A Case on Food Delivery Transformation in Lisbon and Berlin – The Effect of Digital Adoption on Consumer Online Purchasing Behavior

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Abstract

With the increase of convenience service offers responding to shifting consumer demands, online food delivery has gained relevance in recent years, and just now receives accelerated importance due to the COVID-19 pandemic. This work illustrates technological and cultural differences regarding food between the capitals of Portugal and Germany. Restaurants in Lisbon and Berlin need to realize the existential meaning of (digital) changes in consumer behavior concerning new generations of customers who grow up as digital natives, especially in the current crisis. Third-party online ordering platforms might take advantage of consumers' faster food and digital adoption in the long run. Convenience was found to be a critical driver of shifts in consumers' online food ordering behavior.

This research examines effects for Portuguese and German digital natives in Lisbon and Berlin. Therein, it studies the direct impact of personal digital maturity on third-party online ordering maturity, third-party online ordering overall enjoyment, online shopping maturity, and online shopping spending. Further, the moderating effect of Hofstede's individualism dimension, as well as the mediating effect of online shopping enjoyment, are explored. Results indicate that digital maturity has an impact on all variables except online shopping spending. Therein, highly digitally mature respondents show higher frequencies of third-party online ordering and online shopping, as well as higher enjoyment of third-party online ordering. Individualism significantly moderates the effect for online shopping spending. It is found that highly digitally mature Germans spend more money than Portuguese. Online shopping enjoyment mediates the impact for all dependent variables.

Keywords: digital transformation of industries, online food delivery, personal digital maturity, third-party online ordering, maturity, enjoyment, online shopping, spending, individualism, COVID-19

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Resumo

Com o aumento da oferta de serviços de conveniência em resposta às alterações dos padrões de procura, os serviços de entrega de comida na internet ganharam relevância nos últimos anos. A pandemia COVID-19 veio acelerar este processo. Neste trabalho analisam-se as diferenças tecnológicas e culturais relativas a comida entre as capitais de Portugal e Alemanha. Os restaurantes em Lisboa e Berlim devem tomar consciência do alcance das alterações nos padrões de consumo nas novas gerações, que cresceram como nativos digitais. As plataformas de encomenda de comida na internet podem tirar vantagem da adopção cada vez mais rápida de serviços digitais por parte dos consumidores, a longo prazo.

Esta investigação estuda o impacto da maturidade digital individual na utilização de serviços de compras na internet, na sua fruição, maturidade e no dispêndio nessas compras. Adicionalmente explora o efeito moderador da dimensão de individualismo de Hofstede, bem como o efeito de mediação da fruição das compras. Os resultados mostram que a maturidade digital tem impacto em todas as variáveis, excepto no dispêndio em compras. Os inquiridos com níveis mais elevados de maturidade digital evidenciam frequências mais elevadas de compras de comida e de compras, bem como uma fruição mais elevada na compra de comida nas plataformas na internet. Conclui-se que o individualismo tem um efeito moderador significativo no nível de dispêndio em compras, que os alemães com maior maturidade digital dispendem mais que os portugueses e que o nível de fruição das compras tem um efeito moderador no impacto das variáveis dependentes.

Palavras chave: transformação digital, serviços de entrega de comida na internet, maturidade digital pessoal, encomenda em plataformas na internet, fruição, compras na internet, individualismo, COVID19

Titulo: Caso de estudo dos serviços de entrega de comida em Lisboa e Berlim – o efeito da adopção do digital nos comportamentos em compras na internet

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No matter how tough the challenge, there is always an opportunity for growth.

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Abbreviations

bn	Billion
CAGR	Compound Annual Growth Rate
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization
GDP	Gross Domestic Product
IoT	Internet of Things
IT	Information Technology
m	Million
OFD	Online Food Delivery
PDMI	Personal Digital Maturity Index
RQ	Research Question
TAM	Technology Acceptance Model
TPOO	Third-Party Online Ordering

1 Introduction

1.1 Relevance

Without food, there is no life.

Viewing food from an existential point, it provides organisms with the necessary energy to fuel growth and sustain life (Merriam-Webster, 2020). It contributes fundamentally to humans' emotional and physical well-being and is pursued with incomparable intellectual and bodily urgency (Maslow, 1943). However, the meaning of food goes beyond its vital role in life. Food is deeply embedded in peoples' cultures and holds significant value in understanding nations and countries (Beer et al., 2002). Not only is it substantial, food has the power to bring people together since, in its nature, it is not only perceived as a necessity but as the enriching center of social activities (Fieldhouse, 1995).

Food is not only essential for the survival of any species, it is the biggest industry in the world (Murray, 2007). Food delivery has been around for a while in Berlin and Lisbon, but only very recently started to transform the industry with the rise of online food delivery businesses. With the advance of digital technologies, the food industry experiences major shifts from a business but also a consumer perspective. This increase in digitization is manifested in the new generation of digital natives that challenge the industry landscape with their desire for convenience through online solutions on the one hand, and their demand for exciting food-related experiences on the other. It is thus crucial for the food industry as a whole to recognize these shifts and not only adapt to their consumers' needs but to create distinct added value.

Especially in times of crisis like the current COVID-19 pandemic, the food industry must awake to take advantage of the new digital era.

1.2 Objectives and Research Questions

This thesis is written based on expert interviews within the restaurant and online food delivery industry in Lisbon and Berlin. Further, it is grounded on academic literature and previous studies within the field of consumer behavior in e-commerce and online food delivery, and extended by own research to measure the impact of digital adoption and enjoyment in Germany and Portugal.

The goal of this work is to study how food delivery is transforming through the entry of third-party online ordering platforms like Lieferando.de and Uber EATS in Lisbon and Berlin, as well as through changes in consumers' digital adoption. It aims to provide insights for managers about consumers' online purchasing attitudes and behaviors, and further, to illustrate first implications of the COVID-19 pandemic on the further transformation of food delivery in the short and long-term, and give initial insights into consumer behavior shifts.

Therefore, with this thesis, the following research questions (RQ) will be answered:

RQ1: When did the food delivery industry start to transform in Lisbon and Berlin, and what drives this transformation?
RQ2: Do consumers' technological adoption, culture and enjoyment of online shopping influence the digital transformation of food delivery in Lisbon and Berlin?
RQ3: As of May 2020, what implications does COVID-19 already have on the transformation of food delivery and restaurants in Lisbon and Berlin?

Accordingly, first, the market of e-commerce and food delivery, as well as delivery models, are discussed. This is followed by a comprehensive theoretical exploration of digital transformation, and differences in Lisbon and Berlin based on technological adoption and culture. An overview of consumer and digital trends, as well as a pre-COVID-19 industry outlook, are provided. In the second part, existing literature is evaluated as a basis for the subsequent study analysis. In the final section, first insights regarding implications of the COVID-19 crisis are presented and concluded based on the study's and interviews' findings.

2 Case

"You have got to sign up for the view that the Internet changes everything."
(Bill Gates, 1999)

2.1 A Perspective

With the introduction of the first computer in 1946 and the beginnings of the internet, roughly twenty years later, the first steps of commercializing the digital space were made (Licklider & Clark, 1962; Leiner et al., 2009).

2.1.1 E-Commerce Market Overview

In the 1990s, through increasing internet availability to a growing number of users, the first businesses, as well as some established brick-and-mortar stores, saw the opportunity of selling products online, creating an entirely new industry: e-commerce (Leiner et al., 2009).

E-commerce, short for electronic commerce, is understood as "the electronic exchange (delivery or transaction) of information, goods, services, and payments over telecommunications networks, primarily the World Wide Web" (Warkentin et al., 2001), and interchangeably referred to as online shopping (Statista, 2020b).

In 2019, approximately 43% of the world's population purchased products or services online, making them *e-commerce users* (Hootsuite & We Are Social, 2020), in consequence, generating global revenues of €1.7 trillion (Statista, 2019d).

With a Gross Domestic Product (GDP) of €3.7 trillion and a population of 82.3m, Germany's e-commerce market was valued as one of Europe's largest at €73bn in 2019. Its Compound Annual Growth Rate (CAGR) is expected to be 7.3% until 2021 (JP Morgan, 2019b; Hootsuite & We Are Social, 2020). In 2019, 78% of the German population were acknowledged as e-commerce users (Hootsuite & We Are Social, 2020). Portugal, in comparison, reached a GDP of €191.8bn with a population of 10.3m and e-commerce market value of €4.3bn in 2019. Although Portugal's e-commerce market is one of Europe's smallest, it is expected to grow at a CAGR of 12% until 2021 (JP Morgan, 2019a; Hootsuite & We Are Social, 2020). Portugal registered 46% of its population as e-commerce users in 2019 (Hootsuite & We Are Social, 2020).

In recent years, the sub-market *e-services,* focusing on "the sale of online services and digital goods via the internet", evolved (Statista, 2020a). According to Statista (2020a), it is constituted of dating services, event tickets, fitness wearables and apps, as well as online food delivery. Therein, online food delivery is the largest segment with €98bn[1] global revenue in 2019, making up 57.7% of total revenues within e-services, and a CAGR of 10.2% until 2024 (Statista, 2019b). The German online food delivery market was valued at €1,791m in 2019 and a CAGR of 9.7% until 2024. In comparison, Portugal's online food delivery market valuation was at €102m in 2019; however, it expects a CAGR of 15.1% until 2024 (Statista, 2019e).

[1] Exchange rate (31.03.20): US$1 = €0.91

2.1.2 Food Delivery and Delivery Models

The first food ever to be delivered was pizza. When in 1889, Queen Margherita was visiting Naples, Italy, she desired to enjoy Italian commoners' food instead of the typical fine-dining French Cuisine. She asked for three different pizzas to be brought to her. With her desire for pizza, Queen Margherita not only ordered the first delivery food in history, but also her favorite pizza has later been named after her (Nowak, 2014).

Continuing with pizza, in 1960, U.S.-based Domino's Pizza was founded to deliver pizza within the restaurant's physical neighborhood, creating the first traditional food delivery model (Domino's, 2020). In 1994, Pizza Hut introduced the first online ordering website for pizza in the U.S., pioneering in the online food delivery space (Pizza Hut, 2020). In 1999, Seamless launched in the United States (Crunchbase, 2020), establishing the first third-party online ordering platform (Marks & Foroughi, 2017).

The various food delivery business models of today are based on the differences in the food delivery process. As can be seen in Figure 1, within this process, there are four stages: (1) how the order is placed, (2) where the order is placed, (3) by whom the order is prepared, and (4) by whom the order is delivered. The order can either be made online or offline, including phone calls. Then, the order can be placed at a restaurant or a platform. The order is prepared by a restaurant. Lastly, the order is delivered by a restaurant or a platform, or the food is prepared for consumer pick-up.

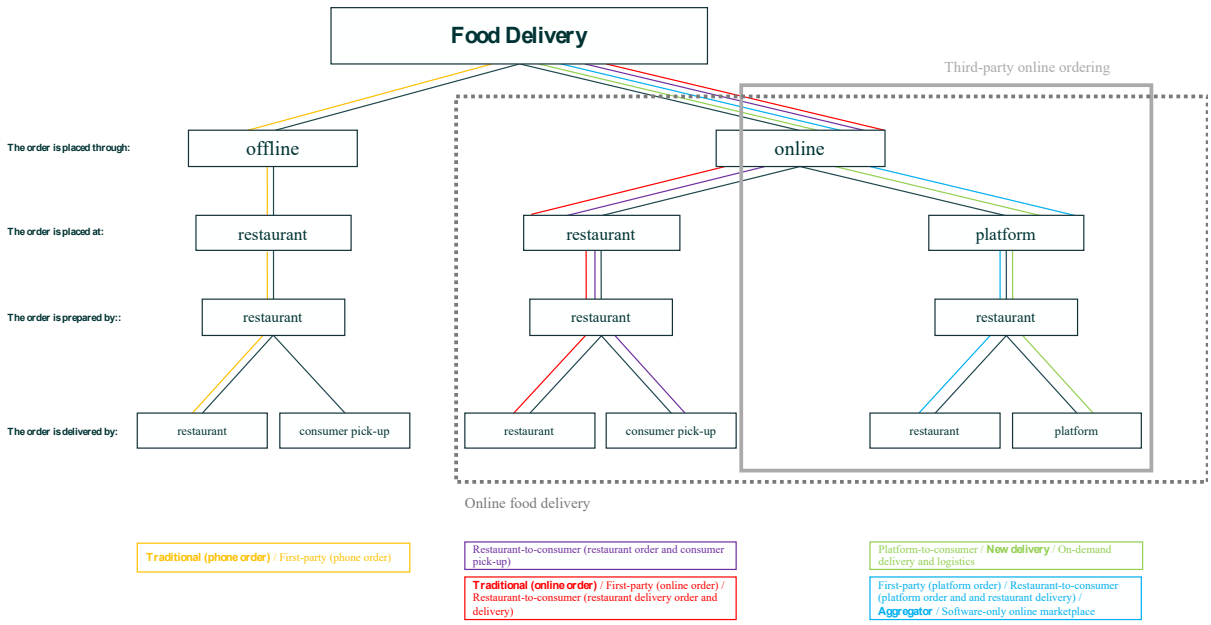


Figure 1: Food Delivery Models | Source: compiled by the author based on Lambert (2019), Hirschberg et al. (2016), Statista (2019a) and Marks & Foroughi (2017)

The *online food delivery* (OFD) market comprises all orders made online, independent of who takes the order and delivers the food (see dotted rectangle in Figure 1 for all OFD models).

2.1.2.1 Third-Party Online Ordering and Business Models

The main differentiator within OFD models is (2) where the order is placed: the restaurant's or a platform's website. Orders that are placed through a platform, independent of who delivers the food to the consumer, fall under the category of *third-party online ordering* (TPOO) (Marks & Foroughi, 2017) (refer to gray rectangle marked "third-party online ordering" in Figure 1). Herein, two distinct business models based on (4) who delivers the food to the customer arise (Lambert, 2019).

If the restaurant delivers the order, the business model follows the *aggregator* concept. If the platform carries out the delivery, its business model falls under *new delivery* (Hirschberg et al., 2016; Deloitte, 2019). Aggregators charge a fixed commission of up to 15% of the order value to the restaurant. For the consumer, no additional cost occurs. This brings an aggregator to an average EBITDA margin of 40-50%. New delivery business models charge a commission of up to 30% of the order value from the restaurant and an additional fixed delivery fee from the consumer. This leads to an EBITDA margin of around 30% (Hirschberg et al., 2016; Marks & Foroughi, 2017).

In Berlin and Lisbon, successful new delivery companies in the market of low margins and fierce competition need three things: capital, medium- to long-term scalability, and innovativeness. Since delivery requires high investments in equipment, pre-financing as well as drivers' hourly salary - independent of the number of orders, it is crucial for any company offering delivery to ensure capital flow. Since the food delivery market is working on small profitability, it is critical to scale growth and profitability right through appropriate delivery fees and a vision for product development and business model diversification. A new delivery company needs to come up with any kind of innovation to remain relevant, attractive, and capable to fulfill consumer demands (Appendix Kc, Appendix Ke).

