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Cloud Kitchens – a Novelty in the Restaurant Industry after COVID-19

Francesco Piccioni

Dissertation written under the supervision of Peter V. Rajsingh

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Abstract:

Over the past few years, the restaurant industry has faced numerous challenges. The arrival of COVID-19 forced various countries around the world to take measures to contain the expansion of the pandemic, especially the mandatory quarantine and the closure of restaurants are measures that have been implemented more by governments.

This paper focuses on the Cloud Kitchen phenomenon, a new business model for restaurants. The strategy used is to focus solely on the production of food for one or more brands dedicated exclusively to delivery. The arrival of the pandemic was a catalyst event that created an increase in the amount of food delivery ordered by people never seen before in history. Based on qualitative and quantitative analysis, in this thesis we are going to study how this new business model may or may not be a disruptor for traditional restaurants, especially, the paper intends to try to identify the possible future scenario of the restaurant industry following the arrival of these new competitors in the market.

The focus is mainly on analyzing the factors that strengthen the Cloud Kitchen, the advantages that an entrepreneur could have by opting for this operational model, and the limitations that arise when operating under this business format.

Competition in the Restaurant Industry is very strong and constantly evolving, restaurants that want to survive and continue to be profitable will have to innovate and adapt to change, anticipating new trends is of fundamental importance to do not be cut off from the market.

Keywords: Cloud Kitchen, Restaurant Industry, Delivery Food, Food Aggregator, Specialization

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Author: Francesco Piccioni

Resumo:

Ao longo dos últimos anos, a indústria de restaurantes enfrentou vários desafios. A chegada do COVID-19 obrigou vários países ao redor do mundo a tomar medidas para conter a expansão da pandemia, principalmente a quarentena obrigatória e o fechamento de restaurantes são medidas que vêm sendo mais implementadas pelos governos.

Este artigo foca no fenômeno das Cozinhas na Nuvem, um novo modelo de negócios para restaurantes. A estratégia utilizada é focar exclusivamente na produção de alimentos para uma ou mais marcas dedicadas exclusivamente à entrega. A chegada da pandemia foi um evento catalisador que criou um aumento na quantidade de entrega de comida encomendada por pessoas nunca antes vistas na história. Com base em análises qualitativas e quantitativas, nesta tese vamos estudar como esse novo modelo de negócio pode ou não ser um disruptor para restaurantes tradicionais, especialmente, o trabalho pretende tentar identificar o possível cenário futuro da indústria de restaurantes seguindo a chegada desses novos concorrentes no mercado.

O foco está principalmente em analisar os fatores que fortalecem as Cozinhas na Nuvem, as vantagens que um empreendedor pode ter ao optar por este modelo operacional e as limitações que surgem ao operar neste formato de negócio.

A concorrência na Indústria da Restauração é muito forte e em constante evolução, os restaurantes que querem sobreviver e continuar a ser rentáveis terão que inovar e adaptar-se às mudanças, antecipar as novas tendências é de fundamental importância para não ficar à margem do mercado.

Palavras-chave: Cozinha na Nuvem, Indústria de Restaurantes, Entrega de Comida, Agregador de Alimentos, Especialização

Título: Cozinha na Nuvem – uma novidade na indústria de restaurantes após o COVID-19

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1.INTRODUCTION

"Going to a restaurant is one of my keenest pleasures. Meeting someplace with old and new friends, ordering wine, eating food, surrounded by strangers, I think is the core of what it means to live a civilized life." - Adam Gopnik

Access to food is a key resource for personal sustenance, maintaining consumer confidence, and global peace (Telukdarie et al., 2020). The movement of food through the global supply chain is essential for sustaining life and for broader economic activity. During the global lockdown which disrupted global economic activity and people's lives, a significant portion of the Food and Beverages Manufacturing sector remained open to provide essential services related to food (though many restaurants were only allowed to work through deliveries and takeout). Nevertheless, according to the National Restaurant Association many restaurants were forced to close in 2020 due to the pandemic. More than 110,000 eating and drinking establishments in the United States shuttered their businesses, temporarily or permanently, with nearly 2.5 million jobs erased from pre-pandemic levels (King, 2021).

Given this, restaurants and bars had to find creative ways to stay afloat, beyond just adding or expanding whatever takeout options they had before. Some restaurants leaned heavily on expanding outdoor dining footprints, while others turned their dining rooms into makeshift artisanal grocery stores. Every restaurant segment was impacted by the pandemic, but the sales and employment losses were felt disproportionately by full-service restaurants, which had to perform much more challenging pivots to off-premises service (Arellano et al., 2021).

The hospitality sector is in constant evolution with practitioners seeking optimal business alternatives (Bacon, 2021). Adapting to changes in social and consumer trends, requires continuous innovation, permanent restyling, and finding adequate means for traditional catering to reach customers and serve their preferences. Currently (at the time of writing), with restrictions caused by the pandemic, the distribution of food at home has taken on special importance and major gastronomic firms have moved to prepared food for home delivery.

The presentation and marketing formulas for this are varied. So-called Cloud Kitchens or Dark Kitchens, a collateral phenomenon associated with the pandemic, is one trend. These are places with industrial kitchens not open to the public, that offer takeout food through delivery (Coquillat, 2021). As it is simply an open kitchen, there is no need for restaurant design features for accommodating the public. In addition, large delivery companies such as Deliveroo, Glovo

or Uber Eats have promoted projects to cover the entire value chain, from production to food delivery (Financial Times, 2020).

This thesis analyzes the acceleration of the birth of Cloud Kitchens caused by the pandemic to examine whether this phenomenon is changing attitudes towards food, potentially disrupting the Restaurant Industry (RI) and transforming the classic restaurant model. To complete this study, Cloud Kitchens will be used as an independent variable to assess their impact on the industry. The phenomenon will be analyzed in a qualitative and quantitative way to ascertain how it affects the traditional restaurant business model and the entire industry, which is the dependent variable of this study.

A further focus is on future scenarios, more precisely whether Cloud Kitchens are reshaping competitiveness in the sector, and, if it will displace classic restaurants or simply will contribute to expansion of the whole industry.

The Research Questions are as follows:

RQ1: Are Cloud Kitchens, as an innovative business model, disrupting the Restaurant Industry (RI)?

RQ2: What is the likely future landscape of the industry in light of this potential disruptor?

2.LITERATURE REVIEW

2.1. The impact of COVID-19 on the Restaurants Industry

To arrest transmission of COVID-19, many national, state and city officials announced executive orders to shut down all onsite-dining at restaurants and bars. Forced closure of dining rooms and restaurant businesses decimated the RI. Many restaurants stopped their businesses, albeit temporarily, while workers lost hourly wages or were laid off altogether. The total number of hours worked for local businesses in the food and drink sector dropped 40 percent by March 17, 2020, while the number of hourly workers overall declined 45 percent (Waldmann, 2020).

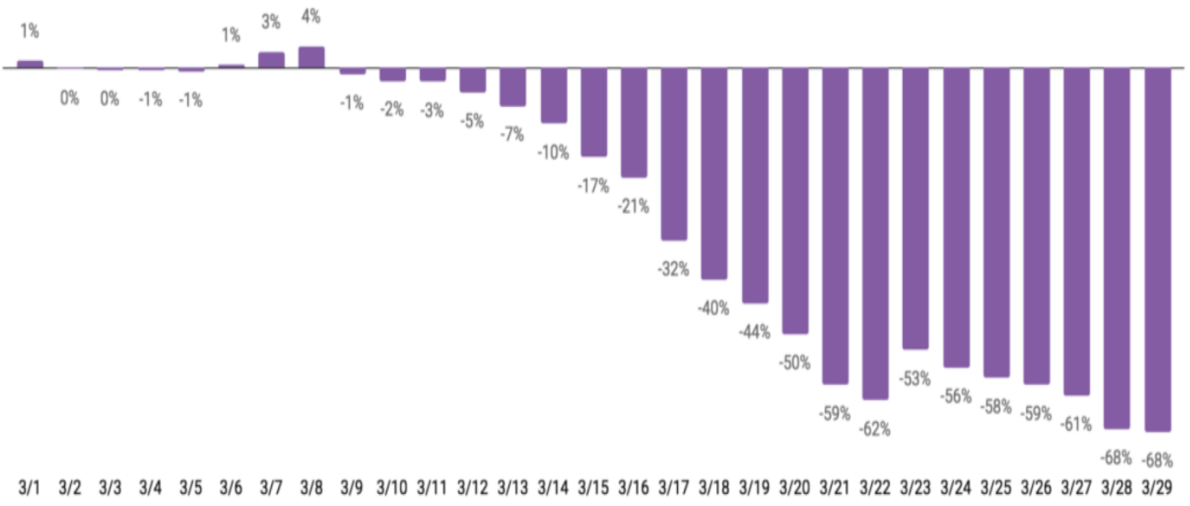

Figure 1: Percentage Change in Total Hours Worked by Hourly SMB Employees in the US (Compared to Median Hours Worked on Same Weekdays in January)

Even in the middle of the COVID-19 crisis, the global Food Service Industry was estimated at US $3.5 trillion in 2020 and is projected to reach a revised size of US$4.2 trillion by 2027, growing at a CAGR of 2.7% over the analysis period 2020-2027(R&M, 2021).

Prior to the pandemic, essentially 70% of restaurant businesses were eat-in dining, with deliveries representing the remaining 30% (Madhavan, 2021). Many restaurants depend totally on the physical presence of clientele, particularly fine dining establishments and restaurants in hotels. The Coronavirus presented a huge exogenous disruptive force globally for the RI.

2.2. New trends emerging in Restaurant Industry

Challenges associated with COVID-19 include operational issues, safety, supply chain management, training, emergency responses, incident management, recreating business models, digitalization, and other unanticipated impacts. In addition, the pandemic changed consumer behavior with respect to food – customer preferences have skewed towards online ordering and, rightly so, with people exercising more caution during the pandemic while trying to limit physical contact with others (Chiquione, 2020).

Many food retailers and the entire food and beverage (F&B) industry are now operating very differently than they did pre-Covid. The pandemic has brought about immense shifts in supply chains, imposed new hazard controls, and, perhaps, most importantly, turned consumer preferences upside down (Saha, 2020). The restrictions and curfews caused an estimated 10% of restaurants in the U.S. to close (Kelso, 2021), especially those unable to make the transition to food delivery or takeaway. In fact, according to a report by Kantar (2020), 60% growth in home delivery softened the collapse of the restaurant sector. Operators, such as Uber Eats, Glovo or Deliveroo added nearly a thousand new restaurants, each in less than three months. Thus, restaurants that did not have partnerships with delivery services were forced to sign up to stay in business.

