DOORDASH LABS - THE ROBOTICS AND AUTOMATION DIVISION

INDIVIDUAL BUISINESS COMPETITORS' STUDY

EE30203 Group Business and Design Project

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WHAT | The Organisation

Overview

DoorDash is a technology-based food delivery service, connecting customers with local restaurants and food establishments and allowing customers to order food delivery through its website and mobile app. Founded in 2013 by four Stanford graduates[1] and the support of Y combinator accelerator[2], the company now operates across 7000 cities in the US, Canada, Australia, and Japan[3] to fulfil last-mile deliveries to 25 million active customers[4].

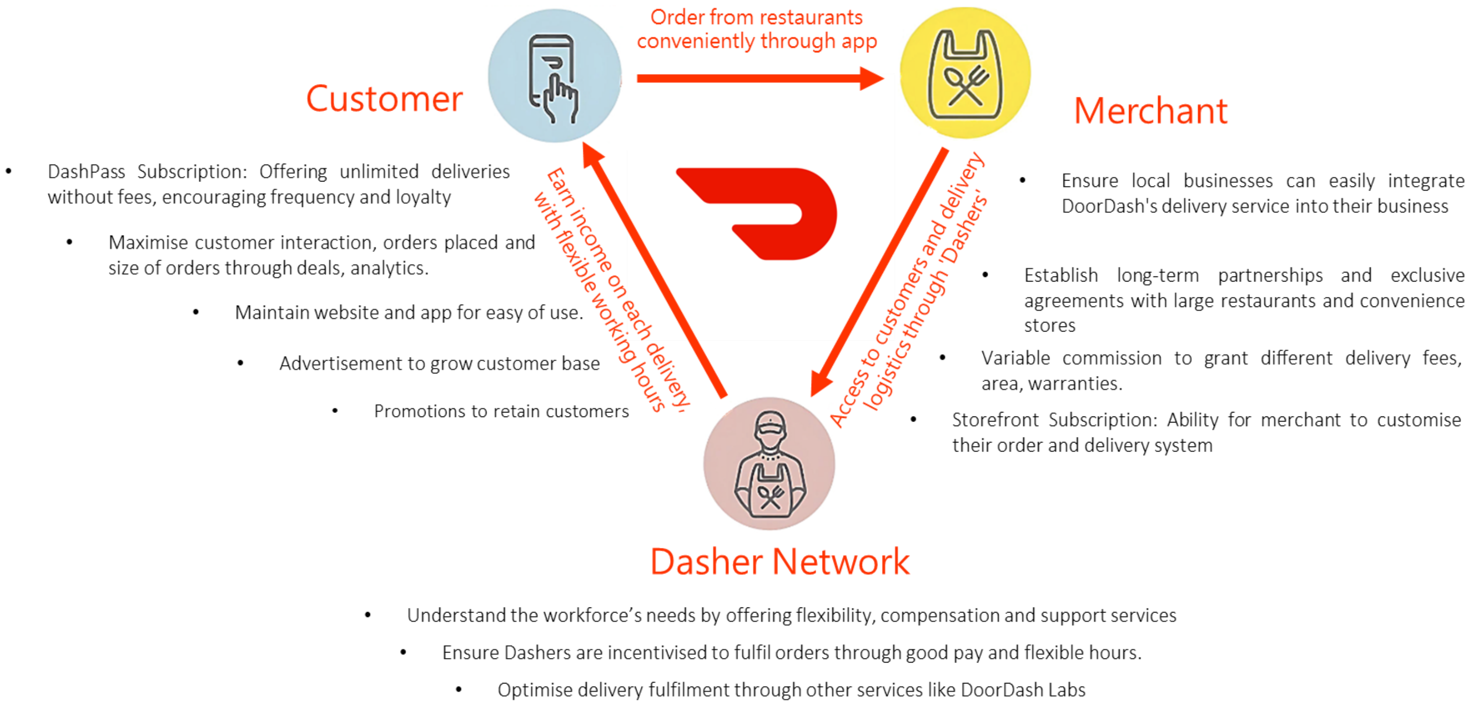

Figure 1 - The three-sided marketplace that DoorDash operate in.

