Research proposal

Moving forward to the new normal in times of Covid-19 - What service innovations are worth keeping in restaurants?

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Abstract

Restaurants applied service innovations as a coping mechanism to survive covid-19. Although innovating services was a forced measure during covid-19, service innovations could result in the following effects on a business model; new customer segments, an increase in revenue, a decrease in costs, improved customer relations and retention and a higher competitive advantage. The business model canvas was applied to gain an overview of the effects of service innovations on the business model. Besides that, with in-depth semi-structured interviews with restaurant managers or owners, six cases were reviewed and analysed using the deductive coding technique in order to answer the research question: *To what extent do covid-19 induced service innovations impact the business model of restaurants?* Two subgroups were identified based on the number of service innovations, additionally a within and between analysis took place in order to analyse the effects of the service innovations on the business models. The results suggest that service innovations have a positive effect on the customer relations, customer segments, revenue streams and cost structure. Moreover, the effects of covid-19 induced service innovations on business models can be categorized in temporary or lasting effects. Second, the most important key performance indicator within the cases was customer feedback, this influenced the decision to keep or cease the innovation. Third, continuously evaluating the key performance indicators and acting on the results of this analyses leads to positive effects of the service innovation on the business model. Last, although service innovations confirmed to have positive impacts on the business models of restaurants, at the current time, most service innovations have been ceased due to lack of resources and time.

Keywords: Service innovation, Business model canvas, Key performance indicators, Restaurants, Covid-19

Preface

Hereby I present you my Master Thesis 'Moving forward to the new normal in times of Covid-19 - What service innovations are worth keeping in restaurants?' This Master Thesis is written for the completion of the master Innovation & Entrepreneurship at the Radboud University Nijmegen.

First, I am thankful to my supervisor Dr. Ig. Nanne Migchels. His feedback during the process and constant availability to help or to catch up on each other has motivated me and guided me in the right direction and to improve my thesis. Second, I would like to thank all respondents who have contributed greatly to my thesis due to their willingness to provide valuable information. Last, I would like to thank Dr. Karim Sidaoui, my first supervisor, now second examiner, with his help this thesis topic was generated.

All in all I hope you enjoy my master thesis.

Robin Mulder

Nijmegen, June 2022

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Abbreviations

SI	Service Innovation
BM	Business Model
KPI	Key Performance Indicators
KHN	Koninklijke Horeca Nederland
NRA	National Restaurant Association
SD	Service Design
NSD	New Service Development
NOW (subsidy)	De tijdelijke Noodmaatregel Overbrugging Werkgelegenheid / Temporary emergency measure to bridge employment costs

1. Introduction

The Covid-19 pandemic has played a big role in everyday life since its first appearance in December 2019 and is argued to be the worst economic crisis the world has faced thus far, as almost all corporate sectors have been affected by the covid-19 virus (Khan, Niazi, Nasir, Hussain, & Khan, 2021). In many cases the covid-19 crisis has played a disruptive role in the existence of individuals, organisations, societies and nations.

Consequently, in Europe there is little experience in handling extreme uncertain situations (e.g. pandemics) with incalculable consequences (Rodríguez-Antón & Alonso-Almeida, 2020). Sands et al. (2016) forewarned that hospitality firms would be more vulnerable to economic disruption from potential pandemics compared to other industries. Rodríguez-Antón & del Mar Alonso-Almeida (2020) echo that the hospitality industry is little prepared for a crisis situation due to a lack of devoted resources, experience and knowledge on how to handle crises (Ritchie, 2008). To add to that, Jamal and Budke (2020) emphasize the probability of pandemics becoming common in the future.

The service sector, particularly the hospitality sector, is one of the sectors that has been financially hit the hardest during the pandemic (Ziyae B., 2021). This is problematic as globally, the service sector has become an important part of the gross domestic products (GDP) of nations. Especially in developed economies, the GDP is dominated by the service sector (Carlborg et al., 2014). Likewise, this applies to the Netherlands, as the services sector contains the largest portion out of all the GDP sectors in the Netherlands (O'Neill,2021). In 2019, the service sector contributed 69.75% to the total GDP (O'Neill, 2021). The nationwide constrictions that came with the covid-19 pandemic such as several lock downs and curfews, has forced Dutch restaurant owners to adapt business practices in order to survive. Kraus et al. (2020) identified temporary business model innovation through service innovations (SI) as a solution to recover from the pandemic. Service innovations (SIs) could be considered central drivers of economic well-being (Carlborg et al., 2014) as they mediate the relationship between an unstable environment and performance in the hospitality industry (Cheah, Ho, & Li, 2018).

Service innovation in the hospitality industry has become a key driver in financial performance, customer satisfaction and retention and the image of hospitality firms (Vargo & Lusch, 2008). This pandemic has challenged the hospitality industry to survive by adopting innovative (service) strategies (Khan, Niazi, Nasir, Hussain, & Khan, 2021). Business model innovations could be seen as a firm's mechanism to respond to challenges and opportunities in its turbulent environment (Cheah, Ho, & Li, 2018). For business model changes mediates a

positive relationship between turbulence and the probability to achieve sustainable competitive advantage. Ultimately, business model innovation plays an important role in enhancing a firm's ability to address challenges in turbulent environments (Cheah, Ho, & Li, 2018). The covid-19 pandemic is regarded as a turbulent environment which has forced restaurant owners to adapt and implement service innovations within their firms. Consequently, by implementing service innovations, the business model (BM) of the firm has been changed.

The aim of this thesis is to add to the body of literature and to understand and create an overview of the changes the service innovations have caused in the business models of restaurants. Therefore the research question within this research is:

To what extent do covid-19 induced service innovations impact the business model of restaurants?

Although the pandemic has been going on for over 2 years now, in academic terms this time span is relatively short to research the phenomenon in different contexts and create an extensive body of literature. This research is academically relevant as it extents the emerging body of literature on both SI, SI in restaurants as well as SIs specifically focused on BM adaptations because of the pandemic. To add to that, even though the research field in SIs is growing, SI and more specifically the definition and application of SIs in both literature as practice has received criticism from several researchers. Gustafsson et al. (2020) argue that the definition of service innovation has been poorly described and applied in many studies with no improvement in clarity thus far. Carlborg, Kindström and Kowalkowski (2014) and Antons and Breidbach (2018) argue that SI is a heterogenous concept that lacks coherent theoretical framework. Moreover, it is argued that there is a need for new knowledge development in theory together with empirical evidence (Gustafsson et al., 2020; Carlborg et al. 2014). Ziyae et al. (2021) is congruent to this and sheds light to the theoretical gap of SI in the hospitality industry and the fruitful potential it has. SI in the hospitality industry is underexplored in terms of its potential (Ziyae B., 2021). Besides the heterogeneous understanding of the concept and the underexplored topic of SI in restaurants, there is a lack of literature that study the influence of SI on the BM of a firm.

Although empirical data has indicated the positive outcomes of SIs within firms (Vargo & Lusch, 2008; Lin, 2011; Wu, 2014), these findings are mainly derived from a non-pandemic context. Besides that, there is a gap at the moment in the body of literature on the influence SIs have had on BMs. Since the beginning of the covid-19 pandemic restaurants have continuously

adapted their BMs by implementing SIs. Although BMs continuously change, the evaluation of a BM could only be completed in a specific time context (Fritscher & Pigneur, 2014). According to Fritscher & Pigneur (2014) identifying the changes between an old BM and a new one could be difficult and time consuming. However, according to Amit & Zott (2012) there is an increasing interest and importance for organisations in BM changes as it occurs with many benefits; it often sheds light to underutilized source of future value and it provides competitive advantage as it is more difficult to replicate. In agreement to Amit & Zott (2014), a study from Pohle & Chapman (2006) found that organisations with the fastest growth in operating margins compared to the competition had an increased emphasize on BM innovations. Henceforth, even though adapting the BM could be considered a coping mechanism during covid-19, this research is practically relevant as it is beneficial for restaurant owners/managers to gain an overview of the BM changes, it also shed light on the benefits of the implemented SIs in restaurants. Additionally, this research aims to explore to what extent the SIs are lasting for the restaurant owners/managers.

As it has been two years since the first signs of covid-19 in the Netherlands, many restaurant owners have adapted their activities by implementing service innovations in order to survive. Additionally as SI is a broadly discussed phenomena in scientific research, the scope of this research is limited to the outcomes of service innovations in Dutch restaurants. These outcomes will be analysed by means of the business model canvas of Osterwalder & Pigneur (2010) that offers a comprehensive and practical overview of the business model. To add to that these innovations have the specific context of being created and implemented during Covid-19.

2. Literature review

2.1 Service Innovation defined

Innovation and Service Innovation has long been researched. Schumpeter (1934) describes innovation as carrying out new combinations where an innovation exists out of several inventions. The Schumpeterian view has been adopted and extended by researchers. With the Schumpeterian view, SI was defined by Toivonen and Tuominen (2009, p. 893) as: *"A new service or such a renewal of an existing service which is put into practice and which provides benefit to the organization that has developed it; the benefit usually derives from the added value that the renewal provides the customers."* Additionally, service innovation is not solely limited to service organisations and service innovation could also be a product innovation (Durst et al., 2015).

Additionally, service innovation, in past researches, has been identified by the process of the innovation as well as the outcome of the innovation. Toivonen and Tuominen (2009) identified five service innovation processes categorized by their degree of collaboration and formality. To add to that, Gustafsson et al. (2020) distinguish 3 separate but intertwining tenets of service innovation. These tenets are Service Design (SD), New Service Development (NSD) and Service Innovation (see figure 1).
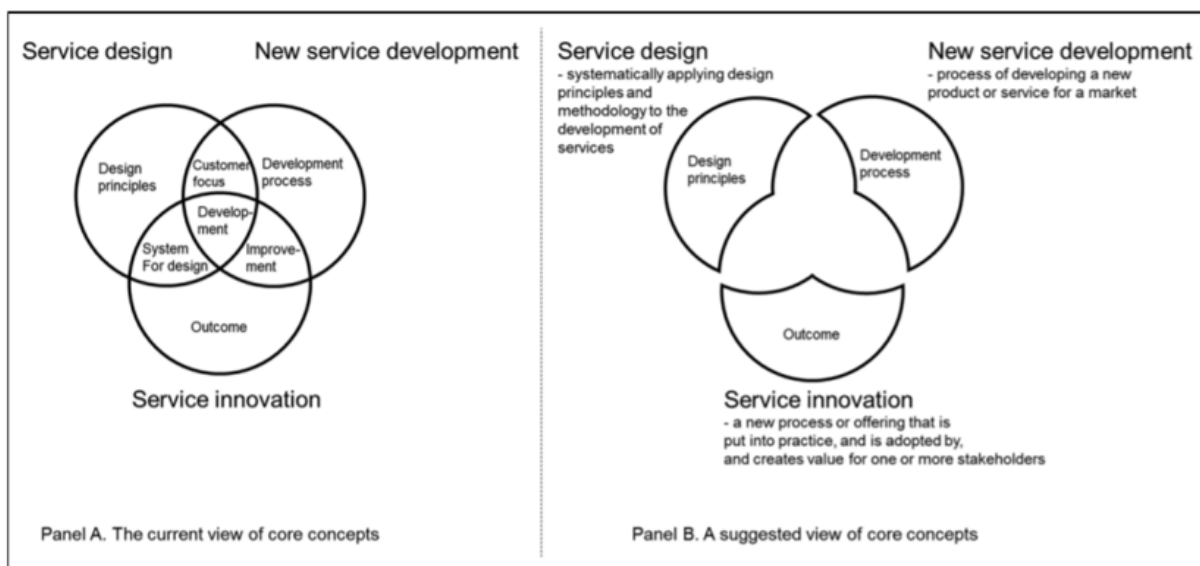
Gustafsson, A., Snyder, H., & Witell, L. (2020). Distinction between new service development (NSD), service design, and service innovation. [Figure]. Journal of Service Research.
https://journals.sagepub.com/doi/pdf/10.1177/1094670520908929

Service Design is concerned with: *'Systematically applying design principles and methodology to the development of services (Gustafsson et al., 2020, p. 2).'* SD, as well as NSD, is more process oriented whereas SI focuses on the outcomes of the innovation (Gustafsson et

al., 2020). Furthermore, previous research on New Service Development was typically described as market offerings that are managed goods (Yu et al., 2017). Gustafsson et al. (2020, p. 2) define NSD as: *"The process of developing new services or products for a market."* This approach has been influenced greatly by the new product development (NPD) approach or the Goods-Dominant Logic (GDL) (Edvardsson, Gustafsson, and Roos 2005; Nam et al., 2010). According to Gustafsson et al. (2020) the 3 tenets (SD, NSD and SI) have been overlapping in past researches. As a result, these tenets are overlapping and have little distinctiveness between the three concepts leading to an all-encompassing, heterogenous understanding of the concept Service Innovation (Carlborg , Kindström, & Kowalkowski, 2014). Therefore Gustafsson et al. (2020, p. 4) redefined service innovation as: *'A new process or offering that is put into practice and is adopted by and creates value for one or more stakeholders.'*

To conclude, there are three approaches to SI: service design, new service development service innovation. This research will focus on the outcomes of service innovations as the research will investigate to what extent service innovations have influenced the business model of a restaurant.

