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Research article

# Co-creation through non-dyadic service experiences using service design

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ABSTRACT

Scant empirical research has examined non-dyadic multi-actor service experiences within the food industry. Drawing from the theories of multi-actor co-creation, service dominant logic and service experience, this paper investigates the meal-kit industry and its role in enhanced food well-being among consumers. Specifically, it answers the following research questions; 1) which stages are there in food preparation and consumption routine when using meal-kits and 2), how do these relate to the components of FWB. This exploratory study used service design tools including mind maps, prompt cards, cultural probes, and a cognitive mapping activity with interviews, to examine the food experience of participants within the meal-kit industry over the period of a week. The findings indicate five stages of food preparation and consumption that through multi-actor interactions, even when deviant to the intended purpose, lead to food experiences that can enable the co-creation of emotional, social, and cognitive benefits specifically contributing to Food Socialisation, Food Availability and Food Literacy from the FWB framework. The investigation into contextual influences and interactions with the resources within the consumer's network across all phases of food consumption, reflects the consumer's changing food experiences over time and the consumer's improved relationship with food, helping in turn to predict their food well-being. This research provides insights as to how consumer interactions with service offerings and actors within their network develop new applications of a service's value propositions based on one's specific needs and situational context.

## 1. Introduction

In 2020, the global consumer food-service industry was worth approximately USD$2.4 trillion (Fortune Business Insights, 2022). A large proportion of consumers (88%) are increasingly eating at home with family and friends (Orgel, 2018). Looking for new opportunities to create memorable food experiences at home, these consumers have a focus on health benefits, sustainability, and convenience that is also pleasurable to plan, prepare, consume, and share (Addis and Holbrook, 2019; Scott and Vallen, 2019). The home environment is one of the most influential micro-level factors that contribute to healthy food choices (Wijayaratne et al., 2018). As a result of the increased access to nutritious foods supplied by advancing ecosystems and services (Deloitte, 2019), food has remained a key driver of well-being and quality of life (Estes and Sirgy, 2019). Continuous changes in food consumption patterns encouraged academics and practitioners to design innovative service solutions for enhancing food well-being (FWB) (Addis and Holbrook, 2019). In this era of volatility where research has recognised that consumers change their behaviour regularly, understanding the individually co-created service experience of consumers is of importance (McColl-Kennedy et al., 2015). These service experiences are co-created by consumers with other actors in the service ecosystem, with the emphasis on how the service is distinctly and contextually construed and felt by the individual consumer (McColl-Kennedy et al., 2015). This current research will endeavour to clarify how holistic food experiences can be enhanced and can contribute to FWB through service design thinking by utilising meal-kit services and non-dyadic, multi-actor co-creation of service experiences within an individual's network (Ostrom et al., 2015) with the view to determine the value-in-use of this FWB experience. Within the context of this research "actor" refers to research participants as consumers, as well as all other people i.e., family, friends within the research participant's environment, who interact with each other during the consumption process.

Healthy and holistic food experiences have gained attention in recent years by changing the way people view their relationship with food (Mahr et al., 2013). When food consumption takes place, the subjective interpretations that a consumer makes of different elements in their environment may create a memorable food experience. Here, the

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experiential view encompasses all aspects from pre-purchase through to the memory of the experience as one continuous interaction, rather than singular parts (Addis and Holbrook, 2019). Companies are increasingly attempting to create such experiences by utilising the service experience as the facilitator, rather than the goods (Mahr et al., 2013).

Services are defined as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself" (Vargo and Lusch, 2004, p. 2). It has been recognised for a long time that consumers' contributions to a service experience are key to its success and that the consumer is considered an equal partner in the service co-creation process (Fellesson and Salomonson, 2016). However, seldom is the dyadic organisation/consumer relationship a mirror image of reality. Often other stakeholders are involved in service delivery. Organisations need to manage these various service experiences while simultaneously bringing functional and hedonic benefits to multiple stakeholders (Mahr et al., 2013). When developing services for food experiences one must acknowledge a multi-actor approach, including the food, social factors, service methods, other actors, and environment to offer the means for the co-creation of service experiences with the goal of determining value for the consumer. Therefore, organisations are increasingly utilising co-creation to improve competitiveness with value as the outcome of this service co-creation process (Hilton et al., 2012).

Keeping in line with existing studies on food related well-being, this study adopts focus on well-being for consumers and is centred in the domain of transformative service research (TSR) which uses and adapts tools from service research to address current issues, with the aim to improve well-being at an individual and collective level (Previte and Robertson, 2019; Gustafsson et al., 2015), and as highlighted by Patricio et al. (2018), due to its emphasis on creating new forms of value, service design should become the basis for TSR research. In this current research, food consumption is positively associated with FWB, defined as "a positive psychological, physical, emotional, and social relationship with food at both the individual and societal levels" (Block et al., 2011 p. 6). FWB explains the interplay between health, well-being and pleasurable food experiences (Bublitz et al., 2011), with food consumption experiences playing a significant part in increasing individual and collective consumer wellbeing (Batat and Addis, 2021). The current research will be guided by the FWB framework to outline the service design approach taken, resulting in the improvement of individuals' holistic food experiences.

The context for this study is the Australian meal-kit industry. This industry showcases innovative services that utilise co-creation with the consumer to deliver a healthy food experience, offering home delivery of raw ingredients and cooking instructions of healthy meals with the objective of enhancing the consumer's overall food experience i.e., meal selection, preparation, and consumption processes and their perceived value-in-use. As consumers are willing to pay double their food bill for weekly subscriptions, the industry is predicted to be worth AU$689 million by 2024 in Australia alone (Deloitte, 2019), with use increasing substantially due to COVID-19 restaurant restrictions (Al Bari, 2022). By 2028 the global meal kit industry is expected to be worth US $27 billion (NASDAQ OMX Corporate Solutions, 2021) Applying service design principles is considered appropriate for this context as it enables service development to make intangible characteristics within the food chain (i.e. processes, sourcing, employees) become tangible capabilities for the consumer (Kimbell, 2011), and follows the call for more multi co-creation research utilising the service design approach (Ostrom et al., 2015).