What started with the delivery of pizza and similar low-cost, fast foods has been challenged by TPOO platforms to cater consumers' increasing demand for healthy, high-quality food options, thus, kick-starting transformation of the food delivery market (Deloitte, 2019).

2.1.2.2 Global TPOO Competition Overview

Globally, the biggest players by revenue include Just Eat, Grubhub, Delivery Hero, Deliveroo, DoorDash, Uber EATS, and Takeaway.com (Global Web Index, 2020; Global Data, 2018; Marks & Foroughi, 2017; Hirschberg et al., 2016). Takeaway.com mainly bases operations on an aggregator business model, making use of restaurants' own delivery operations, as well as small-scale new delivery (Takeaway.com, 2019). Deliveroo, Uber EATS, and DoorDash adopt the new delivery model, exclusively providing their own fleet of delivery drivers (Deliveroo, 2020; Rawley & Wang, 2019; Marks & Foroughi, 2017). Delivery Hero, as a holding company, owns separate new delivery businesses as well as businesses with an aggregator model (Delivery Hero, 2017). Grubhub expanded its business model from aggregator to new delivery in 2015 (Marks & Foroughi, 2017). In 2017, Just Eat also re-shaped its initial aggregator business model, branching out into new delivery (Global Data, 2018).

The goal of TPOO platforms is to leverage the food delivery industry as a whole by slowly building an ecosystem of restaurants and deliveries. Platforms strive to facilitate OFD by building trust, overcoming consumer caveats, and answering to main consumer concerns like quality of the food (Appendix Kb). However, today, new delivery platforms are still on the verge of generating profits due to the considerable cost of capital (Appendix Kc).

2.1.2.3 Food Delivery Evolution in Berlin and Lisbon

In Berlin, food delivery started in fragmentation at the beginning of this century. Some restaurants occasionally offered delivery; however, there was no real consumer demand at the time. When Pizza.de was founded in 2007, it gave rise to OFD. The Berlin market experienced entry of various OFD players within the past years. The digital shift of food delivery happened in 2014/ 2015 when Foodora was founded, Takeaway.com started operations in Germany through acquiring local Lieferando.de, Delivery Hero picked up acquisition speed by taking over Pizza.de, and TakeEatEasy, as well as Deliveroo, entered the German market. Major acquisitions followed because of the creation of a highly competitive landscape. This led up to the consolidation of Pizza.de, Lieferheld, and Foodora under Takeway.com in 2018, followed by Deliveroo's market exit in 2019. As of early 2020, there is only one provider of TPOO: Lieferando.de, which is part of the Takeaway.com corporation. The Berlin OFD market experienced the journey from fragmentation to quasi marketplace monopoly held by an aggregator (Appendix Kc). (timeline: Appendix A)

In Lisbon, food delivery started to develop around sixteen years ago. Comer em Casa was the first company to offer a platform for restaurant deliver, followed only about six years later by noMENU. Within the past ten years, Telepizza and Pizza Hut slowly expanded into online food delivery. Lisbon experienced a significant shift in food delivery when in 2017, the TPOO platforms Glovo and Uber EATS, and in 2018, Takeaway.com launched in the city. Until then, food was mainly ordered via phone call and exclusively delivered by restaurants themselves. Those delivery restaurants were disrupted and forced to adapt to the new digital reality. The digital shift happened in 2017/ 2018, transforming consumer behavior, fostering their demand for an ever wider selection of food choices. Selection of restaurants on a platform is driving demand in OFD. In turn, the growing variety of restaurants fuels consumer demand further. Today, the largest operators within TPOO in Lisbon are Glovo, Uber EATS, and Takeaway.com, where Glovo is adopting the new delivery model (Appendix Ke; Glovo, 2020). (timeline: Appendix B)

2.1.3 The new Consumer's Profile

In 2017, 60% of all OFD orders were placed by consumers under the age of 24 (Global Data, 2018). These younger consumers fall under the term *digital natives* because of their increasing connectivity since childhood, and unique ability to handle digital information existentially differently and in speedier ways than previous generations (Prensky, 2001). The consumers in question are part of Generation Y (born between 1980 and 1994) and Generation Z (born between 1995 and 2010) (Francis & Hoefel, 2018).

Younger consumers search to try new things, innovate their ways of thinking, and boost convenience in all ways of life (Global Data, 2018; Wood, 2013). This *hyper-connectivity*, as well as increasingly busy lifestyles due to work, family, and social duties, influence shopping behavior based on the quest for efficiency and convenience (Global Data, 2018).

Currently, 35% (29m people) of the German population are aged between 10 and 40, and therefore considered digital natives (Destatis, 2019). Similarly, about 33% (3.4m people) of Portuguese are digital natives, born between 1980 and 2010 (Pordata, 2018).

2.2 Digital Transformation in Businesses and Industries

2.2.1 Definition

"Digital business transformation is the process of exploiting digital technologies and supporting capabilities to create a robust new digital business model" (Gartner, 2020).

Opposed to the frequent assumption that *digital business transformation* implies the one-time set-up of technology within part of a company, it really means an infinite agile and circular process. It requires implementation in not only one department but the company as a whole, thus, leading to organizational transformation (Yokoi et al., 2019). The integration of technology itself does not automatically provide competitive advantage since, nowadays, technology is seen as a commodity available to virtually every competitor (Carr, 2003).

"Technology's value comes from doing business differently because technology makes it possible" (Westerman, 2017).

The development of information technology (IT) in the past 20 years reached critical mass and recently triggered digital transformation. As Carr (2003) predicted, IT was implemented as deeply and naturally in a firm's strategy as the use of electricity.

IT provides tools to transform an organization's business model, and further has the far-reaching power to transform the entire industry the organization is operating in (Mendelson & Kraemer, 1998). Digital business transformation produces irreversible change in the way businesses are competing and, thus, leads to digital transformation of industries (Garriga, 2015; World Economic Forum, 2016).

Digital transformation of industries is understood as the disruptive power of putting technology at the center of organizational strategy, fueling innovation and creating value, digitally transforming a business, leading to re-shaping competitive landscapes, and shifting customer expectations (World Economic Forum, 2016).

2.2.2 Meaning, Opportunities and Threats

Digitization – purchase or built, and integration of technology to improve productivity in a specific business area (Yokoi et al., 2019), may lead to digital business transformation (World Economic Forum, 2016). However, firms tend to mistake this simple digitization for transformation (Yokoi et al., 2019).

Successful digital transformation requires five things: (1) clear digital strategy, (2) visualization and understanding of technology's influence on all business areas, implying organizational transformation, (3) digital mindset that is lived and promoted by the administrators, (4) *digital fluency* at the executive level, and (5) risk-taking as a standard.

Digital fluency relates to executives acknowledging the transformative power of technology but does not necessarily require them to be digital natives (Kane et al., 2015).

Effective digital business transformation provides an organization with competitive advantage. The capabilities of transformation foster innovation in all business areas, even leading to business model innovation (Warner & Wäger, 2018). Within this innovation, companies create digital business transformation that raises consumer demands to the industry, giving organizations the opportunity to create further value for their customers and thus, providing firms with the outlook of higher profits. Within e-commerce as well as OFD, value creation implies higher convenience and increasing efficiency through reducing consumers' time and cost (World Economic Forum, 2016; Statista, 2019a).

Implementing digital transformation is not only based on recognizing its transformative opportunities but first and foremost grounded in the vital need to not fall behind changing market dynamics caused by the digital transformation of industries (Hess et al., 2016; Garriga, 2015). Although one of the success drivers is risk-taking, companies need to reflect on their own specific needs, otherwise risking overspending on unnecessary IT (Carr, 2003). The biggest threat related to digital transformation, independent of the industry, however, is the failure to recognize its existential meaning for business. If the transformation movements are ignored, it will be highly likely to result in the death of the firm (Kane et al., 2015).

For the restaurant industry, digital transformation means a new view of customers and customer experience in the face of technology (Global Web Index, 2020). Technology enables restaurants to collect customer data and meet their increasing demands for convenience through methods adapted from the transformation of retail into e-commerce (Feinberg et al., 2016). Through the creation of new experiences, e.g. online reservations and deliveries, not only can additional revenues be generated, but also new customers are attracted by innovations that meet and ideally exceed customer expectations (The Fork Manager, 2018). If restaurants ignore the importance of technology in their customers' lives and thus, fail to integrate technology into their strategic focus, they will be unable to meet the digital natives' demand and be left behind in the process (Feinberg et al., 2016).

2.2.3 Digital Transformation of Restaurants Through OFD

Food delivery is already transforming the restaurant industry. Today, it is perfectly natural for consumers to choose from a vast selection of restaurants on any given platform, as well as to have as a convenient food ordering experience as they desire. Consumers have been provided with the option to order food right when they want, wherever they want. Since consumers are not willing to give up that comfort, OFD has become the new benchmark for the restaurant industry (Zhong, 2019).

In this, TPOO platforms are transforming the market with data-based innovations and integrations along the value chain to meet consumers' changing demands. For both restaurants and platforms to be successful, strategic focus must lie on the creation of new opportunities, i.a. giving rise to concepts like dark kitchens (Appendix Kc). By offering their food on a TPOO platform, restaurants have the chance to expose themselves to a larger potential consumer base, hence, attract new customers, and specifically on new delivery platforms, benefit from the platform's delivery fleet (Deloitte, 2019).

On an industry level, consumers perceive delivery food as a replacement for a meal at the restaurant. Food sold through TPOO platforms provides the restaurant with lower profits per meal due to additional cost of being on the platform (Deloitte, 2019). However, on average, consumers spend more money when ordering food online (IRI GIRA, 2017), and restaurants do not incur the same human resource cost related to serving the food in-house (Deloitte, 2019). Technologies, which are setting a new standard for the industry, steadily increase consumer desire for convenience (Hirschberg et al., 2016).

Today, restaurants face a digital threat: when consumers want to order food online, but cannot find the restaurant online, they will simply choose another restaurant (Deloitte, 2019).

2.3 Differences in Digital Transformation Between Lisbon and Berlin

2.3.1 Technological Landscape

Technology enables restaurants to respond to industry and consumer preference changes. The participation on TPOO platforms exposes a selection of restaurants to a large customer base while simultaneously providing them with added value through features like cashless payment and status tracking (Deloitte, 2019). The digital landscape that consumers live in shapes their preferences and plays a significant role in the creation of demands concerning e-services like online food delivery (Nielsen, 2018).

In 2019, the world's population counted 7.7bn people, of which 67% (5.1bn people) use a smartphone, and 57% (4.4bn people) are internet users. Of internet users, 91% (almost 4bn people) access the internet via a mobile device. The average time per day a person spends on the internet is 06:42 hours, whereof nearly 50% of the time (03:14 hours) are spent on mobile devices (Hootsuite & We Are Social, 2020).

Portugal's population counted 10.3m in 2019. 78% (8m people) of the Portuguese are internet users, of which 89% (7.1m people) connect via mobile device. Per day, on average, a Portuguese spends 06:38 hours on the internet, with 37% of the time spent on a mobile device

(02:27 hours). On average, a Portuguese has 8.5 social media accounts (Hootsuite & We Are Social, 2020).

Germany's population counted 82.3m in 2019. 96% (79m people) of Germans are internet users, of which 81% (64m people) connect via mobile device. Per day, on average, a German spends 04:37 hours on the internet, with 33% of the time spent on a mobile device (01:30 hours). A German typically has 5.1 social media accounts (Hootsuite & We Are Social, 2020).

In recent years, the share of mobile internet usage of total time spent on the internet, increased overall (Hootsuite & We Are Social, 2020). 60% of Germans and 53% of Portuguese state that they can't imagine their everyday life without the internet (Statista, 2020c).

Looking at the overall technological business landscape, German tech start-ups raised record sums in 2019 with the highest share of capital going to Berlin. Therein, mobility and e-commerce companies received most of the funding volume in 2018 and 2019 (Ernst & Young, 2020). Similarly, Portugal experiences growing investments in information and communication technologies, which is expected to be a pillar of economic growth in the future (Ernst & Young, 2019).

2.3.2 Cultural Landscape

Culture is defined as the collective behavior, rules, and norms of a group (nation), that make it different from other groups of people (nations) (Hofstede, 2011).

Hofstede (2011) defines the following six cultural dimensions:

(1) power distance	- extent of hierarchical acceptance
(2) individualism vs. collectivism	- importance of self's needs over group's
(3) masculinity	- value of achievement and status
(4) uncertainty avoidance	- extent of threat prevention
(5) long-term vs. short-term orientation	- extent of future or past inclination
(6) indulgence	- extent of gratification and enjoyment

(Hofstede, 2011; Hofstede Insights, 2020a)

Regarding power distance, Germany scores significantly lower than Portugal, indicating that Portuguese are more willing to accept power differences in social hierarchies than Germans, where power is distributed by knowledge. On the individualism dimension, Germany

scores much higher than Portugal. Thus, Germans tend to put their own needs above the group's, where Portuguese are rather collectivist, based on relationships and group responsibilities. Further, Germany seems to have a rather masculine culture, meaning that status and performance are valued highly. In comparison, for Portuguese, success is rather measured relative to enjoyment. Portugal appears highly uncertainty avoidant, where people have an intrinsic motivation for rules and safety of well-being. Through their strong tendency for uncertainty avoidance, Portuguese might show some hesitance towards accepting innovations. Germany tends to be less uncertainty avoidant than Portugal; however, people still value precision and exact guidelines very highly. As for masculinity, the past seems of high importance to Portuguese, whereas Germans rather focus on what is next to come. Considering Hofstede's indulgence dimension, Germans and Portuguese have rather low values of self-gratification and enjoyment, indicating that indulgence is not embedded in either society (Hofstede Insights, 2020b). (Appendix C)

2.3.3 Culinary Landscape

Food culture is deeply rooted in a country's culture and subject to large variations between different cultures (Beer et al., 2002), thus, implying that restaurants not only broadly impact economy but also culture (Deloitte, 2019).

In Portugal, the fifty-year long dictatorship of Prime Minister António de Oliveira Salazar impacted the county's history and food culture (Beer et al., 2002). In Lisbon, the so-called *quiosques de refrescos* (= refreshment kiosks) were an integral part of the city's culture for a long time, but forbidden under Salazar. After the regime ended in 1974 (Beer et al., 2002), it took 35 years for the first *quiosques* to open again (NPR, 2016). These *quiosques,* which today tend to be open 24/7, are the manifestation of the Portuguese feeling of community and represent social meeting points outside of people's own homes for interactions and discussions (NPR, 2016).

When it comes to eating outside of their own homes, Portuguese opt for a quick meal during lunchtime. Snack bars like *quiosques* and cafés are popular amongst the population because they offer affordable options for anybody who is not able to have a meal at home, and thus, is forced to eat out on working days (Appendix Ka). This reflects the deeply rooted emphasis on the concept of family. It includes building strong bonds, loyalty, and long-term commitment within families (Hofstede Insights, 2020b).