DoorDash is a paragon of a three-sided marketplace service, facilitating transactions between three distinct groups - consumers (quite literally), merchants (restaurants) and fulfilment (delivery drivers or "Dashers"). Crucially, these parties are highly variable and differentiated[5], and part of DoorDash's current success is understanding these intricacies, which will likely change depending on region/country of operation when they look to expand.

DoorDash Labs

DoorDash recognised how critical the use of emerging technology was for optimising deliveries, a critical task for ensuring they can remain competitive, and in 2018 released their Robotics and Automation division, DoorDash Labs[7]. R&D is now given to this division with factors affecting customer spending (analytics), optimising the time it takes for a delivery and how many drivers are required (logistics). Their stated goal for the division was to facilitate automation across the most repetitive part of delivery, improving efficiency and fulfilling more deliveries in the same time. This report will highlight why DoorDashLabs was created and how it will be integrated into the business.

WHY | The Market

Local Domination Instead of Global Dilution

The global online food delivery, currently valued at $106.1Bn, provides ample room to expand. Nevertheless, DoorDash are currently operating in just 4 countries[8], contrasting to UberEats, its biggest US competitor, with more than double the market cap at $46Bn, operating in a staggering 45 countries[9]. DoorDash's hesitance in expanding to new countries may have been justified. Zomato, an Indian-based company, showed to be so dominant that UberEats defeatedly sold their Indian business to them for $400 million after aggressive attempts to compete failed[10].

"Having three different markets to serve simultaneously is a barrier to entry to those who are currently only serving a two-sided market" [5]

– Tony Xu, Co-Founder and CEO of DoorDash

Xu recognises that their advantage over new entrants is that they understand the unique requirements of all three parties (consumer, restaurant, and dashers) in their locations. For example, once a ride-sharing company has a critical mass of drivers in an area, it is extremely difficult for a new entrant to enter that market as the fundamental consumer needs are already met. Furthermore, expanding takes time and capital - thousands of local restaurants must be onboarded, customers acquired, logistics built, and density is initially low, making orders unprofitable. Consequently, DoorDash has chosen to focus their efforts in maximising adoption in the US, achieving 59% of US deliveries in May 2022, before expanding.

UberEat's struggles in India validates Xu's reasoning that understanding the three parties is critical for achieving a share in a new market. DoorDash have therefore relied on long-term partnerships with US restaurant and convenience chains to gain exclusive delivery rights[12], to the frustration of other food delivery services.

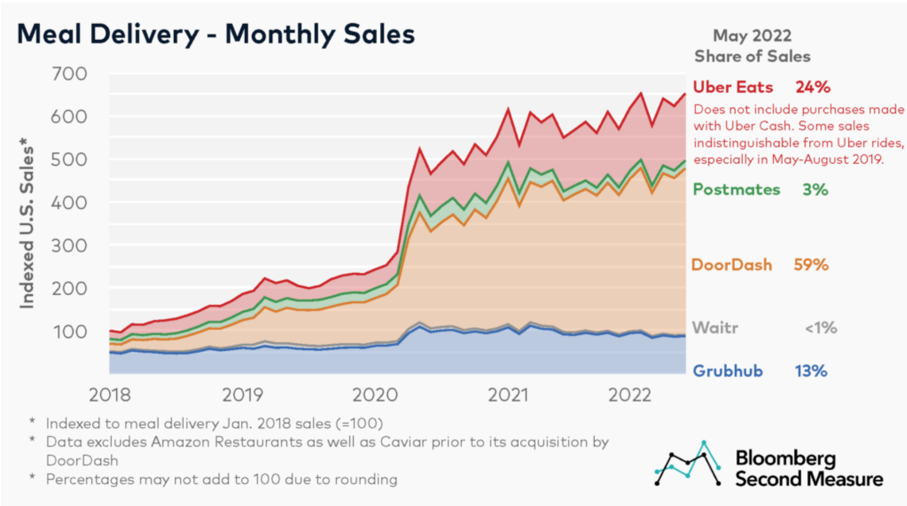

Figure 2 - In recent years, DoorDash have taken the majority of US deliveries [11]

