A Strategic and Adaptive Plan for Resurgence of Food-Tech Delivery Service Sector During and Beyond Public Health Pandemic Crisis

Angad Munshi[1*] and Ashim Raj Singla[2]

[1]Research Scholar, IIFT & Entrepreneur, New Delhi, India.
[2]HOD (IT and Knowledge Management), IIFT, New Delhi, India.

Authors' contributions

This work was carried out in collaboration between both authors. Author AM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ARS) managed the analyses of the study and the literature survey. Both authors read and approved the final manuscript.

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ABSTRACT

Purpose: India's highly competitive online food delivery space is at the forefront of pandemic distress due to unprecedented challenges posed by the global pandemic COVID-19. The thrust of this paper is to focus on, how can Indian online food-tech aggregator landscape operate and sustain business ventures amidst this pandemic disaster. This article examines, investigates and delves into various issues regarding logistics, customer care and penchants coupled with related issues and elucidates various challenges and opportunities there-in. The authors while doing so endeavoured to assess and analyse the impact of COVID-19 pandemic on customer behaviour with reference to online food delivery sector in India.

Design/ Methodology/Approach: The paper is a mix of theoretical study along with author's viewpoint. The data was also gleaned from the latest updates from various organizational and

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*Corresponding author: E-mail: angadres2020@gmail.com;

government sites. A survey involving a representative sample of randomly identified 106 food lovers patronizing online food delivery platforms was conducted using online interview method via CISCO Webex platform.

Findings: Elucidation of evidence-based avenues to work upon to overcome COVID-19 slowdown for the present and beyond is the only riposte. The survey revealed that around 98% of the respondents agreed to higher consumption of food and persons living alone have invariably placed order via online food delivery platforms. The quality and hygiene of the food endorsed by 99% was a highly significant and imperative factor. The need for more stringent safety & hygiene norms for checks and balances required emerged as a primary concern.

Research Limitations/Implications: This being a rapid turnout study, due to pandemic lockdown reaching the customer base, even identifying them, restricted the survey population. The use of evidence-based outcomes of changing customer perceptions and behaviour in this new norm of pandemic, together with logistic avenues using a larger sample size would have further complemented and augmented the viewpoints expressed in this study thereby aided in working out a robust roadmap.

Practical Implications: The authors suggest that business leaders in food-tech delivery firms need to have a dynamic and proactive approach towards the challenges which are evolving on a daily basis, since the impact of COVID-19 is continuous and ever-changing.

Originality/Value: The study presents a strategic and adaptive plan for resurgence of food-tech delivery service Sector using ICT tools and techniques during public health pandemic crisis and beyond.

1. INTRODUCTION

The Indian food service sector has witnessed exceptional growth, coupled with sweeping changes ranging from changing regulations and tax regimes to evolving consumer preferences, and the emergence of new trends and innovative business models during the past decade or so.

The trends depict a continuing and fast pace of expansion in food service sector. The empirical studies, future expansion studies and surveys show varied and impressive growth in food service sector in India that may culminate to 16 percent annual growth touching to $17.02 billion by the year 2023 [1]. It is estimated that India's food delivery market alone is worth $15 billion today [2],[3], and would grow at the Compound Annual Growth Rate (CAGR) of around 10% over the next five years (2018–23) [4]. High growth trends are being predicted for India [5]. Furthermore, the growth promise is expected to drive the industry (online food delivery segment) to a market value of USD 9,207 million (with 184.3 million users) in 2020 and USD 13.233 million by 2024 respectively [6]. Comparatively, the South Korean and Japanese industries will grow at CAGR of 8.9% and 6.5% during 2020-2024, resulting in USD 3,266 and 3,617 million respectively by 2024 [7],[8]. In comparison, the online food delivery in China is huge, about USD 45,909 million in 2020 with 366.4million users, expected to show annual CAGR of 7.0%, during 2020-2024 [9]. The global digital food delivery market is predicted to touch USD 179.27 Billion by 2026 [10].

Zomato and Swiggy are doing more than a million orders a day which is fairly huge. All in all, the scenario projects high growth for this sector, that could be attributed to the ease and the options that these food-tech players provide and have already made online food delivery a preferred choice for the customers particularly in most Indian cities. While continuing to expand at a fast pace, the changing urban lifestyle of the average Indian, the travel time, together with other factors like young and working women population with rising disposable incomes, is dramatic enough to be favourable for the quick home delivery models to grow at higher rates [11]. Rapid and exceptional growth in food service industry can also be attributed to innovations in business models. New innovative models that are being adopted increasingly include intuitive delivery apps, delivery-only restaurants, also called cloud kitchen. The concept of "cloud kitchen" basically comprise eateries that are predominantly smaller ones, with shared kitchen facility from where deliveries

can be made easily. The growing popularity of food delivery platforms has led to a surge of such cloud kitchens in India, variably named "virtual" or "cloud" or "dark" or "ghost" kitchens, because these establishments do not have their own identity or legal standing and as such, they do not exist for general public [12].