Today, 50% of all cafés and restaurants in Portugal are located in Lisbon and the South Coast area, with a total number of 6,350 outlets (Appendix Ka).

In Germany, food culture is very flexible, with not only one typical German cuisine. German food shows influences from all its neighboring countries with distinct regional differences. This reflects the complex German culture that is marked by history (Heinzelmann, 2014). Shortly after World War II ended in 1945, the country was separated into East and West until unification in 1989 (Minkenberg, 1993). Throughout this time of separation, both areas developed different regional foods. Within the following 30 years of unification, German cuisine was shaped by influences from all over the world, making it a rather global than traditional food culture (Heinzelmann, 2014). Eating outside of home is a common and favorable leisure activity for Germans (Statista, 2019c).

In Berlin, there are roughly 5,000 restaurants (Berlin.de, 2020), making up only about 7% of the total number of restaurants in Germany (Statista, 2019c).

2.4 Trends Within OFD

Trends are divided into digital and consumer. Both perspectives are interlinked, thus, increasing consumer needs foster digital innovations, vice versa (Statista, 2019a; Global Data, 2018; Marks & Foroughi, 2017; Hirschberg et al., 2016).

OFD experiences four existential consumer trends: (1) lack of time, (2) changing demographics, (3) *hyper-connectivity*, and (4) "*insperiences*" (Global Data, 2018).

Since available free time becomes increasingly rare for the new generations because of higher workloads and rising social responsibilities, younger consumers are progressively looking for convenient solutions (Global Data, 2018). The benefit and ease of everything being only one click away foster the need for on-demand deliveries to facilitate the new consumer's busy lives. Digital natives as the new consumer generation trust in technologies and appreciate solutions that let them experience the convenience of digital on-demand services (Appendix Kb). From this innate digital thinking arises a *hyper-connectivity,* which relates to the concept of the Internet of Things (IoT), implying usage of a network of various connected technologies and devices 24/7. Since the new generations are constantly looking for novelty and selection but increasingly desire to enjoy the comfort of home, within OFD, they are requesting on-demand restaurant experiences to create their "*insperiences*" (Global Data, 2018). At the root

lies the desire to increase convenience, driven by and, in turn, fueling digital trends (Deloitte, 2019; Statista, 2019a).

Three relevant digital trends are observed: (1) voice interface, (2) IoT, and (3) autonomous delivery (Statista, 2019a; Marks & Foroughi, 2017; Global Data, 2018). The following use case might illustrate the integration of voice interface into OFD: a consumer orders food by giving a voice command to their car on their commute with the food being delivered right when the consumer gets home. IoT in OFD ties in with voice interface integration. It implies increasing connectivity and communication of devices that enable online food ordering through digital assistance devices like Amazon's Alexa or Apple's Siri (Global Data, 2018; Statista, 2019a). Autonomous cars, robots, and drones are summarized as autonomous delivery (Marks & Foroughi, 2017). Tests have already started; Domino's trialed utilizing robots and drones for pizza delivery in 2016 (Business Insider Intelligence, 2020).

The competitive nature of OFD requires TPOO platforms and restaurants to reinvent themselves continuously. One relevant trend kicked off by Deliveroo in 2016 is the concept of dark kitchens known as Deliveroo Editions (Global Data, 2018). These kitchens are designed as delivery-only cooking spaces provided for restaurants to manage higher demand through online orders (Deloitte, 2019). Dark kitchens require less capital to set up since they do not require prime locations and dine-in areas to attract consumers. With additional dark kitchen space, restaurants can serve higher numbers of customers at lower cost (Lien, 2017).

At the root of the development lies the need to match consumer's increasing desire for convenient connected solutions as well as the creation of new demands (Deloitte, 2019).

2.5 Industry Outlook – Before COVID-19

In both Lisbon and Berlin, further shifts can be expected through the entry of new players. Ride-sharing app provider Bolt started its own OFD operations Bolt Food in 2019 in selected markets (Schulze, 2019). In early 2020, Bolt announced their expansion plans to Portugal; Germany could be another potential new market. To stay competitive, Berlin OFD requires increased innovativeness and new ways of consumer understanding to be ready for potential new market entrants like Bolt, Uber EATS, or Glovo (Appendix Kc, Appendix Ke).

Overall, there are major opportunities regarding expansion of food delivery into new category delivery. With grocery and beverage delivery, there is room for OFD platforms to access a wider range of delivery goods, although, differing margins and cost must be taken into consideration (Appendix Kc, Appendix Ke). Responding to shifts in consumer behavior

through OFD has disrupted the restaurant industry. New consumer demands have been created, changing the industry irreversibly (Deloitte, 2019; Zhong, 2019).

3 Literature Review

A study was conducted to understand the impact of changing consumer demographics and preferences in the face of technology on e-commerce and, consequently, TPOO behavior. The study additionally aims at exploring differences between Portuguese and Germans.

The below chapter provides a comprehensive overview of the theoretical standpoint of research regarding e-commerce and specifically OFD. It further illustrates motivations for TPOO, as well as measures for technological adoption and individualism, as defined by Hofstede (2011).

3.1 E-Commerce and E-Services

Increasing e-commerce availability and use are seen as a response to the main consumer trends described before (Nielsen, 2018; Global Data, 2018). As consumers experience less free time, they demand convenient shopping solutions. Since shopping decisions are made, i.a., based on accessibility of the shopping venue, e-commerce provides the option to shop online any time of day, from any place, and any digital device (Beauchamp & Ponder, 2010). Digital natives demand adoption of technologies in all aspects of retail and shopping for goods and services to match their connected digital lives (Nielsen, 2018). Hence, e-commerce leverages technologies to meet consumer demands, enhance consumer experience, and create consumer value (Rayport & Sviokla, 1995).

A large part of food delivery orders is still made by phone call, however, the number of OFD consumers is increasing (Yeo et al., 2016). This is raising the question of key drivers for consumers' TPOO platform usage.

3.2 Hedonic Motivation

Motivation plays a determining role for general purchase intentions (Kang & Park-Poaps, 2010). Consumer motivation has been shown to consist of two parts: utilitarianism and hedonism. Where utilitarian motivation describes the necessity of the purchase based on rational decision-making, hedonic motivation relates to emotion-driven decisions (Batra & Ahtola, 1990). Previous research suggests that although actual purchasing behavior seems to be rooted in rational thinking, feelings significantly influence the process. The need to look for

a product arises from the utilitarian motivation. However, when a consumer enjoys the process of searching for the product and further expects positive experiences provided by the product itself pre- and post-purchase, this will lead to the actual purchase (Babin et al., 1994). In this, enjoyment is defined as a feeling of pleasantness with levels of happiness, joy, and entertainment. Concerning online shopping, research suggests that enjoyment might be a key determinant of consumer's online shopping attitude and intention (Monsuwé et al., 2004).

Holbrook and Hirschman (1982) argue that hedonic motivation substantially extends traditional research in consumer behavior to study influences on shopping behavior. Yeo et al. (2016) suggest that hedonic factors (perceived convenience and post-usage usefulness) influence attitude towards OFD.

Current research starts to examine the effect of hedonic motivation on attitude towards online shopping and OFD. However, it does not fully study the impact of hedonism on actual purchasing behavior in online shopping and, specifically, OFD. This creates the need to research the connection of hedonism to online shopping and OFD attitude, and extend to actual behavior.

3.3 Technological Adoption and Digital Maturity

As a measure of technological adoption, the Technology Acceptance Model (TAM) is prevalent in research within information systems, as well as consumer and organizational behavior (Yeo et al., 2016). Originally, TAM was designed to measure the degree of individuals' acceptance and use of technology based on how useful and easy to use they perceive that same technology to be (perceived usefulness and perceived ease of use, respectively) (Davis, 1989). The model has then been extended to include the effect of technology usage enjoyment on acceptance and actual use of technology (Davis et al., 1992). Initially designed to study acceptance of task-related systems in the workplace, specifically computers, TAM later has been applied to other digital fields like e-commerce (Hsiao & Yang, 2011). Various researchers have made specific adaptations to the model. Monsuwé et al. (2004) extend TAM through external factors like consumer traits to measure the influence of perceived usefulness, perceived ease of use, and enjoyment of online shopping on attitude and intention to shop online.

TAM focuses on measuring the influence of perceived usefulness, perceived ease of use, and enjoyment on actual use of a single technology. The model does not take into account an individual's general acceptance, attitude, and use of multiple technologies. Therefore, it is hypothesized that a person's general technological maturity would significantly influence their

attitude towards and use of e-commerce and OFD, creating the need for a variable that measures overall personal digital maturity.

3.4 Culture

Previous research suggests that culture plays a significant role in shaping consumer behavior, especially product diffusion and the adoption of product innovations (Dwyer et al., 2005). Since Germany and Portugal reach distinctively different scores on the individualism dimension, it is an important variable to consider when studying technological adoption.

It can be seen that diffusion of technologies is different for countries with high scores on individualism compared to countries with low individualism (collectivist cultures) (Dwyer et al., 2005). Germany is a highly individualist culture with a score of 67/100. Portugal, on the other hand, reaches a score of 27/100, implying high collectivist tendencies. In other words, the group's needs are more important than the individual's (Hofstede Insights, 2020b). This difference implies that technological adoption rates would be distinctively different for Germany and Portugal.

Although culture is a widely studied topic in many areas of organizational and consumer behavior, there is a lack of research that specifically examines the effect of individualism on attitude and behavior in e-commerce and OFD as part of the online services landscape in Germany and Portugal.

4. Conceptual Framework and Hypotheses

The results of the literature review, combined with the thorough analysis of the fieldwork outcomes, allowed the author to develop the conceptual framework (Figure 2).

This chapter provides hypotheses that will be explored to generate an understanding of the effects of technology adoption, motivation, and culture on online shopping and *third-party online ordering* (TPOO) on Portuguese and German digital natives in Lisbon and Berlin, respectively. This study specifically examines the impact of a consumer's degree of digital maturity (low vs. high) on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending). Further, this research assesses the mediating effect of online shopping enjoyment on the previous relationship, as well as the moderating effect of culture based on Hofstede's (2011) collectivism versus individualism dimension.

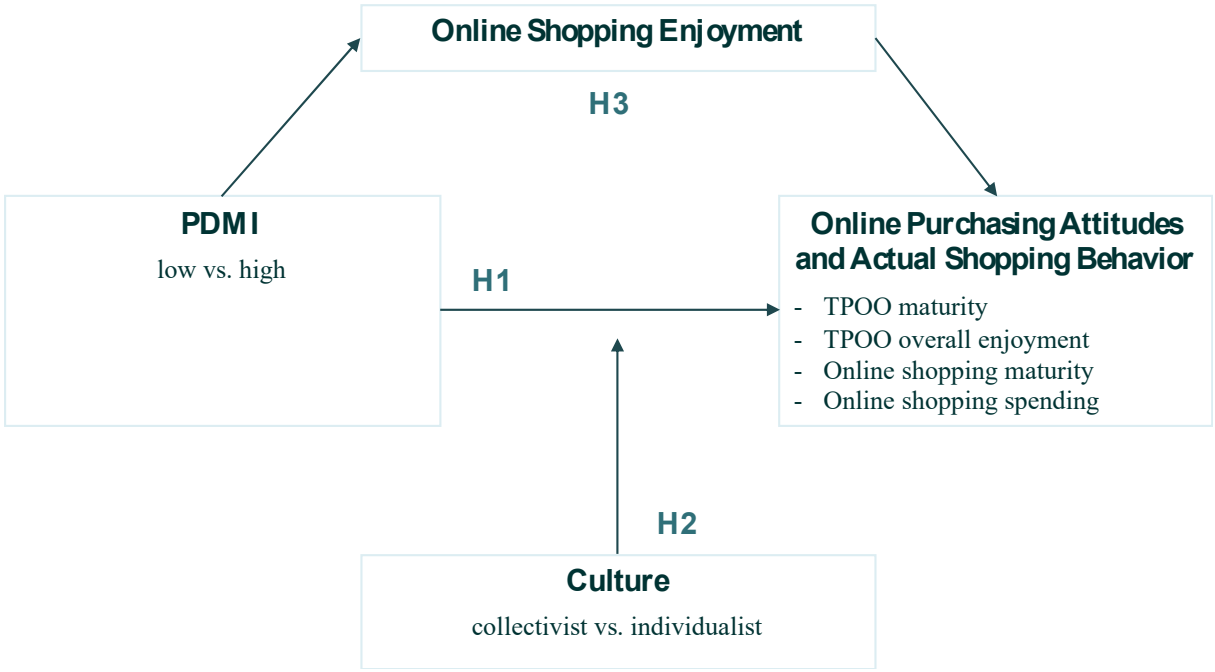


Figure 2: Conceptual Framework

4.1 Hypotheses

As Yeo et al. (2016) suggest, technological adoption levels based on the Technology Acceptance Model (TAM) influences attitude and behavioral intention towards online shopping of products and services, including OFD. According to prior studies by Nielsen (2018), increasing technological connectivity and adoption lead consumers to purchase services increasingly online. This implies that general digital adoption based on multiple technologies should have an effect not only on behavioral intention but further on actual behavior and motivation. This leads to the first hypothesis:

H1: *The personal digital maturity index (PDMI) (low vs. high) will have an impact on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending).*

Van Slyke et al. (2010) suggest that culture has a significant impact on attitude and intention of purchasing goods and services online, and has been shown to influence technological adoption (Leidner & Kayworth, 2006). Prior literature proposes that individualism can be used as one indicator of the spread and acceptance of new technologies (Dwyer et al., 2005). Research largely uses the individualism vs. collectivism dimension as a key determinant for consumer behavior. Sabiote et al. (2013) suggest the existence of a stronger positive effect on consumers' online perceptions for individualist cultures than for collectivist

ones. Moreover, individualism indicates a positive impact on acceptance of new products (Yeniyurt & Townsend, 2003), and is positively associated with higher innovativeness (Lynn & Gelb, 1996). According to Hofstede Insights (2020b), Portugal is rather collectivist, Germany rather individualist. Consequently, it is hypothesized that the strength of the influence of personal digital maturity on online purchasing attitudes and actual shopping behavior will not be the same for Portugal and Germany. This leads to the second hypothesis:

H2: *Culture (collectivist vs. individualist) will moderate the effect of PDMI (low vs. high) on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending), so that:*

H2a: *Consumers with individualist culture will show higher online purchasing attitudes and actual shopping behaviors for high (low) levels of PDMI.*

H2b: *Consumers with collectivist culture will show lower online purchasing attitudes and actual shopping behaviors for high (low) levels of PDMI.*

Previous studies suggest that emotions drive actual behavior (Babin et al., 1994). Past literature has examined the effect of enjoyment as a feeling of fun and joy of the online shopping process on attitude towards online shopping (Childers et al., 2001), as well as hedonic motivation (perceived convenience and post-usage usefulness) on attitude towards OFD (Yeo et al., 2016). Research by Raghunathan et al. (2006) suggests that enjoyment in terms of fun and excitement is a driver for consumers to opt for less healthy food. Since delivery food is stigmatized as fast and inexpensive (Appendix Kf), it is proposed that consumers perceive delivery food as less healthy food. Since it has been shown that decision-making is rooted in utilitarianism but taken over by hedonic motivation (Babin et al., 1994), it is hypothesized that enjoyment of online shopping will play a mediating role on the relationship between personal digital maturity and online purchasing attitudes and actual shopping behavior.