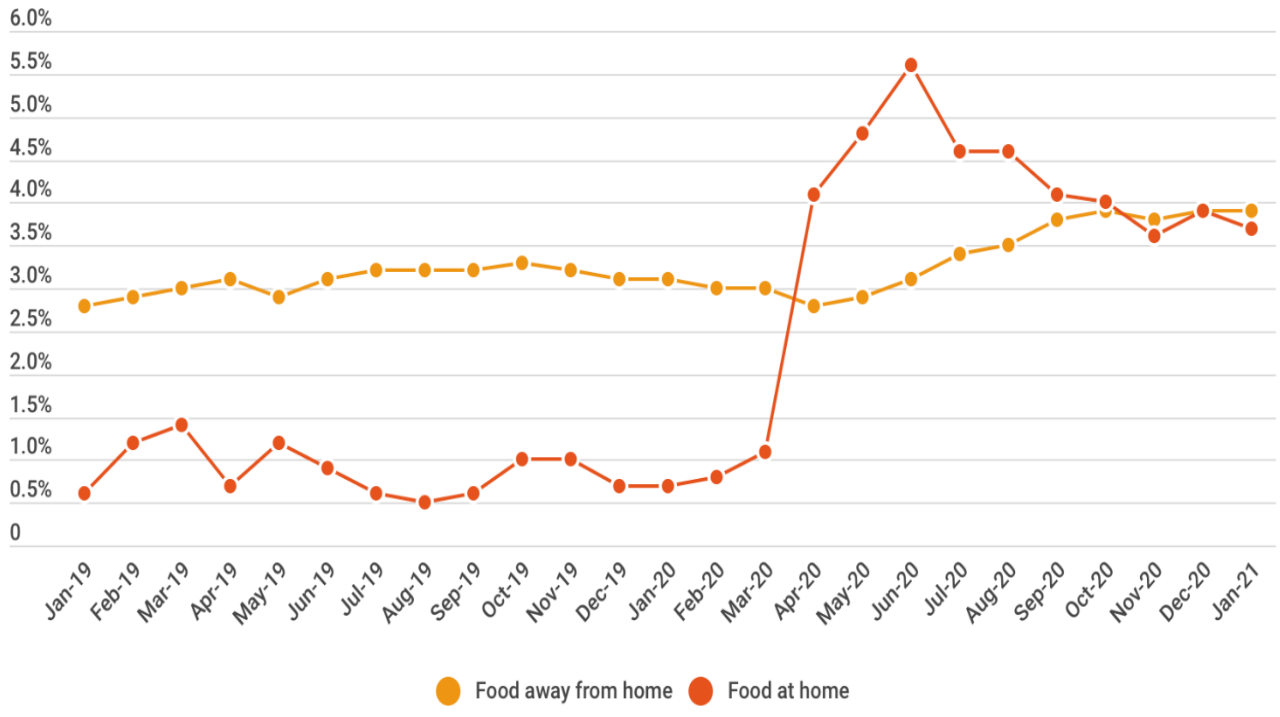

Figure 2: Restaurant vs. Grocery Prices (U.S. Bureau of Labor Statistics)

We can thus state that restaurants were direct victims of the pandemic but have shown impressive elasticity in adapting to new realities. Many businesses introduced service extensions such as deliveries and take-outs, as well as pop-up grocery stores. Enjoying great popularity, some of these options will stick around far beyond the pandemic.

The pandemic aside, in general food delivery has seen exponential growth, especially with digitalization, occurring alongside growth of the Internet and connectivity. With free apps that can be downloaded directly to smartphones and e-grocery sites, food delivery was one of the macro-trends of 2016 according to the Just Eat Research Observatory. According to the 2019 Glovo Delivery Report (5000 associated Partners in more than 100 Italian cities), deliveries through the application increased by 247% from 2018 to 2019.

2.3 What is a Cloud Kitchen?

Most people are well acquainted with the conveniences and functions of food delivery, but not everyone knows that there is another phenomenon that has also come about – Cloud Kitchens. The analog scenario is airline catering services where a single kitchen prepares multiple different menus for various airlines with idiosyncratic needs. Airline catering kitchens are generally located near airports for quick transportation and turnaround time. These kitchens vary in size depending on the number of flights they serve, and hub airports usually feature sprawling facilities which create thousands of meals every day. For instance, Emirates has a 66,000 sqm facility near Dubai Airport which caters over 200,000 meals every day. Catering companies such as Gate Gourmet, DO&CO, and LSG Skychefs, all have kitchens near major airports to service airlines (Pande, 2020).

Similarly, with Cloud Kitchens (also called Dark Kitchens and Ghost Kitchens), food orders made via delivery apps for particular restaurants are directed to a centralized preparation service. Although the nomenclature calls to mind gloomy environments such as basements in the most degraded neighborhoods of a city, in reality Dark Kitchens are efficient and professional. As laboratories servicing various food delivery companies, speed of execution of dishes and consistent output are fundamental (Nestlé, 2021). These “hidden” or “secret” and almost mysterious kitchens are not open to the public. No waiters serve tables, and the staff is composed only of chefs and people plating orders in delivery containers. In addition to having facilitated the survival of many restaurants, Dark Kitchens have also provided a boost to companies responsible for installing them (Tucker, 2020).

2.3.1 Advantages of Cloud Kitchens

Cloud Kitchens overcome a significant barrier that the traditional restaurant model must confront: the large capex needed for setting up a restaurant operation. With these Ghost Kitchens, businesses can save money avoiding costs of licenses, works, equipment and facilities. It also allows restaurants to reduce fixed costs by eliminating personnel, cleaning, and maintenance (Ncr, 2021).

Adopting this business model has given restaurant brands breathing room to experiment with concepts, to fail, and adapt quickly (Coleman, 2014). Being online, there's flexibility to introduce new products, test their market acceptance, and take items off menus quickly when they are unpopular. Furthermore, flexible leases with virtual kitchens allow entrepreneurs not to have to make commitments to long-term rentals for a physical restaurant space (EHL, 2020). Cloud Kitchens also eliminate other expensive elements of developing and opening a physical restaurant such as dinnerware, decorations, and branded signage. In addition, this new model accelerates start-ups and allows a kitchen to become operational faster. Having lower operational costs means that Cloud Kitchens can offer more competitive pricing (Thompson, 1984). Ultimately, Cloud Kitchens can improve overall customer satisfaction by focusing entirely on two major areas: the quality of food and delivery services.

But this innovative business model also requires business pivots. Companies that decide to bet on Dark Kitchens must deploy resources towards digital marketing, SEO, etc., since web-based food service is a very competitive and it is difficult to differentiate oneself from rivals operating in the same food segment. In addition, a restaurant must expand its delivery service or hire one of the leading delivery companies.

2.3.2 Demographic Drivers

Demographic drivers are crucial for the Cloud Kitchen business model. In fact, it is necessary to consider the habits of each customer segment as people of different ages tend to have varied approaches to technology (Vaportzis et al., 2017). Since Dark Kitchens are mainly based on orders that are placed online via the app, it is important that customers have a device with which they can readily connect to the Internet, confirm personal identities, and make online payments (Sentence, 2020). According to a 2018 study by UBS titled "Is the Kitchen Dead?" food delivery sales could rise 20 percent each year to $365 billion worldwide by 2030. Millennials

are driving much of the growth, as they are three times more likely to order in food versus their parents (Cheng, 2018). Generation Z is also playing a role in the growth of food delivery. Sociologists and demographers define the millennial generation as that of those born after 1980 and who entered adult life in the first approximately fifteen years of the new millennium. People born in the 1980s and 1990s are therefore part of this generation.

Experts are reasonably in agreement that the first millennials were born in 1981-82. Less clear is determining the birth year of the last millennials, the youngest (Dimock, 2019). In recent years, research institutes, such as the Pew Research Center in the United States and Istat in Italy, have marked the break between millennials and the next generation as being in the mid-1990s.

The trend towards food delivery is driven by millennials with disposable income who are demanding digital, mobile-friendly solutions. And this will only get more pronounced with Gen Z who, as digital natives, consider smartphone-based food apps to be a norm. Looking further forward, advances in kitchen automation, drone deliveries, and the continued growth of the gig economy will likely give further boosts to Cloud Kitchens.

Figure 3: Cloud Kitchen Flowchart

2.3.3 Cloud Kitchens Business Models

The major Cloud Kitchen Business Models are as follows:

The Single Brand, Single Kitchen, No Storefront Model is the Cloud Kitchen in its simplest form. It is a restaurant kitchen with no seating area and no physical store in the restaurant. With the increase in online ordering and increasing consumer demand for deliveries this concept has gained popularity (Merckaert, 2021).

The Multi-Brand, Single Kitchen, Multiple Outlets, No Storefront Model is more advanced version of Cloud Kitchens that builds on information intelligence about local residents, popular cuisine and commercial demand. The goal is to respond to orders within a 5-6 km radius. It is a clever model because individual restaurant brands are respected and there is a single common kitchen servicing multiple orders while lowering operating costs. This model is similar to the original Cloud Kitchen, but it is important to highlight that it is a specialized kitchen based on multiple restaurants owned by the same brand that share the same kitchen (Taker, 2020).

The Single Brand, Single Kitchen, Multiple Outlets, With A Storefront Model is a kind of blend of a dining room with a Cloud Kitchen. The store front allows for the possibility of guests entering and seeing how their food is being prepared if they wish. This model essentially produces the operational efficiencies of Cloud Kitchens, but it also has a “real” client window.

The Aggregator Owned, Multi-Restaurant Brand, Rented Co-working Kitchens is when established (or new) restaurant companies rent this kitchen area and partner with a food delivery platform, such as for instance, Swiggy, to create a virtual restaurant where the company shares its expertise in managing demand for orders and also has a shop where customers are able to place orders over-the-counter (Deliverect, 2021).The kitchen is essentially a fulfillment center that produces food orders following recipe and plating specifications (Wizenius, 2021).

The Entirely Outsourced Model is considered a new concept among Cloud Kitchens. In this model, restaurants can outsource everything, from call center operations to food preparation and delivery. This entails the majority of food preparation being outsourced and delivered to the kitchen for only final touches put on by the Chef. Orders are then picked up and delivered to customers. The advantage of this model is that large volumes can be processed with no

concerns about incurring overheads and operational expenses because restaurants pay a fixed fee to the service providers (Das, 2020).

2.4 Management Themes Concerning Innovative Trends in Restaurant Business

2.4.1 Porter's Five Forces

For an entrepreneur seeking to start any kind of business it is important to analyze the sector of interest to understand industry dynamics. Consequently, one can prepare the right strategy for entering the market, minimize the risk of failure, and maximize the probability of generating profits and gaining market share from competitors.

The Porter's Five Force, proposed in 1979 by Michael Porter in "How competitive forces shape strategy", is a tool available to better understand the structure of the sector in which companies operate. The greater the intensity of these forces, the lower the profitability for companies.
The five forces are the Threat of New Entrants, Bargaining Power of Buyers, Bargaining Power of Suppliers, the Threat of Substitute Goods and, finally, rivalry among existing competitors.

Setting up a restaurant does not necessarily require high levels of investment allowing ease of entry for competitors. Economies of scale can be attained if production and other operations are efficient, another element that promotes establishing new restaurants (Lee-Ross & Lashley, 2008). Fixed and operational costs must also be considered by new entrants to ensure a cost advantage; nonetheless, high fixed costs remain a problem for new entrants (Hill et al., 2014). As a result, the restaurant industry has moderate threat of new entrants.

In the hospitality industry, customers are picky and difficult to please and seek value for their money. As a result, restaurants may supply value-added services. Customers may make purchases online and expect restaurants to deliver orders for a reduced price. Customers' bargaining power in the restaurant business has increased as a result of these services. Consequently, business models based on deliveries, such as Cloud Kitchens, have a significant advantage. Building customer loyalty in the restaurant business necessitates high-quality services and products (Askar, 2020). For this reason, restaurants must discover ways to impress guests while still protecting profit margins. Since buyers have the power to influence restaurant price changes and generally have low switching costs, we can say that customers' bargaining power is moderately high. (Adhikari & Rao, 2013)

The restaurant sector relies on a variety of suppliers, including farmers and other businesses that provide various services and products. Due to the scarcity of farm produce on the market and the lack of substitutes, providers often are able to be price setters. Also, even if all suppliers do not have equal bargaining strength, supplier bargaining power is a danger to the industry's profitability. The number of suppliers in an industry determines the influence a supplier can have on purchasing decisions of buyers. In regions where there are a higher number of suppliers of similar raw ingredients, suppliers have less power compared to when suppliers are fewer in number (Chong et al., 2001). The size of restaurants is also important. Small-scale restaurants create higher supplier power because of the limited orders they generate. Alternatively, suppliers have a weaker negotiating position with large restaurants that can exploit economies of scale.

Convenience stores, grocery stores, and other meal-serving establishments compete fiercely with the restaurant business. Home cooking also continues to pose a severe threat to the industry (MIQ, 2021). For restaurants that fail to differentiate themselves from competitors and for those that fail to create consumer loyalty, the Threat of Substitute Goods is high.

Due to their usual proximity to one another, restaurants compete with each other. Furthermore, price points range from low to high depending on the quality of services and amenities provided. Customers can easily move their loyalty from one brand to another since there are negligible switching costs. A restaurant may differentiate itself by charging a premium price to target a customers focused on higher quality of food. An opposite strategic choice is lower prices than competitors to attract more price sensitive customers (Solomon, 2018). As a result, competitive rivalry in the restaurant industry is high making it difficult for smaller restaurants to sustain high profit margins. Another element that raises rivalry is the presence of fast-food behemoths with significant marketing and product innovation budgets.

