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CLOUD KITCHENS: CONSUMER AWARENESS & PERCEPTION

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ABSTRACT

This paper examines the recent innovations in the Indian food-tech industry. The most recent business model that has originated in the industry is that of 'Cloud Kitchens'. It is also known as ghost kitchen or virtual kitchen. Through this study, we have tried to examine the level of awareness among consumers regarding cloud kitchens as well as the factors considered by consumers while ordering food online as against the model of cloud kitchen being followed by the businesses. Since 'cloud kitchen' as a concept is still in its infancy stage, businesses don't have a standard model to be followed yet. For the purpose of this study, primary data was collected by way of structured questionnaire from an infinite population with a sample size of more 384 respondents. The study intends to check the awareness among consumers and their general perception towards such innovations in the restaurant industry.

Keywords: Food-tech industry, Cloud kitchens, Online food delivery services, Consumer awareness, Consumer perception.

INTRODUCTION

The fourth industrial revolution has stepped in making technology play big roles in each of our lives. It is transforming the society in various ways. Though it is making our lives easier, it is also challenging the present-day reality by changing the way every work is done. As the future is advancing, technology's pervasiveness is increasing. This is because; the advancement in technology is also leading to change in lifestyle of the general society. Thus, consumer preferences have become extremely dynamic in nature. Henceforth technology has stepped into each and every industry in order to facilitate the businesses to cater to their consumer needs.

Food industry has always been regarded as a low-tech industry and the innovation in this industry are incremental and is characterized with less newness(Ciliberti, Carraresi, & Bröring, 2016). This industry has been regarded as one of the most stable industries for more than a hundred years. It has always been more or less a 'brick and mortar' model used by this industry. But the fourth industrial

revolution is making us all live in a digital world. Food industry which has been a traditional industry for years together is always regarded as a low-tech industry. Research and development in this industry has always been low compared to other industry. But technology has started encompassing food industry as well, like ever before. Gradually, restaurants have started revising their 'brick and mortar' to 'brick and click' model. The new business model of 'brick and click' is where the traditional businesses are enabled to integrate their offline and online presence. The emergence of internet, the rise of big data, data analytics and other innovations as a result of the fourth industrial revolution have started influencing the business model. This is also encouraging entrepreneurs to enter this market with a lot of innovations, which is significantly lowering the barrier to entry. Hence, this industry which had turned into a red ocean for several years has started changing to a blue ocean by way of heavy competition and lots of innovation.

Indian hospitality industry is becoming sensitive towards the needs of the consumers(Sethu & Saini, 2016). The most recent development in the food-tech industry is the birth of a new model of business called 'cloud kitchen'. It is called by different names – cloud kitchen, ghost kitchen, virtual kitchen, etc. They have emerged as business models in response to the increasing demand from consumers for food delivery services (contributors, 2020). A cloud kitchen is a restaurant that just has online presence in the market without any physical dine-in or take-away facilities (Dr Chetan Panse, 2019). "In the case of a cloud kitchen, both the real-estate cost and the kitchen space get slashed significantly. With lower cost of production, the opportunity to scale is really high," says Jaydeep Barman, founder, Faaso's, one of the leading cloud kitchens in India. The two main reasons for the rise of such a business model is setup cost of a traditional restaurant and technological evolutions that has led to exploiting home deliveries (Dr Chetan Panse, 2019). It is a business model which is still undergoing a lot of development and modifications. Hence, we are able to see different models of cloud kitchens in the market. Businesses are trying to cater to the needs of the society in large by way of experimenting different additions and deletions to the basic model of a cloud kitchen. This model completely scraps the traditional model of an offline store and is a 100% online store which excludes both offline services as well as take-away services. It comprises of only online delivery. Hence, this business model enjoys high operational efficiency and low starting up cost as they can save on infrastructure, labour cost, and service time and will be able to collect and work on contextual consumer data. Thus, it makes this model more efficient than the traditional model, low barrier to entry and better expansion opportunities. However, its impact on the traditional businesses is yet to be known.