To exemplify, food joints like Haldiram's, Chaayos, Keventers, Saravana Bhavan and Vasudev Adigas, and others have set up their cloud kitchens in partnership with food delivery platform, Zomato. These establishments started setting-up cloud kitchens in March 2018, and now have over 700 cloud kitchens in 50 odd cities. While Swiggy with its cloud kitchen initiative named "Swiggy Access" launched in 2018 had since set-up more than 1,000 kitchens for its partners [12]. Using "Swiggy Access" as a conduit at no cost for the premises/infrastructure, the partnering restaurants can venture into new markets, thereby expand their reach within and across the cities. Furthermore, the Food-tech delivery platforms such as Swiggy shares key insights with the partner restaurants on vital issues pertaining to current customer preferences, unmet food choices, thus facilitating them fulfil the demand-supply gaps.

The scrutiny of research literature on this issue revealed its absence. However the urgency of the issue has been sporadically reported in blogs and the observations from therein have been appropriately mentioned in this. Thus, this paper is exploratory in nature.

With the outbreak of Pandemic, the COVID-19 crisis has taken a toll not only on e-commerce but in all sectors of economy. The question thus arises as to how the industry (Food and Beverage (F&B) service sector) is responding to projected meteoric trajectory in this complete nationwide lockdown ecosystem? How is the F&B aggregator landscape operating and sustaining business ventures? How health-related issues are being addressed since safety, hygiene, trust and social distancing are necessary pre-conditions or norms in these testing times? Yet the food delivery business by and large requires human interface for pick-up and delivery. How are businesses refining human-computer interactions using information and communication technology (ICT) for keeping supply-chain cycle on the move? It may be indicated here that various terms such as F&B aggregators, Food & Beverage Operators (FBO), food-tech delivery platforms, online food delivery have been used here interchangeably for online

food-tech delivery platforms or aggregators, since many of them use online mechanisms for ordering food delivery.

This article examines, investigates and delves into various issues regarding logistics, customer care and penchants coupled with related issues and elucidates various challenges and opportunities there-in. In doing so, endeavours have been made to assess and analyse the impact of COVID-19 pandemic on customer behaviour with reference to online food delivery sector in India.

The survey revealed that around 98% of the respondents agreed to higher food consumption; and 42% of the respondents staying alone have invariably ordered food via online food delivery platforms. Almost 99% of the respondents endorsed that the quality and hygiene of the food being delivered was a highly significant and imperative factor. The respondents (78%) contemplated trust and sense of faith to be a decisive factor. For the safety aspects the customers are now extremely sensitive about the brands they are dealing with and the service quality of the brands. 99% of the respondents felt that more stringent safety & hygiene norms for checks and balances are required. Nearly two thirds of respondents felt that during the pandemic crisis, consolidation of services is important, so that the responsibility of last mile delivery lies with a limited few, which could be strictly monitored by the authorities.

The vital aspect of quality and safety of the online food-tech delivery platforms or aggregators emerges as the primary concern of the consumers in the present survey. The other key issue of strict monitoring of the food delivery platform for the entire supply chain by the authorities is a pre-requisite to counter the contamination factor. This necessitates use of technology to minimise contamination risk.

2. MATERIALS AND METHODS

2.1 Physical Distancing, Social Proximity and ICT in Global Isolation and the Online Food Delivery Sector

Long-term lockdown can potentially push individuals, society and businesses into complete destruction physically, socially and economically. However, a resilience, strategic and adaptive planning are being deployed in pockets using technology as an important tool. ICT can potentially be used as a great facilitator in times

of crises like COVID-19 pandemic reducing social seclusion and isolation. Empirical studies have shown [13],[14] potential of ICT to alleviate the social isolation of elderly people via various mechanisms.

2.1.1 Social seclusion and the new norm

The social seclusion as a result of COVID-19 has created a new norm of 4Cs, i.e. collaborative, contributive, causative, and connecting or clicking. The new norm has been evident during the COVID-19 crisis. A number of individuals and organizations have ventured to contribute to fulfil their societal obligations rather than to fulfil their business goals, as an expression of good-will, to express their gratitude than a societal favour, as manifestation of generosity without expecting gains and for resolute perseverance to sustain life and engage in fulfilling meaningful social responsibility/obligation or for social cause.

2.1.2 Responding to the needs of the nation during this pandemic

Several individuals and organizations have come forward to help citizens and government to fight pandemic in their own way. For instance, many publishers, aggregators, enterprises and service providers, have opened-up their resources to be accessed during lockdown period for common citizens and scholars. FBOs have in a big way opened-up new vistas to serve the nation, which has been discussed in more details in this study. Similarly, many others have come forward to chip in where-ever supportable.

The maiden approach to keep supply-chain progression in operation for societal good is being christened as SocIsoglobal Effect; or Socio-Isoglobal Effect.