Thus, the third hypothesis is stated:

H3: *Online shopping enjoyment will mediate the relationship between PDMI (low vs. high) and online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending).*

5. Methodology and Data Collection

5.1 Research Method

To test the above hypotheses, two experimental studies were conducted to collect primary data. Due to the extent of the data to be collected, the author decided to run two main studies to optimize the participant's time and attention. The titles of the two studies are Food Ordering Behavior and General Digital Adoption, study 1 and study 2, respectively. Both studies underwent a pre-test with a group of five individuals per study to clarify possible misunderstandings. During the pre-tests, no problems were identified. Thus, both main studies were initiated. Due to the nature and complexity of the research topic and specificity of the target segment, data was collected through the web-based survey platform Qualtrics. Additionally, paper questionnaires were used whenever the conditions would not allow for digital tool usage. The selection of the participants for both data collection methods is described in the next paragraph.

5.2 Sampling

Both studies used a non-probability convenience sampling technique. Participants were identified by the author according to the target group segmentation and contacted through online media, including WhatsApp, Facebook, and LinkedIn, leveraging the author's primary and extended personal and professional network. The target group comprises digital natives between 18 and 30 years old, living in Lisbon or Berlin, of Portuguese or German nationality. The age segment was chosen narrowly to include legal adults as well as to limit the upper interval to include part of generation Y that is most connected to growing up in the emergence of the internet. In order to obtain a representative sample size, paper questionnaires were distributed in Lisbon at the beginning of March 2020. Portuguese participants were approached in small groups at the approximate end of their lunchtime and asked the segmentation questions after the author briefly introduced herself. Only individuals who fit the target group were given the paper questionnaires. The author ensured physical space between the participants and eliminated all interactions between the respondents during their answer period to minimize any potential biases during data collection. The participants' names were not recorded to ensure the same anonymity as through Qualtrics. The same procedure was intended for Berlin, however, the legislative measures enforcing social distancing due to COVID-19 didn't allow for the paper questionnaire method, thus extending the collection period through Qualtrics.

5.3 Research Instruments

Two main studies were created in English language, launched on February 27th, 2020 and stayed active for collection until April 15th, 2020. The studies were distributed online and offline. Study 1 obtained a sample size of one hundred and sixty-seven (167) responses, study 2 reached one hundred and fifty-two (152) answers. After the collection was completed on April 15th, 2020, the participants' respective data from both studies were merged (see process described below), and thus, obtained a total valid sample size of one hundred and eight (108) responses.

5.4 Design and Procedure

The purpose of this research is to examine the influence of personal digital maturity (low vs. high) on TPOO maturity, TPOO overall enjoyment, online shopping maturity, and online shopping spending. Further, the moderating role of culture (collectivist vs. individualist) in this relationship between personal digital maturity and consumers' attitudes and behaviors is tested. Moreover, the research investigates if online shopping enjoyment mediates the relationship beforementioned. The study design followed a 2 (PDMI: low, high) x 2 (culture: collectivist, individualist) between-within subjects' design. The mediator – online shopping enjoyment was assessed as a continuous variable. The dependent variables are TPOO maturity, TPOO overall enjoyment, online shopping maturity, and online shopping spending.

Study 1 consists of six parts. The first part identified the respondent as part of the target group, asking segmentation questions regarding age, city of residence, and nationality. If the participant did not belong to the target group, the survey ended immediately. To gain insight into individualism distribution of this study's sample, four questions by Hofstede & Minkov (2013a) were posed next. Based on the calculation (Appendix D), results show scores of 31 for Portuguese and 65 for Germans. However, these indices are not used in further analyses since they only give an indication of individualism but cannot be compared to Hofstede's original research (Hofstede & Minkov, 2013b). Thirdly, preferences and actual behavior regarding food culture were requested. Next, attitude, preferences, and actual behavior within TPOO were measured. For the fifth part, the participant had to answer personality questions based on the Ten-Item Personality Inventory questionnaire by Gosling et al. (2003) as a short measure for personality. Lastly, the respondent was asked to provide demographics in five questions and thanked for participation. (Appendix E)

Study 2 consists of five parts. Following the same pattern, the participant was evaluated as part of the target group. The second part consisted of the first set of questions used to determine PDMI, explained in detail in paragraph 5.5. Next, the participant's attitude, preferences, and actual behavior within online shopping were examined. Fourth, the second set of questions used in PDMI followed. Lastly, the respondent was again asked to provide demographic data and thanked for participation. (Appendix F)

The respective data from both studies was aggregated for each unique respondent. To successfully obtain a valid merged data set, first, both data sets were downloaded from Qualtrics into Excel. The author went through each response and aggregated the data from both studies according to age, city of residence and nationality, as well as start and completion times, IP address, recorded date and time, location latitude and longitude, as well as the demographic data collected at the end of each study (age, gender, employment status, household size, marital status, monthly available income). Since both studies were sent out simultaneously to the respondents, the strong assumption is made that the same respondent in both studies can be identified based on the interrelation of values from the marked variables. Within the data sets for study 1 and 2, a unique identifier was manually introduced by the author based on the matching values in all the beforementioned columns. Then, all data was transferred into a third Excel file and sorted according to the unique identifier. Further, calculated PDMI was added to the dataset for each individual. In the following, the merged data from study 1 and 2 is referred to as 'the main study'.

5.5 Variable Description

INDEPENDENT VARIABLE

Personal Digital Maturity Index – PDMI (low vs. high) – this variable was calculated based on the personal digital maturity framework developed internally at Católica School of Business & Economics (Appendix G). PDMI determines digital maturity based on four vectors explaining digital aptitude, with distinct weights: (1) use of digital devices (21.5%), (2) digital relationships (25.0%), (3) innovation (32.0%) and (4) digital transactions (21.5%). Each vector has a different weight of influence on the total PDMI, defining its relevance in digital maturity.

The value of a vector is determined based on several questions from study 2. Each question within a vector received a specific weighted influence on the vector (question-specific weight). The weighting was necessary because not all vectors and questions contribute to the determination of PDMI with equal importance.

The questions' nominal answer keys were re-coded into score points to calculate a respondent's score for each question. Respondents received one score point per digital device and one score point per social media account. The remaining answers were coded into score points based on a raking, e.g. the better the internet access, the higher the screen time, or the higher the agreement with digital trends, the higher the respective score point per question. The score points obtained per question are then weighted based on the question-specific weight. These obtained weighted points per question are added up for each vector. The result for each vector was then weighted based on the respective vector's weight.

The total maximum weighted (taking into account question and vector weights) point score amounts to 6.91 points, which means that each respondent could obtain a minimum of 0 and a maximum of 6.91 points to measure their personal digital maturity.

High or low personal digital maturity is determined based on a 50% benchmark. This means that respondents were allocated with "low PDMI" when their score was below and or equal 50% (= 3.455 points). Respectively, respondents with a score of above 50% were allocated with "high PDMI". This process led to a dichotomous independent variable, namely PDMI (low vs. high).

MODERATOR

Culture (collectivist vs. individualist) – according to Hofstede Insights (2020a), measured based on nationality by asking the participant if they were of Portuguese or German nationality, also measured as a dichotomous variable.

MEDIATOR

Online shopping enjoyment – was measured on a 7-point Likert scale, asking the respondent how much they like to order products online (from 1 = "strongly dislike" to 7 = "strongly like").

DEPENDENT VARIABLES

TPOO maturity – was measured on a 7-point Likert scale, asking the participant to rate how often they order food through TPOO per month (from 1 = "never" to 7 = "daily").

TPOO overall enjoyment – to assess the respondent's overall enjoyment related to ordering through TPOO platforms, the variable TPOO overall enjoyment was created, ("Ordering ready-to-eat food through a platform like Lieferando or Uber EATS is convenient", Ordering in ready-to-eat meals is more preferable than going out to eat") from 1 = "strongly disagree" to 7 =

"strongly agree" and ("How much do you like to order in?") from 1 = "strongly dislike" to 7 = "strongly like". A Principal Component Analysis (PCA) with varimax rotation was conducted to explore respondents' overall TPOO enjoyment. The factor analysis implied that all three items measuring overall enjoyment of TPOO loaded heavily (with factor loading of .72, .72 and .83, respectively) on one factor (Cronbach $\alpha = .63$, which indicates moderate reliability and can be used for further analyses (Hinton et al., 2014)).

Online shopping maturity – was measured on a 7-point Likert scale, asking the participant to rate how often they order products online per month (from 1 = "never" to 7 = "daily").

Online shopping spending – was measured on a 6-point scale, asking the respondent to provide approximate spending on online purchases (in €100 steps from 1 = "0 - 100€" to 6 = "> 500€").

6. Analysis and Results

6.1 Sample Characterization

The main study's sample consists of 108 participants – 59 of German nationality and 49 Portuguese. 48 of the respondents who are German live in Berlin; the remaining 11 Germans live in Lisbon. All 49 Portuguese live in Lisbon. Within the sample, there are 62% females and 37% males; the remaining preferred not to say. Most respondents in the sample are aged 24 to 26 years old (38.0%), followed by 27 to 30-year-olds (26.9%) and 21 to 23-year-olds (19.4%). The remaining 15.7% is between 18 and 20 years old. The two largest groups within employment status are full-time employees and graduate students (33.3% each), followed by 23.1% undergraduate students. The sample further consists of high school students, self-employed, part-time employed, and unemployed respondents (sorted in descending order). Most of the sample is single (68.5%), followed by respondents in a domestic partnership (27.8%). The remaining group of respondents is married (3.7%). 36.1% of the respondents are living in a household of two, followed by 27.8% in a household of three. Most Germans residing in Berlin live in households of two (45.8%), whereas 53.1% of Portuguese in Lisbon live in households of either three or two people. This is in accordance with marital status. Most Portuguese in the sample claim an average available monthly income of < €500 (42.9%), followed by 30.6% with 500 - €1,000 available. 33.9% of Germans within the sample claim 500 - €1,000, followed by 23.7% with 1,000 - €1,500.

Within the sample, 61% have high personal digital maturity, and 39% show a low PDMI. Of Germans, 56% have high PDMI, 44% obtained low PDMI. Whereas, 67% of Portuguese have high PDMI and 33% low PDMI.

6.2 Main Results

To test the hypotheses, various analyses were conducted. Multivariate analysis of variance (MANOVA) was used to examine the effect of PDMI (low vs. high) on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending) as well as to examine the moderating role of culture (collectivist vs. individualist) on this relationship. Further, to test for mediation, regression analysis was conducted using Hayes' Process, model 4, testing the mediating role of online shopping enjoyment also on the relationship between PDMI and the dependent variables.

6.2.1 The Impact of Personal Digital Maturity on Online Purchasing Attitudes and Actual Shopping Behavior

H1: *The personal digital maturity index (PDMI) (low vs. high) will have an impact on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending).*

To test hypothesis 1, a multivariate analysis of variance (MANOVA) was conducted. A significant PDMI main effect was obtained on TPOO maturity (F (1, 106) = 4.48, $p < .05$), on TPOO overall enjoyment (F (1, 106) = 11.51, $p < .001$) and on online shopping maturity (F (1, 106) = 5.00, $p < .05$). A non-significant online shopping spending main effect was obtained (F (1, 106) = 2.03, p = n.s.) (Table 1).

Table 1: Results for the One-way Interaction of PDMI

	PDMI Main Effect *F test*
TPOO maturity	4.48*
TPOO overall enjoyment	11.51***
Online shopping maturity	5.00*
Online shopping spending	2.03

**p < .05; **p < .01; ***p < .001*

Further independent sample's t-tests were conducted on the three dependent variables. The means of the two independent groups of observations (low PDMI vs. high PDMI) were compared. From the results, it can be observed that there is a significant difference in the means between low and high personal digital maturity for TPOO maturity, TPOO overall enjoyment, and online shopping maturity. The results indicate that respondents with high personal digital maturity order food via TPOO more frequently than respondents with low digital maturity (TPOO maturity: $M_{low\ PDMI} = 1.98$, $SD = .72$, vs. $M_{high\ PDMI} = 2.30$, $SD = .82$; $t\ (106) = -2.12$; $p < .05$). Further, respondents with high digital maturity seem to overall enjoy TPOO significantly more than the low digital maturity group (TPOO overall enjoyment: $M_{low\ PDMI} = 4.10$, $SD = 1.05$, vs. $M_{high\ PDMI} = 4.81$, $SD = 1.08$; $t\ (106) = -3.39$; $p < .001$). High digital maturity participants shop online significantly more often than low digital maturity participants (online shopping maturity: $M_{low\ PDMI} = 2.14$, $SD = .75$, vs. $M_{high\ PDMI} = 2.48$, $SD = .79$; $t\ (106) = -2.24$; $p < .05$), partially supporting hypothesis 1 (Table 2).

Table 2: Results for Independent Sample's t-test of PDMI on Dependent Variables

	PDMI				
	low		high		
	Mean	*SD*	*Mean*	*SD*	*t-test*
TPOO maturity	1.98	.72	2.30	.82	-2.12*
TPOO overall enjoyment	4.10	1.05	4.81	1.08	-3.39***
Online shopping maturity	2.14	.75	2.48	.79	-2.24*

**p < .05; **p < .01; ***p < .001*

Overall, results show that respondents with high personal digital maturity, on average, order significantly more food online through TPOO and overall enjoy it more than respondents who are low on personal digital maturity. Further, respondents with a high level of personal digital maturity on average shop online significantly more frequently compared to the low personal digital maturity group. However, respondents with high personal digital maturity, on average, seem to spend the same amount of money on online shopping as respondents with low personal digital maturity.

6.2.2 The Moderating Effect of Culture

H2: *Culture (collectivist vs. individualist) will moderate the effect of PDMI (low vs. high) on online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending), so that:*

For hypothesis 2, a multivariate analysis of variance was conducted to test the moderating role of culture on the relationship between PDMI and the dependent variables (online purchasing attitude and actual behavior: TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending). A 2 (PDMI: low vs. high) x 2 (culture: collectivist vs. individualist) interaction effect was obtained on online shopping spending (F (1, 104) = 4.51, $p < .05$), in spite that no interaction effects were observed on online shopping enjoyment, TPOO maturity, TPOO overall enjoyment and online shopping maturity (all variables: *F's* (1, 104) < 2.68, *p's* > .10) (Table 3).