OBJECTIVES

- To know the level of awareness among consumers regarding 'cloud kitchens'
- To find out the uniformed purchases made by consumers from cloud kitchens
- To analyse the relationship between awareness among consumers and age
- To analyse the perception of consumers towards the innovations in the food-tech industry (cloud kitchens)

REVIEW OF LITERATURE

Industries are broadly classified into low-tech and high-tech industries based on the R&D intensity. A traditional industry like food industry is often categorized under low-tech industries (Ioanna Kastelli, 2016). However, the fourth industrial revolution which has been ever encompassing has made food industry turn into a food-tech industry. The growth trajectory of this industry as per TechSci Research report is projected to grow at CAGR 12% till 2021. Customer preferences have been evolving rapidly which has led to many innovations in this industry. When every single industry is undergoing technological revolutions, the most important and crucial part of every business is customer retention. The search for new customers along with the retention of existing customers is the most essential task (Govind Mehta, 2019). Customer relationship management is defined as learning

about the customer, his/her needs and behaviour to initiate and grow stronger relationships (Govind Mehta, 2019). The new era of business has gone beyond traditional to modern ways with the use of technology and other electronic ways to reach and expand the customer base (Govind Mehta, 2019).

In order to satisfy the ever-changing demands of the consumers, the food industry, especially the food delivery service industry has undergone tremendous changes from phone-based to app based online ordering, home delivery, take-away, etc. Technology has made customers depend on it to the extent of doing everything online including getting cooked food through online delivery services (G. See-Kwong, 2017). Services are intangible in nature and digital services can be rendered only through internet-based modes (Dr. Neha Parashar, 2017). One such digital service market is the online food delivery services market. The main motto behind the establishment of this market is to enhance customer convenience. Food ordering online through internet helps in one-to-one communication between the seller and the consumer round the clock (Suryadev Singh Rathore, 2018). Businesses are now trying different models through various innovations to gain some operational efficiency and to enhance their profitability.

Many studies have been done on the online food delivery services. A study on consumer perception on online food delivery says that consumers perceive it to be positive and enhances convenience. However, some of them perceive online platforms to be complex in nature. Also it reveals that the respondents who do not avail online food delivery services due to their perceived risks such as quality of food (An, 2017). A number of innovations in this industry has led to an increase in online food ordering and is steadily growing. Businesses are adopting different methods of online food delivery and one such way is to outsource the delivery of food. A study was made in Malaysia on the outsourcing of online food delivery by restaurants to companies such as Zomato and the F&B owners' perspective towards outsourcing it (G. See-Kwong, 2017). It can be now seen that most of the F&B owners go for outsourcing the food delivery to market giants like Zomato, Swiggy, etc., except a few well-established players in the market who render their own delivery services as well.

Customer loyalty and customer satisfaction are the 2 most frequently used terms in hospitality marketing (H.S. Sethu, 2016). 'foodzoned.com' in Manipal was an online food portal which was a platform for consumers ordering food online. It had enlisted a number of food joints and all its varied menus. A study on customer loyalty and satisfaction was made using 'Customer Loyalty Index' which took customer satisfaction, customer retention and customer recommendations into consideration. The study revealed that penetration of online food ordering services is high (H.S. Sethu, 2016). The main motive behind online food delivery is to retain existing customers and to attract new customers. Hence it becomes important to know the behavioural intentions of customers to use online food delivery services. A study on factors influencing customers to use online food delivery by (Eun Yong Lee, 2017) classifies the various gathered information as firm-generated and user generated information, based on which they arrived at the various perspectives of customers as well as the factors they take into consideration while ordering food online. (Vincent Cheow Sern Yeo, 2017) studied the relationship between consumer attitude, factors motivating them to use food delivery apps and hedonic motivations. The authors give a framework for the behavioural intentions of consumers as well as the attitude towards online food delivery along with the theory of hedonism and the various motivational factors (Vincent Cheow Sern Yeo, 2017). Along with the motivational factors and consumers' perception, the satisfaction attained by using online food delivery services was studied by also taking the restaurateurs perspective into consideration (Das, 2018). Some of the aspects that can limit the satisfaction among consumers could be poor service attitude of employees, delayed services, unsanitary food, etc. which can make consumers lose faith in OFD services (Jiaxiang Hu, 2018). In order to improve the quality of online food services, a study was made based on the negative comments of customers on various food joints in China, listed on a food delivery app. Various negative comments were categorized and thus abled the restaurants as well as the food delivery apps to throw light on the