2.1.3 SocIsoglobal effect or socio-isoglobal effect

What is Socio-Isoglobal Effect? The endurance of supply-chain cycle or system for sustaining humanity in times of pandemic or severe crisis, through collaborative endeavours of various, yet discrete stakeholders by enchasing on their core strengths is termed as SocIsoglobal Effect or Socio-Isoglobal effect. This includes enterprises tying up with other outlets to tide over the crisis and to reach out to the customers.
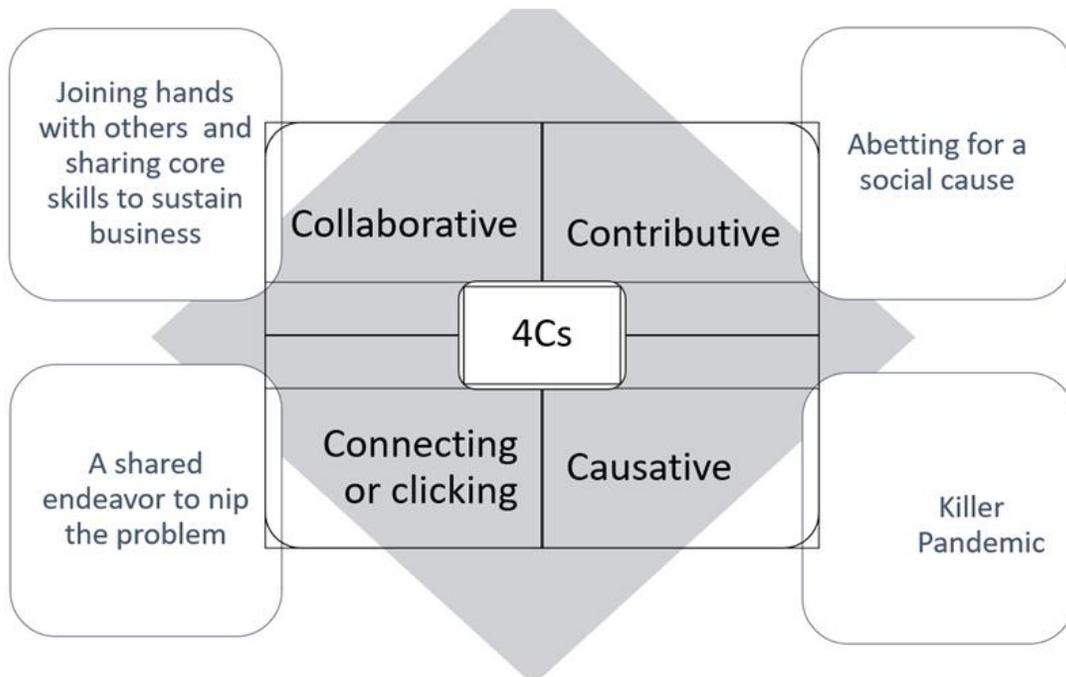
Fig. 1. The concept of 4Cs- A new norm from pandemic upshot

In other words, enterprises across sectors join hands to facilitate operation of supply-chain cycle wherein every partner contributes its own strengths for manageability of supply-chain sequence. Various brands across industries have teamed to share their infrastructure and core strength to touch base with customers and tide over the lockdown-caused supply chain disruption. The ability to reach out to the customers due to coronavirus lockdown has become a major stumbling block during this period. Consequently, novel alliances are being forged in a meaningful manner to utilise combined infrastructure of all partners up to the last-mile connecting delivery handlers. This is a win-win situation for all the stakeholders including the public. For instance, Marico, a leading ride hailing platform, has partnered with online food delivery platforms, such as Swiggy and Zomato to facilitate consumers to order food items under the company's portfolio [15]. Similarly, these companies have alliances with other agencies to facilitate last mile delivery of essential goods. For example, Swiggy collaborated with HUL, P&G, Godrej, Dabur, Marico, Cipla, Vishal Mega Mart, Adani Wilmer's, etc. and are now delivering groceries in 125 cities., whereas Zomato partnered with Vishal Mega Mart and other FMCG to deliver groceries in over 80 cities [16],[17] through their excellent delivery network to serve and support the community in this testing scenario. These two food-tech-delivery platform giants, Swiggy & Zomato in India have raised millions to drive aggressive expansion into new geographies to enable hyperlocal delivery. Furthering expansion of their new businesses and persevering to invest in grocery delivery, concierge services. Zomato's valuation now stands at $3.25 billion, while Swiggy stands at 3.6 billion [18].