Table 3: Results for the Two-way Interaction Between PDMI and Culture

	Culture Main Effect	**PDMI Main Effect**	**Culture* PDMI**
	F test	*F test*	*F test*
Online Shopping Enjoyment	3.69	21.10***	.44
TPOO maturity	4.12*	6.49*	2.68
TPOO overall enjoyment	3.03	9.96**	.01
Online shopping maturity	15.27***	7.73**	.06
Online shopping spending	17.36***	3.26	4.51*

**p < .05; **p < .01; ***p < .001*

H2a: *Consumers with individualist culture will show higher online purchasing attitudes and actual shopping behaviors for high (low) levels of PDMI.*
H2b: *Consumers with collectivist culture will show lower online purchasing attitudes and actual shopping behaviors for high (low) levels of PDMI.*

To test H2a and H2b, further independent sample's t-tests were conducted on the dependent variable online shopping spending. The results show that the difference in means of online shopping spending for respondents with low digital maturity and collectivist culture compared to respondents with low digital maturity and individualist culture are not significant (online shopping spending: $M_{low\ PDMI,\ collectivist}$ = 1.06, SD = .25, vs. $M_{low\ PDMI,\ individualist}$ = 1.27, SD = .45; t (40) = -1.67; p = n.s.). In contrast, there is a significant difference in means of online shopping spending for high digital maturity respondents who are collectivist and high digital maturity respondents who are individualist (online shopping spending: $M_{high\ PDMI,\ collectivist}$ = 1.03, SD = .17, vs. $M_{high\ PDMI,\ individualist}$ = 1.67, SD = .78; t (64) = -4.59; p = .000) (Table 4).

Table 4: Results for Independent Sample's t-test of the Effect of 2 (PDMI) x 2 (Culture) Interaction on Online Shopping Spending

Online Shopping Spending		Culture				
		collectivist		individualist		
		Mean	*SD*	*Mean*	*SD*	*t-test*
PDMI	**low**	1.06	.25	1.27	.45	-1.67
	high	1.03	.17	1.67	.78	-4.59***

**p < .05; **p < .01; ***p < .001*

Findings show that culture exerts a particular moderating effect on participants with high rather than low PDMI. This finding is relevant since it shows that there is an actual higher online spending behavior seen for individualists compared to collectivists. Thus, the size of the effect of high personal digital maturity on how much money the respondent spends online depends on the respondent's culture, partially supporting hypothesis 2.

6.2.3 The Mediating Effect of Online Shopping Enjoyment

H3: *Online shopping enjoyment will mediate the relationship between PDMI (low vs. high) and online purchasing attitudes and actual shopping behavior (TPOO maturity, TPOO overall enjoyment, online shopping maturity, online shopping spending).*

To test hypothesis 3, regression analysis was performed using Hayes' Process (2013, 2015), Model 4 based on 5000 bootstraps. There is no proof of a mediation effect when the confidence interval encloses the value zero (Hayes, 2013, 2015), respectively, there is 95% confidence of mediation, when the confidence interval does not straddle zero.

The results indicate that online shopping enjoyment mediates the effect of PDMI on TPOO maturity (Table 5). Both effects of PDMI on online shopping enjoyment (b = 1.13, SE = .26, p < .001, 95% CI = [.61, 1.65]) and the effect of online shopping enjoyment on TPOO maturity (b = .15, SE = .06, p < .01, 95% CI = [.04, .26]) are significant. The indirect effect shows that online shopping enjoyment mediates the impact of PDMI on TPOO maturity (*indirect effect* = .17, SE = .07, p < .05, 95% CI = [.05, .33]), and the conditional direct effect yields no significance (*direct effect* = .16, SE = .16, p = n.s., 95% CI = [-.17, .48]), thus, online shopping enjoyment fully mediates the effect of PDMI on TPOO maturity.

Table 5: Online Shopping Enjoyment as a Mediator on the Effect of PDMI on TPOO Maturity

Outcome	Indirect Effect Paths	Indirect Effect	Lower CI	Upper CI
1	PDMI → Online shopping enjoyment	1.13***	.61	1.65
2	Online shopping enjoyment → TPOO maturity	.15**	.04	.26
3	PDMI → Online shopping enjoyment → TPOO maturity	.17*	.05	.33
	Direct Effect Paths	**Direct Effect**	**Lower CI**	**Upper CI**
4	PDMI → TPOO maturity	.16	-.17	.48

**p < .05; **p < .01; ***p < .001*

Mediation analysis shows that online shopping enjoyment also mediates the effect of PDMI on TPOO overall enjoyment. It is observed that both effects of PDMI on online shopping enjoyment (b = 1.13, SE = .26, p < .001, 95% CI = [.61, 1.65]), as well as online shopping enjoyment on TPOO overall enjoyment (b = .28, SE = .07, p < .001, 95% CI = [.13, .43]) are significant. Online shopping enjoyment fully mediates the impact of PDMI on TPOO overall enjoyment (*indirect effect* = .32, SE = .14, p < .05, 95% CI = [.11, .62]) (*direct effect* = .40, SE = .22, p = n.s., 95% CI = [-.03, .83]).

Table 6: Online Shopping Enjoyment as a Mediator on the Effect of PDMI on TPOO Overall Enjoyment

Outcome	Indirect Effect Paths	Indirect Effect	Lower CI	Upper CI
1	PDMI → Online shopping enjoyment	1.13***	.61	1.65
2	Online shopping enjoyment → TPOO overall enjoyment	.28***	.13	.43
3	PDMI → Online shopping enjoyment → TPOO overall enjoyment	.32*	.11	.62
	Direct Effect Paths	**Direct Effect**	**Lower CI**	**Upper CI**
4	PDMI → TPOO overall enjoyment	.40	-.03	.83

**p < .05; **p < .01; ***p < .001*

Further analysis results show that online shopping enjoyment also mediates the effect of PDMI on online shopping maturity (*indirect effect* = .29, SE = .05, p < .05, 95% CI = [.14, .48]). As can be observed, both effects of PDMI on online shopping enjoyment (b = 1.13, SE = .26, p < .001, 95% CI = [.61, 1.65]) and online shopping enjoyment on online shopping maturity (b = .26, SE = .05, p < .001, 95% CI = [.16, .36]) are significant. Indicating full mediation, the conditional direct effect shows no significance (*direct effect* = .05, SE = .15, p = n.s., 95% CI = [-.25, .35]).

Table 7: Online Shopping Enjoyment as a Mediator on the Effect of PDMI on Online Shopping Maturity

Outcome	Indirect Effect Paths	Indirect Effect	Lower CI	Upper CI
1	PDMI → Online shopping enjoyment	1.13***	.61	1.65
2	Online shopping enjoyment → Online shopping maturity	.26***	.16	.36
3	PDMI → Online shopping enjoyment → Online shopping maturity	.29*	.14	.48
	Direct Effect Paths	**Direct Effect**	**Lower CI**	**Upper CI**
4	PDMI → Online shopping maturity	.05	-.25	.35

**p < .05; **p < .01; ***p < .001*

Online shopping enjoyment fully mediates the impact of PDMI on online shopping spending (*indirect effect* = .10, *SE* = .04, $p < .05$, 95% CI = [.04, .19]). The analysis shows significant results for the effects of PDMI on online shopping enjoyment ($b = 1.13$, $SE = .26$, $p < .001$, 95% CI = [.61, 1.65]) as well as online shopping enjoyment on online shopping spending ($b = .09$, $SE = .04$, $p < .05$, 95% CI = [.01, .17]). Since there is a non-significant direct effect (*direct effect* = .06, $SE = .12$, p = n.s. , 95% CI = [-.18, .29]), full mediation is concluded.

Table 8: Online Shopping Enjoyment as a Mediator on the Effect of PDMI on Online Shopping Spending

Outcome	Indirect Effect Paths	Indirect Effect	Lower CI	Upper CI
1	PDMI → Online shopping enjoyment	1.13***	.61	1.65
2	Online shopping enjoyment → Online shopping spending	.09*	.01	.17
3	PDMI → Online shopping enjoyment → Online shopping spending	.10*	.04	.19
	Direct Effect Paths	**Direct Effect**	**Lower CI**	**Upper CI**
4	PDMI → Online shopping spending	.06	-.18	.29

**p < .05; **p < .01; ***p < .001*

The results for mediation analysis on all dependent variables show that online shopping enjoyment indeed mediates the effect of PDMI on online purchasing attitudes and actual shopping behavior. The relationship between a participant's digital maturity and their attitude and behavior when shopping and ordering delivery food online is fully explained by how much they enjoy online shopping, fully supporting hypothesis 3.

7 Analysis Conclusion, Implications and Limitations

This study aimed at understanding the influence of changing consumer demographics and trends within e-commerce and TPOO in Portugal and Germany.

Due to the nature of the research questions (RQ), RQ1 and 3 are addressed separately in chapter 8. Regarding RQ2, research shows, in Germany and Portugal, a person's digital maturity (technological adoption) influences how often they shop and order food online, as well as how much they enjoy OFD from third-party platforms. It must be noted that high digitally mature consumers reach higher frequencies and enjoyment than low digitally mature consumers. When culture was introduced into the analysis, there is an observed difference in value spent within online shopping for people with high digital maturity. Therein, Germans spend more money on online shopping than Portuguese. These findings imply that a person's digital maturity influences online purchasing behavior. However, it must be noted that cultural differences in monthly available income might also affect these results. Culture solely plays a role with respect to money spent online.

In the case, it was shown that convenience lies at the root of consumer trends, which then drives the on-demand economy of OFD. Increasing connectivity and digital natives as the new consumer generation imply rising technological adoption on a personal but also on industry level. Research has proven that digital maturity, indeed, is a driver of frequency and enjoyment of TPOO; however, it could not be shown that culture determines consumer's online food ordering behavior. Technological adoption and online shopping enjoyment drive the digital transformation of food delivery.

7.1 Implications

7.1.1 Theoretical Implications

This study makes considerable contributions to previous findings and extends consumer behavior research in Germany and Portugal. It widens literature examining the effect of technological adoption on actual use of technology through measuring personal adoption of multiple technologies, and attitude towards digital innovations like drone delivery. Current research on consumers' reasons for TPOO usage is expanded by the finding that high personal digital maturity has a positive impact on e-commerce and TPOO enjoyment and usage.

Further, this research contributes to studies within e-commerce. Hedonic motivation in the form of online shopping enjoyment is shown to have a positive influence on actual TPOO usage and attitude. It, therefore, adds to the expansion of research by Yeo et al. (2016) regarding hedonic motivations' impact on online food ordering behavior by adding online shopping enjoyment. By applying a specific target segment in this study, a contribution to literature findings by Monsuwé et al. (2004) is made, since they suspect the effect of enjoyment's

influence on online shopping attitude and intention to vary for type of consumer. This study extends previous research by Van Slyke (2010) examining the effect of culture on online purchasing intention through the consideration of enjoyment, namely online shopping enjoyment as a mediator and TPOO overall enjoyment as a dependent variable.

Lastly, it explicitly expands cultural studies in e-commerce and OFD in Germany and Portugal based on Hofstede's (2011) individualism and with respect to digital maturity.

7.1.2 Practical Implications

Valuable insights for TPOO platforms operating in Germany and Portugal are obtained. Businesses must be aware that within e-commerce and OFD behavior depends on consumers' technological adoption. However, Germans and Portuguese overall seem to have similar behavior, except for online shopping spending. TPOO platforms aim to increase the OFD market as a whole. In line with this, managers must think about facilitating digital adoption as the study has shown that high digital maturity leads to increased frequency and enjoyment of TPOO usage, which in turn drives platforms' goal. Further practical implications are discussed in chapter 8.

7.2 Limitations and Future Research

Concerning participant selection, the author was aware of potential selection bias during the study distribution; however, there still might be other hidden biases and uncertainties.

Within the scope of the study, consumers' TPOO behavior was examined, not taking into account traditional food delivery. This research further focuses on the defined dimensions of differences (technological and cultural) between Portugal and Germany, and does not consider climate, infrastructure, consumer lifestyles with regards to exercise, or average delivery time of TPOO platforms. Additionally, it is not possible to draw conclusions on home-cooking behavior from this study, since it considers restaurant meals only.

This study was conducted during the early stages of the COVID-19 pandemic, which might influence the results obtained.

Generally, future research might take into account more or other urban areas of Portugal and Germany. Moreover, it would be immensely valuable to obtain data on consumer behavior in the long-term after the COVID-19 outbreak of early 2020. Further, longitudinal studies are

highly interesting to understand changes in consumer behavior due to the crisis. This study might be repeated to measure the pandemic's influence on consumers' digital adoption levels, online purchasing attitude and behavior as well as to explore implications for TPOO platforms and restaurants. Changes in home-cooking and restaurant dining should also be examined.

8 Final Conclusion With First Implications of COVID-19 on Consumers, Restaurants and TPOO Platforms

In summary and to answer RQ 1, food delivery started to shift into digital in 2014/15 in Berlin and 2017/18 in Lisbon. The transformation is driven through the qualitatively analyzed demand and supply circle with consumers' desire for convenience at the root.

To answer RQ 3, the developments before, during, shortly after and in the long-term after the COVID-19 pandemic need to be examined.

Regarding consumer behavior before, this study indicates that high personal digital maturity leads to higher frequency and enjoyment of TPOO, and is further mediated by how much the person enjoys to shop online. Within the high digital maturity sample it was shown that Germans spend more money on online shopping than Portuguese, which is again mediated by how much they enjoy to shop online. Despite that, culture did not have a significant impact.

Not all restaurants perceived food delivery as a necessity. Restaurants, therefore, either offered dine-in areas with no food delivery, own delivery, or delivery through TPOO platforms.

For TPOO platforms, three things were crucial to be successful: (1) capital, (2) scalability, and (3) innovation (Appendix Kc, Appendix Ke). Platforms aimed to build the OFD market, nourishing the adoption of food and digital (Appendix Kb).

During the crisis, consumer behavior changed rapidly. Through social distancing measures enforced by governments in Portugal and Germany, digital communication and relationships increased. Since people were forced to spend more time at home, they were pushed to try digital convenience services like online food delivery. People only then realized the benefits of online on-demand services and started developing an appreciation for these digital solutions (Appendix Kf, Appendix Ke, Appendix Kg). Overall, this might lead to an increase in personal digital maturity and to higher enjoyment of online services. This might serve as an explanation for the steep rise of TPOO order numbers.

Due to the restrictive measures that led to semi-permanent restaurant closures, restaurants had to either close altogether threatened by liquidation, or operate as ghost kitchens with either setting up own delivery (see Appendix H for example of offline advertisement) or TPOO delivery (Appendix Ke). Since these country-wide closures affected all restaurants, not only small businesses opted for the delivery option. Restaurants like the José Avillez Group in Lisbon, as well as Tim Raue in Berlin, started delivering their fine-dining cuisine (Appendix Kd, Appendix Kf). However, delivery forced them to think about new meal options and led them to create delivery-only menus (Appendix I, Appendix J). For José Avillez, not only physical limitations of delivering fine-dining meals fostered these delivery-only menus, but also consumers' emotions. Portuguese increasingly desired food that would provide them with emotional comfort during this not only health but also humanitarian crisis. The restaurant, therefore, created food to respond to their customers' demands. For the purpose of delivery, the food was vacuumed and refrigerated to ensure the restaurant's quality standards. In Lisbon, the food was delivered by head chefs and head waiters, and preparation was explained to customers in detail. Also, in Berlin, restaurant Tim Raue made use of this food preparation and delivery techniques. This made it possible for the restaurants to maintain control over the entire value chain, ensure restaurant quality, and deliver part of their experience. Customers are provided with feelings of indulgence and comfort in times when people most desire humanity (Appendix Kd). Now that fine-dining restaurants like Tim Raue and the José Avillez Group offer their food for delivery, consumers' perception of delivery food changed for the long-term. Prior to the pandemic, delivery food was rather perceived as inexpensive and fast food but now fueling the trend of restaurant-at-home experiences ("*insperiences*") (Appendix Kf).