The current research will simultaneously respond to the need for further investigation into how service design tools can facilitate the application of non-dyadic multi actor co-creation and food experiences to enhance FWB. Specifically, it addresses the overall research objective of what is the role of the meal-kit industry for enhanced food well-being, by answering two research questions; 1) which stages are there in food preparation and consumption routine when using meal-kits and 2), how do these relate to the components of FWB. The remainder of this article will discuss the relevant literature on the FWB framework, service design, co-creation of the service experience and value-in-use, followed by an overview of the Australian meal-kit industry. Then the research design will be explained with a specific focus on the various service design tools used. This is followed by the findings from the data collection with users of home meal-kits. The final section will discuss the implications of this study as well as limitations and future research outlook.

## 2. Literature review

### 2.1. Food and well-being

Well-being is prominent in empirical research and the construct implies a strong association with various aspects of happiness and life satisfaction (Singh and Arora, 2010). A pattern has been identified in current research that suggests improved well-being may be achieved through a positive relationship with food (Bublitz et al., 2013; Batat and Addis, 2021). A positive relationship includes the multisensory, social, cultural and emotional experience beyond merely the eating of the food (Batat et al., 2019). For example, research on a sample of Chilean university students identified subjective well-being as being associated with life satisfaction, food related satisfaction and healthy eating habits (Schnettler et al., 2015). Findings suggest that higher subjective well-being is associated with positive food-related life for participants who reported better healthy eating habits, greater importance of food for well-being, who live with parents or consumed more meals at home (Schnettler et al., 2015). Food consumption is also characterised by hedonic benefits (Mahr et al., 2013) which are intertwined with sensory experiences that connect food to social memories and other positive experiences (Bublitz et al., 2013). As objective measures of well-being are limited by varying perceptions of weight and body size that influence food choices and health indicators (Scott and Vallen, 2019), a healthy relationship with food requires insight into consumer motivation as well as environmental or contextual opportunities to influence food consumption. In order to advance food service experiences, researchers and practitioners need to understand not only individual perceptions but also other life factors that may influence a consumer's healthy food experience (Bublitz et al., 2013). Hence, this research considers the application of the FWB framework (Block et al., 2011), which incorporates all health and social factors related to production and consumption contexts of food and beverages, as appropriate for the context examined.

### 2.2. Food as well-being

Advancing healthy food consumption requires a better understanding of the holistic role that food plays, and how individual and/or societal factors impact an individual's FWB. To capture the complexities of a consumer's relationship with food, the FWB framework (Block et al., 2011) facilitates an increased focus on the scope of how consumers pursue a positive, holistic food experience (Scott and Vallen, 2019). This current research study focusses on meal-kit services as an innovative food service within the home environment to develop an understanding of how holistic food experiences can be enhanced and contribute to FWB. Part of this study is the identification of FWB components. Since the unit of analysis is on the individual meal-kit user's food experience level it was expected that only the three FWB components on the individual level will be present in the data with the two FWB components on the societal level not to be identified. The three individual FWB components are Food Socialisation, Food Availability, and Food Literacy. These three components on the individual level of FWB are expected to influence how participants will plan, prepare and consume food (Block et al., 2011). The remaining two FWB components (Food Marketing and Food Policy) are captured as societal influences rather than as direct components in the study. Societal influences are an integral part of the FWB framework, however, only relevant to this study in a broader sense. Thus, the FWB

framework is applied to provide theoretical guidance and to ensure a targeted scope of the research on the individual FWB level.

Next an overview of the three directly relevant FWB components on the individual level is provided. Food Socialisation considers social and cultural differences that influence an individual's relationship with food (Scott and Vallen, 2019). Learned food behaviours extend primarily from family and peers, where the types of food introduced by parents, the understanding about food preparation, food safety and cultural values, are transferred to younger generations (Bublitz et al., 2013). The benefits of familial influence on meal consumption have been widely discussed related to well-being and life satisfaction for adults and youth (Elgar et al., 2013; Holder, 2019). However, few have focused on the whole food experience despite the amount of time and knowledge that is dedicated to the preparation phases (Holder, 2019). As good social relationships are proven to be a predictor of well-being (Anderson and Fowers, 2019), measuring social influences that occur both before and after meal consumption is appropriate in order to improve the processes that facilitate FWB.

Food Literacy focuses beyond mere nutritional understanding to consider how ability and motivation to obtain, process and communicate basic information about food leads to healthy preparation and consumption decisions (Wijayaratne et al., 2018). Within the home environment, food literacy positively influences food choices, diet satisfaction, impulse buying, and improves food socialisation and confidence to prepare food for one's self and others (Chammas and Yehya, 2019). Food literacy research is aiming to facilitate the gap between nutritional knowledge (e.g. knowing what benefits a food provides) and procedural knowledge (e.g. how to prepare the food) through household interventions and tools in order to improve FWB (Wijayaratne et al., 2018).

Food Availability focuses on how distribution and access to healthy foods influences consumers' food choices inside and outside the home (Block et al., 2011). As societal influences, e.g. socio-economic status (Batat et al., 2017), predict distribution and educational environments about health and well-being choices, availability on an individual level is reflected in the healthy options that consumers provide at home for themselves and other household members (Scott and Vallen, 2019). Perceptions about immediate costs (e.g. forgo convenience, time sacrificed shopping or higher prices), delayed health rewards and past experiential factors of healthy food similarly determine healthy options in the home environment (Batat et al., 2017). Importantly, the benefits of food availability include improved health, subjective well-being (Holder, 2019), and a positive relationship with food across all dimensions of FWB (Block et al., 2011).