Likewise, many agencies such as Big basket, Grofers and others, joined hands with other agencies whose strengths lie in the effective delivery models to reach out to the consumers. Similarly, the Socio-Isoglobal Effect can also be seen in the act of branding and digital marketing mechanisms. For instance, Lifebuoy's e-media advertisement while promoting and publishing its brand for washing hands, it also endorses any other soap for cleaning the hands in the present pandemic crisis of COVID-19 breakout as a social gesture. Thus, agencies that have purely commercial interest are in some way directly or indirectly providing for supply chain endurance and thereby also contributing their bit towards corporate social responsibility of a different

flavour, for social cause in these testing times. World has seen, with special reference to India that this Socio-Isoglobal effect can bring people together for supportability and maintainability of supply-chain to sustain humanity and thereby civilization.

2.1.3.1 How has food-tech delivery sector responded?

Food delivery service is one of the worst hit sectors because of outbreak of coronavirus. National Restaurant Association of India (NRAI) is expecting its 500,000 members to lose up to Rs 80,000 crore (I crore = 133036.20 USD) in 2020. While asking landowners, including malls, to forgo rentals and common area maintenance (CAM) charges for over 100 days till end of June, because restaurants work on about 15 per cent earnings before interest, taxes, depreciation, and amortization (EBITDA) margins [19].

Owing to the ongoing Covid-19 India lockdown, the food delivery service business is facing a major setback. The food delivery business has shrunk to a negligible size, and also FBOs like Zomato and Swiggy are serving customers through their cloud kitchens, and doing just about 10 per cent business as compared to the pre-coronavirus period. The food delivery services sector is pegged at about Rs 4.5 lakh crore, out of which organised segment is around Rs 1.75 lakh crore [19]. The F&B industry employs more than 7.3 million people. If this lockdown continues, 20 to 25 per cent (roughly 1.5 million) of the employee-base could lose their jobs [20].

Despite these times of crisis due to coronavirus, the F&B sector has also strategized newer ways to communicate and reach out to their customers through various means and mechanisms including other online activities. For instance, food ordering and delivery brands like Zomato and Swiggy are rolling out effective methods to combat the crisis. While endeavouring to deliver quality kitchens (for their partners), they are using and expanding into new markets or opening up new facilities that have come up to the forefront to play its act with support on compliances from partners and government agencies.

As is said, necessity is the mother of invention. To keep the kitchen fires burning in the employees' homes, food delivery aggregators like Swiggy and Zomato have reached out to government and individual establishments, offering to deliver essential goods such as

groceries and medicine, under the new brands 'Swiggy Stores' and 'Zomato Market'. Besides, they are also working to donate meals to migrants and daily wage earners. Zomato's Feeding India channel has initiated Feed the Daily Wager campaign. Providing food to the daily wager communities that are currently unable to support their family's food requirement, which is delivered to locations across multiple cities [20]. Swiggy on its part has set up its Hunger Savior Covid Relief Fund [20]. This fund is used for the welfare of its delivery fleet and their families. Thus, in the pandemic crisis, these collective initiatives are taken-up to support one another; they are also doing what they do the best – serving their customers.

2.2 Health, Hygiene, Safety and Food Delivery in India: Pandemic Panorama

Food delivery platforms have a large chunk of their customers who are bachelors or stay in a single rented rooms or studio apartments without facility to cook. With maids too unavailable because of the lockdown, the problem further aggravated. Due to the pandemic lockdown, millions of customers and food lovers did not have option to order their foods since restaurants were suddenly unreachable.

The delivery partners - Swiggy and Zomato, working with local governments to remain operational and extend their support (though with curtailed partner network -restaurants and delivery) during these testing times, especially to the customers in need of food delivery.

The local state administrations recognized food delivery as an essential service and offered curfew passes to delivery boys facilitating them to operate with guidelines for improved hygiene standards. These actions have become critical because food delivery business took a pounding after the outbreak of the coronavirus and the consequent lockdown.

Delivering safe and hygienic meals in bulk to migrant workers and medical workers, among others has been on the cards of the food-delivery platforms.

In the backdrop of conditions given above, emphasis on food safety and hygiene are of paramount importance during the COVID-19 crisis.

2.2.1 Food safety and the COVID-19

In the present state of crisis, a number of questions have cropped up regarding food

safety. The questions about food safety from standardization point of view are of utmost importance. For example, measures that are being taken to address issues related to outbreaks of foodborne illness during the COVID-19 pandemic? Or is the food supply (pick-up and delivery by food-tech aggregators) safe? Similarly, questions regarding social distancing, disinfecting and other precautions, such as -How to ensure that social distancing is being maintained all the time in the food production/ processing/retailing establishment where usually employees work in close proximity even if they are using masks, gloves, sanitizers and taking other safety measures?

Queries pertaining to food handlers include as to - How does one ascertain that workers/food handlers are not testing positive during operation of services? How to continuously monitor whether workers in a given facility are not infected themselves and are, in turn, infecting the food with virus? How does one go about, if a worker in any of the food processing facility has tested positive to COVID-19? What steps are to be taken to ensure that the food produced is safe? How to ensure that delivery boys are not infected and food delivered by them does not get infected by them intentionally or unintentionally? Similarly, several such questions need to be answered to keep customer's confidence in what he/she is being served.