root cause of the problem. They further analysed the various problems, its causes and also gave suitable solutions to each of it in terms of food safety, packing, delivery and so on (Hong Lan, 2016).

Slowly online food delivery services market began to be ruled by a few big players in the market such as Zomato, Swiggy, Food Panda, etc. which whole and solely dealt with delivery of food. Most of the traditional restaurants which wanted to gain competitive advantage by way of getting technologically updated. Their easiest way of attaining this was to change from 'brick and mortar' to 'brick and click' by way of outsourcing online food delivery services to such well-established online operators in the market. Thus, they have created an online presence for themselves. As the food delivery market started revolving around these sole food delivery-based companies, India started getting many innovative start-ups in this market. The young Indians started accepting the various challenges of making up to the ever-changing consumer demands. A study was made on the 4 leading companies in this market, i.e. Zomato, Swiggy, Food Panda and Fassos to explore and analyse the various innovative strategies undertaken by them to enhance consumer convenience as well as their profitability (Kanteti, 2018). Also the various food apps were ranked based on consumer preferences and they were ranked as Swiggy, Zomato, Food Panda, Uber eats, Food kourts and enjoy foods, in the order as mentioned (I.Karthika, 2018). All these are the evidence for the fact that there is a drastic change in the restaurant business culture due to the technically developed online food delivery system and gives a new amazing comfort zone to consumers (Gupta, 2019). In order to learn the impact of this on the restaurant business, a study was made on the strategies of the 2 leading online food operators in India, being Swiggy and Zomato, and the findings were based on customer experience, sales, customer savings and other positive and negative effects of online food delivery services on restaurants (Gupta, 2019).

All the above factors reveal that the food-tech industry is evolving as per the needs and desires of the consumers. One of the latest developments in this industry, after the evolution of the online food delivery market, is that of the cloud kitchens. All the studies till date have been made on the various developments in the industry till the online food delivery market. For the purpose of this study, cloud kitchens are defined as those restaurants or kitchens with no physical dine-in facility or take-away facility. Cloud kitchens have not been under the purview and thus provide further scope for research in this direction.

RESEARCH METHODOLOGY

The study is based on primary data collected by way of questionnaire. Quantitative research method was used to analyse the collected data with the help of statistical and computational skills. A structured questionnaire was formed which consisted of both open ended and close ended questions. It was designed in a manner that it caters to all the areas of the study. The study was conducted in different areas of Bengaluru, Karnataka, consisting of respondents belonging to varied age groups, varied occupation like student, employed, businessman, homemaker and others.

Table 1 shows the demographic profile of the sample taken for the study. Importantly, it consisted of both people of Karnataka as well as people from other states of India who are currently the residents of Bengaluru. As the population for the study was any consumer of online food delivery services which is infinite in nature, a sample size of 384 respondents has been considered for the study based on non-probability sampling techniques.