2.4.2 Disruptive Innovation

Disruptive innovation is a form of completely new value creation for an existing market, which leads to the displacement of established companies, products, or even whole industries (Talin, 2022). “Disruption” describes a process where a smaller company with fewer resources manage successfully to challenge established incumbent businesses (Christensen, 1997). Particularly, incumbents tend to focus on improving their products and services in order to satisfy the most demanding (and usually most profitable) customers. This process can lead to the conclusion that they exceed the needs of some segments and pay no attention to the needs of others. Entrants that prove disruptive begin by targeting in a successful way those overlooked segments, gaining a position in the market by delivering more-suitable functionality, often at a lower price. Incumbents, pursuing higher profitability in more-demanding segments, tend not to respond strongly to the threat of the arrival of these new competitors. Entrants then move upmarket, delivering the performance that incumbents’ mainstream customers require, while preserving the advantages that drove their early success. When mainstream customers start adopting the entrants’ offerings in volume, disruption has occurred (Christensen et al., 2015).

The arrival of Cloud Kitchen has given a path to new entrepreneurs and increased rivalry among the competitors in the industry. Cut-throat competition combined with low margins is triggering restaurant shutdowns. This shift in customer choice preferring to order food at home, has disrupted the restaurant industry (Parekh, 2019). Convenience now beats dining experiences.

2.4.3 The Technology Acceptance Model of Delivery Food Apps

TAM is a theory is designed to examine the ease of use and usefulness of a technological system and the effect it has on someone’s intention, perception, and behavior, leading to the consistent use of a system or of a presented technology (Davis, 1989). Ease of use represents the manner in which a system does not require a massive use of effort, and usefulness shows how a given technology can be beneficial for the user (McKechnie et al., 2006). Online business websites and mobile applications that are easy to use and provide beneficial information will be able to increase the purchase intention (Dachyar & Banjarnahor, 2017)). Extensive research studies have reinforced the notion which suggest that ease of use and usefulness influence purchase intention when conducting online shopping (Gefen et al., 2003).

User experience of the website also plays a vital role in engaging the customer. If customer feels comfortable to navigate on the website or on the application, and finds easily what he is willing to buy, the chances of having another future interaction with him will be greater. Also,

society and community to which a potential customer belongs influence his behavior and intentions. Customer satisfaction is most the most important factor in every business enterprise so as in food- tech companies (Zulkarnain et al., 2015). TAM is effective for analyzing variables responsible for shaping positive attitudes and behavior of customers towards e-commerce, especially in online food delivery services. However, factors such as freshness of food, delivery time and packaging are external inputs which are difficult consider through the TAM framework because TAM applies "ease of use" and "usefulness of the technology" as its definitive criteria.

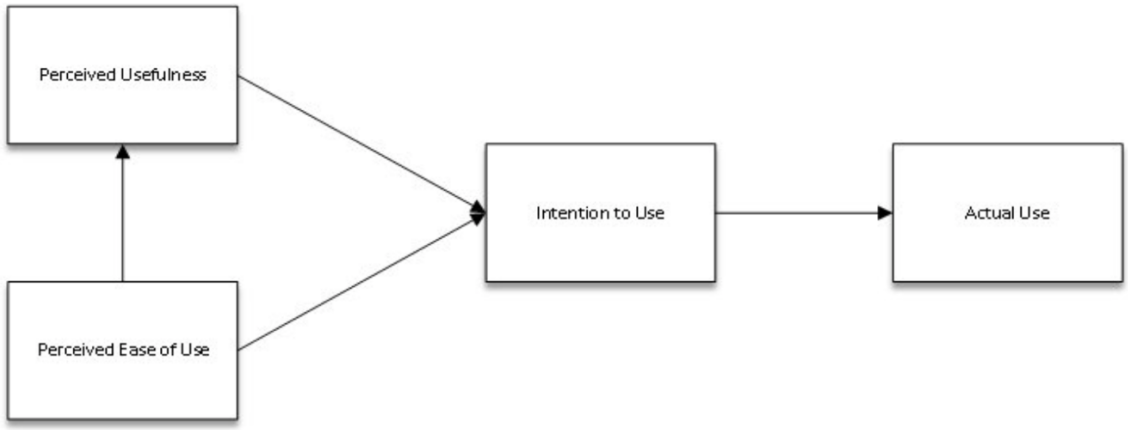

Figure 4: Technology Acceptance Model

2.4.4 The Theory of Core Competency

It is important for organizations to focus on competences and draw strengths from these when they want to get ahead of the competition. Firms can move into new markets and growth possibilities more easily by using their core competence (Prahalad et al., 1994). Unlike Michael Porter's "outside-in-view", Core Competence theory focuses on the "inside-out-view".

To be successful with an investment in a Cloud Kitchen it is important to create unique skills and competences for the business, with specialization that cannot be easily copied by the competitors due to lack of resources or know-how. Specialization is one of the fundamental characteristics that allow Cloud Kitchens to create a competitive advantage, targeting a specific market segment while offering more competitive pricing. The success of the company occurs if the Core Competences are few and accurately developed. By extending competences in new markets, there is risk that an firm may be too diversified with respect to its products/services (Prahalad et al., 2001). The organization therefore needs to stay close to its "core business".

2.4.5 Innovation as Decoupling

Decoupling (Texeira et al., 2014) is one of the fundamental ways in which Cloud Kitchens scale their businesses. By specializing only in the part of the food production process, it is possible to create efficiencies that are not possible with a traditional model. A company that has to deal with coordinating production and distribution operations usually has a more complex organization that has less facility with responding quickly to changes in the environment in which the company operates. Highly diversified companies have a reduced ability to be nimble and take advantage of opportunities than more flexible, less diversified firms (Rumelt,1972).

2.5 Conclusion of the Literature Review

The foregoing Literature Review demonstrates that the Cloud Kitchens phenomenon creates clear efficiencies in the restaurant industry compared to traditional physical restaurants. We can potentially consider it to be a disruptive innovation and also propose that it may become a core competency for the restaurant business. We can also look at the phenomenon in light of the Technology Acceptance Model, whereby key factors promote acceptance by restaurateurs.

Decoupling is what effectively allows Cloud Kitchens to sustain a competitive advantage over time relative to traditional restaurants. Cloud Kitchens decouple the distribution channel from production therefore allowing strategic focus on the latter. This makes catering more effective and leverages the presence of economies of scale while reducing inefficiencies.

3.METHODOLOGY

3.1 Research design

The methodology in this study makes use of qualitative and quantitative primary data, obtained respectively from interviews with experts in the sector and through analysis of data obtained from a survey with the responses of a sample of 150 people with different demographic variables. Hypotheses were formulated to evaluate the survey, which were then verified or falsified with the results.

3.2. Quantitative Survey

A quantitative survey was conducted to support the study. The questionnaire was aimed at discovering food habits and preferences of the various interviewees, to analyze correlations between different key variables. The results supported the validity of the hypotheses formulated that are stated in the next paragraph.

3.3 Qualitative Interviews

Expert interviews were carried out to capture different opinions and points of view of players who are present in the sector. In particular, there were two entrepreneurs who started restaurant businesses with Cloud Kitchen services, one entrepreneur who focused on the real estate investment side dedicated to creation of spaces intended to be Cloud Kitchens, one employee of a delivery platform app, and finally two traditional restaurateurs.

3.4 Hypothesis Preparation

As already introduced in the literature review, an important element of this study is the notion that people who are closer to technology tend more towards ordering food deliveries. For this reason, the first hypothesis to be tested analyzes the impact of Cloud Kitchens on the restaurant industry to determine whether people aged less than 55 order delivered food (Gen Z, Millennials and Gen X).

H1: People younger than 55 have ordered delivery food at least once in their life.

Many people are not comfortable going to eat in a traditional restaurant alone. For this reason, when they find themselves in that situation they tend to discard the restaurant option and find

a different alternative, for instance ordering food. The validation of this hypothesis would allow us to establish the presence of a new and different market segment for Cloud Kitchens.

H2: People tend to prefer to do not go to restaurants alone.

A fundamental basis that allowed the acceleration of the birth of the cloud kitchen business model was, in addition to the mass adoption of technology, the advent of COVID-19. The pandemic forced the closure of restaurants, imposing the choice of the delivery channel for those who wanted to consume food from restaurants or a specific restaurant in particular. With the mandatory quarantine many people had more free time than in their previous pre-pandemic life, but were forced to be at home. This has meant that some of them have spent more time eating than usual and, at the same time, many have started to change their tastes and food needs.

H3: People's habits and preferences toward food changed after COVID-19.

4.FINDINGS AND LIMITATIONS

4.1 Interview Analysis

To obtain expert views on the impact that Cloud Kitchen had in the restaurant industry, semi-structured interviews were employed.

Semi-structured interviews were initially formed around a range of predetermined open- ended questions. To obtain a variety of opinions regarding the challenges that Cloud Kitchen are facing and the future evolution of the restaurant sector, the semi-structured interviews were conducted with experts from different areas of the restaurant and delivery sector. Expert opinions were obtained from entrepreneurs of Cloud Kitchen start-ups, Real Estate entrepreneurs that offer Cloud Kitchen facilities solutions, traditional restaurant entrepreneurs, and employees of delivery apps. This allowed for a look at individual views due to the different backgrounds.

The interview participants were chosen based on their specializations and experience, the interviewees were contacted via personal phone number, eMail, and LinkedIn. All the interviews were conducted online through Zoom or Microsoft Teams. The interviews took between 30 and 60 minutes.

The following table resumes the experts who were interviewed for purposes of this research:

Expert	Name	Expertise
A	Anonymous	Cloud Kitchen Entrepreneur
B	Anonymous	Cloud Kitchen Entrepreneur
C	Anonymous	Traditional Restaurateur
D	Anonymous	Traditional Restaurateur
E	Anonymous	Real Estate Cloud Kitchen Entrepreneur
F	Anonymous	Employee of Delivery Platform App

Table 1: Expert Interviews

The first question that was asked to the experts concerns the factors that according to them have contributed most to the recent and rapid spread of Cloud Kitchens in the world.

Question	Key Finding	Respondent
What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?	• Digitization	• (A)
	• Rising smartphone ownership and access to the internet	• (A)
	• COVID-19	• (B) (D)
	• Increase in food delivery orders	• (E) (F)
	• Lower initial investment than traditional restaurant models	• (B) (C)
	• Cloud Kitchen economies of scale	• (B)

Table 2: Interview Question #1

According to Expert A, the digitization we are experiencing and the increase in owners of mobile phones with internet access were the catalyst events for the spread of Cloud Kitchens. Another very important factor that contributed to this development was certainly the arrival of COVID-19 (B, D), which consequently led to an increase in food delivery orders (E, F). Another factor that has stimulated this diffusion is on the economic side, to start a business with a Cloud Kitchen model the initial investment is lower compared to a traditional restaurant (B, C), furthermore focusing only on the production aspect can generate economies of scale that make it possible to offer a competitive final price (B).

Question	Key Finding	Respondent
How has the arrival of COVID-19 impacted the restaurant industry in your opinion?	• Difficult financial situation for traditional restaurants unable to operate	• (A) (C) (D) (E) (F)
	• Need to reach the customers in a different way I,e., via delivery	• (A) (C)
	• New customers preference for food delivery	• (B) (E)
	• It was a catalyst event that boosted Cloud Kitchen sales	• (B) (F)

Table 3: Interview Question #2

The purpose of the second question was to understand how the arrival of the pandemic had impacted the RI. Most of the respondents (A, C, D, E, F) argued that it was a destructive financial situation for many traditional restaurants, the forced closure resulted in an almost total forfeiture of revenues. This factor meant that the final consumer had to be reached in a new way, namely via delivery (A, C). The creation of this situation has triggered a change in the preference of the consumer who is increasingly accustomed to ordering food delivery (B, E), it can be said that it was therefore a catalyst event that accelerated the growth and sales of Cloud Kitchens.