With regard to interim policy guidelines - How does issuance of the temporary guidance regarding packaging and labelling of food supply by FBOs, and preventive controls and food supplier verification onsite/offsite audit requirements help during COVID-19?

Providing information on food safety and delivery to consumers and other patrons during such public health emergencies is a key issue. Proper precautions are necessary to keep both consumers and providers safe and healthy. More so, if the enemy virus is as dangerous as COVID-19 that has practically brought everything to a standstill. Therefore, it is of paramount importance to focus on food safety and hygiene measures being taken, especially during the pandemic COVID-19.

2.2.2 Food safety and hygiene measures

Measures that are being taken to maintain hygiene and food safety by various stakeholders is an essential aspect and is being deliberated here.

2.2.2.1 Safety & hygiene measures by food-tech aggregators

The major food-tech delivery platform players, such as Swiggy and Zomato have introduced several measures for ensuring strict hygiene standards for delivery boys as well as for partner restaurants. These safety measures and practices are displayed prominently on their apps and are advertised to take customers into confidence [21]. The stringent procedures and initiatives taken to maintain hygiene and healthy norms across stakeholders, customers, delivery partners, restaurant partners, daily wage workers including delivery boys amidst the COVID-19 pandemic lockdown situation in India are mentioned below.

For the customer's safety, these platforms have introduced contactless delivery option disabling cash-on-delivery (COD) temporarily where the delivery boys ensure social distancing [22] thereby, ensuring delivery of safe, hygienic food to customers. Moreover, use of face masks by delivery boys as well as by others involved in food delivery chain is made mandatory to enhance their protection as well as safety of the customers. Delivery partners are given continuous drill on hygiene practices to ensure the use of safety standards.

For the partnering restaurants, these food-tech delivery platforms have mandated strict hygiene standards as precautions against the spread of Coronavirus and supply of quality and safe food. These hygiene standards are being followed willingly by restaurants to insure safety and hygiene standards of the food. Restaurants are required to publish their self-declaration regarding compliance to the best practices advised by WHO at their respective premises. As advised by food-tech delivery platforms, i) hand washing and sanitisation stations are being set-up and their regular use by restaurant staff as well as delivery partners is being promoted; ii) adoption of practice of sanitising their kitchen slabs and utensils periodically; iii) checking the body temperature of restaurant staff as well as the delivery partners to ensure their healthy state; iv) daily self-declaration on the hygiene and health of delivery partners; and above all v) enforcing policies to ensure adherence to hygiene and health standards [23].

Similarly, for the delivery partners, initiatives like Rider Relief Fund, COVID Insurance (Delivery Partner Insurance Plan) have been initiated as a welfare programme. For their (food delivery platforms) restaurant partners and restaurant workers, initiatives like support fund to support their workers and facilities like Takeaway, to support restaurants as well as customers in the current situation are initiated at various places. Community succour have also been facilitated by these Food-tech delivery platforms for homeless and hungry people as well as to quarantine facilities, isolation wards and essential service providers including police, paramedical staff and volunteers

2.2.2.2 Safety & hygiene measures mandated by the government regulatory authority

Besides hygiene standards self-imposed by the leading F&B delivery aggregators, stringent checks and balances are also necessary from the public regulatory authority for safety and regulation so as to ensure food safety in these testing times of COVID-19 crises. The crises demand to completely guarantee and safeguard the quality and hygiene of the food being delivered more than ever, since a small solecism can create havoc in the community, thereby being guilty of causing rippling effect.

The safety standards for ingredients, packaging and delivery of food products in India is regulated by the Food Safety and Standards Act Regulatory Framework and the Food Safety and Standards Act (FSS) 2006. This is the primary law for regulation of food products and the regulatory authority being Food Safety and Standards Authority of India (FSSAI). The Prime Minister of India, Narendra Modi opined that "Safe, wholesome and hygiene food will create 'Swasth Bharat' which is a mandate assigned to FSSAI". FSSAI thus plays a catalytic role as an organisation that enables aligning the expectations of key players across sectors, comprising scientific testing facilities, food businesses, government establishments and consumers that has been laudable to safeguard end users.

FSSAI has been stringently and holistically addressing issues regarding food safety and food hygiene from time to time. For instance, it has implemented a "clean street food hub programme" for street vendors. Under this programme about 144 identified street food clusters across the country are audited by FSSAI in collaboration with state authorities for cleanliness and hygiene. An efficacious outcome of this initiative can be seen at Kankaria Lake

area, a picnic spot in Ahmedabad. This spot became India's first Clean Street Food Hub with 66 vendors, giving hygienic and safe food to 1.2 crore (1 crore = 10 million) visitors who patronise the place every year [24].

