autonomous d2d program

PRD

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STATUS: FINAL

Background

DoorDash Inc. is a San Francisco-based on-demand prepared food delivery service founded in 2013 by Stanford students Andy Fang, Stanley Tang, Tony Xu and Evan Moore. DoorDash is one of several technology companies that uses logistics services to offer food delivery from restaurants on-demand. DoorDash launched in Palo Alto and, as of May 2019, had expanded to more than 4,000 cities and offered a 340,000 selection of stores across the US and Canada.

DoorDash acts as an integrator between restaurants and users who want to order food online. It also provides employment to people who are looking for a full-time/part-time job. Thus, the customer segments involved with DoorDash Business Model are:

Users:
⇨ Foodie people with no time to go out.
⇨ Corporates, business people who wish to treat their team without wasting time and affecting their work routine.
⇨ People who don't want to cook.
⇨ College going as well as working people with no kitchen facility.

Restaurants:
⇨ Restaurants without home delivery services.
⇨ Food joints which do not have good sitting areas.
⇨ Restaurants which want more customers and online branding.

Dashers:
⇨ People who desire a delivery job with flexible timings.
⇨ People who desire a job with good tips.

DoorDash seems to be utilizing technology as much as possible in their operations and seems to be evolving further. [source: link]

Problem

In addition to macroeconomic and lifestyle changes (which significantly increase market size and growth rate), there are other favorable factors in the food delivery market.
One is to enable process automation with current IT technologies. The other is that robot technology and the AI algorithms that control it have undergone explosive development, so operations that have required a lot of computing power can be performed on the edge (robot), so self-driving robots can now do simple human tasks.

With on demand business taking over the traditional business model, the next big disruption can be delivery robots. In 2015, Starship Technologies tested its delivery robots in partnership with DoorDash, a food delivery startup and Postmates, a courier marketplace. Now, their robots have started delivering food for restaurants in Silicon Valley. (YouTube). The Toronto-based food delivery company has partnered with Tiny Mile Robots – a robotics company working within Ryerson University's Design Fabrication Zone – to create "Geoffrey," a waterproof, ten-

pound delivery robot that can carry up to six pounds of takeout in his locked trunk – the equivalent of an $80 order.

Uber Elevate doesn't plan on delivering food directly to your door, at least not yet. To avoid dropping items on unsuspecting pedestrians or causing excessive noise pollution, the drones will fly to designated landing zones. Uber Elevate plans to unveil its own customized drone this year and claims it could reach up to 70 mph. But the company is still waiting on Federal Aviation Administration (FAA) approval.

Drone delivery and robotics push down the cost of delivery, meal ordering becomes a 2-3 times a week habit.

Goals.

We build a product team for the implementation of autonomous robot fleets at DoorDash to be ahead of competition and manage labor cost & fluctuation.

Building a product for the operational team that can remotely monitor the robot's "life functions" and intervene when needed and build an app for our customers to order instantly, track robot movement, and give us an instant feedback.

Product Vision

In 2 years DoorDash will serve their US customers with its own autonomous robot delivery system

Strategy

We need to develop autonomous robotic system in SF as a test field to reduce food serving time under 5 minutes with 32% customer retention metrics by December 30, 2020 to enable to launch the service in US by the end of 2021.

Business metrics

⇨ Customer retention: 32% (Q4 2020
⇨ Labor cost decrease: 16% (Q4 2020)

Product metrics

⇨ Average # orders completed per users per month: 7 (Q4 2020)
⇨ App rating: 4.6 (Q4 2020)

Quality metrics

⇨ Reduction of Robot's stopping time: 35% (Q4 2020)

Action Plan in 2020:

Robots should be able to autonomously deliver food from restaurants within two miles of the user.

⇨ manual control of the robots through app
⇨ remote control of the robots through app
⇨ viewing the real time status of the robot through app

Customer should be able to order food from any restaurant within two miles   and track the food delivery robot

⇨ order handling through app
⇨ tracking the food delivery robot

⇨ real time feedback to DoorDash

Success Metrics

The success metrics is designed based on Google HEART model which is a great tool design a experience product.

Success Metrics: Route planning & RL

	Goals	Signals	Metrics
Happiness	- robot finds the fastest and safest way to the customer - DoorDash brand ratings improve	- customer provides positive reviews online	- Nr. of positive ratings online - Nr. of positive feedback in the media
Engagement	- users track the path of the robot - users teach robots	- users spend more and more time teaching robots	- % increase of time spent in the app to follow robots - % increase of nr. of route planning feedbacks to robots in the app
Adoption	- users recommend app to friends - users use robot service more frequently	- growth of new users - users ask robot delivery more frequently	- % increase of new users - % increase of robot delivery per week
Retention	- users don't use competitor's apps - users use food delivery service more frequently	- decrease competitors market share in the region	- % decrease competitors market share - % increase of service usage per week
Task Success	- users can easily follow robot's route - users can easily teach robots through the app	- increase of customers numbers to use app's route planning feature	- % increase of the users numbers use route planning feature of the app - % incerase of user feedbacks to teaching robot through app's feature