TPOO platforms recognize a major increase in their restaurant selection during the COVID-19 crisis. As mentioned before, restaurants that do not have the capacity to offer own delivery, opt for platforms' delivery networks. TPOO platforms not only experienced a rise in restaurant supply but also increasing consumer demand due to rising convenience service appreciation. Further, platforms start to innovate and expand into new category delivery like grocery and beverage (Appendix Ke, Appendix Kf). Examples include Delivery Hero starting grocery and every-day-goods delivery in Turkey and Greece (Hamann, 2020), and Deliveroo's planned start of grocery delivery for supermarket chain Aldi in the UK (Saker-Clark, 2020). This development is further supported by current market developments like the €1m investment in delivery-only kitchen space provider Kitch in Lisbon (Tucker, 2020).

At this point, nobody can predict what is going to happen in the future regarding consumer, restaurant, and TPOO platform shifts. However, there are strong indicators for the

following developments. The future after the COVID-19 pandemic must be divided into short and long-term. Shortly after the crisis – within two to four months – TPOO orders might decrease. There are two consumer reasons for this: emotions and economics. Immediately after the crisis, people will increasingly desire real-life experiences including physical shopping for food, related to social interactions. People might also refrain due to financial reasons as they perceive food delivery to be too expensive and indulging an option during an economic decline. Consequently, this might lead to a recession in the adoption of food and digital (Appendix Kg).

From a restaurant perspective, it is certain that not all businesses will have survived the economic repercussions. Therein, restaurants might stick with their own delivery or TPOO delivery, or change their business model back to no delivery.

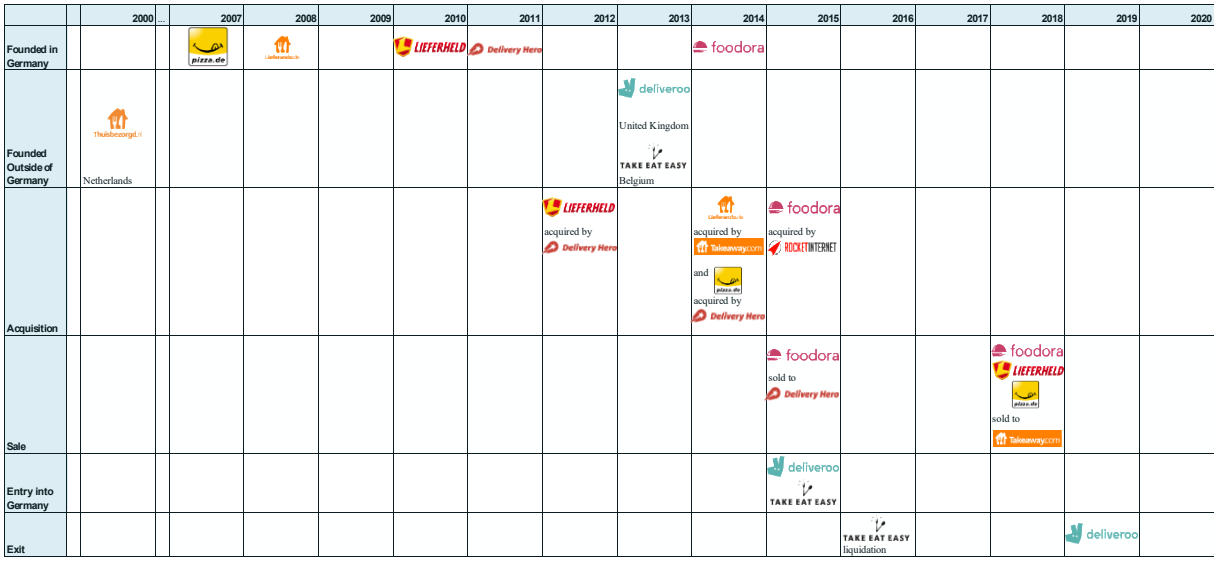
TPOO platforms might want to re-evaluate their value propositions and business models, as well as think about customer loyalty systems to retain their newly won customers. As consumers are increasingly looking for inspiration and information concerning food, there is excellent opportunity for platforms to tap into these consumer desires (Appendix Kf). It will be essential to observe consumer changes and respond appropriately to consumer emotions.

In the long-term, TPOO might expect major growth. From a consumer view, this might be rooted in increasing personal digital maturity based on newfound appreciation of digital services, growing enjoyment of convenience service usage, and one-stop solutions. As TPOO platforms tap into the expansion of their business models to include new category delivery, consumer demands simultaneously shift towards fewer services and mobile applications on their smartphones (Appendix Kf). TPOO businesses responding to these changes will be able to fuel growth. As could be seen, culture did not significantly influence consumer behavior in TPOO before the pandemic, which will allow platforms to integrate the same measures in Lisbon and Berlin. It is expected that the OFD industry will overall benefit from a steeper adoption of food and digital (Appendix Kg). In line with success drivers before the crisis, it will be critical for platforms to keep creating value through innovation in all markets (Appendix Ke, Appendix Kf).

Before and during the pandemic, consumers' desire for convenience drove market development and will continue to rise with increasing personal digital maturity after the crisis, raising numbers of convenience service offers in consequence. However, food remains a deep part of our culture, and especially in times of crisis, OFD needs to deliver humanity.

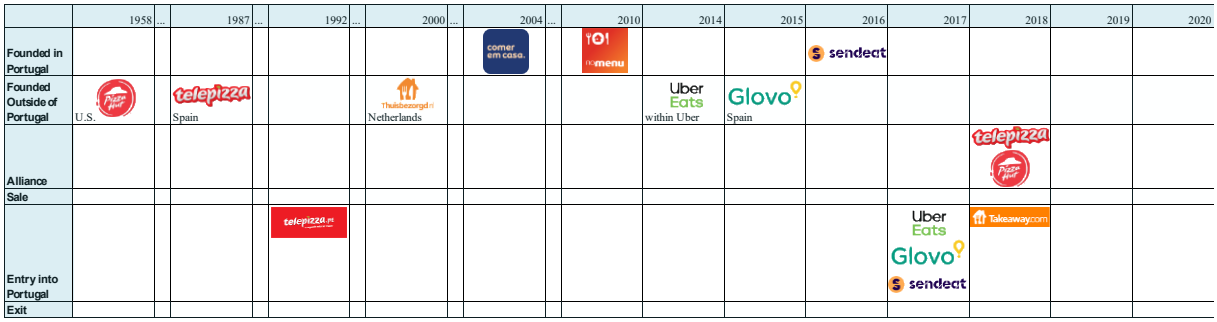
Appendices

Appendix A: Food Delivery Evolution Timeline in Berlin



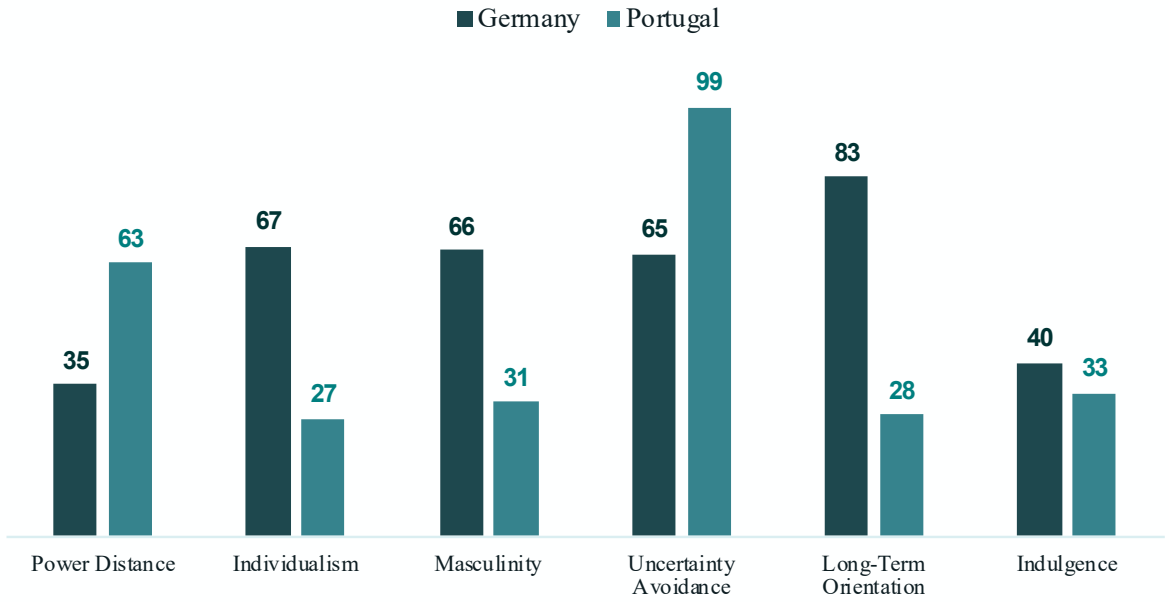
Source: gathered, processed and compiled by the author based on own research on company websites, newspaper articles, interviews and online sources for company details

Appendix B: Food Delivery Evolution Timeline in Lisbon



Source: gathered, processed and compiled by the author based on own research on company websites, newspaper articles, interviews and online sources for company details

Appendix C: Hofstede's (2020) Country Comparison - Germany and Portugal



Source: Hofstede Insights, 2020b

Appendix D: Individualism Calculation Based on Hofstede & Minkov (2013b)

Question Number	Question
01	In choosing an ideal job, how important would it be to you to ... - have sufficient time for your personal or home life
04	In choosing an ideal job, how important would it be to you to ... - have security of employment
06	In choosing an ideal job, how important would it be to you to ... - do work that is interesting
09	In choosing an ideal job, how important would it be to you to ... - have a job respected by your family and friends

IDV = 35(m04 – m01) + 35(m09 – m06) + C(ic) | with C(ic) = 0

Germans

		01	mean 01	04	mean 04	06	mean 06	09	mean 09	Individualism Index
Of utmost importance	1	14	14	9	9	38	38	1	1	
Very important	2	39	78	28	56	20	40	16	32	
Moderately important	3	6	18	19	57	1	3	35	105	
Of little importance	4	0	0	3	12	0	0	7	28	
Of very little or no importance	5	0	0	0	0	0	0	0	0	
German		59	**1.86**	59	**2.27**	59	**1.37**	59	**2.81**	**64.66**

Portuguese

		01	mean 01	04	mean 04	06	mean 06	09	mean 09	Individualism Index
Of utmost importance	1	23	23	22	22	26	26	14	14	
Very important	2	23	46	23	46	20	40	13	26	
Moderately important	3	3	9	4	12	3	9	14	42	
Of little importance	4	0	0	0	0	0	0	5	20	
Of very little or no importance	5	0	0	0	0	0	0	3	15	
Portuguese		49	**1.59**	49	**1.63**	49	**1.53**	49	**2.39**	**31.43**

Source: Hofstede & Minkov (2013a, b)

Appendix E: Main Study - Study 1 - Survey Questions

Food Ordering Behavior – Survey

Introduction

Olá and hallo,

Thank you so much for opening this survey.
My name is Alina Dolibog and I am a Master's student at Católica Lisbon School of Business and Economics specializing in the field of Strategy and Entrepreneurship.

With the following survey I am aiming to collect data regarding food ordering behavior for the purpose of my dissertation on the topic of Digital Transformation in Online Food Delivery. With this data I will be examining the correlation between digital and food as to draw conclusions on adoption rates, as well as general attitudes towards the prior.

All your answers are collected and analyzed anonymously.

Please note that there are no right or wrong answers – answer all questions based on your honest personal opinion. Have fun!

If you have any questions about this survey, shoot me an email: alina.dolibog@gmail.com.

Thank you again for your tremendous contribution to my Master's thesis and your time. I really appreciate it!

Target Group Segmentation

1. Where do you currently live - in Lisbon or Berlin?	2. Are you between 18 and 30 years old?	3. Are you Portuguese or German?
○ Berlin	○ Yes	○ Portuguese
○ Lisbon	○ No	○ German
○ None of the two		○ Neither

Individualism Measurement

4. Please think of an ideal job, disregarding your present job, if you have one.
In choosing an ideal job, how important would it be to you to ...

	Of utmost importance	Very important	Moderately important	Of little importance	Of very little or no importance
have sufficient time for your personal or home life	○	○	○	○	○
have security of employment	○	○	○	○	○
do work that is interesting	○	○	○	○	○
have a job respected by your family and friends	○	○	○	○	○

Preferences and Actual Behavior in Regards to Food Culture

Now I would like you to think about your personal eating habits.

5. Per week, how frequently do you eat in groups (e.g. with friends or colleagues)?

	Never	Once a week	2-3 times a week	4-6 times a week	Daily	More than once per day
	○	○	○	○	○	○

6. How likely is it for you to meet up with other people to cook, go out for food or order food online?

	Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
	○	○	○	○	○	○	○

7. What time of day do you prefer to go out to eat?

- ○ Morning
- ○ Midday
- ○ Evening
- ○ Night

8. How fixed is your meal schedule on a regular day?

	Fixed	Somewhat fixed	Neither fixed nor flexible	Somewhat flexible	Flexible
	○	○	○	○	○

9. On a regular day, at what time do you prefer to have dinner?

○ ○ ○ ○ ○ ○

5 pm 6 pm 7 pm 8 pm 9 pm 10 pm

Attitude, Preferences and Actual Behavior Within TPOO

This part of the survey is going to concern food delivery platforms.

