottleneck was the customs process that, in the large majority of all other US airports, takes a long time and does not offer appropriate temperature-controlled rooms for the flowers to wait for the inspection. The process was hugely optimised. Right after a cargo plane land, all the pallets of boxes of flowers are moved to the supplier's cold warehouse within the airport's facility and separated by piles of SKU numbers. A sample of each pile is sent to the evaluation room for customs inspection. At this stage, US Customs and Border Protection proceed with a thorough evaluation of the flowers performed in an environment where the flowers are already a step ahead in their inventory control and cold storage. Over time, this process allowed the economy of billions of dollars, on a rate, that it becomes cheaper and faster to fly flowers to Miami, and then truck them all over the country on refrigerated truck with a team of drivers. "It is actually faster and more reliable to fly the flowers to MIA and then truck them to our stores in the West Coast than it is to fly them to LAX and wait for customs to clear them in a non-refrigerated facility" (Durrough and Jessup, 2017). The infrastructure that MIA developed has allowed it to become the central hub where nearly all flowers industry-wide enter the USA. The support that the city has set up, including a road system for the delivery trucks, goes to show how important that industry is to the local economy.

The third constraint is the backhaul freight. Florida is the gateway for Latin America. Nearly one-third of all USA exports to Latin America and the Caribbean in 2016 were shipped from or through Florida, and the Sunshine State ranks #1 in exports by air to Latin America and the Caribbean (EFI, 2017). All those cargo planes that would come from Bogota with tons of flowers to MIA would go back bringing electronics, clothing and much more to the southern countries. It was not unusual the next stop from Bogota with flowers to Miami, would be in Sao Paulo, Brazil, with tons of imports to that country. The relationship is so close that "The 2014–2015 economic crisis in Brazil impacted the prices of flowers in the US."

Finally, the hidden reason and bottleneck that was properly exploited and contributed to making MIA the gateway for flowers in the USA. Since the early beginning of that industry in the late 1960's, the initial flights from Colombia were directed to Miami and initiated a culture among the pioneers. Among other things, these Latin American's businesses established their own commercial relationships with grocery stores and future distributors in the Miami region. The culture, weather, and language barrier play a very important role in the strength of this industry. The author of this paper remembers walking into one of the largest temperature-controlled warehouses in Miami and noticing something changing right away. It seemed like we had entered a different country. From the receptionist in the air carrier to the employees in the production line, everybody was speaking Spanish. It was cold, everyone had their jackets on, but the culture, smiles, and warmth among everyone was very characteristic of Latin America countries. When asked about why that way, the person who was giving the author a tour to the facility, said, "This is Miami; everybody speaks Spanish!". In talking more about the reasons why they

chose Miami to establish and grow their businesses, these second or third-generation Latin American businesspeople would mention the culture and weather. Things like, 'Do you know how cold it gets in Chicago?' and 'I do not want to live anywhere else in the US other than Miami' also was shared several times.

As future research opportunities, we recommend furthering the investigation of the backhaul freight from the floral flights coming from Colombia. What other cargo could go on these flights? The new US agricultural trade agreement of 2012 or different trade policies might offer a possible analysis (TPA, 2012). The cold chain and how to maximise space in the refrigerated trucks are also important challenges to be researched. So are the impacts of the Latin America culture and Florida weather in keeping MIA as the gateway for flowers in the USA.

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