"Promiscuous customers are a hinderance to the company's growth" [11]

– Matt Maloney, Co-Founder and Former CEO of GrubHub

According to Maloney, because of these exclusive collaborations, competition among food delivery services is becoming fiercer. Fewer customers exhibit loyalty towards a single platform and the least loyal to a particular service will obtain the most diverse selection. This further implants the need to either **A.** Dominate a market through restaurant partnerships or acquire the competition **B.** Undercut the competition in cost of delivery, or **C.** Obtain new customers by offering additional services that are currently unmet.

DoorDash has implemented strategy **A** profusely, through partnerships and acquisitions - acquiring Caviar in 2019 to "enhance the breadth of our merchant selection"[13], and Wolt in 2022[14]. Xu noted the opportunity for DoorDash to increase the scale of its international business through Wolt was more efficient than if the company expanded to new markets on its own, one-by-one[15]. UberEats acquired Postmates[16] and tried to acquire both DoorDash and GrubHub (now acquired by JustEat)[17]. Delivery companies have recognised that market domination is easier through acquisitions rather than attempting to displace the local leaders with little market understanding or prior business relationships.

COVID Has Forced Adoption and New Verticals

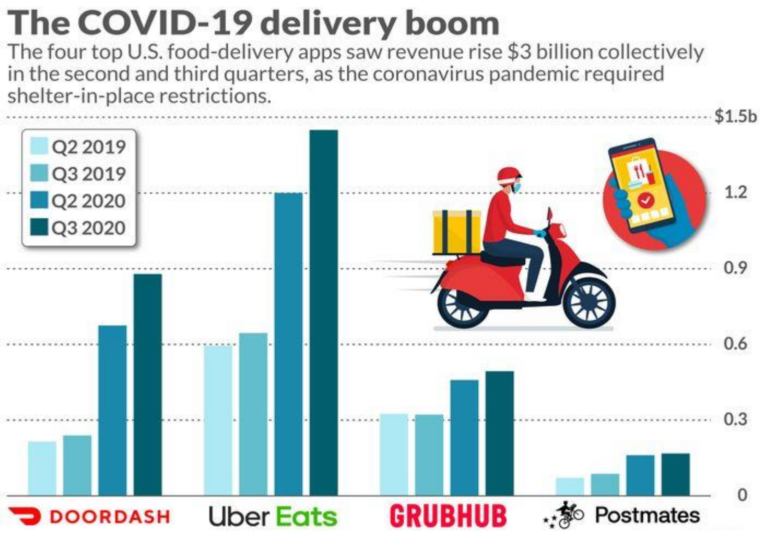

Figure 3 - The pandemic resulted in new users, more frequent purchases and revenue burst for the top companies in the US. [20]

Soon after the outbreak, grocery deliveries were introduced to attract new customers who were uncomfortable shopping in-person. In the study, Factors Influencing Customer Decisions to Use Online Food Delivery Service during the COVID-19 Pandemic[18], it was determined that the pandemic boosted those who prefer using online delivery services to purchase food to 67%, propelling DoorDash to gain 83% revenue from Q2 of 2020 to 2021[19].

COVID prompted UberEats to focus on strategy **C** – branching out into new verticals such as grocery, convenience, and alcohol. This diversification encouraged DoorDash to soon follow[21] and later introduced DoorMart, their grocery fufilment "micro-warehouse"[22].

