Growing B2C: opportunities for DHL Express Amsterdam city Centre

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Abstract

Purpose: To show different opportunities for package carriers in the last mile for e-commerce in Amsterdam city centre

Design/methodology/ approach: Literature review, data analysis and interviews

Findings: Insight in the current E-commerce last mile and the opportunities herein for DHL Express

Research implications/ limitations: This is only applicable for the case of DHL Express Amsterdam City Centre

Practical implications: Useful insight in components of E-commerce and how an international company like DHL Express adapts their approach to this

Originality/value: Findings of other researchers are used to adjust these specifically to the case of DHL Express Amsterdam

Keywords: B2C (Business to Consumer), E-commerce, Last mile, DHL express

Paper type: Case study

Introduction

Research shows that the online market is growing. There has been a notable increase of 18% from 2014 to 2015 (van der Meulen & Kindt, 2010). This naturally results in an increase of 11,3% in parcel deliveries from 2014 to 2015 (Autoriteit Consument en Markt, 2016). On top of this growth the consumer demands also increase. Research from 'Shopping 2020' reveals that customers want full control over their delivery, determining date, time and location (Van den Bos & Groothuis, 2014

The growth of the online market and an increase in consumer demands results in an intensification of transport movements in cities. This leads to a negative effect on the accessibility of the city as well as air and noise pollution and has caused the Municipality of Amsterdam to intervene. Their approach is to spread and reduce the amount of transport movements. An additional step is to shift transportation to two unique possibilities for Amsterdam, waterways and bicycles. With as goal a cleaner city and a smarter use of logistic capabilities by 2025 (Gemeente Amsterdam, 2010).

DHL Express, as a logistics service provider has encountered difficulties delivering to the B2C market in Amsterdam in the last mile due to the increase in volume. Therefor research has been done to be able to offer suggestions for improvement to DHL Express to address the growing B2C deliveries in the last mile in urban areas, with a case study of Amsterdam.

Environmental factors of E-commerce

Not only has the volume and number of online purchase increased, it is expected to continue growing. Furthermore research shows that the B2C market grows rapidly, while the B2B (Business-to-Business) market is slightly declining (Autoriteit Consument en Markt, 2016). The movement from physical stores to increased online shopping has resulted in much larger volumes for the B2C market. In The Netherlands there has been a 4,8 % decrease in the turnover of physical stores whilst online stores increased by 9% in 2012. Another 20 to 25% increase is expected by 2030 (van der Meulen & Kindt, 2010). Logistics providers need to adapt their process to be able to handle the changing market in an efficient manner.

DHL Express increasingly focuses on the B2C market since they can see an opportunity in the market. As the B2C market is relatively new for DHL Express, who is a leader in the B2B market, more information is required about the B2C online market. This is also known as the E-commerce market (online sale of products and services), which consists of the B2C and B2B market (Vos & Tahtali, 2016). For this paper the focus is on the last mile and can be defined as *"The last stretch of a B2C parcel delivery to the final consignee who has to take reception of the goods at home or cluster/collection point."*

According to Vos & Tahtali (2016) there are three external factors that have an effect on e-commerce deliveries. These are; the consumer's needs, innovations and legislation. Each will be explained briefly in the subparagraphs.

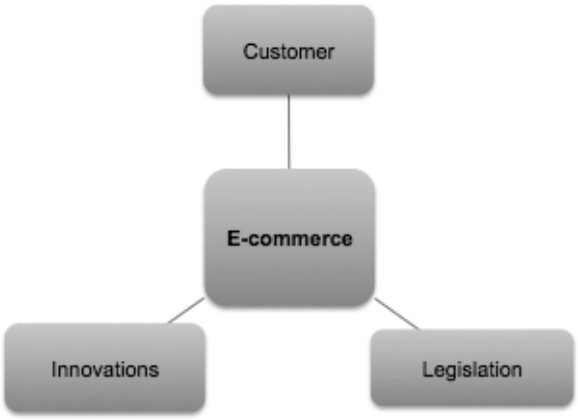

Figure 1: Environmental factors of E-commerce

Consumer

Several researchers have discovered that the consumer wants to influence the delivery of their shipment as much as possible. They also want to be able to control the delivery data, time and locations (Vos & Tahtali, 2016) (Van den Bos & Groothuis, 2014) (Dinaloog, Thuiswinkel.org, Rijksuniversiteit Groningen, 2013). Furthermore, research indicates that consumers have a strong preference for at home deliveries (de Bes-Van Staalduinen & Lammers). The consumers' high demands, further complicates the logistical process.