2.2 Types of service innovations

Service innovation in previous researches has been identified as a new service (Witell, et al., 2016). This raises the question what could be understood as "new''. According to Snyder et al. (2016) "new" services are mostly linked to the firm's perspective, what is new to the firm rather than what is new to the customer. Following this reasoning service innovations originate rather from internal impulses than external impulses. Besides that, Gustafsson et al. (2020) argue that this reasoning indicates that service innovations are in nature incremental rather than radical. Other scholars argue that service innovations could be both incremental as radical (Thakur and Hale, 2013; Durst et al. 2015; Gustafsson et al., 2020). For example, Avlonitis, Papastathopoulou, & Gounaris (2001) make a distinction between incremental and radical innovations and describe service innovations by means of their characteristics. These characteristics are: service new-to-the world, service new-to-the company, improvement of existing service, new delivery process, and/or service modification. Paswan et al. (2009) broaden the types of service innovations by distinguishing three dimensions that characterise the service innovation: perceived environmental uncertainty, service firm's strategic orientation, and market orientation. Perceived environmental uncertainty is associated with higher risks, however with greater opportunities too. This might lead to more radical SI activities. In contrast, when the uncertainty is perceived as low, the risks and thus the

opportunities are perceived as low too. This leads to less engagement in SI activities or more incremental SI. Strategic orientation according to Paswan et al (2009) is focused on the competitiveness of the organisation in the market. This could either be cost control or differentiation. As strategic orientation focuses on the allocation of resources, the type of strategic orientation is of importance in order to understand the direction and goal of the SI. Lastly, the market orientation focuses on the needs of the target market and the internal decisions made in order to fulfil the needs efficiently and effectively. This could either be a market or a firm focus. Hence, an inward or outward focus.

Nam et al. (2010) emphasise on firm's competencies and the embeddedness of resources and stakeholders that enable the organisation to deliver new services. They distinguished two dimensions for creating value: the degree of co-creation (the extent to which different stakeholders influence the SI) and the degree of networked collaboration (the extent to which competencies from different stakeholders are integrated or transformed). With these two dimensions, four typologies of SI approaches are identified: (1) conventional innovation (both a low level of co-creation and low level of network collaboration); (2) collaboration based innovation (low level of co-creation activities but high level of network collaboration); (3) customer oriented innovation (high level of co-creation activities and low level of network collaboration) and (4) service dominant innovation (high level of co-creation activities and high level of network collaboration). Each category differs in the degree of co-creation and networked collaboration.

Both Nam et al. (2010) as Paswan et al. (2009) emphasise the importance of external factors or stakeholders in service innovations. E.g. value is defined and co-created with the customer and the perceived environmental uncertainty encourages or discourages the intention to innovate. However, whereas Paswan et al. (2009) focuses on the environment that influences the intention to innovate services, Nam et al. (2010) focuses on different stakeholders that could contribute to or be used as competencies. Therefore it could be argued that Nam et al. (2010) has a more inward focus in contrast to Paswan et al. (2009).

This pandemic has caused great uncertainties and an unstable environment for firms. As restaurants were little prepared for pandemics (Alonso-Almeida, 2020), it is expected that the types of service innovations according to the dimensions of Paswan et al. (2009), could be characterised as high levels of uncertainty, a low market orientation (firm focused) and a cost control leadership. The focus of this type of service innovation is on the delivery of enhanced value through efficient, cost cutting service delivery.

2.3 Service innovations in restaurants during covid-19

The Covid-19 pandemic has challenged the hospitality industry to survive by adopting innovative (service) strategies (Khan, Niazi, Nasir, Hussain, & Khan, 2021). Heinonen and Strandvik (2020) mention that SI could be a mean to improve existing services and create new services. In line with that, Al-Kalouti et al. (2020) argues that improving the factors that enables innovation is especially important in an unstable economic environment.

In the previous section the different types of service innovations were discussed. These types differ in the nature of the innovation, the characteristics of the innovation and the focus of the organisation. In this section, several service innovations within restaurants are described in order to illustrate practical changes in restaurants and how it might change the business model. These SIs have the specific context of being created and implemented during covid-19.

Although little scientific research has been conducted on which innovations have been implemented by restaurants during the covid-19 pandemic, the National Restaurant Association (NRA) provided a list of innovations and trends in 2020 (hence, in the midst of the covid-19 pandemic). This list is based on a survey of 6000 restaurant operators and a survey of 1000 consumers (The National Restaurant Association, 2021). Additionally, the Koninklijke Horeca Nederland (KHN) (2021) that represents 19.000 hospitality firms in the Netherlands constructed a list of changes within restaurants that has been caused due to Covid-19 and that might be lasting in the future.

Changes that made an appearance according to the NRA (2021) and the KHN (2021) are for example changes of the products and meals on the menus in order to fulfil the customer's demand for both healthier as more comfort food. Besides that, local products have become increasingly more important to customers since the beginning of the pandemic and has more frequently become part of the service offering. Moreover, creating more streamlined menus by adapting the menu to lean and fast menus, reducing inventories in order to require less staff. Another trend is changing the business model by offering off-premise meals (takeout or delivery), this could either come in an finish-it-at-home kit or a completely finished meal. Along with that, a trend is for the customer to order specific courses at the restaurant while making other courses themselves. The KHN adds that digital changes such as QR codes at the tables in order to view the menu, innovate the process of the business model as the ordering process is more efficient and streamlined. Lastly, offering different services such as (online) cooking classes is a change that creates an extra revenue stream in the business model. To add to that, in an article in Forbes, Canter (2021) mentions that restaurant owners might reconsider the

restaurant's layout and change to a greater focus on the kitchen area compared to the dining area. He expects that food delivery will maintain to be a large portion of the revenue, hence restaurants will focus more on expanding the kitchen in order to be able to provide these services more efficiently.

Based on these trends the following three changes can be concluded. First, variety on the menu innovates the product offered. Secondly, digitalisation innovates the firm's processes. Thirdly, by implementing food delivery services, the business model is being innovated. When assessing this with the typologies of Paswan et al. (2009) it could be concluded that these innovations have a cost control focus and are highly market focused. Furthermore, these examples illustrate changes in the business model and henceforth the Business Model Canvas (Osterwalder & Pigneur, 2010). It could be argued that all of the nine building blocks are touched upon with the innovations (NRA, 2021; KHN, 2021; Canter, 2021).

Scientific literature research on types of service innovations in restaurants implemented since the start of covid-19 in 2019, is lacking. Although, the NRA (2021), the KHN (2021) and Canter (2021) have conducted field research and/or have specific field knowledge and expertise, it must be said that these are not scientific sources. Henceforth, the above mentioned references can solely be used to simply provide an understanding on types of recent service innovations in restaurants. To add to that, the innovations suggest changes in the business model.

2.4 Key performance indicators

For restaurants in an uncertain, competitive environment it is beneficial to have an overview of factors influencing the organisation's performance and BM. Key performance indicators (KPIs) prevent information overload and provide an integrated, complete picture of the critical competitive factors (Carlucci, 2010) and represent an important strategy tool that could be applied to innovations (Banu, 2017). As organisations utilize KPIs to measure efficiency (Fernandes et al., 2021), KPIs could be applied in order to measure the performance of SIs of BMs. Additionally, it could indicate which SIs are desirable to maintain. According to the KPI Institute (2016) the most frequently used KPIs in restaurants are: customer feedback, occupancy, service measurements, revenue, cost management and human resources. According to Wadongo et al. (2010) key performance indicators can be divided into financial and non-financial indicators. Financial indicators traditionally are measured by profit margin, total assets turnover and the multiplying of equity (Wadongo, Odhuno, Kambona , & Othuon , 2010). Furthermore, service quality, customer satisfaction and competitiveness are considered non-

financial performance indicators. A study from Atkinson and Brander-Brown (2001) demonstrates that the majority of hospitality firms exclusively focus on the financial performance indicators. The service innovations implemented in restaurants as indicated by the KHN (2021) and the NRA (2021), have a focus on logistic adaptions, customer's demands and digital changes. To measure the performance of these innovations, both financial and non-financial indicators are required. As the KPI Institute (2016) specified the most frequently used financial and non-financial indicators applied in restaurants, these indicators will be employed in this research and are expected to be found in the data collection.

2.5 Effects of service innovations

SI has many positive outcomes: it could potentially attract new customers, increase customer loyalty and retention, generate brighter market prospects and increase sales and profit (Vargo and Lusch, 2008; Durst, 2015). In the hospitality industry, SI has become a key driver in financial performance, customer satisfaction and retention and the image of hospitality firms (Vargo & Lusch, 2008). Moreover, SI significantly adds to the shift from conventional business models towards contemporary business models (Hilman and Kaliappen, 2015). Along with that, Ziyae et al. (2021, p. 2) argues: "*Service innovation is considered the frontier of competitive advantage.*" A research conducted by Lin (2011, p. 24) shows that the goal of service innovations within the service sector is not to improve the quality of the service, but rather to: "*Reduce costs, improve internal operation efficiency, shape superior corporate image or relieve pressure of the competition.*" This argument is also reflected in the reports of both The National Restaurant Association (2021) and Canter (2021). For example, it could be argued that the innovation of stream-lined menus as indicated by The National Restaurant Association (2021), has the goal to reduce the inventory and labour costs.