Food Marketing and Food Policy are the remaining two FWB components which act as influencers on a societal level, and have the ability to influence the way food is purchased, perceived and consumed on a societal level through the entire food system (Block et al., 2011). The focus on food safety, nutrition, and food labelling policies are related to food literacy, impacting the consumer's confidence in making informed decisions (Batat et al., 2017). Similarly, food marketing for product and service strategies are changing from the traditional focus on nutrition, price and convenience as consumers now search for experiential consumption benefits of social relationships, health and well-being (Duarte et al., 2019). Although Food Marketing and Food Policy are not examined directly in the current research, it is expected that investigating individual level FWB components will inform future societal level changes to promote healthy food environments (Block et al., 2011).

### 2.3. Service design and value-in-use

This research uses a service design approach with a focus on value-in-use thanks to the consumer at the centre of the service experience. Due to its customer-centric approaches, service design is gaining in popularity to explore FWB (Rejikumar et al., 2022; Batat and Addis, 2021; Addis et al., 2022). Value-in-use evolves from the service-dominant logic literature and assumes that organisations can only offer value propositions, as true value is determined by its beneficiaries (Vargo and Lusch, 2008). Value-in-use implies the consumer uses their knowledge and skills to co-create value, which in turn captures all the experiential elements involved in the service process (Mahr et al., 2013). Value-in-use incorporates the extent to which a consumer believes they are better or worse off from the consumption experience, having transformed potential value, to value-in-use (Grönroos and Voima, 2013). When the design approach was introduced to the marketing discipline it enabled researchers to merge the design thinking process with service science in order to (re-) design services that deliver the value expected by consumers (Mahr et al., 2013). When innovating and developing services that provide value to consumers, all physical and social elements available are considered Service design thinking enables service innovation and development to make tangible to the consumer, the often intangible capabilities of the value chain i.e., employees, processes, etc (Kimbell, 2011). These intangible capabilities are considered potential values that consumers may experience, but they need to interact with the business first in order to realise them (Grönroos and Gummerus, 2014). Hence, an organisation's value does not stem from its tangible elements only, but is rather determined by the individual consumer's assumptions and perceptions (Ellway and Dean, 2016) when they interact with the organisation. From a service science perspective, value is therefore determined by the individual consumer's perception of a challenge in relation to the circumstance they are in (Grönroos, 2006). The need to interact with external resources to enhance personal capabilities and to co-create the service experience explains why consumers interact with other actors as resources during co-creation (Grönroos and Gummerus, 2014). It also supports the call for increased multi-actor research (Ostrom et al., 2015) and is justification for the importance marketing literature places on determining value from the consumers' perspective (Prahalad and Ramaswamy, 2004).

Value generation is influenced by the network of actors a consumer is involved with (Frow et al., 2014). Within the context of meal-kits, the services need to cooperate with the consumer's network of actors, such as family, and be able to deliver individually determined value to its consumers as well as the other actors, to satisfy all their needs. This reflects the influence of networks on value-in-use assessments and acknowledging the need to move from the traditional dyadic multi-actor service experience to a co-created service experience that involves a network of actors (Vargo et al., 2017). This is an opportunity for service providers such as meal-kit service providers to be guided by the consumer's perceived value-in-use with their wider networks, and to develop and deliver sought after competitive services.

### 2.4. Multi actor co-creation

Regularly, multiple actors are involved in co-creating service experiences and they are often fluid with their tasks and roles. This is why research in the field of co-created service experiences has moved past pre-defined roles i.e., producers, sellers, consumers and addresses every potential participant in the co-creation process as actors (Finsterwalder, 2018). Interactions among actors within the service network is needed for evaluating the co-created service experience (Rajala et al., 2016). It seems that academia and even more so industry, need to try and close the gap with consumers, as research has shown that consumers have clear expectations of being actors in the service co-creation experience interacting with other entities (Fellesson and Salomonson, 2016). Every interaction can potentially have positive or negative impacts on the service experience (McColl-Kennedy et al., 2015) as well as on co-creating behaviour when interacting with other actors or resources. According to service-dominant logic, when resources are integrated such as through this co-created service experience, value is determined or rather, moves from the value propositions of the organisation to value-in-use as determined by the consumer (Oertzen et al., 2018). Unfortunately, industry and academia has not fully progressed from the

dyadic multi-actor relationship approach. For academia and industry, it is important to incorporate all actors involved in the co-created service experience process into product development plans and such a detailed appraisal of the interactions between different actors and resources involved in the service co-creation experience is called for (Wikström and Decosta, 2018).

### 2.5. Co-created service experiences

Service experience as a construct; that is, what the consumer is exposed to at that particular moment in the service consumption process and an integral part of any service delivery, is still contested amongst academics and a robust conceptualisation of the construct is still sought (Jain et al., 2017). Whilst management can use consumer/employee interactions to tightly manage and influence service experiences (Park et al., 2015), this control is lost on interactions between consumers and non-human service provider resources i.e., interactions with self-service technologies or meal-kit services that home-deliver food boxes. Conversely, this can be offset by other positive consequences as research has shown both positive and negative effects, of interactions with non-human resources (Alhathal et al., 2018). From a consumer's point of view, interactions within co-created service experiences are changing (Cambra-Fierro et al., 2018). For example, strengthening the link between co-created service experiences where individuals 'buy' food to how they 'consume' food, should provide a memorable service experience (Addis and Holbrook, 2019). From an organisation's perspective these service experiences are also increasingly changing from service provider centric views and a focus on the production phase of the service offering (Saragih et al., 2019) to increasingly personalised service experiences across the entire value chain with the consumer positioned centrally (Prahalad and Ramaswamy, 2004). The increasingly consumer focused and experiential perspective to marketing is evidenced by growing research in this area and the realisation that consumers quite naturally continuously co-create service experiences as part of their daily lives (Jain et al., 2017).