Question	Key Finding	Respondent
Do you think it has become essential for all restaurants to associate with online ordering platforms and offer a delivery food option for the customers to keep up with the competition?	**Yes:**	
	• Platforms help reach new customers	• (A) (B) (E) (F)
	• Stronger digital presence of the brand	• (B) (E)
	No:	
	• Lost of operational efficiency, loss of specialization, etc.	• (C)
	• It is not necessary for all restaurants	• (C) (D)

Table 4: Interview Question #3

In this question, the focus was on understanding whether it has become necessary, if not essential, for a restaurant today to associate with one or more delivery platforms. The experts who relate to the Cloud Kitchen business (A, B, E, F) are convinced that it is necessary because these platforms help to reach the final customer more easily. Another very important factor is that the digital presence of the brand is strengthened when is present on these platforms (B, E). According to traditional restaurateurs (C, D), however, it is not a necessary thing for all types of restaurants, in fact there are restaurants that are profitable without the need to offer a delivery option or be present in these delivery platforms. Starting to offer a delivery option is not suitable for all restaurants, this could create a loss of operational efficiency and a loss of specialization (C).

Question	Key Finding	Respondent
In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?	• Need for effective digital marketing, SEO, etc.	• (A) (B)
	• High fees	• (A) (B) (D) (F)
	• Set up the initial kitchen	• (E)
	• Dependence on the technology and the Food Aggregator	• (A) (B)
	• Branding than relies only on an online visibility	• (B) (C)
	• Competitive pricing	• (D) (F)

Table 5: Interview Question #4

The fourth question concerns the possible limitations that an entrepreneur might have by opting for this business model. Most of the respondents (A, B, D, F) argue that the main limitation is due to the high fees that are required to be paid to delivery platforms. Both entrepreneurs who operate according to the Cloud Kitchen model (A, B) said that other limitations are due to the fact that a strong dependence is created on the technology of the Food Aggregator, which thus acquires more and more power, moreover, to be competitive in the market, it is necessary to support an effective well-developed digital marketing. Other aspects that emerged from the

interviews are the super competitive prices that leave room for minimal, if not zero, profit margins (D, F). A further limitation may be due to the initial difficulty in finding and setting up a kitchen to operate (E).

Question	Key Finding	Respondent
Do you think that in the future volumes of food delivery will be greater than going to physical restaurants?	**Yes:** • The development of technology will consequently lead to an increase in food delivery orders • If forecasts are correct, people will be more comfortable ordering delivery than going to physical restaurants • Quantity of food delivery will increase and the whole restaurant industry will grow accordingly **No:** • Traditional restaurants will beat Cloud Kitchens	• (A) (B) • (B) (F) • (E) • (D)

Table 6: Interview Question #5

This part is aimed at studying the future evolution of the RI, especially if the volume of food delivery will be greater than that of traditional restaurants. An important fact to keep in mind is that the development of technology will inevitably lead to an increase in food ordered through delivery (A, B). If the forecasts made are correct, in the future people will feel more and more comfortable ordering food delivery than going to a restaurant (B, F), this will help consequently grow the entire RI (E). According to Expert D, however, traditional restaurants will not be replaced by Cloud Kitchens, this is because it is impossible to replicate the culinary experience that a person can have in a restaurant.

Question	Key Finding	Respondent
Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a susteinable way?	**Yes:** • Many restaurants find it impossible to offer a price that is competitive with food aggregators • Goal of these platforms is to quickly grow market share and make people so used to the service that they can no longer live without it • Once customers become loyal then slowly start increasing prices • Low prices to the point of not bringing any profit to the company is not sustainable **No:** • Lower prices are a benefit for final customers	• (A) (B) (C) (D) • (A) • (A) • (A) (D) • (B) (E) (F)

Table 7: Interview Question #6

This question let us know more about the opinion of experts regarding the aggressive pricing policies applied by the most famous Food Aggregators, especially if they are distorting the RI by not letting it grow in a profitable and sustainable way. Most experts (A, B, C, D) argue that for many restaurants it is impossible to compete with these food aggregator prices, especially, according to Expert A, the strategy of these platforms is to make the customer always more accustomed to using their service, once the customer is loyal, the prices will gradually increase. The problem is that often these prices are so low that bring no profit for the company (A, D). Looking from the perspective of the final consumer, the latter has a benefit by having a product available at a lower price (B, E, F).

Question	Key Finding	Respondent
Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?	**Yes:**	
	• For restaurants that are not well managed	• (C) (F)
	No:	
	• Will help the restaurant industry grow	• (A) (B) (E)
	• It is an evolution due to the natural growth of the restaurant industry	• (A)
	• Will not completely replace dining experience, especially fine dining	• (C) (D)

Table 8: Interview Question #7

The last question focused on whether Cloud Kitchens are a threat to RI and traditional kitchen. This phenomenon must be seen as a positive thing for the entire sector that will benefit from growth (A, B, E), the traditional restaurant will not be totally replaced by the Cloud Kitchen (C, D), we can call this event as a natural growth of the sector (A). The arrival of Cloud Kitchens and the increase in food delivery orders can be a threat to those restaurants that are not well managed (C, F).

4.2 Survey Analysis

To make the questionnaire relevant, an initial version with 25 randomly selected participants was produced. After analyzing the answers obtained, the questionnaire was modified with the aim of eliminating details that were not relevant. Questions were added to help support or reject the previously elaborated hypotheses.

The questionnaire had a total of 150 participants. Of these 56.7% were male while 42.7% are female. One person (0.66%) preferred not to declare a gender. Male participants were slightly higher, but overall, the ratio between male and female participants was well balanced. Of the

participants, 36.7% were aged between 25 and 34, 27.3% between 18 and 24, 23.3% between 35 and 44 years and 9.3% were between 45 and 54 years old. Four (2,7%) of the total of the participants were aged between 55 and 64 years old, and only 1(0,7%) declared to be more than 65. The nationalities of the interviewees were mainly four, 36.1% Italian, 26.5% from Portugal, 17.7% from Germany and 15% from Spain. Regarding the level of education of the sample of survey participants, 45% obtained a Master's, 26.8% a Bachelor, 22.8% a High School Diploma and 5.4% obtained a Doctorate.

One of the main aspects that emerges from the survey is that most people prefer traditional restaurants over ordering delivery food. When asked "Do you prefer to order food with delivery or go to a restaurant?", 60% of respondents declared a preference for going to a restaurant compared to having food delivered. This fact strengthens the traditional restaurant business model by showing how people have not changed their preferences to the point of preferring delivery food over the culinary experience of the traditional restaurant.

Through a Welch Two Sample t-test analysis in R studio based on the age of the respondents, was found that p-value is 0.0071, consequentially, we rejected the null hypothesis, and we accepted the alternative one: there is a significant difference between the (true) averages of the two groups (younger and older). Only 39% of the respondents who were between 18 and 24 said they prefer to go to a restaurant, while 72.22% of those aged between 45 and 64 said they preferred to go to a restaurant

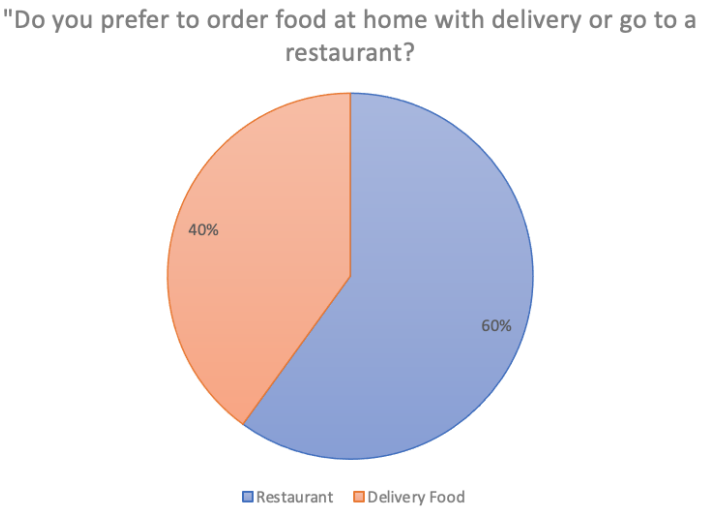

Figure 5: Survey Chart #1

The first hypothesis previously formulated is that people aged 55 or under (Gen Z, Millennials and Gen X) have ordered delivery food at least once in their life.

With 96.6% of respondents between 18 and 55 years old, we can consider the sample size sufficiently large to analyze this hypothesis. With regard to answer the question, “Have you ever ordered delivery food?”, 84.2% of interviewees declared they had ordered delivery food at least once in their life, consequently, hypothesis H1: "People younger than 55 have ordered delivery food at least once in their life " can be therefore partially validated through this result.

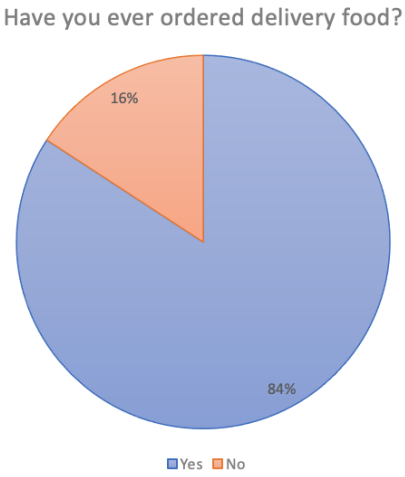

Figure 6: Survey Chart #2

The second hypothesis concerns more concretely the psychological aspect of people, in particular, the hypothesis that people generally tend not to feel comfortable when they go to a restaurant alone and prefer to choose a different alternative to satisfy their need. To the question "Would you have a problem eating at a restaurant alone?", 31.3% of the interviewees replied "I think yes", 30% replied "Yes, for sure" and 18,7% replied “Sometimes yes”. Of the 150 people participating in the survey, only 20 participants (13,3%) replied “No, I do not think is a weird thing” and 10 people (6.7%) stated that they are used to going to restaurants alone. Hypothesis H2: "People tend to prefer not going to restaurants alone" can also be partially validated by the results obtained from the questionnaire.

We can replace these values with a numerical scale ranging from 1 (no problem) to 5 (many problems), in particular all the answers "I am used to go to restaurant alone" have been replaced with the value "1", " No, I do not think it is a weird think "with the value" 2 "," Sometimes Yes

"with the value" 3 "," I think yes "with the value" 4 ", and" Yes, for sure "with the value "5". This results in a mean of 3.66, a median of 4, a variance of 1.52, and a standard deviation of 1.23.

This explains that a person can desire food from a certain restaurant but does not go if not accompanied by another person. People also tend to prefer food delivery simply for the convenience of staying at home and not having to make the trip to a restaurant. Restaurants also tend to be seen as places where persons go with friends, celebrate some particular events or close a business deal.

To address this market segment that tends to prefer delivery food instead of going to a traditional restaurant, an entrepreneur will be forced to also offer the delivery option to sell food. Price should not be ignored since, as previously mentioned, the competitive advantage of a Cloud Kitchen related to lower costs than competitors. It is difficult for a traditional restaurant to offer the same prices as a Cloud Kitchen due to the different cost structure.

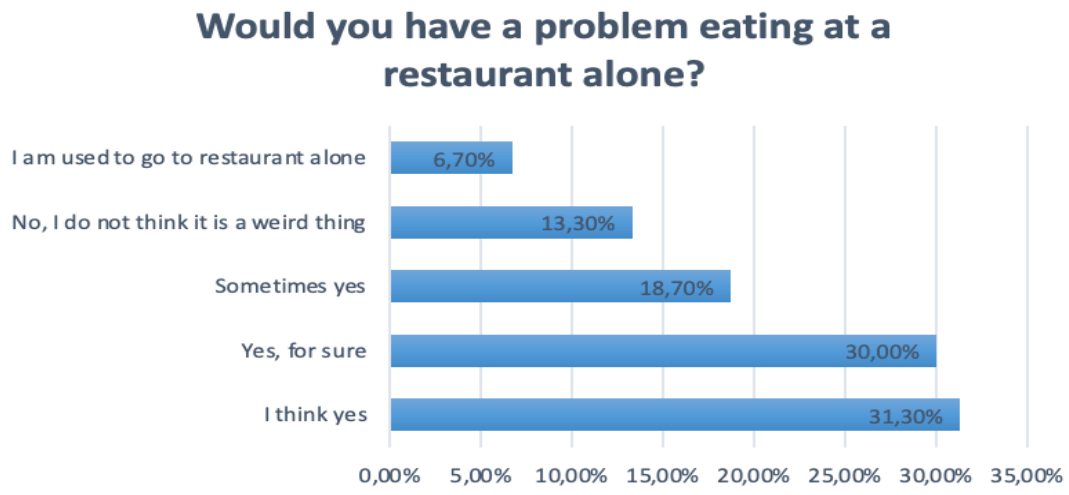

Figure 7: Survey Chart #3

Hypothesis H3: "People's habits and preferences toward food changed after COVID-19" was formulated with the arrival of COVID-19. It has been a growth catalyst for Cloud Kitchens with people forced to stay indoors having more time to dedicate to cooking along with ordering food.