The regulator has ensured that all food business operators (be it schools, offices, hospitals places of worship, FBOs F&B Aggregators, Food-tech delivery platforms, etc.) across the country adhere to certain standards and hygiene. FSSAI is supporting States to ensure food supplies in the lockdown period and is sharing information on food businesses with States and Ministries to enable them to ensure food supplies.

During the present public health crisis due to COVID-19, FSSAI is reaching out to help guide the communities with an appropriate course of action using technological platform and social media. The regulatory authority from time to time is bringing out advisory/orders [25] or making amendments to rules and regulations that address food safety and standards issues such as testing, standards, licensing, etc.

The importance of food safety and hygiene has never been as critical as in the present pandemic crisis. The FSSAI has issued "Food Hygiene and Safety Guidelines for Food Businesses during Coronavirus Disease (COVID-19)" [26]. These detailed guidelines are for various stakeholders (employees and food handlers) across food sector to prevent spread of Coronavirus based on the present evidences about the killer virus, hence subject to revision. Also, issuance of guidelines regarding import Clearance and Food Testing Labs classified as Essential Services by FSSAI during the COVID-19 [27]. Similarly, other related important advisories, include, notice for operationalisation of Food Safety and Standards (Licensing and Registration of Food Business) Amendment Regulations, 2020 [28], or allowing FBOs to temporarily operate during lockdown [29] or extension of timeline (due to COVID-19) for submission of returns [30], or more importantly applications during the lockdown situations by way of e-inspections [31]. It may be highly appropriate here to elaborate on the last issue as it is connected with the assurance of hygiene and food safety standards during the present grave pandemic crises. In a statement [32], it has been notified that due to the prevailing pandemic COVID-19 lockdown condition, to conduct mandatory physical verification and inspection of high-risk category food businesses may not be feasible, hence e-inspection of such

units. This is being done to avoid delay in grant of licence/registration to FBOs. Such an e-inspection of FBO's premise would preferably be carried out using ICT by way of video recording observations being facilitated by the respective FBO and its subsequent submission through any possible media such as live streaming, during the lockdown period. However, the routine inspection of the FBOs (to whom licence was granted during lockdown period) may be scheduled by the authority once normalcy resumes.

2.2.3 Impact of such measures and subsequent auxiliary steps

In spite of all these stringent measures, the questions that were raised do still hold good. While this paper was being written, the case of a delivery boy found COVID 19+ve surfed to the top, who, in turn, became a threat to 72 families to whom he delivered food as well as to his 17 fellow workers. Does this indicate that further arduous measures are required to be taken to mend the leaked pipeline and ensure avoidance of such lapses that hiatuses progression graph of arresting deadly virus COVID-19?

What could have been done better by stakeholders (Food delivery platforms or even Regulatory Authority) for furtherance of ensuring stringent hygiene and food safety measure to arrest human to human spread of deadly virus? A few propositions for consideration for the present and for posterity are given below.

2.2.3.1 For food-tech delivery platforms

Using Drones for Delivery: As social distancing and curbing human to human contact is becoming the new norm, drones are likely to play an important role and help mitigate the situation caused by COVID-19, while ensuring minimum exposure to the virus. Adhering to the government advisories and guidelines with regard to coronavirus, putting a temporary halt on the global supply chain and last-mile delivery, the drones can become a new alternative to the supply chain. Pandemic initiatives are predatory and exploitative, and thus need supersonic mechanisms of reaching to the unreached. However, such alternative tech delivery conduit mechanisms need Government's approval, so for as regulatory framework and regulations are concerned.

In India, with the launch of Digital Sky Platform on December 1, 2018 [33], the Drone regulations 1.0 came into effect from the same day, which permitted Nano drones in India to start flying legally from 1 December, 2018 itself. However, for micro and above categories, operators and pilots, the regulation prescribed to register on the Digital Sky Portal [34]. The Drone Regulations 1.0 however banned the use of drones for delivery of goods and food. Realising that goods delivery by drones will reinforce logistic competencies and the practicability of many-to-many commerce, Drone Policy 2.0 was released by the Ministry of Civil Aviation [35] on January 15, 2019, encompassing regulations for enhanced operations including commercial usage by way of cargo delivery and autonomous operations without active human intervention [36]. The Drone market is also seen as a promising sector. The Indian drone market is expected to be valued at $885.7 million, while the global opportunity is estimated to touch $21.47 billion by 2021 [37]. Meanwhile, the scenario that cropped up due to COVID-19, utility of drone in several sectors is being recognized by the government. Drones have huge potential particularly in the pandemic crisis to maintain social distancing, yet reach to the unreached for supply and delivery of essential items. In India, use of Drones during the pandemic has been witnessed to an extent in some sectors other than the food delivery.

Food supply being an essential service in this pandemic, unmanned drone can serve as an effective solution in contactless food delivery to combat the coronavirus pandemic and maintain the health and safety of the Indian population. Directorate General of Civil Aviation (DCGA), India had approved seven companies (included Dunzo, Swiggy, Zomato, Zipline, Redwing, Tata Advanced Systems and Honeywell) to conduct testing their long-range drone logistics solutions.