Table 1

Category		Count
Age	16-25	287
	26-40	56
	41-60	34
	61&above	7
	Total	384

Category		Count
Gender	Female	202
	Male	182
	Total	384
Category		Count
Education	12th	30
	UG	198
	PG	152
	PhD	4
	Total	384

RESEARCH TOOLS

- Reliability test – Cronbach's Alpha
- Descriptive analysis
- Chi-square test

ANALYSIS

a. Reliability test – Cronbach's alpha

The internal consistency of 16 variables in the questionnaire was measured by way of Cronbach's alpha test (Olaniyi, 2019). Table 2 shows the alpha value to be 0.76 which shows high internal consistency. (a reliability co-efficient of 0.7 or more is considered acceptable for social science research (Das, 2018)).

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.76	0.76	16

b. Awareness

Out of the total respondents of 384, only 40.89% (i.e., 157 of them) are aware of the concept of cloud kitchens and the rest 59.11% (i.e., 227 of them) are unaware. Figure 1 reveals the distribution of awareness among consumers. This shows that awareness regarding the concept of cloud kitchens is just satisfactory even in smart cities like Bengaluru.

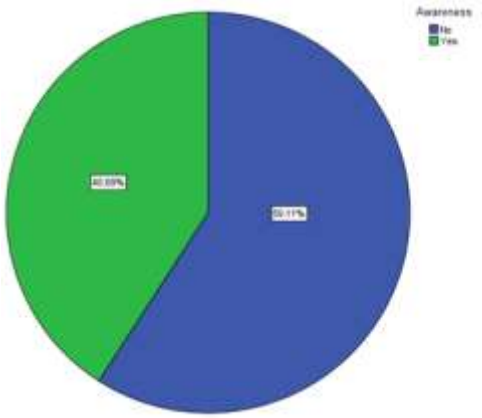

Figure 1

c. Source of Information

Figure 2 shows that out of the 157 respondents who are aware, around 36% of them learnt about it from social media and peer groups each, 16.56% from food delivery apps and 7.64% from advertisements. Hence, social media and peer groups seems to be the major source of information regarding cloud kitchens.

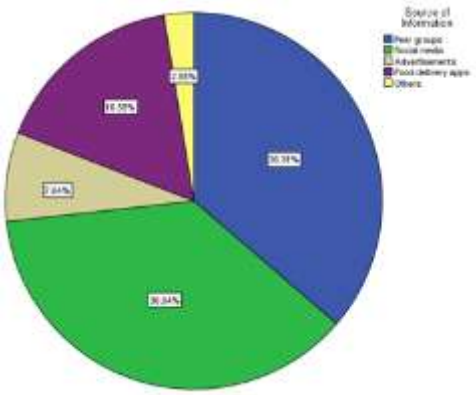

Figure 2

d. Uninformed purchases

Out of the 227 respondents who were unaware of the concept pf cloud kitchens, table 3 shows that 103 respondents had unknowingly availed services from various cloud kitchens. The questionnaire consisted of questions containing 15 most popular cloud kitchens relating to this question. Hence, the number of uninformed purchases may differ and increase in reality as only a few popular cloud kitchens were mentioned in the questionnaire.

e. Relationship between Age and Awareness

H0: There is no significant relationship between age and awareness about cloud kitchens

H1: There is a significant relationship between age and awareness about cloud kitchens

Table 3

		Awareness	
		No	Yes
		Count	Count
Have you ever ordered from 'The Bowl Company', 'Adraq', 'O'Biryani', etc.	No	124	0
	Yes	103	0

Analysis:

Table 4 displays the awareness among different age groups. The samples have been categorized into 4 different categories of age and the awareness under each category has been shown. Figure 3 provides a pictorial representation of the awareness among different age groups. The age group of 16-25 has 61.67% of awareness which is a reasonably good level of awareness. The next age group of 26-40 has 53.57% of awareness which is also satisfactory. The age group of 41-60 has 50% awareness and the 61&above category has an awareness level of 42.86%. This shows that more or less all the category of age group has similar awareness level. This indicates that age is not a significant factor in terms of awareness regarding cloud kitchens. Figure 3 depicts the awareness level among various age groups graphically.