In order to increase customer satisfaction DHL Express aims to deliver in the evening for the B2C market to ensure a 95% successful delivery. Additionally, On Demand Delivery (ODD) is used; this is a unique DHL Express system, where the consumer can choose how, when and where he wants to receive the package. This aims to meet the growing demands of the consumer.

Legislation

Amsterdam's ever expanding urbanisation has caused increased pollution and decreased the city's liveability. In order to achieve an emission-free city by 2025, the municipality of Amsterdam has intervened and set as an objective; the lowering of air and noise pollution. They are aiming for a safer city and better traffic flow through smart supply and using cleaner transport methods.
For this research, it is important to keep in mind that access will be allowed only to delivery vans with Euro 3 values (European standard classification of CO_2 emission for vehicles).

Innovation

An added aspect of the volume increase of e-commerce is the increased amount of parcel carriers to the consumer, contributing to the overcrowding of inner cities. This forces package carriers to come up with innovative plans as to not negatively impact their performance by clogging the cities. Literature research demonstrates a number of innovative ideas in the last mile with regard to the delivery locations and mobility's. These are:

- **Electric vehicles**
- **Cargo bikes**: Also known as Light Electric vehicles (LEV). Expected is that these will be used more and more in the future due to restrictions in urban areas.
- **City hubs:** Packages are delivered at central points located on the outskirts of cities. From here packages are bundled and transported by one party (Autoriteit Consument en Markt, 2016).
- **Drones**: Probably one of the most talked about trends that is expected to be used more in the upcoming years (SKU Labs, 2016) (Dunne, 2016).
- **Self-driving vehicles:** In the future these vehicles could be able to deliver the package to the consumer without using a courier.
- **Service points for example unmanned lockers like "De Buren":** 25 to 30% of the consumers of DHL Express have a preference for using a service point. By working together with "De Buren", DHL Express is able to leave the package at an unmanned locker on request of the consumer. The consumer can pick up their package at the place and time of their own choosing. Another advantage is that DHL Express currently only has to pay for the amount of lockers that had been used.

Future scenario for DHL Express

By examining the three external factors of E-commerce a scenario planning was made in order to create the most likely future situation. This has as aim to identify an unpredictable future and uncertainties so that appropriate decisions can be made (Paradigmchange.nl, z.d.). To correctly predict the future situation two matrixes were created. The first regards the future predicted by literature research, and the second regards uncertainties that are faced by DHL Express. For each matrix two extremes weighed against each other in order to create four situations. From here the most plausible situation is chosen from each matrix. The two chosen situations is the predicted future scenario.