When asked: “Do you think your food habits have changed after the pandemic?", 60 people (40%) answered: "Yes, a bit", 39 (26%) people replied: "No, my food habits are the same”, 28 (18.7%) people answered: "Definitely yes", 23 (15.3%) people answered: "I do not know". Most people interviewed stated that they had undergone a change in their food habits with the arrival of the pandemic. H3 can consequently be partially validated through the quantitative survey.

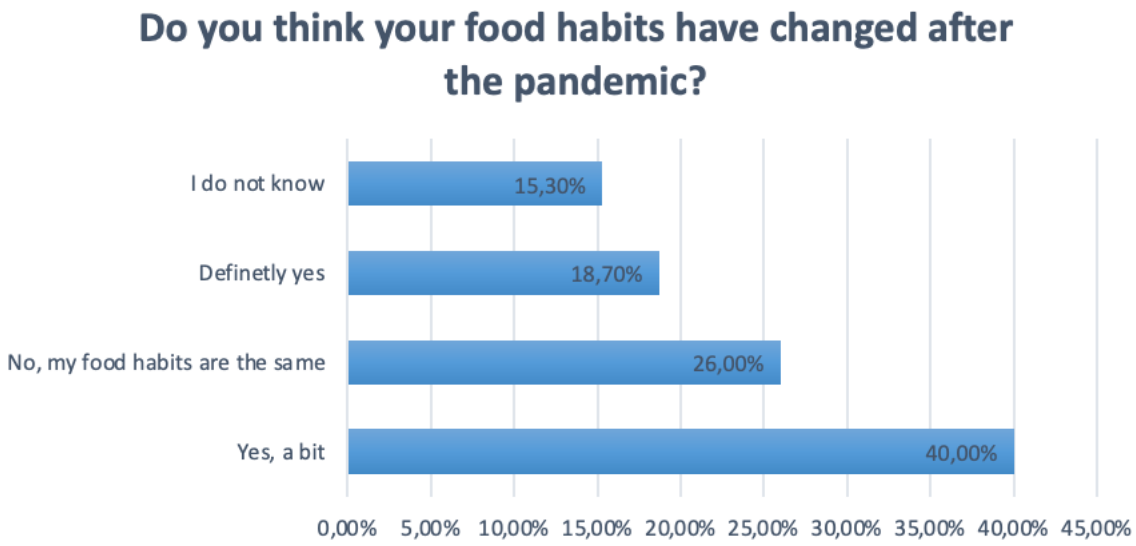

Figure 8: Survey Chart #4

4.3 Limitations

The survey has various limitations. Firstly, even if the participants selected differ sufficiently to create a diverse sample, 150 people cannot be representative to extrapolate with certainty about generalizable trends. Furthermore, the sample does not contain all population groups because it does not include people over the age of 55. Only 4 interviewees (2.7%) declared that they were aged between 55 and 64 while only one person was over 65. A second limitation is due to the fact that the people interviewed are mainly from Europe, in particular from four countries: Italy, Portugal, Germany and Spain. This does not allow us to extend the results obtained worldwide because culture, habits and traditions differ.

At the same time, most survey participants were well educated with 77.2% achieving at least a Bachelor’s degree. Usually, those with above average financial resources tend to have a higher

level of culture and academic background (Coleman, 1966). Consequently, these individuals understand the importance of a balanced diet and nutrition (Levesque, 2014).

5. DISCUSSION

In the Literature Review, the focus was on economic advantages that an entrepreneur may have when opting for a Cloud Kitchen. In this paragraph we list reasons why an end consumer may prefer ordering food online rather than going out to eat in a dine-in restaurant.

Here we analyze the elements that allow to answer the two research questions. To answer the first, we will analyze factors that promote and strengthen the development of Cloud Kitchens compared to the normal restaurant business model.

To answer the second research question, Scenarios Building was used. Each hypothetical scenario was analyzed to determine which of the three scenarios is most likely to materialize in the future.

5.1. Swiggy Access in India

Swiggy is India's largest online food ordering and delivery platform, it is based in Bangalore and operates in 500 Indian cities as of September 2021 (Appsrhino, 2022). When Swiggy came to market there were other competitors in the food delivery sector which already had applications like Foodpanda, Tinyowl, and Ola Café. Foodpanda and Tinyowl were later acquired by Ola Cabs and Zomato respectively, and Ola café was shut down after a year. Swiggy started in 2014 with 6 delivery boys providing food from 25 restaurants, and, at the end of its first year, in March 2015 the company served 1 million orders per month. This is how the journey started for the food tech giant. The company wanted to make a variety of foods available online for delivery. "Swiggy wants to be like a utility app for every Indian. We want people to order food at least 15-20 times a month", said Swiggy co-founder Sriharsha Majety. This statement confirms the theory formulated in the analysis of expert interviews: these delivery food giants are continuing with an aggressive pricing strategy in a way that accustoms the consumer to using their services. A possible scenario is to operate at a loss in the first years of business and then start to slowly increase prices when they have a large captive base of loyal customers.

In 2019 they launched the all-new and innovative program, Swiggy Access. This was a completely fresh idea modelled on the Cloud Kitchen concept. Swiggy’s notion was to offer ready-to-use kitchen spaces equipped with the basic setups and amenities for its restaurant partners so as to expand into neighborhoods where they have not operated before. Swiggy

Access brought food nearer to its customers by helping restaurants set up kitchens in newer locations, thereby boosting the delivery speed of food orders.

Swiggy Access aimed to create a win-win proposition for restaurants and consumers. Swiggy collaborates with restaurant partners in real estate, data science, and operational efficiency. Through this expansion model, the restaurants get to expand into new geographies, whereas consumers get to experience great brands in their neighborhoods.

In two years, about a thousand kitchens were created for their Cloud Kitchen partner restaurants. To cope with the pandemic, in 2020 Swiggy had to cut 1100 jobs, many of which were on the Cloud Kitchen side (Rao, 2020). Since the company already operates with very low profit margins, it had to cut all those operations that had high operational volatility and those experiments that did not look profitable.

5.2. Travis Kalanick and CloudKitchens.com

Travis Kalanick was the co-founder and former CEO of Uber until he left in 2017. Kalanick joined CloudKitchens as CEO in 2018 buying out some of the company's investors and bringing in $400 million from Saudi Arabia's sovereign wealth fund in 2019, according to the Wall Street Journal. The company was created with the idea of offering spaces that could be rented to restaurants that operate via the Cloud Kitchen model. The service is directed to well-known restaurant brands that may not want to invest in a new traditional branch or even new entrepreneurs with an original catering idea in the drawer but without hundreds of thousands of dollars to open a physical location. The businesses of CloudKitchens' parent company, City Storage Systems, grew during the covid pandemic as fast-food outlets and restaurants around the world entered the home delivery industry. The company had more than 50 active locations in the US in 2021 and dozens more around the world, providing space for both established restaurants and food startups. According to a Business Insider report dated January 5, 2022, the Startup has reached the value of 15 billion US dollars.

If Kalanick's new company achieves its goal, brick and mortar restaurants will be replaced by Ghost Kitchens (Forbes, 2019).

5.3 Future Scenarios

To analyze the future development of the RI in the coming years, and if the presence of Cloud Kitchens will be disruptive for traditional restaurants, we will elaborate 3 possible future scenarios and choose the one most likely to become the future reality.

5.3.1 Pessimistic Scenario

The Pessimistic Scenario shows a future reality in which the traditional restaurant model beats that of Cloud Kitchen. According to this view, the rapid development of the Ghost Kitchen is only a temporary phenomenon and will tend to disappear in the future. With very low profit margins and heavy reliance on powerful delivery platforms, many entrepreneurs will choose to close their Cloud Kitchen businesses in favor of another investment alternative with greater economic growth prospects.

5.3.2 Middle Ground Scenario

The Middle Ground Scenario represents a future situation in which Cloud Kitchens disrupt partially the RI, but there is no established business model to be able to compete in the sector. According to this view, there is no winner between traditional restaurants and those operating under the Cloud Kitchen model. This can happen because the restaurant sector has a very large audience with very different needs and preferences that are constantly changing. Cloud Kitchens target that new market segment not possible of being reached from the old traditional business model, or special types of customers. These are individuals who, for reasons such as convenience, the pleasure of staying at home, or the lack of desire to go to a restaurant without company, still want to enjoy food from the restaurant without spending any energy.

5.3.3 Optimistic Scenario

The Optimistic scenario is one that depicts a sector in which Cloud Kitchens manage to disrupt the RI completely, being the only business model for restaurants. The evolution of technology and changes in consumer preferences will mean that there will be a tendency to prefer delivery food at a competitive price. In this way, Cloud Kitchens will be the established business model., This will, in turn, lead to a growing trend among entrepreneurs who will operate following these schemes. Consequently, this phenomenon will lead to a decrease in the number of traditional restaurants.

5.3.4 The Most Likely Scenario

Starting from a situation in which there are three different possible scenarios, we can associate a percentage of probability of occurrence of 33.33% for each of them.

Through the data that emerged during the course of this paper, it is already possible to decrease the probability of success of the Pessimistic Scenario. Many reports and market analyses that emerged during this study showed the growth expectations about the future value of delivery food and the Cloud Kitchen sector. The pandemic has been a catalyst that created new habits and ways of consuming as more and more people accept ordering delivery food. It is now difficult to reverse the trend. At the same time, this is a business model that satisfies a target customer different from that of the traditional restaurant. A future in which all Cloud Kitchens will disappear and only traditional restaurants will remain is unlikely. The development of technology will allow implementation of cheaper and faster delivery solutions., Just think, for example, of a scenario in which deliveries through drones will become the norm. This would greatly stimulate people to use more delivery food solutions. Moreover, technology will be increasingly present in the kitchen with robots replacing human operations and replicating standard movements used in the production of food in Cloud Kitchens, thus making production operations even more efficient.

The other scenario that seems unlikely and deserves a decrease in the probability of occurrence is the Optimistic one. The restaurant experience is a tradition and pleasure that is difficult for people to replace. It is unthinkable to reproduce the same experience that a person can have during a traditional dining experience, even if there are usually higher prices. The market is so vast that there will always be people willing to pay to satisfy their needs.

Through the qualitative and quantitative data that emerged through this report, we can therefore argue that the future scenario most likely to come true will be the Middle Ground.

There will be no loser and the growing trend of Cloud Kitchens will help increase the value and development of the RI as a whole, which will, therefore, be the real winner of this “battle”. Traditional restaurants and those operating through Cloud Kitchens must have excellent strategic and operational management to gain market share. Choosing a Cloud Kitchen model, even if it may seem easier initially for an entrepreneur, does not necessarily translate into a successful operation. On the contrary, with such strong competition in the sector, the focus must be on creating a profitable and lasting business that has competitive advantages.