One of the India's leading food delivery companies, Zomato, has already acquired Tech Eagle Innovations in 2018 to carve a path towards drone-based food delivery in India. It also had a successful test run in June 2019, covering a distance of 5 kms in 10mts at a peak speed of 80 kms per hour [38].

Having said so, delivering essential packages via Drones in India in the pandemic- COVID-19 testing times becomes of paramount importance. Could not this have been the most opportune time for Food delivery platforms (Zomato, Swiggy, and others) to take their Drones out in India? Technology is an enabler in times of crisis; it should not be seen only as hype.

Therefore, enable e-commerce to disable Coronavirus by unlocking the true potential of e-commerce to the last mile during the pandemic and beyond, should definitely feature on the cards by Food-tech delivery platforms.

2.2.3.2 Supporting endeavours for furtherance of upholding robust system of stringent procedures

Strategically, in these testing times, what has worked, what has not worked, how far the procedures followed to ensure the food quality and safeguarding of customers has been complied with and seek evidence-based answers to similar questions can play a catalytic role in mapping future roadmap. It may be highly appropriate here to survey the users being served by these food delivery systems (Zomato and/or Swiggy, or even others). For such a survey, the data needs to be shared by the online food delivery systems at least for the lockdown period, when commuting was totally shut. It may be highlighted here that in most probabilities, common families may not have ordered (or may have placed a very restrictive /limited number of orders) online food through such food delivery apps. It is likely that only people who are either alone and dependent on such food delivery systems and/or where no other options are available, the maximum orders for food must have been placed online. The results of such survey will facilitate furtherance of measures that can be taken to make the system robust by upholding the stringent procedures. Such a survey can prove very useful, if it is either taken up by the Regulatory Authority or sponsored by them.

Furthermore, as part of the guidelines, other procedures such as tax enhancement for unhealthy food could be factored as a punitive measure to discourage malpractices. For instance, an empirical study [39] that simulated the effect of three tax scenarios on nutrient purchases, demonstrated that a tax on the same foods and beverages already delineated as unhealthy by the marketing controls and front-of-pack labelling should promote a healthier diet. Similar kind of modalities can also be worked out to boost healthy and safety food for all times to come with periodical revisiting for validation.

3. RESULTS AND DISCUSSION

3.1 COVID-19 Pandemic and Customer Behaviour: A Survey

Realization of the impact of coronavirus on each one of us as resilient beings has landed us into the new normal regime of lockdown. It is perhaps natural, to have paradigm shift in people's perceptions and thereby in their behaviour as well. How does the customer behave in this highly impacted economy and disruptive supply-chain is very important to be assessed to retain the customer-base in times of unprecedented recession?

To assess and ascertain insights to see the impact of COVID-19 pandemic on customer behaviour with reference to food delivery, a small sample survey was undertaken. The major highlights and outcome of the survey is given below.

3.2 Sample Size and Method

Due to the lockdown advisory, a small sample was taken, to gauge the mood of the customer. A survey was done using a small sample of 106 persons who are not only food lovers, but frequent order placers with online food delivery platforms. The persons were randomly identified through various contact networks.

3.3 Data Collection

Data was collected using one of the known methods via technological interface. The survey was conducted using interview method via CISCO Webex meetings facility in small groups. The grouping of the persons was done based on the convenience of the interviewee.

A set of seven base questions was prepared and asked to every person on Webex conference call. Besides there were a few additional generic questions asked to different customers depending on their time, convenience and interest to answer.

3.4 Analysis

Data thus obtained was subject to analysis using the response to questions asked. It was found that majority of the respondents have same type of perceptions and an apprehension so far as the online food delivery is concerned.

3.5 Survey Outcome

The tangible outcome of the survey is as follows:

3.5.1 Food intake

More food is being consumed in this pandemic lockdown (even by those who are not foodies type). The variety and frequency of food intake has also seen upswing. About 98% of the respondents corroborated to more consumption of food (both variety and frequency of intake) as time pass.

3.5.2 Food ordering

Ordering has continued to be on the cards of those who are used to do so quite frequently. However, eating outside saw total decline, because such crowd also used to frequent restaurants besides ordering food online, which did not happen during the lockdown. About 42% of the respondents, who are staying all by themselves have invariably placed order via online food delivery platforms, while 58% who live with families have occasionally placed the orders.

3.5.3 Quality and hygiene

Regarding this aspect, customers trusted the following: FSSAI licensed; brand name; (restaurant from where food was picked from); Packaging; and personal hygiene of the delivery boy (mask, gloves, using sanitizer), etc. Almost 99% of the respondents agreed and endorsed that the quality and hygiene of the food being delivered was most significant and an imperative factor.