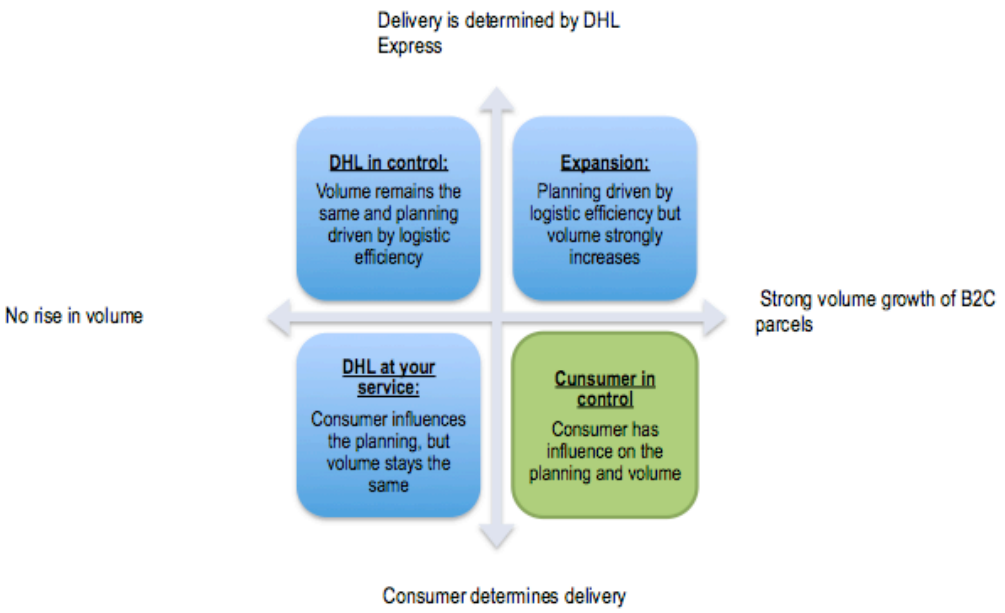

Figure 2: Theoretical future scenario

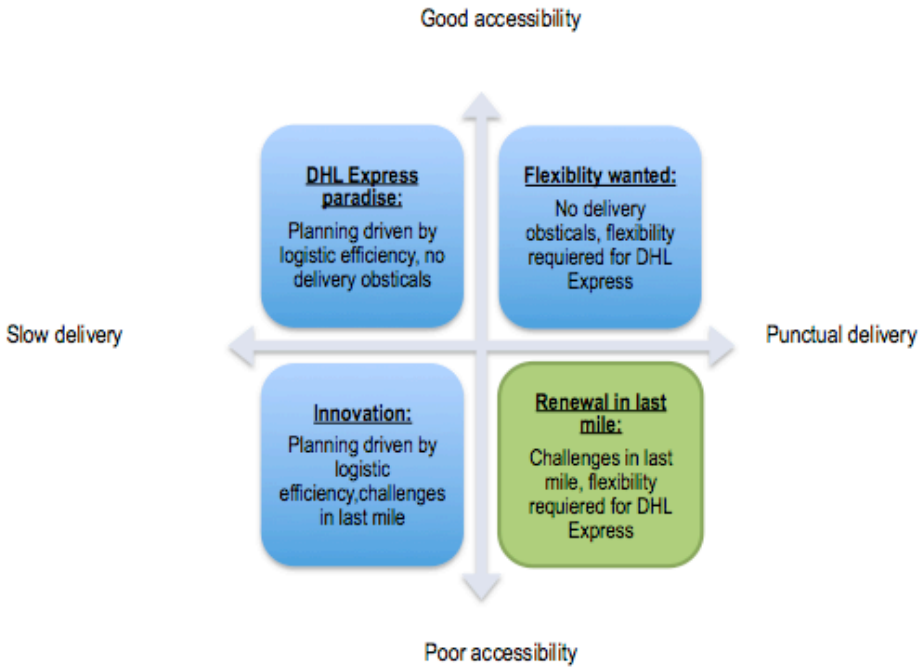

Figure 3: Uncertainties for DHL Express

The most likely future scenario is expected to be that the volumes of the B2C market will increase and the consumer will have control over the delivery. In order to process these predictions a flexible logistics network is required to be able to satisfy the customer needs and transport the increasing volume. With this scenario there are also challenges which are predicted; a poorly accessible city centre and on time deliveries to the consumer.

Case of DHL Express

DHL Express is one of the five business units of DHL and specializes in fast, time critical and international shipments. Most likely these shipments have a higher monetary value such as smartphones or corporate documentation. The logistics in express shipments include integrated and combined air and ground networks. The current last mile concept of DHL Express is not in line with the growth of the B2C market.

After analysing the current situation of DHL Express it has become apparent that there are few constraints that prevent them to be able to meet the expectations and challenges ahead. This was done by using the "ILC tool" (Integrated logistics concept) which takes into account the following elements of a logistics concept and the relationship between them: Strategy, logistics target, network, planning and control, ICT, organisation and KPI's (Ploos van Amstel, Van Goor, & Ploos van Amstel). By using this method the constraints in the current process of DHL Express became apparent and will be discussed below.

DHL Express wants to know what options there are to adjust the current system so that they can cope correctly with the volume growth in the B2C market in the last mile. DHL Express has a set of conditions to which the improvement proposals must adhere. These are; implementation within a year, Operational Cost Per Move (OCPM) should not increase, only invest in equipment and compliance with the company policy. By analysing all the trends and eliminating these solutions through the set conditions of DHL Express the following solutions were created for the current constraints:

1. **Increasing volume of the B2C market→ extending delivery hours**

DHL Express expects to grow with approximately 11 % each year until 2020.

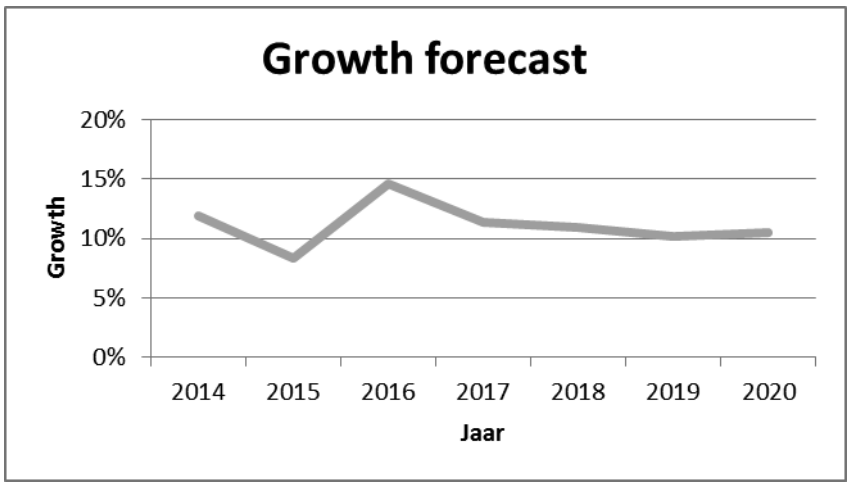

Figure 4: Growth forecast

The current delivery vans are used to the maximum capacity as shown in figure 4. A maximum of 25 stops/deliveries can be made in the evening, within a three-hour period. The volume a delivery van can transport does not limit the amount of deliveries, as it is able to transport up to 100 packages.