6. CONCLUSION

Using a food delivery app surprises users by the variety of choices that can be accessed with a single click. A normal restaurant cannot this variety of offerings on its menu. Another important factor is that often different options are also accompanied by simplicity and convenience. Simplicity is represented by receiving the food you want without making any effort and moving from home. This is perfect for a person who has worked all day and is not in a position to go out. Convenience is represented by the fact that delivery apps have various discounts and promotions making takeout food cheaper than the same items consumed in the restaurant. This is precisely how Cloud Kitchens are disrupting the restaurant industry, through simplicity and convenience. Thus, they have created a new market niche that was not previously addressed by traditional restaurants. On the other side, one of the biggest challenges faced by Cloud Kitchens is that technological costs replace traditional real-estate costs. This business model cannot function properly if there is a compromise on technological features such as on the delivery network, logistics support, order tracking, customer applications, etc. Furthermore, maintaining and investing in these different features is expensive. It is not enough to open a Dark Kitchen to be successful. Given that every restaurant has its own specific type of clientele, sometimes opening a Cloud Kitchen far from where the target lives and works is not ideal. This is especially true at the beginning, when it is difficult to build trust among consumers for a new idea.

Focusing on the price side, Cloud Kitchens have the problem of having low profit margins and no decision-making power on the price since competition is strong. Few Cloud Kitchens are actually successful and most operate at a loss initially and then fail (Saxena, 2022). This is also due to the fact that this business is very dependent on delivery platforms. Third parties such as Uber Eats, Glovo or Postmates have very high fees that eat into profits. At the same time, it is possible to opt for an owned delivery service, but this requires high initial investment due to personnel and logistics costs. Another disadvantage is the lack of interaction with customers. In a normal restaurant it is easier to solve problems and attend to the specific needs of a customer. It is difficult to interact with customers and transmit the values of the brand in the online medium. This can cause customer dissatisfaction, errors, and lead to future lack of customers, low ratings, and a bad reputation.

Cloud Kitchens also face a disadvantage by missing out on the organic local brand awareness created by a frontage. The top-of-mind recall only happens when you see the brand again and

again, which is usually not possible for Cloud Kitchens. Also, since there is no dine-in, customers do not have memorable experiences to talk about or to post on social networks. This does not allow restaurant to take advantage of the most reliable marketing channel for local businesses, word of mouth.

Another aspect to take into consideration is that with Cloud Kitchens the customer is not able to see the actual hygienic conditions of the kitchen or workers. For this reason, some entrepreneurs decide not to respect hygiene to save money and effort. This is becoming increasingly an issue and hygiene must be an element taken into consideration from the production to the delivery process when developing a successful Ghost Kitchen brand.

7.BIBLIOGRAPHY

Adhikari, A., & Rao, A. K. (2013). Individual preference and bargaining behavior in families' buying decisions of restaurant service. *Cornell Hospitality Quarterly,* 248-261. https://www.scirp.org/(S(vtj3fa45qm1ean45%20vvffcz55))/reference/referencespapers.aspx?referenceid=2158470

Appsrhino. (2022). What is Swiggy and how does it work? Everything you need to know. *Appshiro.* https://www.appsrhino.com/blogs/what-is-swiggy-and-how-does-it-work

Arellano, P., & Olson, E. (2020). COVID-19 Industry Impact Report: Restaurant Industry. *Real Time Talent.* https://www.realtimetalent.org/2020/04/09/covid-19-industry-impact-report-restaurant-industry/

Askar, M. (2020). A Study of Customer Satisfaction and Customer Loyalty in the Restaurant and Hotel Industry of Pakistan. *Global Journal of Emerging Sciences, 137-151.* https://www.researchgate.net/publication/338584309_A_Study_of_Customer_Satisfaction_and_Customer_Loyalty_in_the_Restaurant_and_Hotel_Industry_of_Pakistan_1

Bacon, P., & Santos I. (2021). What Is Shaping The Future Of The Hospitality Industry? *Hospitality Net.* https://www.hospitalitynet.org/opinion/4103717.html

Dachyar, M., & Banjarnahor, L. (2017). Factors influencing purchase intention towards consumer-to-consumer e-commerce. *Intangible Capital.*

https://www.intangiblecapital.org/index.php/ic/article/view/1119/672

Cheng, A. (2018). Millennials Are Ordering More Food Delivery, But Are They Killing The Kitchen, Too? *Forbes*. https://www.forbes.com/sites/andriacheng/2018/06/26/millennials-are-ordering-food-for-delivery-more-but-are-they-killing-the-kitchen-too/?sh=166d5aa7393e

Chiquione, J. (2020). Staying Healthy at Home: How COVID-19 Is Changing the Wellness Industry. *Uschamber.* https://www.uschamber.com/co/good-company/launch-pad/pandemic-is-changing-wellness-industry

Chong, P.P., Chen, Y. S., & Chen, C.J. IT induction in the food service industry. *Industrial Management & Data System*, 101(1), 13-20. https://www.ingentaconnect.com/content/mcb/029/2001/00000101/00000001/art00002

Christensen, C. M. (1997): The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. *Harvard Business Review*.

https://www.hbs.edu/faculty/Pages/item.aspx?num=46

Christensen, C. M., Raynor M.E., & McDonald, R. (2015). What is Disruptive Innovation? *Harvard Business Review, 44-53.*
https://hbr.org/2015/12/what-is-disruptive-innovation

Coleman, J. S. (1966) Equality of Educational Opportunity. *Inter-university Consortium for Political and Social Research*, 2007-04-27.
https://eric.ed.gov/?id=ED012275

Coleman, D. (2014). Experiment to Innovate: Cultivating a "Fail Smart, Learn Fast" Culture. *Eyepharma*.
https://www.reutersevents.com/pharma/commercial/experiment-innovate-cultivating-fail-smart-learn-fast-culture

Coquillat, D. (2021). You must add the index that appears in the article of the: Complete guide to 2022. Diego Coquillat *El periodico digital de los restaurantes.*
https://www.diegocoquillat.com/en/dark-kitchen-guia-completa-para-2021/

Das, S. (2020). Business Models for Cloud Kitchens. *Aranca*.
https://www.aranca.com/knowledge-library/blogs-and-opinions/business-research/business-models-for-cloud-kitchens

Davis F. D. (1989). "Perceived usefulness, perceived ease of use and user Acceptance of Information Technology. *MIS Quarterly, Vol. 13, No. pp. 319-340.*

https://www.jstor.org/stable/249008

Deliverect. (2021). Dark kitchen business models and how they work. *Deliverect*.
https://www.deliverect.com/us/blog/dark-kitchens/dark-kitchen-business-models-and-how-they-work

Dimock, M. (2019). Defining generations: Where Millennials end and Generation Z begins. *Pew Research Center*.
https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/

EHL I. (2020). What is a Ghost Kitchen? The future of fast food. *Hospitality Insights*.
https://hospitalityinsights.ehl.edu/ghost-kitchen

Lee, D., & Bradshaw, T. (2020). Uber Eats gets out of heat of delivery kitchens. *Financial Times*.
https://www.ft.com/content/8cbeef94-bfc7-40eb-991a-bc519c058f73

Kelly J. (2019). Ex-Uber CEO Travis Kalanick Has A New Startup: How Will Ghost Kitchens Shape The Future Of The Restaurant Industry And Its Workers? *Forbes*.
https://www.forbes.com/sites/jackkelly/2019/11/19/ex-uber-ceo-travis-kalanick-has-a-new-startup-how-will-ghost-kitchens-shape-the-future-of-the-restaurant-industry-and-its-workers/?sh=62fe66594792

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in Online Shopping: An Integrated Model. *MIS Quarterly*, 51-90.

https://www.jstor.org/stable/30036519#metadata_info_tab_contents

Hill C. W. L., Jones G. R, Schilling M. A. (2014). Strategic Management: Theory: an integrated approach. *Cengage*, 116-145.

Kelso, A. (2021), Report: 10% of all restaurants have closed during pandemic. *Restaurant Dive*. https://www.restaurantdive.com/news/report-10-of-all-restaurants-have-closed-during-pandemic/597521/

Lee-Ross, D., & Lashley, C. (2008). Entrepreneurship and small business management in the hospitality industry. *Routledge*, 191-212. https://www.routledge.com/Entrepreneurship--Small-Business-Management-in-the-Hospitality-Industry/Lee-Ross-Lashley/p/book/9780750684484#

Levesque, A., & Li, H. Z. (2014). The Relationship Between Culture, Health Conceptions, and Health Practices: A Qualitative–Quantitative Approach. *Journal of Cross-Cultural Psychology*, 628-645. https://journals.sagepub.com/doi/10.1177/0022022113519855

Madhavan, M. (2021). The rapid growth of the cloud kitchen market during a pandemic. *Affility Consulting*. https://www.affilityconsulting.com/insights/the-rapid-growth-of-the-cloud-kitchen-market-during-a-pandemic/

McKchnie, S., Winklhofer H., & Ennew, C. (2006). Apply The Technology Acceptance Model to the retailing and financial services. *International Journal of Retail & Distribution Management,* 388-410.

https://www.emerald.com/insight/content/doi/10.1108/09590550610660297/full/html

Merckaert, G. (2021): 6 Most Popular Cloud Kitchen Business Models (& the Only Two We're Betting On to Thrive). *Apicbase*. https://get.apicbase.com/cloud-kitchen-business-models/

MIQ B.C.M. (2021). The impact of COVID-19 on eating, restaurants and fast-food chains. *MIQ*. https://www.wearemiq.com/blog/the-impact-of-covid-19-on-eating-restaurants-and-fast-food-chains/

Ncr. (2021). Pros and cons of booming Virtual Ghost Kitchen models. *Ncr*. https://www.ncr.com/blogs/restaurants/ghost-kitchen-pros-cons

Nestlé. (2021). What is a dark kitchen? *Nestlè*. https://www.nestleprofessional.co.nz/what-is-a-dark-kitchen

Pande, P. (2020). Inside Airline Catering: From Farm To Plane. *Simple Flying*. https://simpleflying.com/airline-catering/

Parekh, J. (2019). Customer convenience: How cloud kitchens are disrupting traditional restaurants. *Medium*.

https://medium.com/arthavc/customer-convenience-how-cloud-kitchens-are-disrupting-traditional-restaurants-16c6f68e6d09

Prahalad C. K., & Hamel G. (1990). The core competence of the corporation. *Harvard Business Review*. 275-292.

https://hbr.org/1990/05/the-core-competence-of-the-corporation

Prahalad, C. K., & Hamel, G. (1994): Strategy as a field of study: Why search for a new paradigm? *Strategic management journal, 15(S2).*

https://www.jstor.org/stable/2486873#metadata_info_tab_contents

Rao, R. (2020). Coronavirus impact: Swiggy lays off 1,100 employees, future of cloud kitchens uncertain. *Business Today*.
https://www.businesstoday.in/jobs/story/coronavirus-impact-swiggy-lays-off-1100-employees-future-of-cloud-kitchens-uncertain-258593-2020-05-18

R & M. (2021). Food Service Industry - Global Market Trajectory & Analytics. *Research and Markets*.
https://www.researchandmarkets.com/reports/1056045/food_service_industry_global_market_trajectory

Rumelt, R. (1972). Good strategy/Bad Strategy: The difference and Why It Matters. *Strategic Direction 28(8).*

Saha, S. (2020). Five Trends Defining the Food Industry Post-COVID. *Food Safety Tech*.
https://foodsafetytech.com/column/five-trends-defining-the-food-industry-post-covid/

Saxena, A. (2022). Why Do Cloud Kitchens Fail?
https://iamabhinavsaxena.com/why-do-cloud-kitchens-fail/

Sentance, R. (2020). How cloud kitchens can overcome CX and marketing challenges in an increasingly virtual industry. *E-Consultancy*.
https://econsultancy.com/how-cloud-kitchens-can-overcome-customer-experience-marketing-challenges-in-increasingly-virtual-industry/

Solomon, M. (2018). Only The Customer Gets To Decide What Matters In Customer Service And Customer Experience. *Forbes*.
https://www.forbes.com/sites/micahsolomon/2018/11/18/the-customer-gets-to-decide-what-matters-in-customer-service-and-the-customer-experience/?sh=7482a91c69db

Talin, B. (2022). Disruptive Innovation – Intro, Definition and Meaning of being disruptive. *More than Digital*.
https://morethandigital.info/en/disruptive-innovation-intro-definition-and-meaning-of-being-disruptive/

Teixeira, Thales S., and Peter Jamieson. The Decoupling Effect of Digital Disruptors. Harvard Business School Working Paper, No. 15-031, October 2014.