Den Hartog, Gallouj & Segers (2011) studied the degree of SIs and the impacts of these innovations in Dutch hospitality firms and identified 6 types of impacts of innovation in the industry. These impacts were categorized as financial and non-financial impacts and are shown in the graph below. The graph shows horizontally the specific firm context and vertically the different impacts. The numbers in the graph indicate the percentage of which the participating firms see a difference since the implementation of the service innovation. E.g. 70% of the restaurants indicate that one of the impacts of the service innovation is the improvement of quality. Other findings of Den Hartog et al. (2011) were a higher turnover, lower costs in all

hospitality firms, quality improvements of the services offered and increased chances of welcoming new category guests.
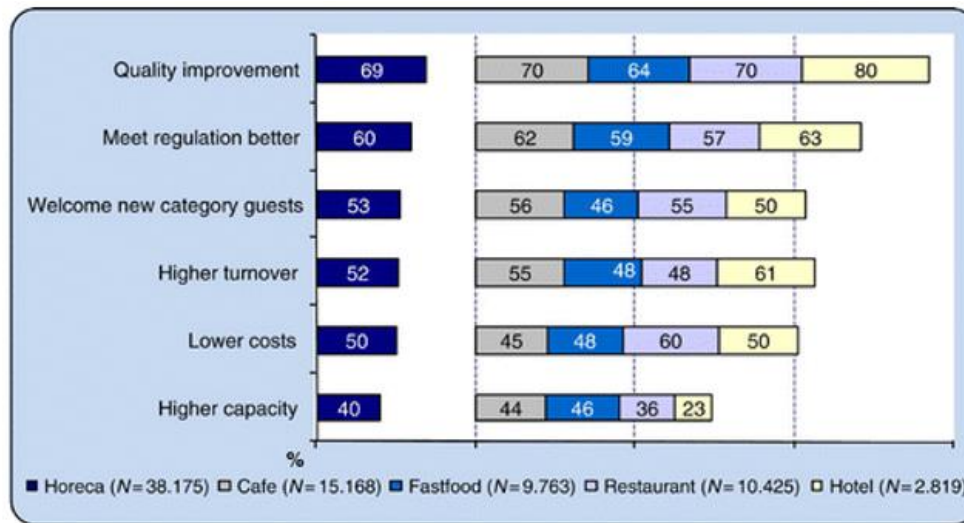
Den Hartog, P., Gallouj, F., & Segers, J. (2011, 16 May). Measuring innovation in a 'low-tech' service industry: the case of the Dutch hospitality industry [Graph]. https://www.tandfonline.com/doi/full/10.1080/02642060903576084

Gursoy and Chi (2020) argue that the break-even point for firms in the hospitality industry are relatively high due to high operating costs, therefore the survival of hospitality firms depend on the increasing demand for the services offered (Gursoy & Chi, 2020). Along with that, research findings of Aas and Pedersen (2011) indicate that increased sales revenues generated through the service innovation are neutralized because of the increased costs of the innovation, hence a service innovation does not provide financial benefits. One of the effects of a service innovation is the increase of financial performance (Thakur & Hale, 2013). For example, a research conducted by Den Hartog et al. (2011) indicates that respectively half of the respondents report two direct financial impacts after implementing a service innovation; Higher turnover (52% of the respondents) and lower costs (50% of the respondents).

The different types of effects indicate impacts in the business models of firms whom apply service innovations. A model is required in order to, gain an overview and distinction of the effects on the business model and make a more practical and understandable operationalisation for the respondents. Additionally, the model will enhance the quality and generalisability of the conclusions of this study.

According to the studies of Den Hartog et al. (2011), Lin (2011) and Van der Aa & Elfring (2002) the positive effects of SIs on business models are evident. Therefore the following positive effects of the SIs on the business model are expected to arise in this study; quality

improvements of the service, new customer segments, improved internal efficiency and customer satisfaction and retention.

Additionally, although an increase in turnover and decrease of costs in physical and human resources was mentioned by Den Hartog et al. (2011), Lin (2011) and Vargo and Lusch (2008), studies by Gursoy & Chi (2020) and Aas & Pedersen (2011) suggest limited financial impacts. Taking in consideration the context of covid-19 and regulations that restaurants had to abide to, it is expected that the financial effects of the SIs in the restaurant will not be sufficient enough reach the break-even point or become profitable.

2.6 Business Model Canvas

The essence of service innovations is to create value for the firm (Gustafsson, Snyder, & Witell, 2020). Both the financial as non-financial impacts of service innovations improve the value proposition of the firm (Lin, 2011). However, at times these studies show different results in different contexts (Aas & Pedersen, 2011; Cainelli et al., 2004). When looking at the financial and non-financial outcomes of a SI, they could be allocated to the nine building blocks of the Business Model Canvas (BCM) of Osterwalder & Pigneur (2010). These building blocks structure the fundaments of how a firm intends to make money and cover the four areas of a business: customer, offer, infrastructure and financial viability.
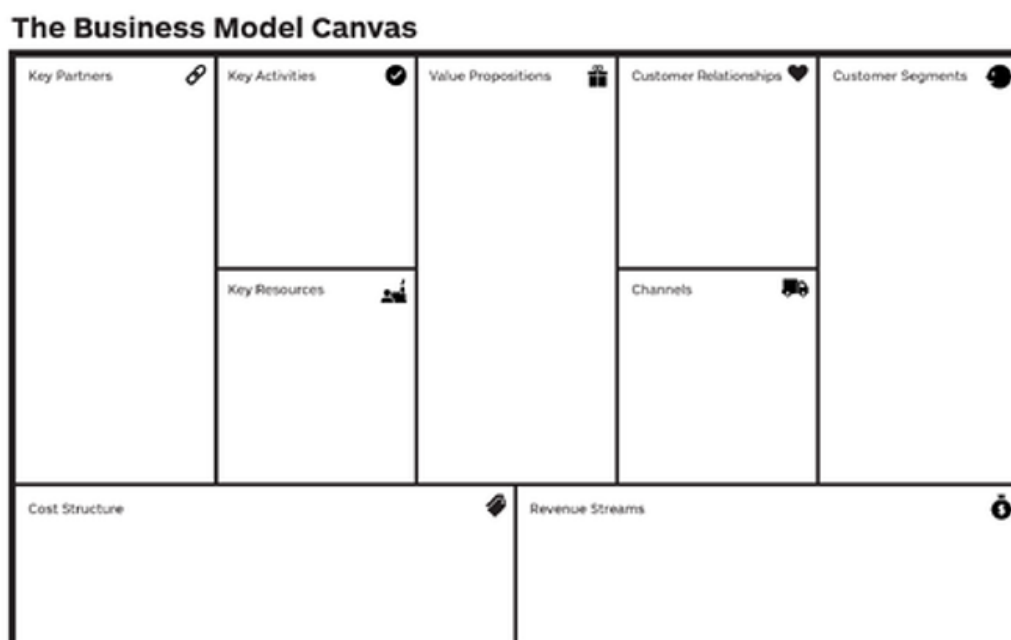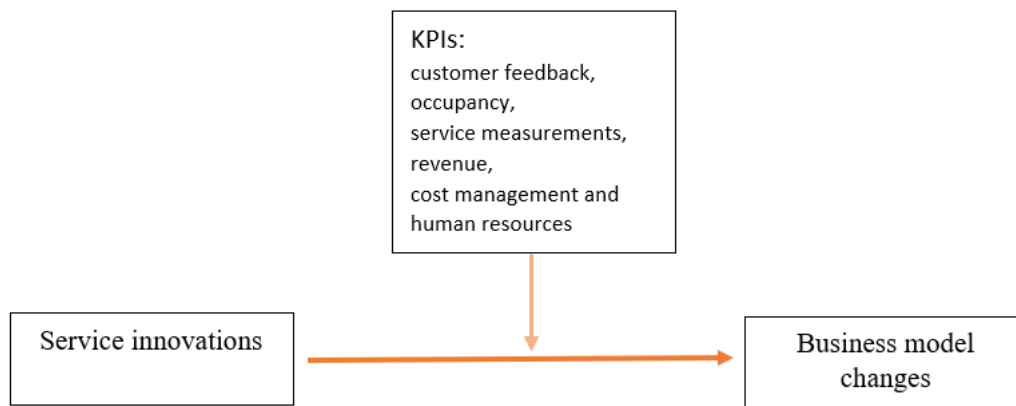

Osterwalder, A., & Pigneur, Y. (2010). Business Model Canvas [Model]. https://www.strategyzer.com/blog/what-is-a-business-model

The BMC challenges old business models and aims to turn ideas into business models by creating a systematic blueprint for a new strategy or innovation (Osterwalder & Pigneur, 2010). Hence this model will be a practical tool to apply to service innovations that in nature tend to be less tangible compared to product innovations (Lin, 2011). When looking at the four elements of a business (customer, offer, infrastructure and financial viability), the financial and non-financial impacts of service innovations could be allocated into the nine building blocks as follows. The value proposition contains a new idea/offering or in other words, the service innovation. According to Den Hartog et al. (2011) service innovations could lead to new customer segments but also to improved customer relationships. The service innovation might lead to improved service quality and customer retention, these impacts could be allocated to the building block customer relationships. Furthermore, channels to reach out to the customers might have changed since the start of Covid-19. Trends indicated by Canter (2021), the KHN (2021) and the NRA (2021) already implied changes in key activities and key resources. For example changes in meal courses and streamlined menus to reduce costs and improve the productivity of employees. Examples of new or different key partners could be the implementation of food delivery services which possibly leads to new partnerships with existing food delivering organisations. Lastly, the building blocks Revenue streams and Cost structure might show a decrease in costs, an increase in sales and/or profit and an improved ROI because of the innovation.

2.7 Conceptual Model

Since the beginning of the covid-19 pandemic SIs have been implemented in Dutch restaurants in order to survive and maintain a revenue stream through the different levels of nationwide covid-19 restrictions. These innovations have influenced and changed the BMs of restaurants. This research aims to describe the SIs, the effects of the SIs on the BMs of restaurants and discover if the covid-19 induced SIs will last after the covid-19 restrictions have been removed. With these results, restaurant owners and managers will have an empirically based overview of the advantages and disadvantages of SIs and what effects one can expect when implementing a SIs. Moreover, the restaurant owners and managers will have an overview which KPIs are utilized in order to measure the effects of the SIs on the BMs. After which it could be researched whether these changes will be lasting changes in the BM. Therefore, the following conceptual model was created.

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┌──────────────────────────────┐
│ KPIs:                        │
│ customer feedback,           │
│ occupancy,                   │
│ service measurements,        │
│ revenue,                     │
│ cost management and          │
│ human resources              │
└──────────────────────────────┘
                    │
                    ▼
┌──────────────────┐          ┌──────────────────┐
│ Service innovations │ ─────▶ │ Business model   │
│                  │          │ changes          │
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3. Methodology

3.1 Research strategy

The research question of this thesis is: *To what extent do covid-19 induced service innovations impact the business model of restaurants?*

This research aimed to understand the influence that Covid-19 pandemic related service innovations have had on the business models of restaurants. Moreover, this research contributed academic and empirical knowledge on the relationship between SI and business models. All in all, it intended to create a valid and reliable understanding on the types of service innovations in restaurants, the impacts of these innovations and the extent to which they are sustainable to the organisation. As the aim of this research was to understand the impact service innovations have had on the business model of restaurants, this research could be considered explorative in nature. Furthermore, the research focused on types of service innovations per restaurant and the impact it has had on the individual business models, therefore the appropriate approach for this research is a qualitative approach. Qualitative research aims to discover the meaning reality has following people (Vennix, 2019). As the research takes into consideration all relevant phenomena individually in order to form a coherent understanding, this research adopts a holistic approach (Vennix, 2019).

A qualitative research has several research methods; case study research, ethnographic research, action research or a grounded theory (Meyers, 2013). Within this research a case study was used as a case study questions about the "why" and the "how" of specific phenomena which could be applied for exploratory, descriptive and explanatory research (Vennix, 2019; Rowley,

2002) which is in line with the research question and research aim. Additionally, the data collection method within this research were semi-structured, in-depth interviews.

3.2 Case selection

The selection of the cases should be well thought-out in order to maximize the understanding of the phenomena (Stake, 1995). Bleijenbergh (2013) argues that contrasting cases enables the explanation of factors, however, this research has an exploratory nature and hence focused on comparing cases.

Considering the goal was to gain greater understanding, the cases selected were managers, chefs or owners of restaurants. Other requirements were that the restaurants should have been established at least 2 years before the start of the covid-19 pandemic in December 2019 with the purpose that the respondents were able to identify covid-19 related service innovations and changes within their business models. Additionally, the restaurant must have been open for at least three months during the pandemic. This is to ensure that the firms did implement service innovations, which improved the validity of the research. The respondents were approached by phone calls, emails and personal visitations in order to establish a personal relationship. This increased the chances of benevolence and thus participation in the research. All interviews were conducted in Borne, a village located in Overijssel (in the region Twente), furthermore all cases including background information and the respondent are shown in Table 1.