Co-created service experiences and the role of multi actors is further explored and described in the following section. This study is placed within the context of the food industry and more specifically focusses on meal-kit businesses that are under the umbrella of delivering holistic food experiences. As the food industry is largely service based, local markets are interconnected with the introduction of food delivery services and there has been rapid investments and experimentation of online and offline service experiences according to consumers' preferences and individual needs (Addis and Holbrook, 2019). The food industry influences all aspects of food – its sourcing, preparation, consumption, and disposal – and influences aspects of social and cultural perceptions and routines. Since these perceptions and routines are determined by more than one actor and are situated within a contextual environment, conducting multi-actor, co-created service experience-based research to determine value-in-use is highly appropriate.

### 2.6. Meal-kit services – the servitization of dinner

Recently, a new type of business model has emerged within the food industry in Australia. The meal-kit business model is based on a subscription service designed to facilitate the consumer's preparation of meals through a regular, usually weekly, home delivery of raw ingredients in conjunction with matching recipes enabling the consumer to cook the food at home but with pre-determined ingredients and recipes, thus removing the stress of deciding, shopping, and organising meals. This is a market with significant potential and there are a number of competitors in this space already (Clemons and Ciaramidaro, 2020). Signing up to the service via a subscription is usually done through an online interface and consumers generally can choose from several meal options offered. These typically range from standard and larger family options to more specialty style dinners such as vegetarian or halal options. Once the consumer collects the meal-kit delivered to their doorstep, they will then be guided by the recipes and the ingredients provided, to cook the meals developed by the meal-kit service providers.

The move away from a sole provision of goods (meal ingredients) toward product offerings that combine goods and services (home delivery, pre-selection of ingredients, provision of recipes, etc.) has been facilitated by advances in service science. The increasing servitization of products which often correlates with a change in business model can prove to be highly profitable for businesses and highly valued by consumers (Nudurupati et al., 2016). The US meal-kit industry is worth US$6.9 billion, with a predicted annual growth rate of 4.3% between 2022-2027 (Al Bari, 2022) Meal-kit service providers are offering an alternative to the traditional sourcing of ingredients and food preparation, and at the same time are able to counteract increasing food illiteracy, poor dietary habits and increasingly unhealthy lifestyles (Banwell et al., 2012) due to the co-created experience and educational process undertaken. Therefore, the application of this research to the context of meal-kit services is highly warranted as the servitization of the traditional sales process for ingredients provides a value-added element to the meal preparation process.

## 3. Methodology

Exploration of co-created service experiences within the food industry through the guidance of the FWB paradigm presents opportunities for the meal-kit industry to expand its scope and to address individuals' holistic food experiences contributing to healthy food consumption. Service design principles highlight a solution incorporating the physical, social and information systems elements of those involved in the service experience and helps to provide a methodology that meal-kit service providers can implement when developing their service model addressing consumer needs (Karpen et al., 2017). With a particular focus on the food context, Choi et al. (2014) call for actors to be considered as entities who are "fundamentally influenced by the system but at the same time shape the system itself through their varied actions". The current research utilises service design thinking and methods, specifically participatory design's fuzzy front end, to help facilitate a greater understanding of the roles of all actors involved in the service process (Furrer et al., 2016). The fuzzy front end explores the user and their contextual elements without any preconceived goals or expectations and is most useful for societal co-creation (Sanders, 2013). Therefore, this project will narrow its scope to the exploration of participants' routine use of the meal-kit within their households with an understanding that this knowledge will help guide service process improvements within this industry through greater understanding of the agile and effective co-created service experience (Lozada et al., 2019). Through collaboration and exploration, participants offer consultation and discuss the desires and experiences they encounter to inform the researchers about design features and convert them into actionable concepts to enhance the completed co-created service experience (Kimbell, 2011). Within this service design framing, a focus on the whole of the experience is needed to ensure the largest benefit for societal value (Sanders, 2013), which is captured in this study as FWB.

As a primary focus of service design, design thinking enables the interpretation of actors and their contexts by using its tools and techniques such as visual processes and sharing of user knowledge to enhance the process and structure for delivering value for consumers (Andreassen Tor et al., 2016). Researching participants' food related activities and associated perceptions is best done in the participants' own words as this research recognises that embedded value is contextually influenced and determined by the individual (Vargo and Lusch, 2004). Participatory methods are exploratory in nature, utilising creative techniques which encourage emotional reflection, imagination and deep insights in order to shape potential co-design solutions (Sanders and Stappers, 2012). Rather than asking preconceived questions, these tools encourage participants to be 'partners' in the process typically involving activities

which utilise photographs and artefacts. Mutual involvement provides a means to clarify experiences or foundational problems that may appear, enabling a method of inquiry about how the service fits into the participant's network while understanding the process that determines value-in-use (Wilson et al., 2015). Therefore, participatory methods used in this study are highly appropriate pertaining to FWB and meal-kit services.