Table 4: Age * Awareness Cross tabulation count

		Awareness		Total
		No	Yes	
Age	16-25	177	110	287
	26-40	30	26	56
	41-60	17	17	34
	61&above	3	4	7
Total		227	157	384

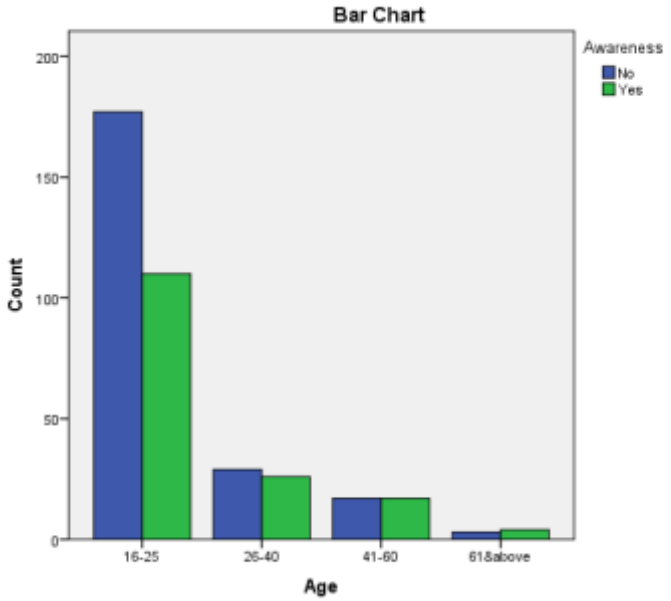

Figure 3

Also, Karl Pearson's p value to be 0.304, as shown in table 5, is more than 0.05. Hence, we accept the null hypothesis and there is no significant relationship between age and awareness. This means, there is no statistically significant relationship between the two variables, i.e., the amount of awareness is the same across the various age groups.

Table 5: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.635[a]	3	0.304
Likelihood Ratio	3.594	3	0.309
Linear-by-Linear Association	3.471	1	0.062
N of Valid Cases	384		
a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.87.			

f. Consumer Perception

When the models of cloud kitchens are contrasted with that of traditional restaurants, the major difference was the non-existence of physical dine-in. Hence, based on online surveys conducted by major online food delivery platforms, four important factors – 'hygiene', 'freshness of the food', 'use of harmful ingredients' and 'spending more for a traditional restaurant', were chosen for the study to find out if the consumers would trust a cloud kitchen for these factors.

(i) Hygiene:

It is seen that 143 respondents trust a cloud kitchen for its hygiene only sometimes and 96 of them rarely trust it. Less than 70% of the respondents rely upon hygiene in cloud kitchens. Only 37 of them are of the opinion that cloud kitchen can be trusted for its hygiene. Figure 4 gives a graphical representation of reliability on hygiene factor by consumers, which reveals that most of them rarely trust a cloud kitchen for the same.

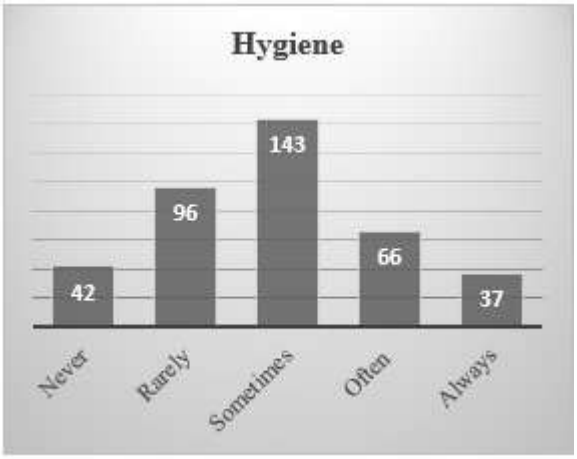

Figure 4

(ii) Use of harmful ingredients:

Figure 5 shows the perception of consumers towards use of harmful ingredients in cloud kitchens. Around 35% of the respondents rarely or never rely a cloud kitchen for use of consumable safe ingredients. While 114 respondents, accounting to around 30% sometimes rely. However, around 30% would trust a cloud kitchen for no use of harmful ingredients, which seems to be a smaller number.