Table 1 Case selection

	1. Las Carretas	2. Roast It	3. De Eetkamer	4. Il Tartufo	5. Grandcafe de Steeg	6. Kir
Organisation	The restaurant offers a cosy atmosphere and Mexican dishes. Located in the city centre. The restaurant has 80 seats inside. Main course prices on the menu range from €16,75 to €21,75. (Las Carretas, 2022)	Roast It offers lunch, dinner and a grill. And is specialised in meat dishes. Roast It is located in the city centre. Main course prices on the menu range from € 18,50 to € 37,50 depending on the amount of meat you order (Roast It, 2022)	This restaurant with 9 tables exists since 1997, offering a French cuisine with honest and fresh products. It is located in the city centre. Main course prices on the menu range from €13,50 to €28,95. (De Eetkamer, 2022)	"A place where you can enjoy the real Italian cuisine and hospitality in an atmospheric way." Il Tartufo is located right outside the city centre. Main course prices on the menu range from € 14,35 to € 27,95. (Il Tartufo, 2022)	This café has offered lunch, dinner and drinks since 1981. It is located in the city centre. *"De Steeg has made a name for itself in Borne.''* Main course prices on the menu range from €16,75 to €21,75. (Grandcafe de Steeg, 2022)	Attention is essential to the restaurant. Every season they adjust the menu and create dishes based on 6 seasonal products. Kir is located outside of the city centre. Main course prices on the menu range from € 22,50 to €43,95. (Kir, 2022)
Respondent	Co-owner of the restaurant	Manager	Owner of the restaurant	Manager	Co-owner of the restaurant	Chef

3.3 Data collection

This research was conducted by means of in-depth, semi-structured interviews with respondents in a managerial position within restaurants. Semi-structured interview ensured room to diverge from the question at hand in order to add depth and credibility to the research. This provided the interviewees the opportunity to add important information (Meyers, 2013). The sample size of the research was based on the achievement of data saturation. According to Guest et al. (2006) the point of saturation could be achieved within 12 interviews. Moreover, patterns could already be established within 6 interviews (Guest et al., 2006). Considering this along with the novelty of the topic in the specific context of covid-19 and the impact it has on the business model of firms, the aim of this research was to conduct 6 to 8 interviews.

3.4 Operationalisation

Below the operationalisation is shown in the graph. The operationalisation was derived from the business model canvas of Osterwalder and Pigneur (2010). The constructs represent the nine building blocks of the model and the dimensions the categorizations identified by Osterwalder and Pigneur (2010). However, as business models were anticipated to differ from one another, the constructs were merely used as an illustration and were considered as fluid dimensions. The operationalisation was the starting point for the interview guides that can be found in appendix A.

Table 2 Operationalisation

Construct (Osterwalder & Pigneur, 2010)	Dimension (Osterwalder & Pigneur, 2010)	Question
Key activities	Production Problem solving Platform/network	- What are the most important activities you do? - What are the most important key activities of the SI?
Key resources	Physical Intellectual property Human Financial	- What assets do you require for your restaurant? - What assets do you require for your SI? - What was the effect of SI x on the key resources of our organisation?
Key partners	Optimization and economy of scale Reduction of risk and uncertainty Acquisition of particular resources and activities	- What are your most important partners? - Did the SI influence these partnerships?
Customer segments	Mass market	- How would you describe your target group(s)?

	Niche market	-	For whom are you creating value?
	Segmented		
Channels	Owned direct	-	Through which channels do the customer segments want to be reached? How do you reach them at the moment?
	Partnered indirect	-	How did the pandemic influence the manner to which you reach out to your customers?
Customer relationships	Transactional	-	How would you describe the relationship you have with your customers?
	Long-term	-	Since the beginning of the pandemic until now, how do the customers want to be reached?
	Personal assistance		
	Dedicated personal assistance		
	Self-service	-	What was the effect of SI x on the customer relationships?
	Automated services		
	Communities		
	Co-creation		
	Switching costs		
Cost structure	Cost driven	-	What costs do you have in order to operate?
	Value driven	-	Which service innovations influenced the cost structure? In what way?
		-	Which Key Resources are most expensive?
		-	Which Key Activities are most expensive?
Revenue streams	Asset sale	-	For what value are our customers really willing to pay?
	Usage fee		
	Subscription fees	-	What revenue streams does your restaurant have?
	Lending/Renting/Leasing	-	Where there any service innovations revolving around the revenue streams? (e.g. changing the prices)
	Licensing		
	Brokerage		
	Advertising	-	To what extent did the SI influence your revenue stream?
Value proposition	Newness	-	What value do you deliver to the customer?
	Performance	-	What customer needs are you satisfying?
	Customization	-	To what extent does innovations X contribute to the value that the restaurants offers?
	"Getting the job done"		
	Design		
	Brand/status		
	Price		

	Cost reduction	
	Risk reduction	
	Accessibility	
	Convenience/usability	
KPI *(Brudan, 2016)*	customer feedback Occupancy Service measurements Revenue Cost management Human resources	- How do you measure the performance of the restaurant? - What are the most important factors to measure the efficiency of the restaurant?

3.5 Data analysis

In order to reach data saturation, all interviews were structured following the same order of interview questions (Fusch & Ness, 2015; Guest et al., 2006). The interview guide was based on the operationalisation and can be found in appendix A. The interview guide, that was established from the operationalisation, was extended with additional questions in order to include dimensions influencing the BM. Furthermore, the interviews conducted were recorded and transcribed. Subsequently, these transcription were analysed using the deductive coding technique. A deductive analysis is effective as it is expected that the dimensions found in theory will appear in the transcripts (Meyers, 2013). The dimensions derived from Chapter 2.4 Key performance indicators and 2.5 Effects of service innovations, were expected to be found in the data analyses. Data retrieved from the interviews were first, according to the Grounded theory, coded into open codes in order to name apparent phenomena or emerging patterns and start the comparison of the applied codes (Birks & Mills, 2015). Thereafter, the existing codes were categorized into axial codes in order to create a conceptual framework that possesses explanatory power of the dimensions (Birks & Mills, 2015). In order to structure the codes and categorized codes, the axial codes were given different colours. The program Atlas.ti was applied to code and provide a sense of conceptual control and overview over the data. With Atlas.ti separate comparisons could be made and patterns could be found. Moreover, the collected data was analysed using within- and cross-cased analyses. Within-cased analysis focuses on the data from each individual case and the cross-cased approached analyses one case in relation to the other cases (Bruscia, 2005). Within this research, the effects of SIs on BMs were researched per individual case and in addition, were compared to the SIs and their effects on the BMs of all other restaurants.

3.6 Research ethics

The researcher will ensure research ethics are guaranteed throughout the process of writing the thesis. The research ethics will be explained by means of the 5 principles from the Dutch Code of Conduct for Research Integrity (2018):

Honesty: The reporting of the data collection will be accurate and open. The conducted interviews will be transcribed, coded and analysed after which correct conclusions will be made. The interview transcripts will be published in the appendix.

Scrupulousness: This research is two-folded. First, an extensive literature review is conducted in order to create a grounded conceptual model and operationalisation based on academic research. Secondly, empirical research should explore and possibly verify these academic findings. To achieve a scrupulous research the literature review and operationalisation will be reviewed, evaluated and adjusted by the researcher and the first examiner. This process is iterative in order to improve the scrupulousness.

Transparency: Data will be gathered by means of qualitative, semi-structured interviews. The participants of this research are given the choice whether they would like to remain anonymous during the interview as well as during the data analysis. All information shared by the participants will remain confidential, and the participant will be made aware of the research goal. Moreover, before and during the interview the participants will be asked permission for participation in this research as well as permission for audio recording the interview. At any time during the process (e.g. before, during and after the interview) the participants may object to questions or discontinue participating in the research. Lastly, the participants, if interested, will be send the final thesis report.

Independence: The thesis is impartial as no (financial) compensations will take place at any time throughout the process of this research. Additionally, the only stakeholders involved in the process are the researcher, the respondents, first examiner of the thesis and indirectly the Radboud University.

Responsibility: The researcher is aware and acknowledges the responsibility she has in conducting this research and involving interviewees to gather data. Additionally, the responsibility in writing true statements based on academic research and transparent data.

4. Results

The table below indicates the SIs that were implemented by the individual cases in order to create an overview. The table is structured by case number and the amount of SIs implemented per restaurant (from left to right, the accumulated amount of SIs). The restaurants were given corresponding numbers as described in chapter 3.4 case selection.

Table 3 Main results - Service innovations

Case number:	1.	2.	3.	4.	5.	6.
Service innovations during covid-19	Take away*	Take away, Adapted menu	Take away*, Adapted menu, Delivery	Take away*, IT system, Adapted menu, Pizza and Pasta Tasting	Take away, Delivery Car puzzle tour, Easter Egg Hunt	Take away, Bentobox, Finish it yourself box, Adapted menu

*This SI was already incorporated in the restaurant's activities before covid-19.

Based on the amount of SIs two subgroups were categorized in order to explain the differences and comparisons of the SIs and their effects on the business models. Subgroup A. contains the restaurants with 1 to 3 service innovations and exists out of case 1, 2 and 3. Subgroup B has more than 3 SIs and exists out of case 4, 5 and 6. First an analysis within the subgroups is conducted, consequently a comparison between the groups is provided. All building blocks of the BMC will be touched upon in the analyses. The results are indicated according to the following structure: first the rights side of the canvas, the customer segments, customer relations and channels, then the left side, key partners, key activities and key resources, after that the cost structure and revenue streams and lastly the KPIs.

4.1 Within analysis subgroup A:
Customer segment, customer relations & channels

Take away was already incorporated in the business models of respondents 1 and 3. For respondent 1 take away was a regularly used option in which they already possessed a streamlined menu. However, respondent 3 mentioned that only the daily dish was offered for take away, but it was not frequently bought for take away by customers. Restaurant 2 was unfamiliar with the SI take away and had to adjust to the new resources and activities that took place.

Respondent 3 added another SI, the delivery of separate courses in which customers had the option to have the courses delivered separately in order to maintain the service and quality they would normally provide. E.g. first the entrée would be delivered, after that they would bring the main course and desert. After launching this SI respondent 3 experienced logistic and

time management issues in the delivery of the separate courses as there was an increase in demand.

Both respondents 2 and 3 adapted the menu. The main reason for both organisations was to maintain the quality of the courses they offered. Additionally, this was for both organisations an important part of the value proposition. Respondent 2 adapted the menu during Christmas, in which the customer had two menu options. Moreover, respondent 3 explained that they regularly change their menu based on seasonal products. A new feature was to offer different options based on the weather and customer demand. For instance, the respondent included spareribs to the menu that attracted different customers. These customers, customers underneath the age of 40, were different from the regular customer segments: "*Our older customers would not order this, but the young ones enjoyed it a lot.*" However, this new customer segment has yet to visit the restaurant since the opening according to the respondent. Respondent 1 on the other hand, explained that since the opening of the restaurant, they can add a new customer segment to the restaurant: customers from outside the village. He assumes, the increase of channels used and the new channels might have attracted these new customers.

The existing customer segment as expressed by respondent 1 could be described as broad and informal in which anyone is welcome: "*You don't need to come dressed in a suit, just be yourself.*" Although restaurant 1 has a broad target group, they still attracted new customers that can be specified as a new customer segment, customers from outside. Likewise, respondent 3 states to have a broad customer segment but specifies it to anyone, with any spending budget over the age of forty. For example, the daily dish is offered for €13,50 and the most expensive main course is €27,95. By implementing different menu options (Spareribs and barbeque boxes) the restaurant attracted new customers. These customers were younger than forty years old according to respondent 3: "*Our guests aren't likely to order it, but the young ones do enjoy it.*" These young customers have yet to visit the restaurant now the covid-19 regulations have been removed, henceforth these new customers are considered short term customers. Restaurant 2 indicates a specific customer segment that could be categorized as fine diners. The prices of a main course range from € 18,50 to € 37,50. Moreover, the SIs didn't attract new customers during and after covid-19 at all. Respondent 2 explains: "*People that order take out, aren't willing to try any new restaurants.*" Henceforth, solely the regular customers ordered take out. However, these regular customers would visit to a limited degree as the respondent explains that certain regular guests would not order take away from them:

"Of course, there are always guests who aren't interested in take away, they told us they would make up for it whenever the restaurant opens again.''