Four service design tools were used in this research, including a mind map, prompt cards, cultural probe, and a cognitive map including an in-depth interview. These design tools were selected due to their exploratory nature and their ability for the participants to collect information about their use of their meal-box experiences over a period without the researchers' continual involvement. Ethical approval for this study was obtain from the Queensland University of Technology's Human Research Ethics Committee (Approval Number 1600000839). All respondents provided written informed consent for their involvement in the study. This research project was conducted in two stages. Stage 1 developed a mind map, prompt cards, and a cultural probe. These service design tools were needed for the research conducted in Stage 2 when the participants engaged in a cognitive mapping activity with in-depth interviews which was undertaken to elicit insights into how the service provider could improve the service experience for the customer in the future. The prompt cards and photographs from Stage 1 were used as collateral for the interview and cognitive map in Stage 2. which is the main study reported on in depth in the findings. Stage 1 was completed online, and Stage 2 was completed face to face. These studies addressed the overall research objective, what is the role of the meal-kit industry for enhanced food well-being? To address this objective two research questions were asked; 1) which stages are there in food preparation and consumption routine when using meal-kits and 2), how do these relate to the components of FWB.

### 3.1. Stage 1

Stage 1 enabled the researchers to develop a mind map, prompt cards, and a cultural probe which were materials necessary for Stage 2, to facilitate the cognitive map activity and in-depth interview (Sanders and William, 2002). Fifteen participants self-enlisted via social media to complete the activities of the pilot study. Nine participants identified as female, and six participants identified as male, with ages from 18 to 29. To maximise objectivity of responses and reduce research bias, any participant who completed the preliminary activities for Stage 1, and therefore was involved in the development of the material used for the cognitive map activity of Stage 2, was excluded from Stage 2 (Leon et al., 2011). The participants selected for this research all indicated that they currently use or have recently cancelled, using an online meal-kit service such as HelloFresh, MarleySpoon, Pepper Leaf, Dinnerly or FoodConnect, to cook for themselves, or for a group (such as family, friends, roommates). If a participant had cancelled their service, their duration of using the service needed to exceed the duration of time between cancellation and their acceptance to participate, with a maximum duration of six months. There was no prior relationship between the researchers, the participants, or the meal-kit organisations.

#### 3.1.1. Mind map and prompt cards

The first step in Stage 1 was the creation of a mind map. A mind map is a visual diagram used to demonstrate associations towards a particular concept when the relationships among the different concepts are unclear (Martin and Hanington, 2012). The aim of the mind map was to develop prompt cards for the later cognitive map in Stage 2 of the research. Mind maps were selected as a first step in the research process as they help create real understanding and give insight into how participants prioritise and organise the information that is important to them (Hanington

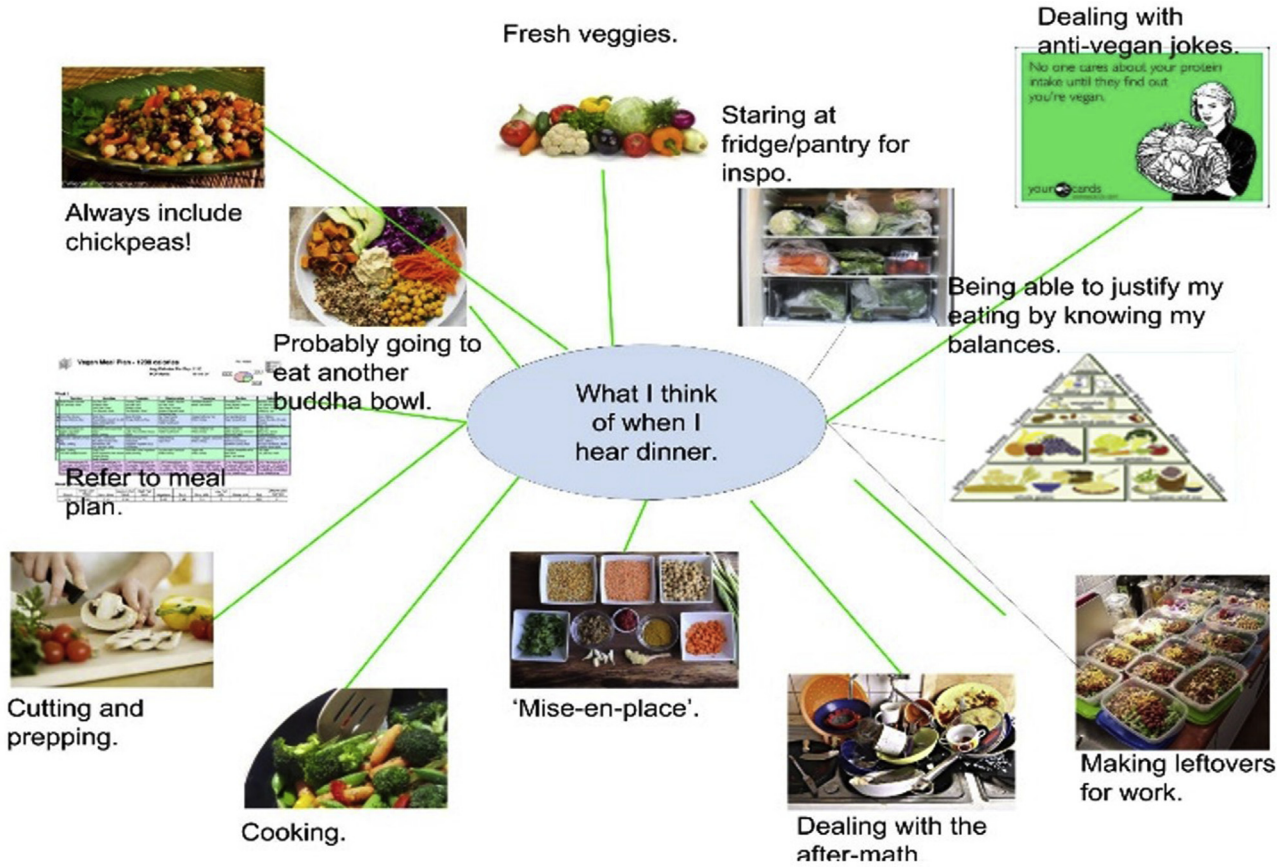


**Figure 1.** Stage 1 Mind-map example.

and Martin, 2019). As participants were recruited online, the map was created in an online 'Google Drawings' document. The key concept was written in the centre of the page: 'What I think of when I hear dinner'. After observing an example of the mind map, participants were asked to write, place or draw words and images around the central theme of dinner (Figure 1) (Leeds et al., 2019). In total, 150 words and 150 images were identified to represent the concept of 'dinner' for the next stage of analysis. The images and words from the mind map were analysed through Kimbell's (2011) AIEOU (actions, environment, interactions, objects and users) framework to dissect complex service processes and create prompt cards that depict images, words and phrases around the main area under investigation. The final prompts were allocated to designed AIEOU categories to improve the process of scanning and selecting prompts during the cognitive map activity (Stage 2). A total of