Telukdarie, A, Munsamy, M., & Mohlala P. (2020). Analysis of the Impact of COVID-19 on the Food and Beverages Manufacturing Sector. *Sustainability* 12(22):9331.

https://ideas.repec.org/a/gam/jsusta/v12y2020i22p9331-d442706.html

Thompson, Jr., & Arthur, A. (1984). Strategies for staying cost competitive. *Harvard Business Review.*
https://hbr.org/1984/01/strategies-for-staying-cost-competitive

Tucker, C. (2020). Lisbon-based Kitch seals €1 million to build delivery-first virtual kitchens. *E-U Startups*.
https://www.eu-startups.com/2020/05/lisbon-based-kitch-seals-e1-million-to-build-delivery-first-virtual-kitchens/

UBS, Report. (2018). Is the kitchen dead? *UBS*.
https://transact.ft.com/the-kitchen/#:~:text=UBS%20estimates%20global%20online%20food,industrial%2C%20economic%20and%20demographic%20factors.

Uranga, E. (2020). El crecimiento del 60% del delivery suaviza el desplome del sector de la restauración. *Kantar Report*.
https://www.kantar.com/es/inspiracion/coronavirus/el-crecimiento-del-60-del-delivery-suaviza-el-fuerte-desplome

Vaportzis, E., Clausen, M. G., & Gow, A. J. (2017). The Effect of Coronavirus on American Chinese Restaurants, Explained. *Front Psychol*.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5649151/

Waldmann, J. (2020). The impact COVID-19 is having on small businesses. *Home Base*.
https://joinhomebase.com/blog/real-time-COVID-19-data/

Wizenius. (2021). Cloud Kitchen Business Model
https://www.wizenius.com/post/cloud-kitchen-business-model

Zulkarnain, K., Yusof, I., Akm, A. Selim, A. (2015). *Key Success Factors of Online Food Ordering Services. Malaysian institute of Management,* 50 (2). 19-36.

https://www.academia.edu/21643315/Key_Success_Factors_of_Online_Food_Ordering_Services_An_Empirical_Study

King, R. (2021). More than 110,000 eating and drinking establishments closed in 2020. *Yahoo Finance*.
https://finance.yahoo.com/news

8.APPENDIX

I. Delivery Platforms Reports

Just Eat Research Observatory. (2019).
https://www.justeat.it/esplora/osservatorio2019
Gloovo Report. (2019).
https://about.glovoapp.com/order-boom-in-italy-in-2019-247-compared-with-2018/

II. Expert Interviews

Expert A (Cloud Kitchen Entrepreneur)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

I think there are various factors that have contributed to the development of the Cloud Kitchen phenomenon in the word, with certainty, the fact that more and more people have a smartphone and an internet connection is something that in general has greatly helped the growth of the delivery sector. Cloud Kitchens were a natural response due to the fact that it is a business model that allows us to be competitive and target that market segment with a lower reserve price.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

I believe that the arrival of Covid has literally destroyed traditional restaurants. The various mandatory closures and curfews allowed traditional restaurants to work only through delivery, and not all restaurants were prepared to offer this service. Many restaurants that were not operational efficient and profitable have found themselves forced to close when COVID-19 arrived.

3- Do you think it has become essential for all restaurants to associate with online ordering platforms and offer a delivery food option for the customers to keep up with the competition?

I think that joining a delivery platform is a perfect way to reach new customers without spending huge costs on marketing, the problem is that the commissions due to these food aggregators come to cover almost half of the price of the product sold, in this way the margins for restaurateurs who rely on this service are usually very low.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

A very big limitation is certainly the fact of being dependent on food aggregators and the conditions they offer. In my opinion, if you do not want to rely on delivery platforms and avoid paying large commissions to these giants, the only way is to offer your own order and delivery service, which consequently leads to an increase in general fixed costs of the business. To compete online, digital marketing is of fundamental importance, for example SEO, and you will have to dedicate the right budget to this activity.

5- Do you think that in the future volumes of food delivery will be greater than going to physical restaurants?

I am sure about it, technology will continue to develop, and more and more people will have access to the internet, consequently it is very likely that the number of people who order food delivery will also increase.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

I think it's very difficult for a traditional restaurant to compete with these giant Food Aggregators. The prices offered are so low that sometimes they do not bring them any profit but rather a loss, this is part of the strategy of getting consumers used to using their platform and then increasing prices in the future when customers will be more loyal.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

No, I don't think this, on the contrary I think they are an evolution that came naturally thanks to the development of industry.

Expert B (Cloud Kitchen Entrepreneur)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

First of all, we need to focus on the economic aspect, I chose to operate through the Cloud Kitchen business model thank to the possibility of reducing costs and creating efficiency, this also happens thanks to the creation of possible economies of scale, which are not present in traditional restaurant models. Furthermore, the initial investment required to enter the market is much less than that required to open a traditional restaurant. I think it can be said that the arrival of COVID-19 was certainly a catalyst factor that contributed to the development and affirmation of this business model.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

In my opinion, the arrival of the pandemic has literally changed the games within the restaurant industry. The restaurants that were forced to be closed still had to continue to pay fixed costs such as rent, the only way they had to earn something was to offer the service of food delivery. Me and other entrepreneurs on the Cloud Kitchen side were less affected by COVID-19 and the consequences that it brought, on the contrary, for some Cloud Kitchen restaurants it was a boost that increased economic growth.

3- Do you think it has become essential for all restaurants to associate with online ordering platforms and offer a delivery food option for the customers to keep up with the competition?

If you intend to open a Cloud Kitchen, I think that at least at the beginning it is important to be present in the major food delivery applications, this allows you to reach clients more easily and have a stronger digital presence.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

The greatest limitation is due to the fact that there is no physical presence in the streets of the city, consequently, the only way to acquire new clients is to do a successful digital marketing, and this involves costs that can be high. Businesses that work only through delivery platforms are extremely dependent on the latter, and it is difficult to refuse any changes in conditions of the contract that create advantages for the delivery platforms, moreover, the commissions that you have to pay can cover a large portion of the revenue.

5- Do you think that in the future volumes of food delivery will be greater than going to physical restaurants?

Yes, I think that in the future the volumes of delivery food will be greater than the physical restaurants, even the economic forecasts support this thing. This will happen because there will be technological developments such as the arrival of automated kitchens, which are perfect for reproducing the standard operations that are carried out in the production of food in the Cloud Kitchen. Another factor that will be a catalyst will be that of food deliveries through drones, this will make delivery operations faster and cheaper, thereby stimulating the number of orders from customers.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

I think these aggressive pricing policies make many restaurants no longer able to compete in the market. I do not believe that this is a distortion of the market and I do not believe that they do not allow sustainable growth of profits, on the contrary, I think that this is a benefit for customers.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

No, I don't think it is a threat to the restaurant industry at all. The efficiency of the Cloud Kitchen is reflected in the lower final price that results in a higher consumer surplus. This in the future I think will help the industry grow as a whole. I don't think traditional kitchen is dead, but traditional restaurants will have to adapt to change and keep up with the competition to survive.

Expert C (Traditional Restaurateur)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

Many people start a Cloud Kitchen with the idea of being able to make fast money, even though this isn't easy to happen. In my opinion, the development of Cloud Kitchens is due to the fact that there are lower initial costs to start a business, in this way people are more enticed and easier to invest capital in the restaurant industry. The initial investment that a traditional restaurant requires is a barrier to entry for many potential new entrants to the sector.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

In our case, the arrival of the pandemic was destructive. In Italy the rules were very strict, and we were forced to be closed for many months. The restaurant was closed but expenses such as rent continued to be present, it was very difficult to overcome this period, the aid received from the state was not sufficient to cope with this situation. The only way that allowed us to stay afloat was to operate through deliveries too.

3- Do you think it has become essential for all kinds of restaurants to associate with online ordering platforms and offer a delivery food option for the customers in order to keep up with the competition?

I don't think it's necessary for all kinds of restaurants. Our business is known for the quality of the food and for the experience that you can have by eating in our restaurant. Surely offering a delivery service could also allow us to reach those customers who want to eat comfortably in their home, the problem is that if you have too many activities to manage then you lose focus and operational costs may increase. Since we reopened, we have stopped offering a delivery service.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

I imagine that the biggest limitation would be to be known from customers initially, not having a physical place in the streets of the city is difficult to get immediately in the mind of the consumer. For example, when we opened our restaurant, many people were curious to try it because the rumor of the new opening spread in the city, this was certainly a huge help we had in starting the business that I don't know if we would have had operating through a Cloud Kitchen.

5- Do you think that in the future scenario of the restaurant sector the tendency to consume delivery food will be greater than to go to a physical restaurant?

I can't answer this question correctly, I think that in general the quantity of food delivery ordered will increase over the years, but I don't know if it will be greater than the quantity of food consumed in physical restaurants.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

I don't know these platforms, but when we had the opportunity to collaborate with the most famous ones operating in Italy, we realized that the commissions we had to pay to these operators were very high. In this way we could not operate in an economically

sustainable way. I think this is not good for the market because many restaurants that offer a quality product are no longer able to compete with the low prices that some restaurants offer in these delivery platforms.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

Yes, I think the arrival of Cloud Kitchens is a threat to many restaurants. At the same time, however, I think that a traditional restaurant, which operates strategically well and offers a quality product, it is not easy to replace. Many of our customers certainly also order delivery food, but this does not mean that they will no longer be our customers.

Expert D (Traditional Restaurateur)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

I think the most important factor that contributed to the spread of Cloud Kitchens was the arrival of the pandemic, the various stay-at-home obligations for people made entrepreneurs reinvent themselves, to reach the consumer in a new way.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

In my opinion, the arrival of COVID-19 has impacted the restaurant industry in a negative way, I am not lying if I say that we too have experienced this situation in a difficult way, it was hard to be able to remain open, if we had not any economic reserves we would not have made it, many of our competitors are no longer in the market because they have been forced to close.

3- Do you think it has become essential for all kinds of restaurants to associate with online ordering platforms and offer a delivery food option for the customers in order to keep up with the competition?

I don't think it has become essential, it depends on the type of restaurant you have and the type of product you offer. I think that being present in the most famous delivery food

platforms can help increase sales and make your brand more known, the problem is that if it becomes the only way to sell the product then a highly dependent relationship is created with the platforms. Our restaurant is associated with some of the most famous platforms, but our main revenue channel always remains with the clients who come to physically eat in our restaurant.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

I've never been in this situation, but I think one of the biggest problems is being profitable. Many restaurants that operate under the Cloud Kitchen model have very low profit margins, plus, the platforms take very high commissions. I don't think it's easy to operate in this mode.

5- Do you think that in the future scenario of the restaurant sector the tendency to consume delivery food will be greater than to go to a physical restaurant?

No, I don't think that. In my opinion, normal restaurants will win, it has always been part of our culture to go to restaurants, in addition to being a way to satisfy a primary need such as appetite, it is also a place where you experience multiple sensations that are not easily replicable in other ways, especially if we focus on fine dining experience.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

I think this aggressive pricing and “pay 1 get 2" promotion offers is not very beneficial to the industry, on the contrary, I think it is somehow distorting the market a bit. With this strong competition it is difficult for many restaurants to operate in such a way as to remain profitable, while for large delivery platforms it is easier to accept any losses.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

No, I don't think they are a threat, they are just following a new way of operating in the market. I don't think traditional kitchen is dead, just look at the traditional restaurants as they are crowded with people since they had a chance to reopen normally as the global pandemic situation became better.

Expert E (Real Estate Cloud Kitchen Entrepreneur)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

There are many factors that in my opinion have contributed to the development of Cloud Kitchens in the world making them a new trend. One of the main factors is certainly the fact that many people are starting to use delivery platforms more and there is a growing increase in food delivery orders. This tendency has undoubtedly been noticed and many entrepreneurs have thus decided to open an entire business focused on this type of clientele.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

I believe the arrival of COVID-19 was a factor that temporarily destroyed the restaurant industry, causing many restaurants around the world to the forces closure. Another factor that led to the arrival of the pandemic was undoubtedly the increase in people who started ordering online, this is because many restaurants were forced to be closed during the various lockdowns, which is why the only way to provision to earn something was to work through delivery.