According to respondent 1, a possible explanation for the restaurant to attract a new customer segment could be caused by applying different channels during covid-19 compared to before covid-19. The respondent explains that a banner was placed on a vehicle and moved to different locations around town. Another channel that was utilized was social media. Although this is not a new channel, the respondent increased the degree to which the channel was utilized. This is similar to respondents 2 and 3. Additionally, respondent 2 used their customer database to reach the customers via email and considered word of mouth an important channel. To add to that respondent 3 used the website more frequently for newsletters and updates. These channels became more important as a means to maintain customer relations. Reasons for increasing the use of channels or adopting new channels was to inform the customer that they were open or to promote special offers.

In general, maintaining customer relations was perceived as more difficult to all respondents. Especially, respondent 2 and 3 mentioned that part of their value proposition and customer relations was customized services with the customers. Both organisations struggled to provide this service and value proposition to the customer and therefore issued that it was more difficult to maintain or built relations. Respondent 3 argued: *"They are inside for a very short amount of time, and will be gone in no time. I didn't enjoy this way of working, because you don't have any contact at all."* Subsequently respondent 2 mentioned that the SI take away was a means to maintain the relationship with the customers. Moreover, keeping the restaurant open, for respondent 2, was in order to show appreciation to the guests for supporting them, to create work for the employees and to prevent the customers from visiting other restaurants.

Key partners, key activities & key resources

Before and during covid-19 the most important resources for the respondents were food and drink products and human resources. Although during covid-19 packaging products were included to the resources. Respondents 1 and 2 purchased their products through wholesalers or local suppliers. However, due to the new SI, respondent 2 faced issues regarding the SI throughout covid-19; the size of the kitchen was insufficient, they had to figure out the logistics of the SI and purchases went wrong (not enough packaging products but too many food products). "*It was difficult to estimate what we needed to purchase because there were fewer guests, therefore we had to throw away a lot of wasted products.*" Restaurant 3 has fewer

partners as most products are daily purchased by the respondent herself. The respondent reasons that by managing this activity the respondent is able to control the quality of the products, minimizes the costs of waste products and partners and increase the flexibility to adapt the menu. Additionally, due to the size of the restaurant the respondent has limited storage space in the refrigerators. Moreover, the existing partners did not change (in general or in intensity of the relationship) for the respondents. However, all respondents mentioned the municipality as new partner. The municipality brought forth events during covid-19 the restaurants could participate in. Although it did not influence the service innovations, it did create a new revenue stream as they could participate in events organised by the municipality. According to respondent 3: *"It was a success. As a result, we had many orders and people were enthusiastic."*

Key activities changed from inhouse activities to take aways activities for all restaurants and additional delivery activities for restaurant 3. Take away required different activities and resources from the restaurants. Respondent 2 mentioned that the kitchen was not made for take away as the size of the kitchen was limited according to the respondent. Additionally, due to a lack of knowledge and experience in the required activities and resources there was an increase in costs as there were more unutilized products going to waste compared to inhouse activities. This was not the case for respondent 1 and 3. Respondent 1 mentioned that the existing experience in take away was beneficial in the procurement and activities, e.g. staff that would normally waiter in the restaurant were now given different tasks. Respondent 3 learned early on during covid-19 to adjust the logistical activities in order to maintain the value proposition to the customers. Additionally, the respondent received help from family members free of charge and therefore required less personnel. Respondent 3 started rescheduling the employees during the last lockdown as they anticipated to be short on employees if they would not start scheduling them again. Respondent 1 and 2 scheduled the employees as frequently as possible during covid-19 in order to potentially prevent them from leaving the organisation.

Cost structure & revenue streams

In order to finance the salaries of the employees restaurant 1 utilized the temporary emergency measure to compensate for income losses (the NOW subsidy) and is intended to be applied to pay employee salaries within an organisation). Restaurant 2 did not apply for the subsidy due to the fact that the take away SI brought too much revenue in order to be eligible for the subsidy. Restaurant 3 allocated the subsidy to other fixed costs such as mortgage. During covid-19 the revenue streams shifted from income through the restaurants to income through the SIs, the NOW subsidy too was perceived as a revenue stream by the respondents. For respondent 3 due

to the SIs together with the NOW subsidy the restaurant was able to reach break-even. Respondent 3 explains: *"We didn't earn anything during covid-19, but we were able to pay everything. Our fixed costs, the taxes and such."* Additionally, implementing special offers in the take away innovation increased the sales and had a positive effect on the revenue streams. According to respondent 3 the costs did not change during covid-19 compared to before covid-19. Moreover, by controlling the procurement and receiving help from family members they were able to minimize the costs of products, waste and employees. *"I waiter and my husband is the chef, we don't need many employees. […] It helps that my husband and I work here, and we are quite small fortunately."* Restaurant 2 changed the menu once by creating a Christmas menu. These menus reached the breakeven point compared to a non-covid-19 Christmas turnover. However, the take away in general brought limited revenue to the restaurant, the respondent mentions: *"What we would normally earn in a weekend turned out to be our monthly revenue during covid-19,''* she further explains *"the turnover of the take away was enough for us not to have any claim to the subsidy."* Henceforth, although the SI was not profitable it could be considered to have a positive effect on the revenue streams. Furthermore, as the SI led to new resources and activities, the effect of the SI on the cost structure of the BM was an increase of waste costs and in employee costs for restaurant 2. Restaurant 1 has not faced these issues and experienced an increase in take away since the start of covid-19 which has had a positive influence on the revenue streams. The respondent does argue that the prices for take away are lower compared to the restaurant as customers do not receive a similar service compared to restaurant dining: *"Take away is a few euros cheaper, even though we basically use the same raw materials for it."* Although the prices for the meals increased equally to the inflation of the products, increasing the prices was not an option for the respondent: *"Because it has always been like this, the only unfortunate thing is that our gross profit margin declined a bit."*

Furthermore, respondents 1 and 2 considered employees the most expensive resources before and during covid-19, even before the other fixed costs and costs for products. Due to the fact that restaurant 3 has limited employees and the owners work full time in the restaurant, other fixed costs were the most expensive costs for respondent 3.

KPIs

Employee capacity was one of the key performance indicators that the respondents took into account when measuring the efficiency of a SI or deciding to maintain of cease a SI. Other key performance indicators that were taken into account were employee costs, gross profit margins, costs of (waste) products and customer feedback. For example, respondent 3 utilized customer

feedback to adapt the menu and comply to the customer's demand and the restaurant's value proposition. Respondent 2 concentrated on costs of employees with respect to the turnover, the costs of waste products and gross margins. The respondent monthly reviews these KPIs and explains that after an evaluation of the KPIs, actions are taken to improve them. Although a frequent analysis of the performance of the restaurant occurs, take away had a negative effect on the cost structure (costs of products and employees), customer segment and the revenue streams of the organisation. Even though the respondent had up to date knowledge on the performance and efficiency of the SI and organisation, no adjustments to the existing SI or development of new SIs occurred during covid-19. Respondent 1 mostly focuses on the key performance indicators gross margins and employee costs. The costs of products is less important as they solely adapt the prices with inflation and customer feedback is welcome but not a KPI. For instance, a considerable part of the menu has remained the same in the last 35 years.

Based on the current circumstances and the KPIs, the respondents decided to maintain or cease the SIs. Only restaurant 1 maintained the SI as it was already part of the key activities and value proposition and they have experienced an increase in sales of the take away since the start of covid-19. However, the restaurant will still be the core business to the respondent: *"Last Sunday, with Mother's day, we were completely occupied on both the terrace as the restaurant. So I told them to pull the plug of the phone and turn the website offline because otherwise we will be too busy with take away orders around 6 o'clock while the restaurant is far more important."* Restaurant 2 has completely stopped the SI as there is a shortage of employees and they do not have the resources to provide take away. The costs of the resources were too high according to the respondent. Additionally, the restaurant mentions that the size of the kitchen and the lack of packaging products are reasons not to maintain the SI. Restaurant 3 has ceased the delivery of meals and take away meals at the moment. According to the respondent they are willing to provide the daily dish as a take away meal in the future, but this depends on the amount of customers in the restaurant. Moreover, the restaurant does not have the employee capacity or the size of the restaurant (e.g. storage place) to maintain the SI. The restaurant, which is prioritized, has been fully booked since the restaurants have been open. Maintaining the SIs would require more staff to be hired which results in an increase in costs which does not align with the turnover of the restaurant.

In hindsight respondent 2 explains that more SIs should have been implemented and they should have utilized the NOW subsidy. Additionally the respondent critically reflects on

the take away innovation and indicates that the restaurant should have responded quicker when covid-19 started and worked more efficiently with the logistics, employees and purchases of products which would have positively influenced the revenue streams and costs of the business model.

To conclude, within group A there were less SIs but the effects of the implemented SIs on the BMs differed. Respondent 2 experienced a loss on the SI. Whereas respondent 1 and 3 reached break even. This might be due to the fact that respondents 1 and 3 used the NOW subsidy fully or partially to cover the fixed costs whereas restaurant 2 didn't. Another explanation could be that respondent 1 and 3 defined a broad customer segment whereas respondent 2 defined a specific one which could minimize the target group for the organisation. Moreover, by sending emails to inform customers within the existing customer database of their activities, restaurant 2 had a more inward focus when utilizing the channels. Although the restaurant did use social media to inform and attract new customers, it could be argued that every case utilized this channel. As a result the target group respondent 2 could potentially attract was limited and the restaurant was unable to capture everyone within this target group. This ultimately had a negative effect on the revenue streams.

4.2 Within analysis subgroup B:
Customer segments, customer relations & channels

Group B contains restaurant 4, 5 and 6 which all implemented more than 3 SIs. Similar to subgroup A all restaurants implemented take away in which take away was already incorporated in the business model of restaurant 4. Although respondent 4 already had a streamlined take away menu, all restaurants adapted their menu frequently in order to steer customers to a certain direction (respondent 4), ensure the quality of the meals also defined as the *"Dummy proof menu"* by respondent 6 (4, 5 and 6), adjust to the changing customer demands (respondent 4, 5 and 6), comply to the value proposition (respondent 4, 5 and 6) and distinguish the restaurant from the competition (respondent 6).

Additionally, although respondent 4 already possessed a take away menu containing pizza's and pasta's, a pizza or pasta tasting was added to the menu, in which the customer were served 4 pizzas or pastas from the menu that together formed one main course. Besides that, the restaurant implemented a new system which internally operated as a communication system and externally as an order, pay and reservations system.

Respondent 5 implemented a delivery service in order to provide work for the staff. Another SI was a car puzzle tour in which customers had to solve puzzles in order to uncover the next location. This SI was accompanied with a lunch provided by the restaurant. This service innovation was put into place to show regular customers that they were still open and working hard to generate an income. Additionally it provided work to the employees. Moreover, the respondent explains the timing of this SI was beneficial to the restaurant as people couldn't do anything at that time because of the covid-19 restriction. *"It went extremely well, people had nothing to do, everything was closed. And this was an activity that took about 3 to 4 hous one could do with the family."* Another service innovation was an Easter Egg hunt for children where they followed a trail through certain neighbourhoods of the town. After collecting all the separate letters and eggs, the children could formulate a word after which they received a small present from the restaurant. The idea behind this SI was that the children's experience with a restaurant ultimately influence the parent's decision on where to go out for lunch or dinner.

Respondent 6 actively kept the customer's demand in mind when adapting SIs or creating new SIs. After a fruitful start of the take away, the respondent experienced a decline in demand after a few weeks. Along with this decline, the respondent wanted to distinguish from competition and create a restaurant experience at home. Hence the Finish it yourself box was created. This box contained a four course dinner that needed to be finished at home, including a Spotify playlist, candles and appetizers. Along with that they created the Bentobox, a box that contained 4 meals that together formed one main course. The customer could choose four out of twelve options and decide for themselves to eat it individually or as tapas, sharing it with others. Subsequently, this box included the playlist, candles and appetizers as well.