Key Features & Scope

Priority	Feature	Description
P0	Home Screen	Home screen should be designed to evoke emotional attachment and simple UI
P0	Sign in page	Login should be made easy with email, facebook, google sign-in option
P0	Order screen	The user can browse the menu selection on one page. Layers showcasing food should be visually appealing
P2	Purchase History	Users should have the ability to see their purchase history, including previous purchased Items that were most recently ordered should appear at the top of the list.
P0	Robot Status	The user can see the robot's position on a map, expected arrival time
P1	Robot feedback	The user can provide real-time feedback and improve the route planning algorithm with his feedback
P2	Delivery selection	The user can select the delivery type of human, robot, later drone

Core UX Flow

Figma flow: link

TAM (Total Addressable Market)

When we do desktop market research, TAM or SAM numbers of quite different sizes come out. According to sources [1], [2] the target market size is from SAM (service addressable market) of $795 billion to estimate our TAM to be the entire $2.8 trillion consumer spend at retail restaurants… Statista pegged revenue in the online food delivery segment to $94.385 billion in 2019. It estimated revenue to show an annual growth rate (CAGR 2019–2023) of 9.3 percent, resulting in a market volume of $134.49 billion by 2023.

Calculating bottom up TAM: US TAM
US population: 328million
online food ordering behavior: 31% of US population * 2times/wk = 203 million food ordering/wk [4]
average order size: 25$/order [5]
= (200million orders * 25$) * 52week = **$260 billion in US**

Source:
[1] Uber, Postmates, and DoorDash: Where Do We Go From Here? link
[2] Fighting for Share in the $16.6 Billion Delivery App Market link link
[3] Industry Benchmarks for Food Delivery Apps link
[4] 22 Online Ordering Statistics Every Restaurateur Should Know in 2020 link
[5] What do you usually pay per order when ordering food online? link

Competitors

UberEats [6]
revenue: $1.46 billion (2018)
user visit nr (by similarweb): 32.78M [7]
social activity: facebook, youtube
avg. monthly download: 1.7M [7]
all time rating: 4.3 [7]
category rank: 4 [7]
daily active user: 212k [7]

Grubhub [8]
revenue: $1.31 billion (2019)
user visit nr (by similarweb): 72.5M [9]
social activity: facebook, youtube
avg. monthly download: 1.5M [10]
all time rating: 4.2 [10]
category rank: 2 [10]
daily active user: 200k [10]

[6] Ubereats Wikipedia link

[7] Ubereats app similarweb link
[8] Grubhub wikipedia link
[9] Grubhub similarweb link
[10] Grubhub app similarweb link

Marketing and Pricing Strategy

Acquisition Channel Strategy: Interaction, Suburbs, best Customer Service

Know your target audience
DoorDash's customer base is split into three segments [11]
Users:
- People who don't want to/are too busy to cook
- Companies ordering for their teams
- Foodies who don't want to go out to restaurants

Restaurants:
- Restaurants who wouldn't usually be able to deliver
- Restaurants with no seating
- Restaurants who want wider reach

Dashers:
- People who want a job with flexible timings

Channel 1_Suburbs.: The inner cities are flooded with delivery services. The opportunity lay in the areas outside of inner cities, where people had far fewer delivery options available to them, reaching this users and customers with self-driving robots is an advantage.

Channel 2_Investing in Customer Service: Give the user the opportunity to give feedback to the delivery robot and even improve the service. Not only is user feedback built into the route planning service, but aggregated data is displayed on the product manager's dashboard.

Channel 3_Interaction: Engage/Recruit Influencers - make them feel part of the d2d program success, Feedback on blog post/press release about 1st robot delivery success story, Invite Contributors Before Public Launch

Tactic level: [12]

User Segment	Tactics
Unaware User	- Invest in SEO to spread awareness about your brand and product. - Leverage App Indexing to prompt users who restaurant discovery or food delivery related searches to land on your app store page.

User Segment	Tactics
Aware but not Acquired User	• Prompt web users of your platform to migrate to your app via the website. • Run SMS or email drip campaigns after web users have made 5 or more orders. Incentivize app downloads through promo codes, first-time app purchase discounts. • Invest in social media retargeting to prompt downloads for users who have made 5 or more orders on your website.
Acquired User	• Create and deliver a seamless app onboarding experience through an informative tutorial or walkthrough wizard on first-time app launch. • Run a "Welcome!" or "Thank You for Downloading" email drip campaign on days 1, 3, and 7 after app download informing the user of key features, nearby restaurants, hot deals, promo codes, etc.