10. Have you ever ordered a meal through a platform like Lieferando or UberEats?

- ○ Yes
- ○ No

11. Per month, how often do you approximately order food through a platform like Lieferando or UberEats?

	Never	On occasion	2-3 times a month	4-6 times a month	8-10 times a month	Every other day	Daily
	○	○	○	○	○	○	○

12. How much do you like to order in?

	Strongly like	Like	Somewhat like	Neither like nor dislike	Somewhat dislike	Dislike	Strongly dislike
	○	○	○	○	○	○	○

13. What is the main reason for you to order food online?

- ○ No food at home
- ○ Possibility to discover new cuisines
- ○ Save time
- ○ Having friends/ family over
- ○ Convenience
- ○ Effortless ordering process
- ○ Need to eat
- ○ Make informed choices
- ○ Don't want to cook

14. What are your favorite categories to order from? (Please choose up to **three** categories.)

- ☐ Italian (i.e. pizza, pasta)
- ☐ Sushi
- ☐ American (i.e. burgers, American style pizza)
- ☐ Healthy (i.e. salads, smoothies)
- ☐ Breakfast
- ☐ Desserts (i.e. cake, ice cream)
- ☐ Drinks and snacks
- ☐ Indian
- ☐ Meat (i.e. beef, steaks, chicken)
- ☐ Vegan
- ☐ Vegetarian
- ☐ Chinese
- ☐ Asian (i.e. Vietnamese, Thai, Japanese, Korean, Indonesian, dumplings)
- ☐ Middle Eastern (i.e. Lebanese, shoarma, Pakistani)
- ☐ Other (please specify): _____

15. How much are you willing to pay to have your ready-to-eat meal delivered? (cost per delivery in €)

	0	2	4	6	8	10	12	14	16	18	20
Please slide on scale:											

16. To what extent do you personally agree with the following statements?:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Ordering ready-to-eat food through a platform like Lieferando or UberEats is convenient (i.e. saves time, doesn't require major movement, reduces need for groceries, and more).	○	○	○	○	○	○	○
Ordering in ready-to-eat meals is more preferable than going out to eat.	○	○	○	○	○	○	○
When alone, ordering ready-to-eat food online is an alternative to cooking.	○	○	○	○	○	○	○
Eating together with others is a social activity.	○	○	○	○	○	○	○
Food is more of a necessity than an exciting activity.	○	○	○	○	○	○	○
When making plans with friends or family going out to eat is a top choice.	○	○	○	○	○	○	○
It is easier to order food for more than four people than to cook.	○	○	○	○	○	○	○
It is important to me to have a meal together with my family at least once per week.	○	○	○	○	○	○	○

Personality

For this last part I would like you to think about your personality. Please remember to answer all questions truthfully. Just be yourself.

17. I see myself as:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Extroverted, enthusiastic.	○	○	○	○	○	○	○
Critical, quarrelsome.	○	○	○	○	○	○	○
Dependable, self-disciplined.	○	○	○	○	○	○	○
Anxious, easily upset.	○	○	○	○	○	○	○
Open to new experiences, complex.	○	○	○	○	○	○	○
Reserved, quiet.	○	○	○	○	○	○	○
Sympathetic, warm.	○	○	○	○	○	○	○
Disorganized, careless.	○	○	○	○	○	○	○
Calm, emotionally stable.	○	○	○	○	○	○	○
Conventional, uncreative.	○	○	○	○	○	○	○

Demographics

18. How old are you?

○ 18-20 ○ 21-23 ○ 24-26 ○ 27-30

19. What is your gender?

- ○ Male
- ○ Female
- ○ Diverse
- ○ Prefer not to say

---

20. What is your current employment status?

- ○ Employed full-time
- ○ Employed part-time
- ○ Graduate student
- ○ Undergraduate student
- ○ Highschool student
- ○ Self-employed
- ○ Unemployed
- ○ Retired

---

21. Including yourself, how many people live in your household?

○ ○ ○ ○ ○ ○

1 2 3 4 5 > 5

---

22. What is your marital status?

- ○ Single
- ○ Married
- ○ In a domestic partnership
- ○ Divorced
- ○ Widowed

---

23. What is your average monthly available income?

- ○ < 500€
- ○ 500 - 1,000€
- ○ 1,000 - 1,500€
- ○ 1,500 - 2,000€
- ○ 2,000 - 2,500€
- ○ > 2,500€

Thank you so much for taking the time to support my Master's thesis.

Appendix F: Main Study - Study 2 - Survey Questions

General Digital Adoption – Survey

Introduction

Olá and hallo,

Thank you so much for opening this survey.

My name is Alina Dolibog and I am a Master's student at Católica Lisbon School of Business and Economics specializing in the field of Strategy and Entrepreneurship.

With the following survey I am aiming to collect data regarding general digital adoption for the purpose of my dissertation on the topic of Digital Transformation in Online Food Delivery. With this data I will be examining the correlation between digital and food as to draw conclusions on adoption rates, as well as general attitudes towards the prior.

All your answers are collected and analyzed anonymously.

Please note that there are no right or wrong answers – answer all questions based on your honest personal opinion. Have fun!

If you have any questions about this survey, shoot me an email: alina.dolibog@gmail.com.

Thank you again for your tremendous contribution to my Master's thesis and your time. I really appreciate it!

Target Group Segmentation

1. Where do you currently live - in Lisbon or Berlin?

- ○ Berlin
- ○ Lisbon
- ○ None of the two

2. Are you between 18 and 30 years old?

- ○ Yes
- ○ No

3. Are you Portuguese or German?

- ○ Portuguese
- ○ German
- ○ Neither

5. How is your access to the internet?

○ 24/7 access ○ Only at home ○ Only at work

6. What digital device(s) do you own? (multiple selection possible)

- ☐ Smartphone
- ☐ Smartwatch
- ☐ Smart home device (e.g. Google Home or Alexa)
- ☐ Laptop
- ☐ PC
- ☐ e-Reader
- ☐ Other: _____

7. Do you use one or more of the following social media channels? (multiple selection possible)

- ☐ Facebook
- ☐ YouTube
- ☐ WhatsApp
- ☐ WeChat
- ☐ Instagram
- ☐ Tik Tok
- ☐ Reddit
- ☐ Snapchat
- ☐ Twitter
- ☐ Pinterest
- ☐ Other: _____

8. Do you know your screen time?

○ Yes ○ No

What is screen time and where to find it on your phone?

Screen time is the "time spent [...] using an electronic device with a screen (such as a smartphone or tablet)" (Merriam-Webster).

If you use Android: battery usage and time on battery can be translated into screen time

1. Open up the Settings app.
2. Look for e.g. Battery/ Screen/ Digital Balance
3. To see statistics select e.g. battery usage or screen time

If you use iOS:

1. Open up the Settings app.
2. Scroll down to the "Screen Time" section that's grouped with Notifications, Sounds, and Do Not Disturb.
3. Tap on "Screen Time" to see your usage statistics.

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9. How high is your average daily screen time?

- ○ 0 - 1 hour
- ○ 1 - 2 hours
- ○ 2 - 3 hours
- ○ 3 - 4 hours
- ○ 4 - 5 hours
- ○ > 5 hours

Attitude, Preferences and Actual Behavior Within Online Shopping

10. Have you ever purchased products of any kind online?

- ○ Yes
- ○ No

---

11. Per month, how often do you approximately make online purchases?

	Never	Once a month	2-3 times a month	4-6 times a month	8-10 times a month	Every other day	Daily
	○	○	○	○	○	○	○

---

12. How much do you like to order online?

	Strongly like	Like	Somewhat like	Neither like nor dislike	Somewhat dislike	Dislike	Strongly dislike
	○	○	○	○	○	○	○

13. What is the main reason for you to make online purchases?

- ○ 24/7 shopping availability
- ○ Price comparison
- ○ Better prices compared to offline
- ○ Save time
- ○ Convenience of not going to shops
- ○ Greater variety/ choices
- ○ Free shipping offers
- ○ Convenience of everything in one place
- ○ Locate hard to find items

14. How many items do you usually order at once?

○ 1 - 3 ○ 4 - 6 ○ 7 - 9 ○ 10 - 12 ○ 13 - 15 ○ > 15

15. What kind of items do you order online? (Please choose up to **three** categories.)

- ☐ Food
- ☐ Books
- ☐ Online financial services
- ☐ Apparel
- ☐ Accessories
- ☐ Home appliances
- ☐ Travel (e.g. flights, hotels)
- ☐ Music
- ☐ IT
- ☐ Events
- ☐ Other: _____

16. How much do you approximately spend on online purchases per month?

- ○ 0 - 100€
- ○ 101 - 200€
- ○ 201 - 300€
- ○ 301 - 400€
- ○ 401 - 500€
- ○ > 500€

PDMI - Second Part

17. Which is your preferred device to make online purchases in the categories of travel, home appliances, financial services, IT?

- ○ PC / laptop
- ○ Smartphone
- ○ I use both to the same extent

18. Which is your preferred device to make online purchases in the categories of food, accessories, books, apparel, music, events?

- ○ PC / laptop
- ○ Smartphone
- ○ I use both to the same extent

19. To what extent do you personally agree with the following statements?:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
It is convenient to make online purchases/ orders via voice interface.	○	○	○	○	○	○	○
It would be cool if I knew via smartphone if I had something to eat in my fridge at home.	○	○	○	○	○	○	○
I think receiving my parcels via drone delivery will be feasible.	○	○	○	○	○	○	○
Autonomous robot delivery will replace traditional delivery of parcels and letters carried out by humans.	○	○	○	○	○	○	○

Demographics

20. How old are you?

○ ○ ○ ○

18-20 21-23 24-26 27-30

21. What is your gender?

- ○ Male
- ○ Female
- ○ Diverse
- ○ Prefer not to say

---

22. What is your current employment status?

- ○ Employed full-time
- ○ Employed part-time
- ○ Graduate student
- ○ Undergraduate student
- ○ Highschool student
- ○ Self-employed
- ○ Unemployed
- ○ Retired

---

23. Including yourself, how many people live in your household?

○ ○ ○ ○ ○ ○

1 2 3 4 5 > 5

---

24. What is your marital status?

- ○ Single
- ○ Married
- ○ In a domestic partnership
- ○ Divorced
- ○ Widowed

---

25. What is your average monthly available income?

- ○ < 500€
- ○ 500 - 1,000€
- ○ 1,000 - 1,500€
- ○ 1,500 - 2,000€
- ○ 2,000 - 2,500€
- ○ > 2,500€

Thank you so much for taking the time to support my Master's thesis.

Appendix G: Calculation of PDMI

Vector	Name	Vector Weight	Question	Question Weight	Maximum Score Points per Question	Total Maximum Weighted Points
1	use of digital devices	21.5%	How is your access to the internet?	25%	4	0.22
			What digital devices(s) do you own?	25%	7	0.38
			Do you know your screen time?	20%	1	0.04
			How high is your average daily screen time?	30%	6	0.39
2	digital relationships	25.0%	Do you use one or more of the following social media channels?	100%	12	3.00
3	innovation	32.0%	It is convenient to make online purchases/ orders via voice interface.	25%	7	0.56
			It would be cool if I knew via smartphone if I had something to eat in my fridge at home.	25%	7	0.56
			I think receiving my parcels via drone delviery will be feasible.	25%	7	0.56
			Autonomous robot delivery will replace traditional delivery of parcels and letters carried out by humans.	25%	7	0.56
4	digital transactions	21.5%	Which is your preferred device to make online purchases in the categories of travel, home appliances, financial services, IT?	50%	3	0.32
			Which is your preferred device to make online purchases in the categories of food, accessories, books, apparel, music, events?	50%	3	0.32
						6.91

Source: author's calculation based on personal digital maturity framework developed internally at Católica School of Business & Economics

Appendix H: Flyer Advertising Restaurant Delivery (Berlin) (31.05.2020)

"PHO Delivery Service

→ Can we deliver to you?
→ Otherwise, we are delivered!"

Appendix I: Tim Raue's Online Advertisement for Delivery-Only Menu (02.06.2020)

"4 sensational courses for unbelievable 68€

Fuh Kin Great Delivery Service

Yeah! We are allowed to open up the restaurant slowly while guaranteeing compliance with hygienic standards. Therefore, our beloved Fu Kin Great delivery service focuses on a sensational menu, all sorts of wine and reading material.

Order now!

Large beverage menu & wine suggestions
red wine | white wine | rosé | sweet wine | sake | bubbles"

Source: Tim Raue, 2020

Appendix J: Bairro do Avillez' Online Advertisement for Delivery-Only Menu (23.04.2020)

"MONDAY TO SATURDAY
12H – 21H

SEE THE MENU IN OUR HIGHLIGHTS OR
GO TO BAIRRODOAVILLEZ.PT"

Source: Bairro do Avillez, 2020

Appendix K: Interview Summaries

Appendix Ka: Filipe Amoroso, E-Commerce Manager (Central de Cervejas e Bebidas) - 24.02.2020

Filipe Amoroso states that there a major differences in the Hotels, Restaurants, and Cafés (HoReCa) landscape between northern and southern Europe. In the south, HoReCa is rather affordable and seen as an alternative option to cooking for everybody who has to have a meal outside of their home during lunchtime. It provides quick and inexpensive meal options. For Portuguese, it is a traditional market and, further, a popular option to start working in the HoReCa market by setting up a café to provide for the family. Business is started with the intention of having a job. The market offers opportunities for smooth operations, few problems, few surprises as well as a steady income. This mindset is very different from the start-up mentality, where there is a clear intention of making a profit. Food delivery is seen as an additional efficient revenue channel for restaurants and TPOO platforms. Chains like McDonald's are very well represented on food delivery platforms as Uber EATS in Lisbon. On the other side, the seafood restaurant Ramiro developed its own website for deliveries instead of taking part in TPOO. Overall, in Lisbon and the southern area there are 6,350 cafés and restaurants, which makes up about half of the total number of outlets.

In Portugal, Filipe Amoroso doesn't see the concept of ghost kitchens taking off as quickly as in other markets. However, some restaurants have already branched out into this space and started testing the market.

In summary, Filipe Amoroso states that the older generations in Portugal are currently not very interested in digital solutions, which is a figure that his company measures through Net Promoter Scores (NPS) regularly. The Portuguese HoReCa market is shaped by traditions, which implies that restaurants are meant to feed as many people as possible when they are out of their own homes and provide them with a sense of a home-cooked meal. Lastly, new digital players are rather profit-focused but coming to the Lisbon market quickly along with new generations of customers. Filipe Amoroso perceives the Portuguese HoReCa market as not quite ready for new digital solutions like drones or autonomous delivery. Digital change has to happen progressively.

Appendix Kb: Ana Rita Garcia, Craft & Varieties Brand Manager (Central de Cervejas e Bebidas) - 28.02.2020

Ana Rita Garcia perceives the Portuguese HoReCa market as very traditional but states that the new generations are becoming more digital in terms of order processes. This indicates that currently, the market is not very well presented online.

Concerning TPOO platforms, restaurants are able to get a great part of their income through platforms like Uber EATS, and thus, create new revenue streams. The new generation of entrepreneurs is taking advantage of the start-up mentality and drive new initiatives within food delivery. Currently, there are not many competitors in Lisbon (Uber EATS, Glovo, Takeaway.com). TPOO platforms, in general, are not interested in primarily communicating their own brand but instead building the food delivery category as a whole. This will lead to the facilitation of online food delivery by building trust, overcoming barriers, answering consumer concerns ("Is the food going to be cold when it arrives at my home?", and finding solutions (e.g. delivery times of max. 15 minutes). The most significant barrier is building delivery in Lisbon since Portuguese prefer to have proper meals either at home or at a restaurant. Proposing a restaurant experience at home is challenging.

Ana Rita Garcia states that digitization is making consumers' lives busier. It connects them 24/7, so they are always online. She perceives that consumers have already gotten so used to having everything right here, right now, that on-demand delivery is proliferating to facilitate these increasingly busy lives.