3.5.4 Trust and sense of faith

Reliance factor in the delivery systems developed over the time period has worked well in some cases. The pre-coronavirus customer's experience with certain brands has played a role in ordering food. About 78% of the respondents contemplated this to be a decisive factor.

3.5.5 Branding

The customers are now extremely sensitive about the brands they are dealing with and how the brands are dealing with them in terms of safety aspects.

3.5.6 Strict & stringent safety & hygiene norms

All the respondents echoed that endurance of more robust system of screening and stringent procedures of hygiene in these testing times rather than simply laying guidelines and fixing standards should be on the top of the agenda. Besides, strict adherence to same, needs to be validated on continuous basis, and not just occasional inspections. Ninety nine percent of the respondents felt that more stringent norms for checks and balances are necessitated.

3.5.7 Service consolidation

Consolidation of such services during crisis of the sort COVID-19 should be on cards, so that strict adherence to standards together with other additional advisories issued to safeguard the health and hygiene can be monitored with a vigil eye. Nearly two thirds of respondents felt that during such pandemic crisis, consolidation of services is important, so that the responsibility of last mile delivery lies with limited few, which could be strictly monitored by the authorities.

The food and grocery delivery platforms have not only been taking extra precautions to ensure their customers about safety and hygiene but are also making some changes to their daily operations [40] to retain their customer-base. To give confidence and ensure safety to their customers, they have been taking strict measures and declaring information (via messages and mails) about stringent medical tests, and critical safety measures. Yet, when it comes to food delivery platforms in India, its delivery handlers are the ones who are most exposed to this outbreak. The frequency of ordering food online has gone down as people are thinking twice now whether they should order the outside food or not.

The above analysis does focus on one thing that care for customers is unarguably catalytic to the progressive supply-chain cycle in every sector with special reference to food delivery platforms.

4. CONCLUSION

4.1 Final Observations

Covid-19 is a global pandemic now and sectors whether consumer-based or others are facing an unprecedented challenge. The pandemic has beyond doubt hit hard on the economy and hugely impacted customer behaviour. In these times of uncertainty, where the number of infected persons in the country is growing with the added damage on the economy, the companies have to go extra mile to gain its customers' trust. The impact of COVID-19 is continuous and ever-changing, business leaders need to have a dynamic and proactive approach towards the challenges which are evolving on a daily basis.

With the extension of lockdown, Government of India is unveiling interim measures for sectors that have been hit the most by the COVID-19 outbreak in addition to the ₹1.7 trillion packages already announced for the poor. These measures are for 'survival' of sectors including micro, small and medium enterprises (MSMEs) as well as aviation [41]. Similarly, Reserve Bank of India (RBI)'s constant valuation of economic disruptions in the backdrop of COVID-19 has announced several measures [42],[43] pertaining to maintaining adequate liquidity, incentivising bank credit flows, easing financial stress, normal functioning of the markets and the like.

What about the start-up companies, especially food-tech delivery platforms, how is their distress going to be comforted. Banks do not generally lend finances to such platforms. The government has to further dovetail its efforts for reinforcement, deliverance and respite of this kind of promising e-commerce sector.

Need to remember that things will turn around to 'so called' new normal. What are the changes we are going to get post-pandemic in the business ecosystem and how are we going to address these changes is of utmost importance to ponder over at this point in time. One must consider the current crisis truly as a period of learning to explore opportunities for survival. Recovery in different regions will take time, beyond doubt. Putting the correct measures forward right at the earnest will help minimize time period (from years to may be months) for recovery. None will argue that the probability of a V-shaped recovery after the pandemic-slowdown might not allure employers to go valiant and gallant to retain their work-force during the lull phase, but the leeway of incentivization could reinforce their bounteousness for not laying off.

Having said so, business establishments on their part are also making efforts for carving a niche to sustain the trailing business from becoming oblivion. The ways of doing business seems

likely to change and of course put pressure on companies differently. During these times of distress, decline of scheduled customers, resulting in lull is though quiet disheartening to sustain supply-chain cycle.

However, it is hoped that this phase is not going to last forever. There is light at the end of tunnel. Using this time as an opportunity, modalities of improving customer experience needs to be worked out, while remaining connected, communicative and concerned. Need to work on delivering a wow experience to the customers should be on the cards. Besides, shortening time to product market-fit, being resilient and extending the business runway [44] is also imperative.

India's highly competitive online food delivery space is no different; it is also at the forefront of pandemic distress. If the food-tech company has to succeed, it has to continue to work on logistics and customer care and penchants. While on the logistic side, the right intersection of innovation, speed, and cost, technological prowess, and established sophisticated delivery mechanisms need to be avidly factored. On the customer care side, innovative delivery models that takes cognizance of customer preferences and customised experiences to allure customer appetite is important.

Each new crisis brings a learning opportunity for organizations and this pandemic is no exception. Elucidation of avenues to work upon to overcome COVID-19 slowdown for the present and beyond is the only riposte.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard guideline participant consent has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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