Metric	Description	Measurement Formula	Industry Benchmark
App Ranking	High ranking on a search engines or app store results means a greater chance of app discoverability, download, and adoption	Influenced by number of downloads, app store rankings, and reviews	The long-term objective must be to feature in the top 3 food tech apps across Android and iOS
Install Rate	The number of clicks on an ad that eventually result in download and installation of your app	(Total Number of App Installs/Total Number of Clicks on the Ad) x 100	Average Install Rate = 26.40%
Cost Per Install (CPI)	The amount you pay per installation of your app through a paid ad campaign	Total Spent on Ads/Total Number of App Installs	Average CPI = $6
App Store Page Conversion (APSC) Rate	The percentage of apps downloaded and installed on a user's device after landing on the app page	(Total Number of App Installs/Total Number of App Page Views) x 100	Average APSC Rate = 26.25%* *(*across Android and iOS)*

[11] DoorDash's Growth Strategy: Why Simplicity Succeeds link
[12] Growth Machine link

Covering by Marketing guide attached: link
Content:

- Background including a description of the product and the problem it solves for users
- Market and User information including a description of the target market and competitors
- Product positioning
    - Value proposition
    - Description of the product's three main features
    - At least one screenshot or mock of the product

Set a Pricing Strategy

Doordash is looking to automate food delivery using self-driving robots for trips that are less than 2 miles in order to reduce its operating costs and provide more reliable delivery times. The long-term goal is that these delivery robots will navigate sidewalks fully autonomously.
The financial basis of the objective formulated above is **cost reduction**, while the strategic objective is to introduce a service that puts us **ahead of our competitors**.

DoorDash ROI CALCULATOR 2020 San Francisco

COST	Cost	nr of Cost owner	TOTAL
Robot direct costs	$ 2 000	1	$ 2 000
Robot indirect costs	$ 1 000	1	$ 1 000
Developer cost / year	$ 30 000	3	$ 90 000
Development indirect cost / year	$ 10 000	1	$ 10 000
Marketing budget / year	$ 30 000	1	$ 30 000
			$ 133 000

IMPACT	Program goal	nr of Cost owner	TOTAL
Labor Savings (Courier)	$ 8 000	4	$ 32 000
Gained social media	$ 9 000	1	$ 9 000
Customer retention gain (income)	$ 560 000	1	$ 560 000
			$ 601 000

ROI	Total cost	Total gained	Return %
Regular (amount gained - amount sp	$ 133 000	$ 601 000	352

Pre-Launch Checklist

A prerequisite is the completion of the tickets recorded in the last sprint and the continuation of ongoing activities with the cross-functional team members.
Back-end engineering: all pending tickets are done
Front-end engineering: finalizing A/B tests for landing pages
Data team: finalizing launch metrics and analytics set-up

Marketing: websites, messages, campaign set-up
Management: final Go decision | green light
Legal department: compliance terms finalization

Tactics: [13]
Try Beta tests to get feedback earlier
Optimize for long-term metrics before launch
Test, launch and Iterate

[13] Google Pre-launch checklist link

Risk Factors

Risk Assessment [14]
- Impact
- Probability
- Time to discover

And rate them subjectively from 1–10
The multiplication of these factors gives you the risk score.

App development	d2d program	Impact	Probability	Time to dicover	Score
UX design will not liked by user	3	6	2	36
Backend developers leave	7	2	5	70
Cloud servers failure	8	1	5	40
Google API changes	4	2	4	32

Mitigation
It is necessary to assign a metric and a responsible person as well as a corrective action plan

App development	d2d program	Score	Mitigation Measure	Person responsible	Corrective Measure
UX design will not liked by user	36	A/B testing	head of UX	Iterate
Backend developers leave	70	Incentive, motivate	hed of engineering	performance review
Cloud servers failure	40	Redundant servers	head of Devop	restore backup
Google API changes	32	Vendor page	head of Devop	redesign

Wash, rinse, repeat
Be sure to track and refresh the findings on your risk matrix. Share the findings as well as the responsibility in your team.

[14] How rockstar Product Managers mitigate IoT project risk link

Training Guide for Sales and Customer Support

attached: Training Guide for Sales and Customer Support

User Guide

attached

Post-Launch Activities

Launch email: link

Iterate the product after launch

Field Feedback:
The DoorDash Operations team is generally very happy with your product, but in about 25% of the deliveries with the robots, there are some issues.

Hypothesis
You believe that it is because the operations team misses some of the robots' malfunction.

Action
Together with the operational team, we review the feedback functions and intervention options of the robots. We prioritize the listed cases: can be solved with training, bug fixed, feature to be developed (P0, P1, P2)

Design an A/B test [15]

Initial hypothesis: Training operation team about self-driving robots' function and robot feedback system will decrease field issues.

Metrics used:
- % field issue vs all food deliveries measured in error tickets

Activity:
The operational group is divided into two groups (groups A and B). Group A receives field training on the robot's feedback system while the other group does not. The number of error tickets and deviations generated by the two groups are then measured.
If there is no significant discrepancy, a review of the robot feedback system is required.

[15] Udacity A/B testing course