3- Do you think it has become essential for all kinds of restaurants to associate with online ordering platforms and offer a delivery food option for the customers in order to keep up with the competition?

Yes, I think that it has become essential for a restaurant to associate with delivery platforms. The market is changing, becoming more technological and evolving, nowadays digital marketing is of fundamental importance, a restaurant that is present in the most

famous delivery platforms can be known by many potential customers who were not aware of the restaurant before.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

I think there are various limitations for anyone who wants to start a Cloud Kitchen business. The first limitation is to find a space to operate. For many it is not easy to face the initial costs of setting up a kitchen with all the tools that are necessary to produce food. In fact, my idea is to rent kitchens ready to be used by restaurants that operate following this business model, in this way they do not have to waste time preparing the kitchen and can put all the focus on taking care of the other aspects of the business. efficiently.

5- Do you think that in the future scenario of the restaurant sector the tendency to consume delivery food will be greater than to go to a physical restaurant?

What I think is that in the future the quantity of food delivery will increase and the whole restaurant industry will grow accordingly. I think that in the future the efficiency produced by this type of restaurant will make the final food even cheaper than that cooked at home. This could create a future decrease in store-bought food destined for household cooking.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

I think this is a normal situation that is created in the market, strong players that are formed aim to become stronger and stronger. This price war is certainly an advantage for the final consumer, the same thing cannot be said, however, for restaurants that find themselves having to offer a price that sometimes cannot even cover the expenses they have.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

Absolutely not, Cloud Kitchens can in no way be a threat to the restaurant sector, on the contrary, I think it is a phenomenon that helps the restaurant sector a lot. In addition to creating efficiencies in the market, this business model gives many entrepreneurs the opportunity to try out their business idea that they would not have been able to experience if they had had to have an initial investment that a traditional restaurant requires.

Expert F (Employee of Delivery Platform App)

1- What were the factors that in your opinion have contributed most to the spread of Cloud Kitchens in the world?

There are many factors that in my opinion contributed to the development of the Cloud Kitchen, I think the most important one was the great growth of delivery platforms which triggered an exponential increase in the amount of food delivery ordered. It can be said that the spread of Cloud Kitchens has contributed to create a new trend which is bringing a change in consumer preferences.

2- How has the arrival of COVID-19 impacted the restaurant industry in your opinion?

I think the arrival of COVID-19 has impacted the restaurant industry differently. On the one hand, traditional restaurants were penalized because they had never dealt with such a situation before, they were not prepared for such an event. On the other hand, I think that the arrival of the pandemic has been a great help for the development of delivery platforms, and consequently, for all the restaurants operating through the Cloud Kitchen business model.

3- Do you think it has become essential for all kinds of restaurants to associate with online ordering platforms and offer a delivery food option for the customers in order to keep up with the competition?

I don’t know if it’s fundamental, but I think it’s a great help for a restaurant to be present in major delivery platforms. Of course, if more and more restaurants start partnering with

food aggregators, those who are out will definitely be penalized. Only the fact of being present in these applications can help the brand to get more popularity.

4- In your opinion, what are the major limitations that an entrepreneur would have when opening a business with the Cloud Kitchen model?

I think that the greatest limitation is due to competition. As soon as you enter the market with a new restaurant operating via Cloud Kitchen it is difficult to convince the consumer to choose your product from the vast amount of offer available. Many new restaurants offer promotions for the customer in such a way as to be known by the market, but doing so is very difficult to operate in such a way as to be profitable, furthermore, fees that delivery platforms require are high.

5- Do you think that in the future scenario of the restaurant sector the tendency to consume delivery food will be greater than to go to a physical restaurant?

Absolutely yes, the delivery food trend is growing and in the future ordering instead of going to the restaurant or cooking will be more and more a normal for people.

6- Do you think that the policies of aggressive discounts and promotions applied by some aggregators (such as Zwiggy and Zomato in India) are distorting the market and that they do not allow the market to grow profitability in a sustainable way?

If I'm honest I don't think so, the low prices and promotions offered by the delivery apps are part of their marketing strategy. It is normal that in order to accustom the consumer to using a new technology, stimuli must be created for the latter.

7- Do you think Cloud Kitchens are a threat to the restaurant industry? Is the traditional kitchen dead?

I think Cloud Kitchens are a threat to restaurants that don't have good management. Maybe in the past even a restaurant entrepreneur that did not operate well had its share of customers that brought him a gain, while now, I am of the idea that this competition that has been created means that in the future the customer will have more and more

bargaining and decision-making power. In this way the restaurants that want to continue to operate must be managed perfectly in all aspects.

III. Survey

Age

#	Answer	%	Count
1	18-24	27,30%	41
2	25-34	36,70%	55
3	35-44	23,30%	25
4	45-54	9,30%	14
5	55-64	2,70%	4
6	65+	0,7%	1

Gender

#	Answer	%	Count
1	Male	56,70%	85
2	Female	42,70%	64
3	Prefer not to say	0,60%	1

Income

#	Answer	%	Count
1	0-1000	18,10%	27
2	1001-2000	36,20%	54
3	2001-3000	34,90%	52
4	3001-4000	10,10%	15
5	4001-5000	2,70%	4

Country

#	Answer	%	Count

1	Germany	17,33%	26
2	Italy	35,33%	53
3	Portugal	26%	39
4	Spain	14,66%	22
5	Argentina	1,33%	2
6	Australia	0,66%	1
7	France	3,33%	5
8	Poland	0,66%	1
9	Morocco	0,66%	1

How many people live in your household?

#	Answer	%	Count
1	1	10,70%	16
2	2	21,30%	32
3	3	28,70%	43
4	4	29,30%	44
5	5	10%	15

Would you have problem eating at a restaurant alone?

#	Answer	%	Count
1	I am used to go to a restaurant alone	6,70%	10
2	No, I do not think is a weird thing	13,30%	20
3	Sometimes Yes	18,70%	28
4	I think yes	30%	45
5	Yes, for sure	31,30%	47

How often do you cook your own meal?

#	Answer	%	Count
1	Never	18,70%	28
2	Once a week	19,30%	29

3	Few times per week	34,70%	52
4	Almost every day	17,30%	26
5	Every day	10%	15

How often do you eat alone?

#	Answer	%	Count
1	Never	19,30%	29
2	Once a week	20%	30
3	Few times per week	34%	51
4	Almost every day	18%	27
5	Every day	8,7%	13

How much do you think about eating healthily on a scale of 1(lowest) to 5(highest)?

#	Answer	%	Count
1	1	4,7%	7
2	2	4%	6
3	3	14%	21
4	4	49,30%	74
5	5	28%	42

Do you think your food habits have changed after the pandemic?

#	Answer	%	Count
1	Definitely yes	18,70%	28
2	Yes, a bit	40%	60
3	I do not know	15,30%	23
4	No, my food habits are the same	26%	39

Have you ever ordered delivery food?

#	Answer	%	Count
1	Yes	84,2%	123
2	No	15,8%	27

Do you prefer to order food with delivery or go to a restaurant?

#	Answer	%	Count
1	Go to restaurant	60%	90
2	Order delivery food	40%	60

IV. Welch Two Sample T-Test R Studio

2) Activate the packages:

```
library(readxl)
library(data.table)
library(ggplot2)
library(stargazer)
library(doBy)
library(readr)
library(lmtest)
library(dplyr)
library(mfx)
library(janitor)
library(vtree)
library(tidyverse)
library(countrycode)
library(tigerstats)
library(ggpubr)
library(caret)
library(lmtest)
```

```
db <- Food_habits_Risposte_ <- read_excel("Downloads/Food habits (Risposte
).xlsx",
sheet = "Sheet1")
db <- data.table(db)

stargazer(db, type = "text", no.space = TRUE)
```

```
##
## ================================================
## Statistic     N    Mean    St. Dev. Min  Max
## ------------------------------------------------
## aloneR       150   3.647    1.227    1    5
## preferencesS 150   2.867    1.072    1    4
## age          150  28.353    9.906   18   65
## income       149 1,390.081 920.847   0  4,001
## ------------------------------------------------
```

```
t.test(survey[orderedN == "Yes", income] , survey[orderedN == "No", income
])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[orderedN == "Yes", income] and survey[orderedN == "No", i
ncome]
## t = 1.9779, df = 32.069, p-value = 0.05659
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -10.99209 749.55528
## sample estimates:
## mean of x mean of y
##  1415.463  1046.182
```

```r
t.test(survey[orderedN == "Yes", age] , survey[orderedN == "No", age])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[orderedN == "Yes", age] and survey[orderedN == "No", age]
## t = 1.6884, df = 38.05, p-value = 0.09951
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.6164167  6.8136596
## sample estimates:
## mean of x mean of y
##  28.70732  25.60870
```

```r
t.test(survey[orderingO == "Go to restaurant", income] , survey[orderingO
== "Ordering delivery food", income])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[orderingO == "Go to restaurant", income] and survey[order
ingO == "Ordering delivery food", income]
## t = -0.65619, df = 141.27, p-value = 0.5128
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -392.5934  196.9176
## sample estimates:
## mean of x mean of y
##  1353.045  1450.883
```

```r
t.test(survey[orderingO == "Go to restaurant", age] , survey[orderingO ==
"Ordering delivery food", age])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[orderingO == "Go to restaurant", age] and survey[ordering
O == "Ordering delivery food", age]
## t = 2.7315, df = 135.35, p-value = 0.007144
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  1.201168 7.503005
## sample estimates:
## mean of x mean of y
##  30.20455  25.85246
```

```r
t.test(survey[qualitypriceP == "Go to restaurant", income] , survey[qualit
ypriceP == "Delivery food", income])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[qualitypriceP == "Go to restaurant", income] and survey[q
ualitypriceP == "Delivery food", income]
## t = -1.0844, df = 113.38, p-value = 0.2805
```

```
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -496.9168  145.3585
## sample estimates:
## mean of x mean of y
##  1334.148  1509.927

t.test(survey[qualitypriceP == "Go to restaurant", age] , survey[qualitypr
iceP == "Delivery food", age])

##
##  Welch Two Sample t-test
##
## data:  survey[qualitypriceP == "Go to restaurant", age] and survey[qual
itypriceP == "Delivery food", age]
## t = -1.4167, df = 96.755, p-value = 0.1598
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -6.135126  1.024705
## sample estimates:
## mean of x mean of y
##  27.39024  29.94545

t.test(survey[aloneR > 3, income] , survey[aloneR < 4, income])

##
##  Welch Two Sample t-test
##
## data:  survey[aloneR > 3, income] and survey[aloneR < 4, income]
## t = 0.10587, df = 126.04, p-value = 0.9159
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -287.5175  320.0203
## sample estimates:
## mean of x mean of y
##  1396.407  1380.155

t.test(survey[aloneR > 3, age] , survey[aloneR < 4, age])

##
##  Welch Two Sample t-test
##
## data:  survey[aloneR > 3, age] and survey[aloneR < 4, age]
## t = 0.52372, df = 139.83, p-value = 0.6013
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -2.300754  3.958925
## sample estimates:
## mean of x mean of y
##  28.67391  27.84483

t.test(survey[preferencesS > 2, income] , survey[preferencesS < 3, income]
)

##
##  Welch Two Sample t-test
```

```
##
## data:  survey[preferencesS > 2, income] and survey[preferencesS < 3, in
come]
## t = 0.59479, df = 73.82, p-value = 0.5538
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -234.1026  433.3280
## sample estimates:
## mean of x mean of y
##  1417.491  1317.878
```

```
t.test(survey[preferencesS > 2, age] , survey[preferencesS < 3, age])
```

```
##
##  Welch Two Sample t-test
##
## data:  survey[preferencesS > 2, age] and survey[preferencesS < 3, age]
## t = 1.3302, df = 87.694, p-value = 0.1869
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.086043  5.482104
## sample estimates:
## mean of x mean of y
##  28.95413  26.75610
```