Covid has served as a catalyst for these new services, and with accelerated and retained adoption illustrated in figure 3, will see DoorDash venturing into new sectors. Despite the surge from the pandemic, per-annum, none of the companies listed in Figure 3 are profitable. This is in part due to mass reinvestment in R&D and Marketing, illustrated for Uber and DoorDash above. The companies are compromising their current profitability in the hope that their push for scale through optimisation and international presence increase efficiency and cut costs.

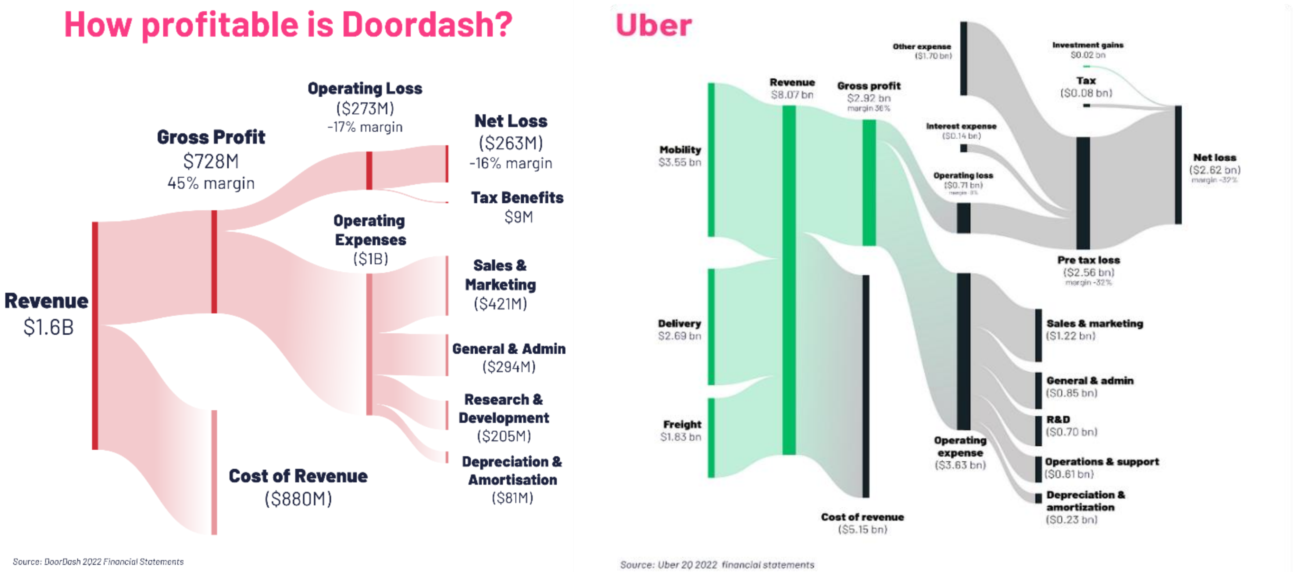

Figure 4 - Uber vs DoorDash's Revenue Streams illustrating where the billions in revenue result in a net loss [23]

How | The Business Model

A Game of Seconds and Inches

Cost of Revenue currently accounts for 55% and 64% of revenue for DoorDash and Uber respectively. Illustrated in Figure 5, the margins for orders are so minimal per order and will only prosper profit when tremendous scale is applied.

"A small little thing like this can drive a crazy amount of operational output" [24]

– Toby Espinosa, DoorDash VP, discussing font size

DoorDash has strategized to make more lucrative sales, such as non-perishable goods but crucially has focused on technology that will optimise the cost of delivery time and money. Something as seemingly trivial like changing the size of font on instructions from customers to reduce errors, could generate significant savings and eventually profitability.

Changing the Workforce for Last-Mile Delivery

Multi-sided marketplaces have attracted companies that utilise emergent technologies to handle complex logistics on large scale, however last mile delivery does not submit to economies of scale and is usually the most expensive leg of logistics[25]. DoorDash have strived for market domination in localised areas as there are greater efficiencies, but an alternative strategy being introduced is the push towards automation of the workforce through Autonomous Mobile Robots (AMRs).