The implemented service innovations or the participation in social events during covid-19 attracted new customers to restaurant 4, 5 and 6. Service innovations having a positive influence on the customer segments were take away of regular meals and of special boxes, the car puzzle tour, and special offers besides the menu (e.g. Bentobox). Besides attracting new customers during covid-19, respondent 4 stated that offering certain items during events and special offers, had an immediate positive effect on the sales and generation of revenue of that item in take away. According to respondent 4, the newly attracted customers were; customers from a neighbourhood that is being developed, customers from outside the village that recently went to another Italian restaurant, and elderly people that discovered the restaurant during covid-19 and would previously buy grocery pizza or visit a pancake restaurant. Respondent 5 and 6 did attract new customers with their service innovation, however these customers are

uncertain of becoming regular customers. Respondent 5 expects to attract new customers whenever the car puzzle tour will be implemented again in the restaurant. However, these customers are likely tourists and the respondent argues that these customers might not become regulars for the concept of the restaurant is common in towns. Simultaneously, respondent 5 explains that the reputation of the restaurant is extensive enough that he expects all habitants of Borne to have visited the restaurant several times.

In general, restaurant 4, 5 and 6 defined their customer segment as a broad customer segment. Respondent 4 and 6 characterised their customer segment having no specific demographic background or spending budget. All the respondents stated that the customer segments could range from young families to couples to groups of friends. Respondent 6 explains: "*You can have a meal and a beer for €25 or have a seven course dinner with complementing wines*". Respondent 5 on the other hand mentioned having an informal, open atmosphere with reasonable prices for the meals: "*Everyone is welcome, everyone visits us too. For food or for drinks. Young, old, families or groups of friends. I couldn't place them within a segment, it's just that everyone comes.*"

Before covid-19 all restaurants built and sustained relationships with customers by means of personal contact. Service provided by the employees and having conversations with the customers themselves positively influenced this relationship. Similar to group A, within group B all organisations benefited from this relationship during covid-19 as especially regular guests used the SI's, they also experienced difficulties building relationships with new customers during covid-19 as there were limited contact moments and time to sustain the relationship. Respondent 6 explained: "*We became more active on social media during covid-19 in order to show our guests that we are still there and what we are doing. As it is, of course, different to what our guests are used to.*" Additionally, the restaurant deliberately created novel service innovations (e.g. the Bentobox) that fit with the restaurant's reputation and expectations of the customer. Respondent 4 tried to maintain the relationship by providing free dessert for a couple of months as a sign of gratitude to their customers. As a result, when this free offer stopped after a few months, the respondent experienced an increase in sales of dessert and more specifically in the offered item during and after covid-19. Moreover, respondent 4, 5 and 6 mentioned that in general implementing SIs was a mean to sustain the relationships with customers. Especially respondent 5 described that staying closed would have a negative impact on this relationship: "*People would respect us more if they see we're still taking actions to stay open compared to if we would have stayed closed.*"

Maintaining the relationship was achieved by several channels. Before covid-19, the restaurants only used social media (Facebook and/or Instagram). During covid-19 current channels were utilized more intensively or new channels were applied to reach the customers. Respondent 5 explained he placed an article in the local newspaper and handed out flyers at camping sites in the area in order to promote the car puzzle tour. This had a positive effect on the revenue streams as both channels attracted a lot of regular and new customers to the SI. The main goals of respondent 4, 5 and 6 to use the channels during covid-19 was to inform the customers of changes, to make them aware that they were still open and to maintain customer relationship and retention. Furthermore, not only would they inform customers of being open, they would promote new menu items, special offers and giveaways. Respondent 6 used social media as a means to launch a SI: "*We set up a small Facebook campaign where people could win 2 carpaccio dishes if they would reply to the post and tag others*." Likewise the channel had a positive effect on the revenue stream as the restaurant consequently sold 200 carpaccio dishes in the first weekend they opened again. For respondent 4 and 6, word of mouth was an important channel too. According to respondent 4, word of mouth advertisement has always been the best channel for the restaurant and they experience a snowball effect due to this channel.

Key partners, key activities & key resources

During covid-19 changes took place in the partners of restaurant 4, 5 and 6. The respondents got appointed a contact person within the municipality to discuss new regulations. Additionally the municipality brought forth events the restaurants could participate in during covid-19. Respondents 4 and 5 purchased different services from their existing partners. One wholesaler of respondent 5 created a platform for their customers that could be utilized by restaurant guests to order meals. Respondent 5 was able to purchase it for a reduced price if they would cooperate with the promotion of the platform. Similarly, respondent 4 purchased an online ordering and paying and reservation system from their IT partner. As the IT specialist launched the innovation in restaurant 4, the restaurant was able to purchase it for a reduced price. Benefits of this new service were plenty according to respondent; they required less personnel and were therefore able to generate more revenue and have a decrease in costs, additionally there were less miscommunications resulting in a higher quality of the products. Respondent 4 explains: "*Without the system, we would have to place one employee at the phone, however then we would need an extra person to welcome and waiter the guests that were allowed in the restaurant during covid-19, but we didn't have enough turnover to afford that.*" Additionally, as customers

could order a week in advance the restaurant could prepare for the orders and have less costs of waste products. Via another partner, Coca Cola, respondent 4 was able to retrieve data from any organisation using Coca Cola in the Netherlands about trends, increases or decreases in demands of any type of product or brand. Therefore the respondent could predict trends starting in the Randstad that slowly moved to Twente. Respondent 6 made a conscious choice in hiring a packaging specialist. This enabled them to minimize the partners in the supply chain and the packaging producer which reduced the costs of the products and lowered the chances of shortages in packaging products.

The packaging products were a resource that respondents 5 and 6 added to the key resources. In general the respondents listed food and drink products and human resources as the key resources of the organisation. Besides that, respondent 4, 5 and 6 kept the employees and applied for the NOW subsidy to finance them. The activities changed along with the SIs. Respondent 6 described the new activities as an assembly line in which everyone had their own task. Respondent 5 focused on providing work to employees by including them in the development of the SI and implementing the delivery service. Restaurant 4 was already familiar with take away activities and as there was an increase in demand of take away, the respondent allocated waitering staff to perform take away activities. Additionally, the respondent required less staff because of the ordering system and the activities were improved: *"We barely talk to each other, it runs so smoothly. I can estimate much better what needs to be done and time my activities with the other kitchen."*

Cost structure & revenue streams

For respondent 4 there was a positive link between the SI and the revenue streams. By implementing the system and participating in events the respondent experiences a higher turnover compared to before covid-19. "*Our revenu generated from take away at the moment and during covid is 3x higher compared to before covid-19. The revenue equals a busy Saturday. Every week we have an extra weekendday as a bonus for which we don't have to put a lot of effort into. We prepare for the orders beforehand and during the rush hour we are able to still fully focus on the restaurant.*" Henceforth, the employee costs and costs of waste products are lower according to the respondent. Furthermore, because of a decrease in income the respondent gained a better overview of the restaurant's spendings and discovered unnecessary costs and investments which were ceased shortly after the discovery. Although respondent 5 attracted new customers and is planning on implementing the car puzzle tour again whenever the respondent has more time, the respondent argues that the SIs contributed little to

the revenue streams. It was primarily a means to maintain customer relations and employees. *"It's solely to maintain contact with the customers, it's not like I earned anything from it."*

Due to continuously analysing and adapting the SIs to the customer's demand and wishes, respondent 6 was able to reach break-even with the Finish it yourself box and be profitable with the Bentobox and with the Christmas menus. During Christmas customers could only order in advance, therefore the respondent was able to correctly estimate the purchases of the products and sold around 750 menus in one day. Although the Finish it yourself box was high in demand at the beginning, the respondent experienced a decrease in demand after a few months. Henceforth the Bentobox was created and launched and appeared to appease their broad customer segment. The respondent compared both SIs and mentioned that: *"It takes a lot of time to prepare and we always had products left over. Those products become waste products and that is an additional cost. At the same time it was difficult to correctly purchase the products for this box."*

All three organisations continuously utilized the NOW subsidy, however respondent 5 mentions that in retrospect, he would consider not holding on to all of the employees in order to have require less subsidy from the government or to allocate the extra money to cover for the other fixed costs. For respondent 4 and 6, the take away and NOW subsidy covered the fixed costs of the restaurants.

KPIs

Key performance indicators for restaurant 4 are: sales compared to turnover, employee costs, costs of (waste) products, gross profit margin and customer feedback. Respondent 4 admitted profits were more difficult to obtain with SIs compared to normal activities of restaurant diners. The respondent did try to save money at the end of the month in order to reinvest in the SIs and other costs. "As there was barely any income, I noticed how much leeway we had left at the end of the month. It amounted to hundreds, sometimes a thousand euros which was not a lot." Respondent 4 was able to decrease the employee's costs, the most expensive costs to the organisation, due to the implemented ordering system. On the other hand, respondent 4 explained that due to the lockdowns and the lack of time currently the respondent has had limited opportunity to have contact with the customers: *"Not only to create a relationship, also to discover whether people have any good ideas. There are so many people who can help you with problems and ideas. It's just that we didn't get around to it."* Similar to respondent 4, respondent 5 mentions that customer feedback is the most valued KPI. Thereafter gross profit

margin, costs compared to revenue and employee costs. Respondent 5 explains that in retrospect he would have let go of all of the employees: *"If I would have known it would take this long, I might have let go of the staff from day one. That has cost me a lot of money and we have around 30 employees here of which 50% didn't show their face once during covid-19."* Employee costs negatively influenced the revenue streams and cost structure of the BM for respondent 5. Lastly, respondent 6 considered profit margins of the products (meals and drinks), costs of the (waste) products, employee costs and performance and customer feedback the most valued KPIs. The respondent explained that she wasn't able to obtain the profit margins during covid-19 due to a decrease in revenue from drinks, drinks generates the most profits. Additionally, the respondent argued that they couldn't increase the selling prices of the meals although the cost prices of the packaging materials was considerably higher compared to reusable products in the restaurant (e.g. cutlery). Hence although the SIs provided revenue or even profits, the SIs did have a negative effect on the profit margins of restaurant 6 and the cost structure.

At the moment, restaurant 4 is the only restaurant to have continued the SIs. The respondent mentioned an increase of 300% in revenue of take away orders compared to before covid-19. As the costs of this SI are low, this SI is profitable for the restaurant. Respondent 6 has ceased all innovations due to the high amount of restaurant customers and lack of resources. *"We are too busy with keeping things going in the restaurant."* Additionally, according to the respondent the revenue they generate from the SIs is not worth the required effort and resources together with the core business of the restaurant. Respondent 6 explains that maintaining the SIs would be at the expense of the profit the restaurant generates from customers in the restaurant. Respondent 5 has ceased all service innovations for the moment due to lack of resources and time. However the respondent plans on implementing a second puzzle tour in the future. Additionally the respondent explains that due to the car puzzle tour, the respondent realized he wants to add new activities to the restaurant in order to attract new customers. One of these activities is a pub quiz that will be held occasionally.

To conclude, within subgroup B restaurant 4 and 5 were, similar to restaurant 2 and 3, inexperienced in the SIs, however it appeared that this group put more thought in the SIs and therefore the restaurants experienced more positive effects and lasting effects. Respondents 4, 5 and 6 continuously adapted the service innovations or implemented new innovations when there was a change in customer demand or in order to improve internal efficiency. Respondent 5 developed a Car puzzle tour during a period with strict covid-19 regulations. By developing this tour the respondent was able to capture new customers as well as generate revenue.

Likewise, respondent 6 developed the Finish it yourself box when customers would ask for a different restaurant experience. Consequently the respondent launched the Bentobox when she noticed a decrease in the demand for the Finish it yourself box. These SIs resulted in an improved internal efficiency and an increase in revenue. These decisions were based upon the KPIs of the organisations. Ultimately, the restaurants in subgroup B were all able to attract new customers. Although for restaurant 5 and 6 it is unclear if these new customers become regulars, according to respondent 4 they have added lasting customer segments to the business model.

4.3 Analysis between subgroup A and B:

The results between both groups suggest that a specific customer segment negatively influences the revenue streams of a restaurant. Restaurant 2 was the only restaurant with a specifically defined customer segment. Having a specific customer segment and value proposition directed to this customer segment, the restaurant was unable to attract new customers. Whereas the other restaurants experienced temporary or lasting new customers or customer segments. To add to that, within the existing customer segment the restaurant was unable to capture all the customers within with the SI. Resulting in a decrease of number of customers in the customer segment a decrease in the revenue streams.