Figure 5

(iii) Freshness of the food

Around 32% of the respondents rely upon the freshness of food from cloud kitchen only sometimes. However, 45% of them rarely or never trust a cloud kitchen for the same. And, only around 20% of them rely upon its freshness of food. Figure 6 provides a graphical representation of consumer perception towards the freshness of food in cloud kitchens.

(iv) Spending more for traditional restaurant:

Figure 7 shows the distribution of consumer willingness for paying more for a traditional restaurant as against a cloud kitchen. It is seen that more than 50% of the respondents are willing to spend more for a well-known, well established traditional restaurant. Up to 30% of them sometimes mind spending more, however, only around 20% of them doesn't want to spend more for a traditional restaurant.

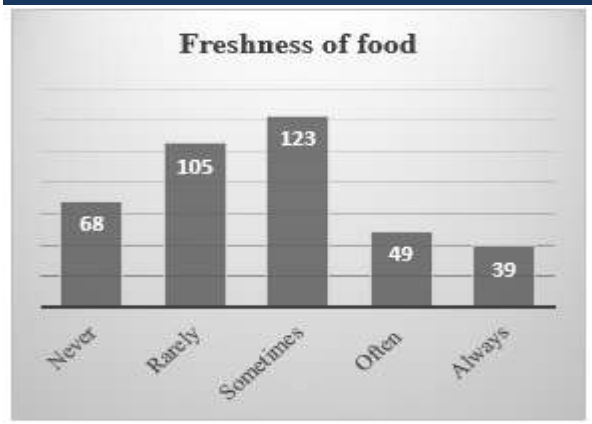

Figure 6

Figure 7

FINDINGS & CONCLUSION

- The study reveals that less than 50% of the sample are aware about the concept of cloud kitchens. Hence, businesses should concentrate on making consumers aware by various means of promotional activities. Also, it is the right of consumers to be aware of the source of the food being consumed by them, as cloud kitchens are quite different from traditional restaurants.
- The study also reveals that there is no significant relationship between age and awareness. Hence, businesses can have a common strategy to make all classes of consumers aware.
- The study also reveals that social media can be an effective mode for businesses to make consumers aware.
- Out of the respondents who were unaware of cloud kitchens, more than 45% of them had availed services from cloud kitchens unknowingly. However, such uninformed purchases can be more than 45% as the questionnaire covered purchases from only certain popular brands of cloud kitchens.
- The study reveals that almost half of the respondents do not trust a cloud kitchen for its hygiene, freshness of the food and no use of harmful ingredients. Hence, businesses have to put in efforts in convincing consumers to gain their trust for the same. They can follow a model of cloud kitchen which is more transparent in nature and provides a better interface to consumers to introspect the kitchen space by any means.
- It is also seen that more than 50% of the respondents are willing to pay more for a traditional restaurant rather than a cloud kitchen. By this it can be inferred that the consumers value the goodwill earned by a traditional restaurant over the years, as against a cloud kitchen which has recently entered the market. The financial leverage obtained by cloud kitchens by way of lesser operational and setup cost, is not sufficient. Hence, businesses have to formulate strategies to compete with the old giants in the market.

LIMITATIONS OF THE STUDY

- The study was based on convenience sampling. Though it was based on a sample size of 384, conclusions can however not be generalized.
- The study covers only the consumer perspective. It doesn't take the businessman and other stakeholders' perspectives into consideration.
- The study concentrates only on awareness and perception of consumers. The field provide several other factors to be explored, which still remains unexplored.

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