For some restaurants, it is very valuable to be on a TPOO platform, but it depends on their brand. For some, it is of great advantage to integrate every step of the value chain. However, there still is the benefit of TPOO platform's network effect. Hence, restaurants have to do a trade-off calculation to determine if the advantages of being on a platform outweigh the cost. In the end, Ana Rita Garcia perceives that participation in TPOO to provide significant benefits, which in turn means that not participating in platforms will lead to a loss in business for restaurants.

"Drone delivery, Voice Interface and automation sound very futuristic now, but they will come; probably later in Portugal than in other markets". Drone delivery does not seem feasible to her for the next three to five years, but in 10 years, this will be a new reality.

Businesses need to be very cautious with consumer demands since consumers cannot identify future needs until the business has created solutions for them, and they suddenly cannot live without those solutions. Convenience is the primary driver of consumer behavior and will lead to more digital solutions with the rise of digital generations as the new customers. Generations X and Y do not have any problems with the digital space and lay complete trust in technologies.

In summary, Portugal is a very traditional market with a rather digitally hesitant population but with new generations bringing about change. The Portuguese market is adopting technologies rather slowly compared to other markets. TPOO platforms focus on growing the food delivery category as a whole, especially in Lisbon, to make the restaurant-at-home experience more attractive. This is supported by heavy investments in online and offline advertising. Further, improving convenience to meet increasing demands coming from consumers' busier lives through on-demand everything is key to stay ahead and gain competitive advantage. Consumers do not know what they want until it is there. Finally, it is important for restaurants to be aware of the digital changes and how much their customers trust in technologies and not miss valuable chances especially those that are provided through platforms.

Appendix Kc: Alexej Habinski, former Global Director of Performance Marketing (Foodora) - 10.03.2020

At the beginnings of OFD in 2014/15 in Berlin, there were three companies with an entrepreneurial mindset: Take Eat Easy (FR), Foodora (DE), Deliveroo (UK). The development from a rather fragmented market to Takeaway.com holding a quasi-monopoly in 2020, could not be predicted then.

Within the OFD market, there is relatively low profitability. Food orders overall are rather expensive with delivery costs as a significant cost driver. German consumers' willingness to pay extra for the delivery is small, and therefore, TPOO platforms' profitability is dependent on a steadily high number of orders. Despite those challenges, there are ways for TPOO platforms to be successful. Platforms need to have high capital for general pre-financing of cost i.a. related to drivers' salaries. They further need to have a plan for mid to long term profitability (e.g. by charging high delivery fees and creating visions for innovative product development).

A way for platforms to be innovative is to expand into delivery of everyday goods like groceries and beverages. There are already some successful cases (e.g. Flaschenpost) that might be function as an example for the expansion of TPOO platforms' business models. Another idea relates to the concept of ghost kitchens which was Deliveroo's key innovation concept in the UK. The expansion of delivery goods ties into the statement that increasing integration along the value chain leads to rising profitability of the business model.

Alexej Habinski highlights the current gap in the Berlin market for new delivery platforms, which leads him to suspect that a new player might enter and try to fill this void soon (e.g. Uber EATS, Bolt or Glovo).

Regarding digital trends and technological innovations, Alexej Habinski firstly stresses the fact that most of food is still ordered via phone call. Therefore, as soon as the new generations of digital natives gain even more significance within OFD, trends like drone delivery will become more relevant. The second point concerns the restaurant-to-home shift, where home delivery must provide restaurant experiences at home. Lastly, meals need to become less expensive for people to see food delivery as a real alternative to home cooking.

In the future, Alexej Habinski can picture drones delivering food that has been prepared by robots as long as consumers' mindsets change along with increasing digitization.

In summary, profitability is rather low within OFD. There are major differences in profitability for new delivery and aggregator business models. New delivery has yet never been profitable in Berlin, and aggregators are likely to build a quasi-monopoly. Digital trends are always limited to the development of appropriate technologies and highly influenced by generational gaps and adoption rates. Trends like IoT, voice interface and autonomous delivery have a scope of minimum 10 up to 15 years. TPOO platforms must have a solid capital base and be innovative to gain competitive advantage and further, work on becoming profitable. A good starting point of innovation is the expansion into everyday goods delivery. Altogether,

platforms are moving towards expansion of the business model and integration along the value chain.

Appendix Kd: Paulo Gonçalves Salvador, Operations & Logistics Manager (José Avillez Group) - 23.04.2020

The José Avillez Group started off in 2007 with one small restaurant that was designed as a kitchen space for delivery and catering (with an additional small grocery store). Today, José Avillez holds two Michelin stars and the restaurant group comprises 20 restaurants with a variety of cuisines from fine-dining to casual. 15 of these restaurants are located in Lisbon.

As the COVID-19 pandemic lead to governmentally enforced restaurant closures, all of the group's restaurants were closed in Portugal. Since food delivery is still allowed during restaurant closures, the group kept their main restaurant Bairro do Avillez open and started preparation of delivery food. At the time of the interview there was no online ordering, orders could only be placed via phone call, which seemed to match their customers' desire for in-person communication perfectly. Since they quickly discovered that their customers want to consume comfort food rather than fine-dining cuisine during the pandemic, they adapted their menu to delivery-friendly traditional but yet elevated Portuguese meals. Currently, head chefs and waiters are in charge of delivering the food to the customers which enables the José Avillez Group to take control of the entire value chain and ensure the restaurant-quality delivery of the food. The meals are delivered vacuum packaged and the preparation at home is explained in detail by the chefs and waiters. This ensures the same quality of the food at home and at the restaurant. The meal portions however, are not meant for single person households, rather intended for families. In line with the menu change for delivery, Paulo Salvador stresses that it is impossible to create and sell the same fine-dining restaurant experience at home. The meals that are currently on delivery, are meals that the group was cooking around 10 years ago to emotionally connect the customers with each other as well as to the chef. Their take on traditional Portuguese food is meant to provide their customers with the feel of a home cooked meal in times where people most need humanity and social contacts.

Paulo Salvador observed that the pandemic drove the majority of Lisbon's restaurants to TPOO platforms like Uber EATS and Glovo. He further perceives this migration to delivery to be vital for a restaurant's survival in times of this crisis.

For the future Paulo Salvador expects to see several phases. There is going to be a re-opening season where the main concern will be in regards to the customer's restaurant experience. Since restaurants will still be legally obliged to follow strict health regulations like

maximum occupation, masks, gloves and temperature control, the restaurant experience simply cannot be the same as before the pandemic. Paulo Salvador hopes that the regulations will change as soon as the pandemic can be brought under control, and therefore, the restaurant experience can be recreated.

Paulo Salvador puts strong emphasis on the humanitarian effects of the current health crisis. The group is leading a non-profit initiative together with their suppliers that provides families and Portuguese people who are most affected by the crisis through e.g. the loss of a job with free meals. Paulo Salvador underlines the importance of staying together and close to each other even when it is physically not possible.

Appendix Ke: Anonymous, Online Food Delivery Expert in Lisbon - 04.05.2020

There was phone food delivery before there was online food delivery. Approximately 10 years ago online food delivery started to slowly gain relevance with the launch of noMENU, followed by Telepizza and Pizza Hut. The food delivery market started to experience a major digital shift when Glovo, Uber EATS and Takeaway.com started to enter the market with full digital services. Restaurants that had their own delivery solutions, were disrupted and had to change their strategies to keep up with the new competition. With this digital shift, consumer behavior changed. The key driver of demand within OFD is the restaurant choice on the platform. The demand fuels the number of restaurants and the growth in selection in turn fuels demand further. Before the COVID-19 crisis restaurants participated in food delivery because they wanted to reinvent themselves, wanted to adapt to the changing consumer needs driven by the digital shift, as well as their desire not to fall behind their competition.

During the pandemic restaurants were either forced to shut down because delivering food on their own simply is not profitable, or started doing delivery by moving to TPOO platforms, which then raised the question of capacity for own delivery or leveraging the platform's delivery network. Further, a shift in consumer behavior currently can be observed: consumers develop a much higher willingness to order food online. After the crisis it is expected that consumer behavior will shift again. Since during the pandemic consumers were "pushed" to try delivery, came to like it and now appreciate the benefits of food delivery, this will lead them to order food much more frequently than before the crisis.

Another shift within the market can be expected through the entry of new players. Bolt recently announced to start food delivery operations in Lisbon, leading to more TPOO platforms in the market and thus, fiercer competition. The entry of new players is meeting the rising demand for food delivery in Lisbon. However, OFD requires high investments as well as

a good quality experience and a varied selection of restaurants. Therein, capital flow is the most important aspect. If this cannot be ensured it will lead to consolidation. Further, there must be innovation e.g. through the expansion into a wider range of deliveries like grocery delivery. Nevertheless, this is very different from current food delivery with lower margins and additional storage and warehousing cost.

Further, ghost kitchens can be seen as another source of innovation. This however, depends largely on the product offered, where ghost kitchens for fine-dining cuisine would not make much sense. Lisbon currently starts to see more ghost kitchens in the because of the pandemic. In spite of that, it cannot be expected to lead to a long term shift towards ghost kitchens.

Appendix Kf: Ava Ghaiumy, Regional Director Global Food Services (Delivery Hero SE) - 26.05.2020

In 2017, food delivery in Berlin was a very interesting but competitive market with many players. Delivery Hero alone operated under three brands in Germany (Pizza.de, Lieferheld and Foodora), with competition from Deliveroo and Lieferando. As Uber started their ride hailing operations in Germany, the OFD industry was threatened by the possibility of Uber EATS stepping into the ring as well. According to Ava Ghaiumy, OFD underwent an exciting development that however, resulted in a winner-takes-it-all market with Takeaway.com taking over all of Delivery Hero's German operations in 2018, as well as Deliveroo's exit in 2019.

Ava Ghaiumy currently observes changes within OFD consumer behavior due to the COVID-19 pandemic and states that these changes will have a long-term impact on the industry. The present pandemic brings additional consumers to try OFD for the first time. Ava Ghaiumy suspects that the new consumers will stay in the long-term since they just now discovered the possibilities within the convenience, and consequently on-demand everything market. Therefore, every TPOO platform is aiming to match this increasing demand for convenience through expansion into every day goods delivery with a focus on pharmacy at present. There will be a definitive shift into new category delivery. In line with this shift are changing consumer trends towards usage of less services and less applications on their mobile phones. Consumers today seek convenience through one-stop solutions.

Concerning Delivery Hero's recent expansion into grocery and beverage delivery in Greece and Turkey, Ava Ghaiumy states that conditions for this new category delivery are very dependent on the market, especially in regards to labor cost. However, a global expansion strategy for TPOO platforms is still realizable when focusing on scale and time.

Ava Ghaiumy perceives the current crisis especially as a challenge for corporate OFD solutions. Since these business models are based on OFD customers working in physical office spaces, the big question regards when and if people will be returning to their offices. Many well-established players as well as start-ups within this market are challenged with the next normal in terms of office work. On a consumer level, Ava Ghaiumy sees growth within on-demand delivery on the demand as well as on the supply side. During the crisis, restaurants increasingly requested participation on TPOO platforms. At the same time restaurants with enough resources expanded into own delivery by themselves. Further, there is a major shift in perception of food delivery. Prior to the pandemic, delivery food was still stigmatized as fast and inexpensive. However, during the crisis, fine-dining restaurants like Tim Raue in Berlin started offering their restaurant experiences at home, shifting consumers' perceptions of delivery food.

Appendix Kg: Maximilian Hinz, Managing Director (Bloom Partners) - 27.05.2020

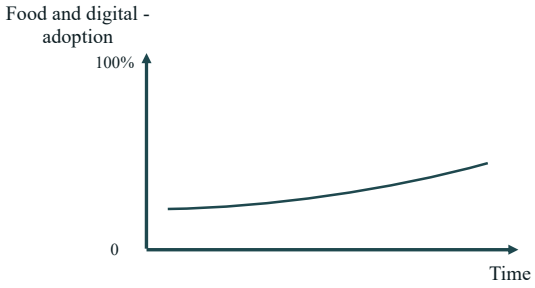
The interview was conducted on the basis of Bloom Partners' study "The New Normal of Food Habits" regarding implications of the current COVID-19 pandemic on consumer food behavior.

Maximilian Hinz notes that the following discussion is situated within the context of the interaction of food and digital. Before the crisis, the adoption of food and digital was rather low and only marginally increasing over time, based on a relatively flat slope. As the pandemic started to evolve and governmental measures came into force, the adoption curve experienced a sudden steep increase. Shortly after the crisis, which Maximilian Hinz defines as a two to four months period, the adoption will rapidly decrease again and take form of a recession. This decrease will even lead the adoption curve to sink below the pre-crisis adoption level. Followed by the sudden drop shortly after the crisis, Maximilian Hinz expects the adoption curve to increase again at an even steeper slope than before the crisis. The reasoning for the expected sudden drop in adoption is based on two arguments: (1) emotions and (2) economics. Firstly, Maximilian Hinz found that shortly after the crisis, consumers' desire for real-life experiences will rapidly increase again, therefore lead adoption to decline and reach even lower levels than before the crisis. Consumers are expected to develop the strong desire to have real physical shopping and real food experiences. Secondly, economic reasons will also contribute to the decline in adoption of food and digital. Even in times of a crisis, OFD is still seen as a luxury and perceived as something indulging. In order to save money, people are expected to cook themselves rather than order food online. However, in the long-term Maximilian Hinz expects the adoption curve to increase faster and with a bigger scope. This is based on the observation

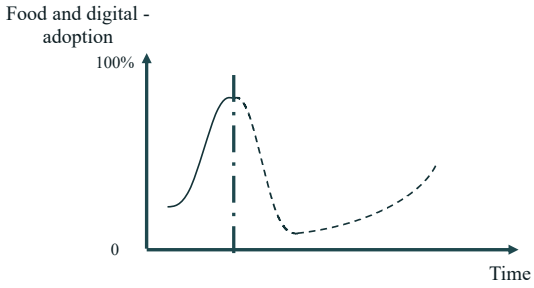
that during the crisis, consumers were confronted with the use of digital services like food delivery and pushed to cope with convenience service offers. Consumers then came to realize and appreciate the benefits, and are expected to continue adoption of more digital services in the long-term. This comes along with a shift in perception of how food and digital actually match. The scope within food and digital is going to widen and comprise digital offers like online video cooking guides produced by Michelin star chefs and further inspirational content that arose during the pandemic. Consumer behavior will especially shift in the long-term towards digital solutions in regard of replenishment and bulk shopping.

According to Maximilian Hinz, these findings imply that TPOO platforms are facing questions of business model and value proposition adaptations in the face of time. In the long-term, they are expected to benefit largely from consumers' increased convenience appreciation, however, in the short-term platforms need to sustain new consumers through increasing loyalty and retention as well as respond to consumers' desires for real food experiences.

Without crisis:



With crisis:



(Note: graphs in rough approximation to Maximilian Hinz' explanations about the development of adoption and intended for visual support of the before summary only)

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