This result could also be explained by another finding. Restaurant 2 utilized the channels with an inward focus by applying social media and emailing customers from an existing customer base and therefore targeting the existing customers. Henceforth a second result suggests that restaurants that applied additional types of channels, achieved a positive effect on the customer segments and revenue streams during covid-19. Even though all restaurants applied social media, the manner in which social media was utilized differed. For example, although respondent 2 used social media in order to inform current customers, respondent 6 employed social media to reach a larger audience. By organising Facebook campaign to launch their first SI during covid-19, customers could win a free course if the customer would share the Facebook post and tag two people. As a consequence the respondent experienced a positive influence on the revenue stream. Likewise, respondent 5 visited camping sites in the area and actively handed out flyers to the tourists to promote the car puzzle tour. As a result the organisation attracted new customers and experienced an increase in the revenue.

A third finding is that strategically reflecting on customer demand, the circumstances (e.g. covid-19 regulations) and actively acting upon this reflection, results in an increase in customer segments and revenue streams and a decrease in the cost structure. Especially subgroup B actively acted on these factors. For example, respondent 5 employed the covid-19

regulations as an inspiration for a new SI. The car puzzle tour fulfilled the needs and wishes of the customers and therefore attracted a large audience and increased the sales of the restaurant. Restaurant 6 created the Bentobox when the demand for the Finish it yourself box decreased. Analysing the customer's demand and reflecting on internal efficiency the respondent developed a SI that fit to the customer's wishes which led to a profitable SI while decreased the costs by more efficiently utilizing the key resources. Within subgroup A restaurant 3 was able to flexibly adapt the menu as the respondent purchases the products daily herself. As a result the restaurant attracted new customers. Additionally the delivery SI of the restaurant had a positive effect on the revenue streams of the organisation as customers were more likely to order a three or four course menu. Restaurant 1 and 2 did not adapt the services nor implement different SIs during covid-19. For restaurant 2 this resulted in a negative influence on the customer segment, revenue streams and cost structure. According to respondent 1, the restaurant did not experience negative effects by keeping the menu the same. The respondent explains that in 35 years of existing, the restaurant has remained over 70% of the menu items. Hence the respondent didn't see the added value of adapting the menu. The restaurant did attract new customers. This might be due to the reputation of the restaurant.

These adaptions and developments of new SIs derived mostly from the KPIs of the individual restaurants. The results suggest that customer feedback was the most important indicator thereafter gross profit margin and turnover. Respondent 4 mentioned that he talks with customers in order to improve the relationship and to retrieve feedback on ideas of SIs. According to the respondent, customers often provide a new perspective on problems or ideas the respondent has.

Additionally, subgroup B utilized the partners differently compared to subgroup A. Within subgroup A the existing partners did not change and a new temporary partner, the municipality, was added to the key partners. This new partner was added to the respondents in subgroup B too. Furthermore, subgroup B included other new partners to the list and/or utilized existing partners differently. Respondent 4 and 5 bought different services from an existing partner, ordering systems, for a reduced price and respondent 6 hired a specialist in packaging products and take away activities.

In general, reasons to innovate services during covid-19 was to sustain the relationship with customers, generate revenue and minimize costs. Respondents argue that not implementing innovations would have a negative effect on the customer retention during and after covid-19. Moreover, according to respondent 5 it would give the restaurant a negative

reputation. Additionally, implementing SIs in general had a positive effect on the customer relations, customer segment, revenue streams and cost structure of the organisations.

5. Discussion

The aim of this study was to understand the effects of service innovations on business models of restaurants. Therefore the Business Model Canvas was utilized and key performance indicators were researched in order to answer the research question: *To what extent do covid-19 induced service innovations impact the business model of restaurants?*

5.1 Types of service innovations implemented in the restaurants

Although it was expected that the SIs could be characterised by high levels of uncertainty, a low strategic and market orientation (firm focused) and a cost control leadership (Paswan et al., 2009; Nam et al., 2010), the results differ slightly from the theory. SIs were characterized by a high degree of strategic orientation and market orientation. The strategic orientation was applied to the allocation of resources in order to control the revenue streams and cost structure. Additionally, a clear inward market orientation applies in the study as customer feedback and the demand for certain SIs were decisive factors for the ceasing or adaptions of SIs. For instance, respondent 5 and 6 implemented new SIs based on the customer demand. Respondent 5 experienced an increase in sales after implementing delivery services and respondent 6 developed a new SI in order to appease a greater part of the customer segment and improve the revenue streams. Moreover, similar to Nam et al.'s (2010) findings value was mostly created through cocreation as different stakeholders influenced the SI. For respondent 5 implementing SIs was important to appease the customer and provide work to the employees that helped in the development of the SIs. Additionally, according to respondent 4 and 5 cocreation resulted in a new ordering system. Both restaurants were the first organisations among the clients of the partner to launch the systems and were utilized by the partners to retrieve feedback or to promote the system. Moreover, according to the study of Paswan et al. (2009) it was expected that restaurants would experience a high degree of uncertainty and therefore implement radical innovations. The results suggest that the respondents perceived a low degree of uncertainty during covid-19. The respondents experienced a safety net due to the NOW subsidy, the municipality and the local entrepreneur association (BBO) that offered financial assistance.

Furthermore, the results do reflect a cost effective leadership (Nam et al., 2010). For example, respondent 6 implemented a new SI, the Bentobox, that decreased the risk of waste products, enhanced the value proposition as the SI could be applied in different contexts to different customers and resulted in a profitable revenue stream. To add to that, respondent 4 strategically introduced certain meals with a higher profit margin during events organised by

the municipality to increase the sales of specific items. Ultimately a positive effect on customer segments, revenue streams and cost structure could be concluded.

Moreover, the implemented SIs are considerably in line with the expected SI trends as illustrated by the NRA (2021) and the KHN (2021). Respondent 3, 4 and 6 implemented varieties to the menu. These varieties led to a positive effect in the customer relations, customer segments, value proposition, revenue streams and cost structure. Respondent 4 added a (digital) SI that had an immediate positive effect on key resources, key activities, value proposition, customer relations, customer segments, revenue streams and cost structure. However, although it was expected by the KHN (2021) that restaurants would maintain QR codes, a digital innovation, to direct customers to an online menu, none of the restaurants applied this SI during or after covid-19. Additionally, Canter (2021) anticipated take away and delivery to continue to be a large portion of the revenue stream after covid-19, the results indicate that restaurants who were familiar with the SI before covid-19, restaurant 1 and 4, will maintain this SI. Optimizing these activities during covid-19 has resulted in a higher turnover of these services for respondents 1 and 4. However restaurants that didn't incorporate take away or delivery activities before, ceased the SI. Those respondents, respondents 2, 3, 5 and 6, reasoned to be pressed on time and resources (human and products) to continue carrying out the SIs.

5.2 Effects of the service innovations on the business models

The expected effects as indicated by Den Hartog et al.(2011), Lin et al. (2011) and Van der Aa & Elfring (2002) were: quality improvements of the service, new customer segments, improved internal efficiency and customer satisfaction and retention. These effects were substantially reflected in the data results. The SIs attracted new customers for the cases 1, 3, 4, 5 and 6 during covid-19. Only restaurant 2 did not comply to the expectation of new customers. Respondents 3, 5 and 6 mention that the new customers that visited several times during covid-19, have yet to visit the restaurant since the covid-19 regulations have been removed. Henceforth, there was a short term effect of customer retention in the cases 3, 5 and 6. Restaurant 1 and 4, attracted new customers that still visit the restaurants after the covid-19 regulations have been removed. Therefore, restaurant 1 and 4 experienced the effect of lasting customer retention within the BM due to a SI (Den Hartog et al., 2011). For respondent 1 these guests were derived from outside the village. This is equal to respondent 4 who had two additional segments; customers from a new neighbourhood within the village and elderly people that otherwise would buy grocery store pizza.

In all cases, respondents received signs of customer satisfaction by means of positive feedback from customers or customer retention which led to an improved customer relation in the business model. Customer satisfaction was often the catalyst to implement SIs or adapt SIs. For example, respondent 5 explained that SIs were implemented in order to prevent negative reactions from the customers. Likewise, respondent 2 mentioned that customers would turn to the competitors if the restaurant didn't implement SIs. Henceforth, although the results indicate a positive effect similar to the study by Den Hartog et al. (2011), customer satisfaction had little impact on the business model as an effect, but was rather an incentive to innovate.

The effect quality improvement of existing services was solely applicable within organisations that already utilized SIs like take away. For restaurant 1 and 4 the quality of take away was improved as restaurant 4 implemented the ordering system that improved the efficiency, quality of the service and quality of the meals. The quality of the implemented SI was improved in case 3, 5 and 6 as the respondents adapted the SIs in order to abide to the customer's demand and decrease the human and physical costs of the organisation. Respondent 3 implemented the delivery of separate courses and experienced an increase in demand for three or four course dinners and maintained the quality of the meals as compared to before covid-19.

Lastly, the effect of internal efficiency of the restaurant is limited (Lin, 2011). Respondent 2 experienced issues with internal efficiency as they had issues with the planning of staff and the purchasing of the products. Moreover, respondents 1, 3, 5 and 6 experienced the effect of internal efficiency within the SI. By adapting, the internal efficiency was improved and resulted in lower costs for the organisations. For example, with the Finish it yourself box respondent 6 could form an assembly line with the staff and the Bentobox innovation improved the estimation of purchased products. Respondent 4 experiences a lasting effect of internal efficiency on the BM of the organisation. According to the respondent, the system they implemented in the restaurant has resulted in more efficient communication between colleagues, a clear and efficient communication to customers who would want to order and an improved allocation and utilization of the resources.

Studies of Gursoy & Chi (2020) and Aas & Pedersen (2011) suggested a difficulty to attain break-even or profits out of the service innovations. Likewise, within the context of covid-19 it was assumed that the results would reflect this neutral or negative impact on the building blocks revenue streams and cost structure. The results suggest that to a certain extent this assumption was valid. Restaurant 2 and 5 did not obtain profits with the SI. Restaurant 2 described to generate a monthly income during covid-19 that equals to one weekend day before

covid-19. Restaurant 1, 3, 4 and 6 were either break even and at times profitable per SI during covid-19. For example the Bentobox was profitable for restaurant 6 as it required less costs but accomplished a higher gross profit margin compared to the Finish it yourself box. Additionally, restaurant 1 and 4 achieved the break-even point and occasionally profit during covid-19. After covid-19 and in addition to the current restaurant activities, the SI take away has become profitable for the restaurants.

This research builds on the studies of Den Hartog et al. (2011), Lin et al. (2011) and Van der Aa & Elfring (2002) by uncovering underlying, intertwined relationships between the effects of the SIs on a BM. The results suggest that the effects were not independent but rather a chain of contiguous actions and effects. For example, as suggested by Den Hartog et al. (2011) SIs would improve the internal efficiency and customer satisfaction and retention. In case 4 these effects became apparent due to the implementation of the ordering system. The SI innovation led to an increased internal efficiency, that in turn caused customer satisfaction and retention, which subsequently affected the revenue stream positively.

5.3 The influence of key performance indicators on the service innovations

The most important KPIs retrieved from the data collection were customer feedback, gross margin profits and costs of (waste) products. This is considerably in line with the findings of the KPI Institute (2016). However, occupancy and service measurements were not mentioned by the respondents as key performance indicators. Within the context of implementing SIs during covid-19, the respondents relied on customer feedback, revenue and costs of resources and employees in order to continuously evaluate the effects of the SIs. Although Atkinson & Brander-Brown (2001) indicated that the majority of hospitality firms solely focus on financial performance indicators, results suggest that the most important KPI is non-financial. Customer feedback had an extensive influence on the implementation, adaption or ceasing of the SI and influenced the building blocks customer relations, revenue streams, cost structure, channels and value proposition.