DoorDash's service is comparable to how Amazon's AWS provide data centres to companies, allowing them to focus on their key business without purchasing servers, bandwidth, or staff. With online delivery services, restaurants do not need to hire delivery drivers, booking systems etc. but instead utilise the assets of DoorDash – customer reach, platform, and workforce.

Both Amazon and DoorDash have realised that their workforce is one of the primary factors that drives profitability and have invested heavily in automation. Amazon started autonomous testing of Scout in 2019[26], a robot which navigates pavements and completes last mile delivery of packages. ArkInvest estimated that for an average last mile delivery of $1.60, the equivalent could be as little as $0.06 using an AMR[27]. Currently, DoorDash currently gives $5.37 average per delivery to the Dasher's, equivalent to 80% of the cost of revenue[24]. Exemplified in the section above, integrating AMRs, even to a small percentage of orders, could result in radically different profitability.

Figure 5 - Amazon's Scout Delivery Robot that has now been discontinued [26]

DoorDash's AMR Integration

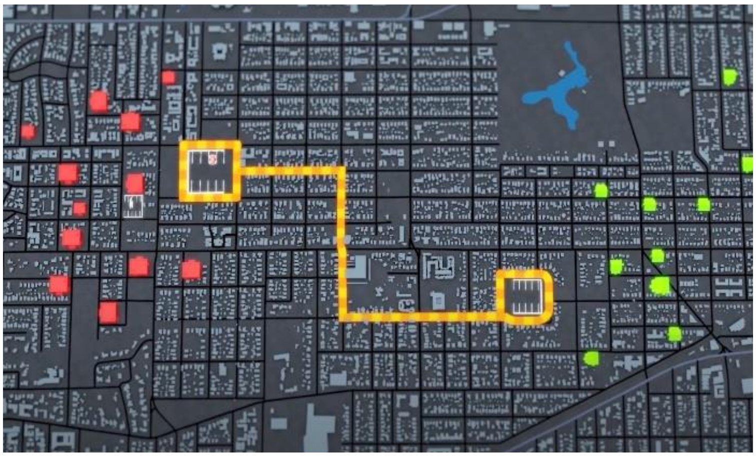

Figure 6 - DoorDash's hub-to-hub model, a robot would move between merchant and consumer hubs with deliveries [28].

Amazon discontinued Scout after unfeasibility, however, DoorDash has remained undeterred and teamed with several robotics companies including Starship Technologies[28], the current market leader in AMR's, already achieving 4 million deliveries[29] in 20 countries[30], to test this concept. CPO and Co-Founder, Tang, states that DoorDash expect to use robots for "smaller, short-distance, thereby freeing up Dashers to fulfil the bigger and more complex deliveries" or "bring food from a restaurant to a local hub", eliminating the time taken by Dasher's waiting for the restaurant to prepare and hand over the delivery. This integration is close to how DoorMart has optimised order fufilment to prevent deliverers waiting.

Like how UberEats and GrubHub partnerships for AMR testing[31][32], DoorDash have little expertise in autonomy and have employed Starship Technologies. For long-term integration, inhouse capability has proven to be vital for scaling[33] and the company is hiring Autonomy[34] and Machine Learning[35] Engineers despite job cuts after the 'COVID Boom'[36]. Currently testing in California[37], regulations will be a key factor determining how quickly these AMR's scale; the US regulations vary hugely between states, each requiring individual approval. This is where globally based UberEats, may have an advantage of choosing countries with more lenient autonomy laws.

Integrating the automated systems detailed above with the intricate understanding of consumers, restaurants, and dashers, could finally yield profitability for DoorDash.

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Cover page illustrated by Daria Shiryaeva, exclusively for this report.

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