**Figure 2.** Stage 1 cultural probe Information.

100 prompt cards were created for Stage 2 for the cognitive map with additional blank cards included to allow for participants to express themselves later in the analysis (Figure 2). Prompt cards (or picture cards) are an artefact-based guide for interviewing and are frequently used in conjunction with other research methods such as the Cognitive Map in Stage 2 of this current research.

### 3.1.2. Cultural probes

The final step in Stage 1 was a cultural probe. Cultural probes inspire participants to self-report how they feel and experience specific activities in various settings over a period of time following the day reconstruction method (Kahneman et al., 2004). Cultural probes were selected for this stage in the research process given their exploratory, informal nature and their ability to encourage participants to develop new ways of understanding and communicating about their lives, environments, thoughts and interactions (Hanington and Martin, 2019; Stickdorn et al., 2011). Cultural probes also allow the collection of ongoing information, when the designer is not able to be with the participant as in the current study. To explore participants' routine use of meal-kit services in Stage 2, the cultural probe was key to distinguish a timeline of moments of use that encompassed the whole food experience. The research team developed the cultural probe with four major service moments consisting of nine service prompts which were considered important aspects of the meal-kit service experience (Figure 2). Different moments of meal-kit use were identified to successfully apply the specific processes onto a timeline for the cognitive map activity (Stage 2).

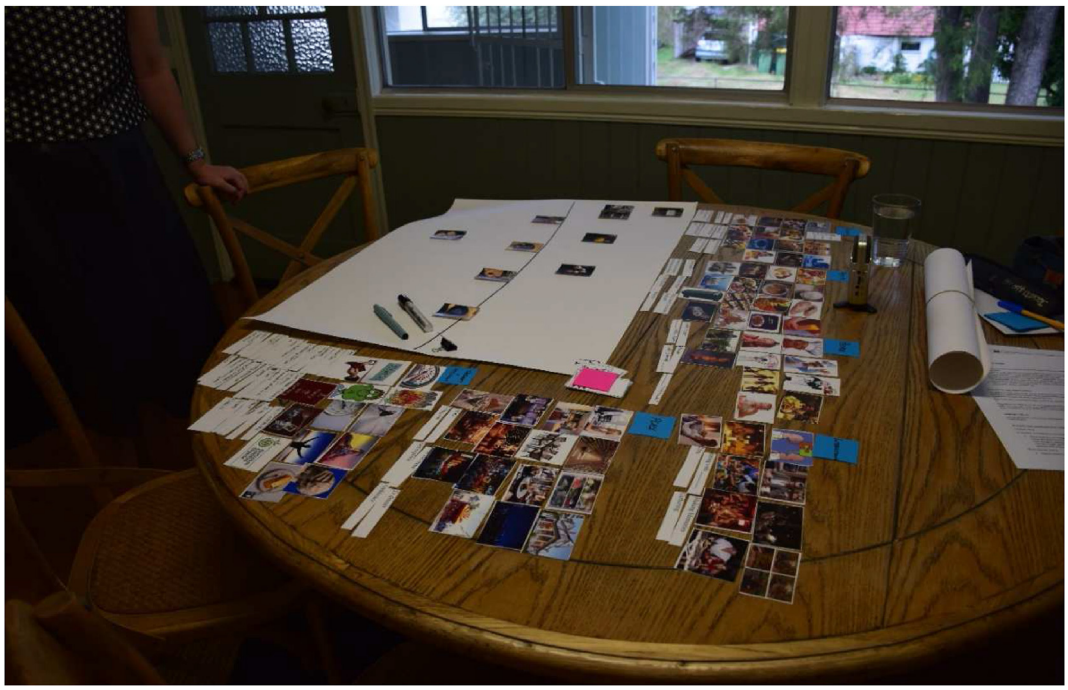

**Figure 3.** Example setup of cognitive map activity.

**Figure 4.** A completed cognitive map activity.

The same 15 participants from the prior activities were involved. All participants were asked to photograph service moments during one week of using the meal-kit service they had subscribed to. These prompts were later used to elicit responses from those who were being interviewed in Stage 2 to motivate open-ended discussions (Sanders and Stappers, 2014).

The focus of Moment One was ordering and receiving the meal-kit, taking note of produce quality and unpacking experiences. Moment Two required participants to record instances leading up to and during the preparation and cooking process which contributed to whether they perceived the meal to be successful or not, including elements that caused difficulty or were modified. During Moment Three, participants noted instances during the eating process and the interactions with others who consumed the meal, a snapshot of how the meals were accepted and where dinner was typically eaten. Finally, Moment Four identified processes following the use of the service and instances that occur when the meal kit is not used during the week. This final moment was also developed to discuss instances where the food service was failing, and ways the participant may modify parts of the meal kit to align with personal needs. Participants were asked to hang an A4 poster of the four moments as part of the cultural probe in their kitchen to act as a reminder to complete the task. Having developed interview prompts and collected photographs from Stage 1, these were used to underpin the data collection in Stage 2.

