

meena_2022_online_food_delivery_companies_performance_and_consumers_expectations_during_Covid_19_an_investigation_using_machine_learning_approach

Year

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Author(s)

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Title

Online food delivery companies' performance and consumers expectations during Covid-19: An investigation using machine learning approach

Venue

Journal of Retailing and Consumer Services

Topic labeling

Manual

Focus

Secondary

Type of contribution

Established approach

Underlying technique

Manual labeling

Topic labeling parameters

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Label generation

An expert team reviewed keywords of each topic and gave an appropriate name, as shown in Tables 1–4.

To label topics, the keywords of each topic were discussed and reviewed carefully by experts from academics.

Table 1
Keywords, topics, and dimensions of Zomato and their statistics.

Dimension	Topics	Keywords	Positive			Negative		
			mean	std	max	mean	std	max
Social responsibility	Help in providing food to needy during lockdown	dalli, support, wager, donat, help, feed, provid, coronaviru, food, lockdown	0.14	0.119	0.505	0.076	0.091	0.651
	Impact of staff/workers' salary on food delivery business	employe, busi, impact, worker, deliveri, food, staff, swiggi, uber, salari	0.067	0.084	0.469	0.079	0.092	0.388
	Riders' help in delivering donated food and groceries	help, deliveri, work, groceri, delhi, donat, food, rider, launch, deliv	0.135	0.122	0.574	0.057	0.081	0.411
Delivery operations	Responsiveness of food delivery person	food, order, time, come, corona, foodi, think, action, carri, know	0.104	0.104	0.535	0.082	0.088	0.478
	Pizza and food delivery during home quarantine	deliveri, food, pizza, quarantin, isol, home, swiggi, posit, test, thank	0.117	0.117	0.672	0.061	0.068	0.351
	Customized food orders by following corona appropriate protocols	deliveri, corona, order, food, viru, custom, time, contactless, mask, deliv	0.108	0.101	0.571	0.087	0.096	0.573
Perceived responsibility of consumers	Stay home and order food from restaurants during quarantine time	order, food, swiggi, restaur, quarantin, corona, stay, time, deliv, stayhom	0.109	0.105	0.545	0.06	0.089	0.504
	Fight corona and save people's life by having food products delivered at home	corona, life, swiggi, quarantin, avoid, deliveri, indiafightscorona, soon, peopl, product	0.104	0.115	0.577	0.066	0.101	0.583
	Use food delivery services to stop spread of corona virus among people	food, corona, peopl, order, deliveri, stop, deliv, servic, spread, time	0.099	0.094	0.474	0.096	0.099	0.623
Financial impact of COVID-19	Loss of income in food delivery business nationally	food, hous, lose, nation, delivers, medicin, lacorn, leav, coronaviruspandem, live	0.037	0.078	0.415	0.078	0.063	0.302
	Consumers' purchase behaviors	corona, serv, thing, restaur, outbreak, gold, food, face, membership, lockdown	0.065	0.116	0.623	0.105	0.12	0.487
Perceived solutions	Indian food delivery startup business help fighting corona	swiggi, indian, corona, compani, startup, amazon, fund, fight, busi, flipkart	0.112	0.101	0.624	0.067	0.087	0.505
	Online food delivery order to stop corona virus spread	deliveri, swiggi, lockdown, coronaviru, home, corona, deliv, food, onlin, spenad	0.076	0.088	0.412	0.047	0.073	0.636

Table 2
Keywords, topics, and dimensions of Swiggy and their statistics.

Dimension	Topics	Keys	Positive			Negative		
			Mean	Max	Std.	Mean	Max	Std.
Perceived consumers' responsibility	Stay home and have food delivered from restaurants during lockdown	deliveri, home, food, corona, stay, restaur, work, lockdown, time, amazon	0.108	0.594	0.109	0.058	0.503	0.08
	Online food delivery may help in reducing the corona virus spread among people	deliveri, corona, food, virus, order, deliv, spread, peopl, onlin, like	0.110	0.6	0.098	0.065	0.536	0.08
Social responsibility	Help hungry (needy) people by a delivery chain through food delivery during corona	deliveri, corona, help, peopl, partner, fund, work, need, relief, hunger	0.128	0.67	0.111	0.071	0.512	0.081
Negative impact of COVID-19 on OFD business	Lockdown prevented/affected food delivery operations	lockdown, quarantia, order, oper, coronaviru, food, prevent, current, poor, foodi	0.106	0.778	0.117	0.035	0.375	0.06
	Negative impacts of corona virus on online food delivery business	employe, food, coronaviru, busi, deliveri, lockdown, uber, startup, impact, indian	0.066	0.623	0.095	0.051	0.506	0.089
Delivery operations	More customized food orders (delivery time, service, refund) from restaurants during corona	order, custom, food, time, deliv, restaur, servic, corona, deliveri, refund	0.102	0.674	0.103	0.103	0.586	0.097

Table 3
Keywords, topics, and dimensions of Ubereats and their statistics.