2. **Insufficient delivery vans available for evening deliveries → using smaller delivery vans or cargo bikes**

Even though data shows in figure 5 that the evening deliveries only use 24% of the delivery vans it does not mean that they can actually be used. Because the delivery vans are used during the day for the B2B customers it means that they are not back in time to be loaded for evening deliveries.

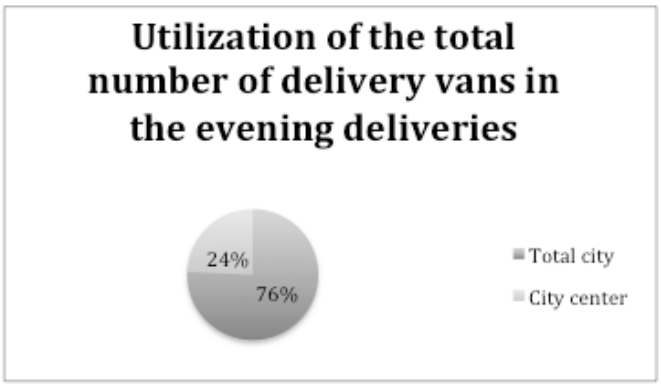

Figure 5: Used delivery van capacatiy

3. **Lack of real-time information→ IT problem, requires follow-up study**

DHL Express Amsterdam differs from the other locations. Since the service centre and gateway are directly next to each other, there is a faster process from receiving the international shipments to transport. Unfortunately this leads to an IT problem where the data is only available after delivery and requires manual sorting and adjustments for the route. This causes uncertainty in the process and last minute manual adjustments by the personnel, which leads to an inefficient process.

4. **Consumer in control → Using "De Buren"**

DHL Express uses evening deliveries and gives the opportunity to use ODD for its customers to increase satisfaction. However ODD is only used 40 % of the time.

5. **Accessibility city centre→ using smaller delivery vans or cargo bikes**

As mentioned before, the municipality of Amsterdam is aiming for an emission-free city by 2025. Which also includes a minimum Euro 3 value for delivery vans; however this has no impact on DHL Express with an Euro 5 value.

Evaluation of possibilities

The proposals are compared below by:

- OCPM (Operational Cost Per Move): is not allowed to increase.
- Capacity increase to be able to comply with the growing volume.
- SPORH (Stops Per On Route Hour): indicates the productivity of a route. If more stops on route are made it results in a better productivity of the route.

The impact each situation makes for DHL Express is shown bellow:

	Capacity		OCPM			SPORH		
				Impact			Impact	
Opportunity	Stop	% stops	[redacted]		%	[redacted]		%
30 min extention	11.276	1,1%			-0,46%			0,2%
10 smaller vehicles	55.618	5,5%			-0,53%			0,0%
5 cargo bikes	27.809	2,8%			-0,47%			0,0%
5 Lockers station with 25 lockers	31.875	3,2%			-1,04%			-0,1%

*Due to privacy certain numbers are blacked out

The impacts these opportunities have on the current processes are:

- Extending delivery times; Minimal, change in planning and times.
- Using smaller delivery vans; none.
- Cargo bikes; Medium, use of sorting centre in the city available in the evening and planning to organize the delivery to the bikes.
- Using “De Buren”; Medium, consultation with this third party and working together.

Conclusion

This research paper shows that e-commerce has three external factors that impact the last mile deliveries and serves as a foundation for future predictions on volume, consumer needs, legislation and trends. DHL Express needs to adjust its current process if they want to have a future-proof process. It is advised to implement the opportunities of delivery time extension and smaller delivery vans as these can be implemented immediately. The extension of delivery times will have a big impact on volume capacity with minimal change in the process. By using smaller delivery vans the accessibility in the narrow streets improves. The vans are loaded closer to maximum capacity, due to extended delivery time, which means less empty mileage. By implementing both methods it results in increased volume capacity, delivery of more packages on route and decrease of the OCPM.
Furthermore a proposed partnership with “De Buren” is great for the future so as to provide multiple delivery options to the client, it is also essential that ODD should be used to distribute the volume.

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