### 3.2. Stage 2

#### 3.2.1. Cognitive map with interviews

Stage 2 was used to further explore FWB using a cognitive map as the chosen service design tool. Cognitive maps are a graphic visualisation of the service experiences of research participants and provide a more synergistic approach to understanding the participant's experience by linking together their ideas and thoughts to identify themes (Marshall, 2013), with the aim being to encourage participants to generate their experiences and ideas through images, words and questions that prompt the participant into discussion with minimal leading from the interviewer (Sanders and William, 2002). Incorporating the card prompts from Stage 1 allows the participants to provide a richer response. Intensity sampling was employed with the recruitment strategy asking for involvement from participants who had current or recent experience with meal-kit services. All participants were over 18 years of age and were selected on the amount of in-depth information they can provide (Brun et al., 2014) allowing for a more rigorous analysis of the data obtained (Crouch and McKenzie, 2006). Since this study was exploratory in nature and a wide variety of responses was sought, the participants were not screened beyond this. Therefore, the sample consisted of participants with broad cooking experiences, dietary requirements, personal situations, familiarity with meal-kit services, etc. Seven participants from six different households were recruited and subsequently interviewed. The sample size reflects the specificity of the participants and the interactivity of the research method. Previous studies in marketing utilising cognitive mapping also share small sample sizes. These can be as small as only three participants (i.e., Brun et al., 2014), however, it is common for cognitive mapping studies to only utilise a lone participant (i.e., Durif et al., 2013). The sample size allowed the in-detail exploration of not only the research participants' usage of the meal-kit services, but also an analysis of the interactions with other actors including household members, their affiliated goals, and attitudes towards the activities throughout the meal-kit services consumption process, as well as their involvement with the meal-kit services and also in what capacity.

A cognitive map provides a graphical form of a participant's mental representation about a specific subject, including their ideas and links among those ideas (Brun et al., 2014). The cognitive map activity consisted of a prototyping session using a paper crafting activity with a variety of prompt cards and photos of the meal-kit experiences that were developed by the preliminary activities in Stage 1 (Sanders and Stappers, 2014). Additionally, a semi-structured interview was conducted for participants to provide detailed descriptions about what contributed to their responses in the session. Blue Post-It notes were used to segment the images and words from the prompt cards from Stage 1, into 'actions', 'objects', 'places', 'interactions', 'people' and 'feelings' (Kimbell, 2011) AIEOU categories so participants could make selections quickly (Figure 3). The activity was conducted in person in a familiar area of the participant's house where dinner was eaten to improve participant recall (Kimbell, 2011). The interview guide was developed to include standardised questions for all participants about the processes that were influenced using the meal-kit, as well as questions that focused on participants' attitudes and perceptions of the activities surrounding the meal-kit service. A selection of questions included:

- Do you feel like much has changed in your daily processes now that you're using the meal-kit service?
- Do you feel pressured to cook every night?
- Do you ever modify the meal provided? If so, how do you do it and why?
- Is there a feature that you feel would greatly benefit you if it were implemented by the service?

A timeline was incorporated with the cognitive map capturing a week of using a meal-kit service, focussing on activities relevant to the context which occurred over a longer timeframe inclusive of the planning, sourcing, preparation, cooking, and food intake phases. For data collection purposes the cognitive map was conducted on an A1 sized butcher paper with a horizontal line to represent the timeline of the participant's weekly process of using the meal-kit service (Figure 4). During this activity, the interviews were conducted.

The audio-recorded interviews lasted between 40 and 90 min. At commencement, participants were asked to describe the events unfolding in the first photo they took from the probe activity ("Who ordered the meal-kit and where?"). This initiated discussions about the entire customer co-created service experience involving the participant's one-week long interaction with the meal-kit service. Probing questions were asked when participants struggled to recall their experiences and/or when their descriptions lacked the required depth of describing an element in the process. Although the cognitive map activities were structured to chronologically discuss the research participants' experiences, the visual and flexible nature of the cognitive map allowed the participants to flexibly discuss various events of their weekly process if a chronological recall was not possible. Secondly, it assisted the participants to connect events throughout the week that were not temporally connected. Finally, the visual timeline of the cognitive map aided the participants during the interview to consider the overall service experience of their meal-kit consumption throughout the week under observation.

Interviews concluded when the description of the participant's weekly meal-kit service experiences were considered sufficiently

**Table 1.** Participants' household composition.

| Participant # | Household # | Household composition | Exposure to meal-kit service |
|---|---|---|---|
| 1 | 1 | 2 adults<br>2 children | 18 months |
| 2 | 2 | 2 adults | 3 months |
| 3 | 3 | 2 adults<br>2 children | 2 months (recently cancelled) |
| 4 | 4 | 2 adults<br>2 children | 12 months on/off (recently cancelled) |
| 5 | 5 | 2 adults<br>2 children | 1 month |
| 6 | 6 | 3 adults | 24 months |
| 7 | 6 | | 24 months |

described by the participant and interviewer. Participants had the ability to add additional images if they felt it contributed to their recount of the week, and this gave further insight into their moods and perspectives about the routine. All audio-recorded interviews were transcribed, and thematic content analysis of participants responses was conducted following Lincoln and Guba (1985). Please refer to Table 1 for an overview of the participants.

## 4. Findings

Within the context of the meal-kit industry, this research followed the call for more (a) multi-actor co-creation research; (b) research into how holistic food experiences can contribute to (food) well-being; (c) research into how service design thinking can strengthen value-in-use through service (Ostrom et al., 2015); and (d) research into the construct of service experience (Park et al., 2015) and investigated the following research objective, what is the role of the meal-kit industry for enhanced food well-being.