Dimension	Topics	Keys	Positive			Negative		
			Mean	Std.	Max	Mean	Std.	Max
Importance of Coupon/ promocode on food delivery order	Promocode accounts for more food orders during coronavirus	order, coronaviru, code, discount, quarantin, uberatspromocod, promocod, account, uberatsruk, coronavirusuk	0.032	0.078	0.457	0.005	0.043	0.701
	Problems with discount coupons in food delivery order during quarantine	order, quarantin, spend, code, account, problem, discount, uberatspromocoded, vheplook, vhopif	0.03	0.073	0.496	0.095	0.054	0.369
Financial impact of COVID-19	In quarantine, people think about working to get money	quarantin, peopl, netflix, week, money, think, work, isol, month, watch	0.093	0.101	0.808	0.081	0.096	0.603
Delivery operations	Drivers and restaurants' food delivery time and service	deliveri, food, driver, restaur, order, time, deliv, peopl, servic, leav	0.086	0.086	0.579	0.072	0.082	0.484
Free delivery service	Restaurants help local people by offering free delivery services during lockdown	deliveri, restaur, busi, help, support, local, servic, offer, free, lockdown	0.108	0.102	0.532	0.055	0.081	0.519
	People want free home delivery during quarantine/coronavirus	corona, viru, quarantia, peopl, deliv, want, free, home, thank, stay	0.123	0.122	0.647	0.072	0.095	0.47
Perceived consumers' responsibility	Need for home food delivery to stay in isolation during the self-quarantine period	quarantin, self, isol, food, home, like, deliveri, deliv, stay, need	0.104	0.103	0.612	0.084	0.095	0.613

Table 4
Keywords, topics, and dimensions of Grubhub and their statistics.

Dimension	Topics	Keys	Positive			Negative		
			mean	std	max	mean	std	max
People's supports in adapting to pickup/ takeout service	Avail takeout and pickup service for food and alcohol	deliveri, coronaviru, food, takeout, pickup, chicagoindustri, alcohol, avail, dinneridea, luckysandwich	0.068	0.103	0.512	0.037	0.101	0.730
	Restaurants and drivers need local support to provide service	restaur, food, deliveri, support, servic, order, driver, local, need, like	0.130	0.112	0.552	0.075	0.088	0.519
Food delivery operations	Longer delivery time caused order cancellation	order, driver, quarantin, food, time, know, like, deliveri, cancel, deliv	0.091	0.089	0.355	0.083	0.091	0.463
	People like food order delivered on time from restaurants and drivers	deliveri, quarantia, time, deliv, restaur, order, driver, food, like, busi	0.106	0.094	0.409	0.072	0.08	0.454
Free delivery service	People want home food delivery from restaurants and drivers	food, deliveri, quarantin, want, order, peopl, driver, like, restaur, home	0.116	0.106	0.458	0.078	0.094	0.574
	Restaurant food delivery offers needed to save people	restaur, corona, deliveri, quarantin, save, peopl, money, deliv, need, offer	0.101	0.115	0.532	0.094	0.115	0.5
Appreciation for drivers/ restaurants for delivery service	People like free food delivery offers during corona spread	deliveri, food, corona, deliv, peopl, like, quarantia, spread, free, offer	0.143	0.122	0.55	0.054	0.072	0.279
	Thank gift card to food delivery drivers for risking their life during corona	deliveri, quarantia, driver, risk, gift, compani, order, card, thank, meal	0.124	0.115	0.496	0.084	0.093	0.351
	Thanking drivers for working, wearing masks, and delivery service	peopl, deliveri, mask, food, thank, come, servic, work, like, wear	0.123	0.11	0.527	0.091	0.101	0.474
	Delivery drivers working during the COVID-19 outbreak help greatly people and restaurant business	quarantin, work, driver, order, busi, help, peopl, start, great, restaur	0.119	0.12	0.633	0.068	0.087	0.522
	Need to thank restaurants and drivers for offering free food delivery	order, deliveri, quarantia, food, driver, free, thank, place, need, restaur	0.132	0.116	0.548	0.084	0.1	0.513

Motivation

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Topic modeling

LDA

Topic modeling parameters

Nr of topics (k): 2 to 40 (for each OFD company)

Nr. of topics

13 for Zomato, 6 for Swiggy, 7 for Uber Eats, and 11 for Grubhub

Label

Manually assigned single or multi word labels

Label selection

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Label quality evaluation

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Assessors

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Domain

Paper:

Dataset: Social media (Twitter)

Problem statement

Online food delivery (OFD) businesses flourished during COVID-19; however, OFD companies experienced different challenges and customers' expectations. This paper uses social media data to explore OFD companies' performance and customers' expectations during the COVID-19 pandemic. The most important topics in developed and developing countries are identified using machine learning. Results show that customers in India are more concerned about social responsibility, while financial aspects are more important in the US. Overall, customers in India are more satisfied with OFD companies during the COVID-19 pandemic than the US customers. We further find that factors such as OFD companies' brand, market size, country, and COVID-19 waves play a crucial role in moderating customer sentiment. The results of the study offer several managerial insights.

Corpus

Origin: Twitter

Nr. of documents: 41072 (37094 after pre-processing)

Details:

- between February 01, 2020 to November 30, 2021
- company name, their Twitter handle, and related hashtags as keywords to extract the data
- Zomato, Swiggy, Uber Eats, and Grubhub

Document

Text of a single tweet

Pre-processing

- language identification
 - cleaning
 - tokenization
 - lemmatization
 - removing stopwords
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