5.4 An overview of the SI take away

As take away was implemented by all cases, a small overview of the effects of this SI is provided to illustrate an overview of the effects of the SI per restaurant. In general all respondents defined take away as a SI during covid-19. In restaurant 1, 3 and 4 take away was already incorporated into the organisation, for respondents 2, 5 and 6 take away was a new service offering. For most restaurants (restaurant 1, 3, 4, 5 and 6) take away led to the attraction of new customers during covid-19. In addition, for restaurant 1 and 4, take away resulted in

new, lasting customer segments. Other positive effects for respondents 1, 3, 4, 5 and 6 were reduction of costs of human resources and waste products, reaching the break-even point or be profitable and to improve the customer relations. To respondent 2, the SI didn't generate enough revenue to cover the costs. These costs increased within the organisations as the restaurants faced issues with the logistics, the costs of waste products and employees. The restaurants that implemented take away in covid-19, restaurants 2, 5 and 6, completely ceased the SI now all covid-19 restrictions have been removed. Since the covid-19 restrictions have been removed, restaurant 3 only offers take away when the respondent has the capacity for it. Lastly, restaurant 1 and 4 continue the SI as it has been applied during covid-19. Due to lack of capacity, time and the main focus on the restaurant customers, respondents 2, 3, 5 and 6 have minimized or ceased the SI.

6. Conclusion & limitations

To conclude, the main findings of this study were: SI had a positive influence on new customers or customer segments, maintained or improved the customer relationship, improved the internal efficiency (the key resources) and improved the quality of products. Besides that, certain restaurants reached break-even or achieved profits (although minimal). Negative effects were an increase in costs of human resources and waste products, and making losses on the SI.

This study focused on answering the question '*To what extent do covid-19 induced service innovations impact the business model of restaurants?'* The answer is, there is a limited effect of the covid-19 induced SIs on the BM. The results suggest that the effects of the SIs could be categorised in temporary or lasting effects. For example, Restaurant 4 still experiences the positive effects of the SIs take away and the implementation of the ordering system. With the SI take away the restaurant attracted new, lasting customer segments and was able to steer customers to make certain decisions and promote menu items, increasing the gross profit. With the ordering system the internal efficiency of the restaurant improved, the quality of the products improved and there was a decrease in costs in waste products and human resources. Since the removal of the covid-19, restaurant 4 still experiences the fruitful effects of the SIs. On the other hand, restaurant 3 attracted new customers, but these customers have yet to visit the restaurant since the removal of the covid-19 restrictions. Therefore, the effect of attracting new customer segments is considered temporary. Furthermore, even though the effects of the SIs were considerably positive, it did not result in lasting SIs as four restaurants (restaurant 2, 3, 5 and 6) ceased the SIs when the covid-19 restrictions were removed due to lack of resources, capacity and time.

A second conclusion is, the number of implemented SIs during covid-19 has no influence on the extent of the effects of the SIs on the BM. But the KPIs do influence the effects of the SIs on the BM. More specifically, reviewing and managing the KPIs regularly results in an increase of positive effects and a decrease of negative effects of SIs on the BM. For example, restaurant 2 and 3 both implemented less then 4 SIs. However, with the KPI customer feedback restaurant 3 adapted the menu regularly and captured new customers. Restaurant 2 evaluated the KPIs employee and waste costs and customer feedback. Even though respondent 2 was aware of the negative effects of the SIs on the BM (e.g. high employee costs, high waste products costs), no adaptions were applied to the SIs and the restaurant overpassed on the fruitful effects the SIs could potentially have on the BM.

6.1 Theoretical contribution

This research contributes to the further exploration of the phenomenon service innovations which has become increasingly more important (Ziyae, 2021). Additionally, as theory on the effects of SIs in the context of covid-19 and the context of the hospitality industry is fragmented, this study contributes to the existing body of literature by providing empirical data (Ziyae, 2021). Moreover the study complies to the demand of comprehensive qualitative data to elaborate on the relative importance of the effects of SIs on a BM (Gustafsson et al. 2020). In addition the study contributes to the research of Gursoy & Chi (2020) and Aas & Pedersen (2011) as this study elaborates on the financial effects of SIs on the BM. Last, the study builds on the current scientific research by placing the effects of SI on BM in a covid-19 context and identifying comparisons or differences. For example, the effect customer satisfaction according to Den Hartog et al. (2010) proved to be a KPI and a catalyst to innovate for restaurant owners/managers during covid-19.

6.2 Practical implications

This study indicates the effects covid-19 induced SIs have had on the BM of restaurants. For restaurant owners or managers an implication of this study is that it comprehensively illustrates the effects of the innovations on the business model during covid-19 and after the removal of the covid-19 restrictions. Moreover, as take away was an innovation implemented in all the cases, it is assumed that other restaurants were likely to implement this SI as well. By providing an overview of the short and long term effects of covid-19 induced SIs in restaurants, owners and managers of restaurants could weigh the advantages and disadvantages of covid-19 induced SIs based on empirical findings. Moreover, the owners and managers of restaurants could weigh the advantages and disadvantages of SIs in general because of this study. Besides an empirical analysis on the positive and negative effects of SIs in restaurant, this study provides clear explicit factors that positively or negatively influence the BM. For instance, consistently evaluating the KPIs within the restaurant and taking actions to adapt the SI if needed, results in positive effects in the customer segments, customer relations, revenue streams and cost structure of an organisation.

6.3 Limitations and future research

Although several implications are shown, this research has its limitations too. During the data collection it became apparent that certain restaurants have a solid brand image/reputation within the village, that influenced the SIs or building blocks of the BM. Subsequently, this reputation illustrated a 'How it has always been done' mindset which resulted in less SIs or a different approach to customer relations, partners and channels. To add to that, the culture in Twente

should be kept in mind when interpreting the results of the study. The Dutch saying "What the farmer does not know, he does not eat" has been mentioned by respondent 4 and could be applicable in this research setting for both the entrepreneur/manager as the customer. It implies a reluctance towards that what is unfamiliar and a more traditional mindset which might hinder the development and implementation of SIs. Therefore, an interesting recommendation for future research would be to apply the same research in a different demographic setting and compare it with the results of this study. When duplicating this research in a city, different results are expected to arise in the SIs and separate building blocks.

Furthermore, a recommendation for future research would be to include income statements and balance sheets in the study in order to gain a greater overview of the key resources, revenue streams and costs of the restaurant. As a greater overview of the revenue streams and cost structures is achieved, more patterns might be found. For example, even though the SIs implemented in restaurant 2 were unable unprofitable as there were high costs of staff and products, the respondent did not apply for the NOW subsidy nor adapt the SIs in order to minimize the negative effects. It could be speculated that the savings of the restaurant were sufficient enough in order to survive. Gaining an overview of the financial statements could potentially explain this phenomenon. Additionally, these statements will provide a better understanding of the financial effects of the SIs and well-being of the restaurants now that the covid-19 restrictions have ceased.

A practical recommendation for future research is to study how the SI take away could be implemented in restaurants in a non-covid-19 setting. This study should include the current factors hindering restaurants from implementing the SI. Restaurant 1 and 4 have proven that take away could be profitable without requiring a lot of resources or time. To add to that, restaurant 1 and 4 were the only restaurants to continue with this service offering now the covid-19 restrictions have all been removed.

Lastly, although SIs are defined as a complete new service or a renewal of an existing service (Toivonen & Tuominen, 2009; Gustafsson et al., 2020), when critically reviewing the results, the extent of innovativeness of certain SIs is considerably low. As restaurant 1 and 4 were already familiar with take away activities, the SI was rather focused on optimizing the service offering by adapting changes. Likewise, it could be argued that covid-19 accelerated the implementation of SIs that otherwise would have been implemented but at a different time. The SI ordering system within restaurant 4 was implemented by a partner who was developing this system to sell to their clients. Besides that, respondent 4 was able to purchase it for a

reduced price if the partner could launch the new system in the restaurant and restaurant 4 would provide feedback. Henceforth, it is assumed that the system was already being developed and that covid-19 was the catalyst for launching the innovation.

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Appendix

A. Interview guide

The structure of the interview should have a logical order. First, service innovation will be explained and the respondent will be asked for examples. This will provide clearance and help the respondent to answer the next questions. The interview will continue by means of the building blocks of the Business Model Canvas of Osterwalder (2010). This will structure the interview in a comprehensive, practical manner. Lastly, the interviewee will be asked what service innovations will continue to exist after the nationwide covid-19 restrictions are discontinued.

Table 4 Interview guide

Interview guide English
[explain service innovations] ***Service innovations:*** A new process or offering that is put into practice and is adopted by and creates value for one or more stakeholders. (Gustafsson, Snyder, & Witell, 2020) This research will use the context of business model changes since the implementation of covid-19 related service innovations. First we will discuss what service innovations you have implemented in the restaurant because of covid-19. - Can you think of service innovations that you have implemented since the start of Covid-19? - Looking specifically at SI X? what was the specific reason for implementing this innovation? - What was the effect of SI x on the business in general?
[explain business model canvas] ***Business model canvas:*** Is a systematic blueprint for a new strategy or innovation aims to turn ideas into new or changed business models. We will be going from block to block. At each block some questions will be asked. Additionally, it is possible that per block questions will be asked per different innovation. With the visual, printed BMC, we create a clear overview of the business model.

Building block (Osterwalder & Pigneur, 2010)	Question
Key activities	What are the most important activities you do? Looking at the SI, was there a shift in key activities? to what extent did it change your key activities?
Key resources	What assets do you require for your restaurant? To what extent did this change after implementing the service innovations? What was the effect of SI x on the key resources of your organisation?
Key partnerships	What are your most important partners? Did the SI influence these partnerships? If so, in what way did they influence the partnership? How would you value your current partners? change?
Customer segments	How would you describe your target group(s)? What was the effect of SI x on the customer segments that you identify?

	- Did this target group change with SI X? In what way? Did the service innovation attract a new target group?
Customer relationships	How would you describe the relationship you have with your customers? How did the pandemic influence your customer relationships? What was the effect of SI x on the customer relationships?
Channels	How do you reach your customer segments? How did the pandemic influence the manner to which you reach out to your customers? If it changed – What was the effect of the different channels on your customer segment?
Cost structure	What costs do you have in order to operate? Which service innovations influenced the cost structure? In what way? Which costs are short term?
Revenue streams	What revenue streams does your restaurant have? Where there any service innovations revolving around the revenue streams? (e.g. changing the prices) To what extent did the SI influence your revenue stream?
Value proposition	How would you describe your value proposition? To what extent does innovations X contribute to the value that the restaurants offers? To what extent would you be interested in keeping this SI?
Keeping or ceasing of the service innovations	Which service innovations were the most important to your business model? Could you explain why? Which service innovation(s) had the most impact on your organisation/business model? What were the positive outcomes of service innovation X? What were the negative outcomes of service innovation X? Now that the service innovations and their impacts on your business model is discussed, what service innovations will sustain after the discontinuing of the covid-19 restrictions in the Netherlands? - What are the reasons for continuing/discontinuing the SI?
Past experiences	Were there any service innovations that you discontinued during the pandemic? - If so, what was the reason for discontinuing the SI? - If you look at this SI and place it in the BMC, which block caused the discontinuing of the service innovation in your opinion? What have you learned from the pandemic when it comes to business model changes? Is there anything that you would have done differently?

Future plans	Lastly, are there any new service innovations that you will be applying to your restaurant in the future?
	- If so, can you describe this SI to me?
	  What is the reason for this SI?
	  How do you think this SI will influence your business model?

The order of the building blocks is structured in a manner that first in general the service innovations are discussed. After that is established, based on the literature review it is assumed that with the service innovations the key activities have changed. Therefore the interview will

first focus on the left side of the BMC, after which the right side and lower side will be discussed. Lastly, after having established an overview of the BMC within the specific firm, the interviewee will be asked whether certain service innovations will continue to be used in the restaurant after the covid-19 restrictions are withdrawn. Follow up questions should be asked in order to retrieve in-depth information. Some service innovations might have been implemented in the beginning of the pandemic, therefore it is required to establish a clear understanding of the information.