During the thematic analysis, five major phases emerged which distinctly identified phases of the food preparation and consumption routine where actors interacted with each other and/or with the service provider's resources and thereby determined value-in-use for the actors involved. These five phases reflect the general phases of meal preparation more generally and even extend beyond meal kits. The coding analysis captured the activities performed by the participant, other household members involved, and attitudes attributed to a certain activity during the process. The five phases identified are:

- Planning (determining what the week's meals consist of and the degree of meal-kit service integration)
- Sourcing (obtaining the required ingredients for the planned meals)
- Preparation (activities necessary before commencement of the cooking activity)
- Cooking (cooking of the meal)
- Food intake and clean-up (consumption of the cooked food and activities necessary to get the kitchen and dining area back into its initial state)

The activities were grouped into the above five phases to facilitate the analysis and comparison of participant routines. This also enabled a better understanding of the chronology of events and how activities in earlier phases informed/impacted on activities in later phases. The repetitive process of the five phases creates value and contributes specifically to Food Socialisation, Food Literacy and Food Availability components from FWB. From this initial analysis, the relationship with the FWB components emerged. Next, data will be presented on how actors experienced the service consumption by interacting with other actors within their network i.e., other humans or with the service provider's resources.

### 4.1. Co-created service experience during the planning phase

The planning phase comprises of routines related to the decision-making process surrounding the selection of the meals for the week. The resources made available by the meal-kit service provider comprise of the recipes and the ingredients. All participants stated that when the meal-kit service was not used that they used to be the meal planner in their household. When subscribed to the meal-kit service, participants noted that their ongoing interactions with the resources provided, developed largely positive service experience. i.e., increased convenience, or reduced anxiety levels. Despite this, some of the participants had concerns about relying completely on the capacity of the meal-kit service to consistently plan their weekly meals. This was largely due to elements in their weekly routines such as children's activities, work, and dinner with friends. Participant 4 found that when attempting to balance these factors with the meal-kit service, and the limited selection of meals offered by the service, sometimes his household dinner processes were challenged. Although under these conditions he found that he widened the multi-actor network and gave his extra meal to a neighbour which contributed toward Food Socialisation. But despite Participant 4's solution to ensure that nothing was wasted, his inability to modify the number of meals delivered contributed toward him cancelling his meal kit service subscription. As he explained when he had an extra meal about giving it to someone else.

> "We didn't get ever to choose the things we wanted to have, um, because there just weren't spare nights, and, and quite often we actually wouldn't even be able to use the four meals that we got and so, we were always, you know, gave them to someone; worked out alright." (Participant 4)

The value-in-use the participants gained overall though from interacting with the meal-kit service was generated mainly from the service's mitigation of each participant's routine cooking responsibilities, provided they were able to modify the service's meals to align with household allergies or preferences. No longer did participants have to purchase the ingredients individually, plan and choose meals/recipes, nor justify these decisions to other actors within their household. Instead, the meal-kit service was perceived as an actor within their network that challenged and questioned and at times re-established existing dinner processes. The research data indicated that the interactions amongst actors (meal-kit service providers and consumers within their network) generated a positive service experience and determined value-in-use if household preferences and routines were not repeatedly challenged. This value resulted from increased convenience, freed-up time, and the reduction in anxiety regarding meal planning whilst at the same time reducing the negative options available to the participants. This value specifically reflects the components of Food Literacy and Food Availability. By widening meal options (literacy) and introducing variety into meals and ensuring access to healthy food (availability) meal-kits are enabling participants to attain healthy options through preparation and consumption decisions (Batat et al., 2017; Wijayaratne et al., 2018). But contrary to these positive value-in-use evaluations, if the meal-kit service's dictation of meals challenged the food preferences of participants, this was seen as negative to the value-in-use evaluation and was seen as detrimental to the creation of dinner. In the most severe example, Participant 3 demonstrates that those who are highly familiar with a specific food type (in this instance, cooking fish), may even consider the service to be conducting a poor job and consider it necessary to personally undertake the meal planning role again.

> "Yeah, it is different. *I wouldn*'t automatically choose the things that they're giving us, but I like the fact that it's encouraging me to do that, to try ... I didn't realise I was doing it until we tried all those other things and I was like, 'Oh yeah I really, I pigeonholed myself a little bit." (Participant 2)

> "For me, it's really about convenience. Um, and about avoiding going to the grocery store, and, uhhh yeah, just that decision fatigue and deciding what to eat and it's, they [meal kit meal] always taste yummy ... But I find as well, like, in a way, you're paying almost … um, I don't know, you're paying for the luxury to bypass the grocery shopping and all the impulse buying you would have done." (Participant 6)

> "Nah, just the seafood, and then fish was on the menu again and I was like, 'Naah' ... and that was a bit of a real swaying thing for us because I was like 'Well, that's one night's meal that we can't eat out of the box,' and if they're going to keep adding fish ... and things like fish tacos, eugh ... that just ... pfft, that just doesn't sit well with me. So, the seafood was an issue for me, yep … No, I would never eat fish tacos ... I just don't think the two should go together." (Participant 3)

### 4.2. Co-created service experience during the sourcing phase

The sourcing phase refers to the participants interacting with the resources necessary for their weekly cooking process. This mainly

referred to the delivery of the meal-kit and independent grocery sourcing reflecting Food Availability. The research data shows that the interactions with the home delivery feature of the meal-kit service and the associated flexibility it offers are the main sources for the generation of positive service experience with an almost immediate integration into the participants' existing dinner routines. This complementary ease of access to distribution and access to healthy food and foregoing relationships with highlight processed foods contributes a positive approach toward FWB (Block et al., 2011). Similarly, to the interactions during the planning phase, in the sourcing phase the participants interact with the integrated meal-kit resources by allocating the meal-kit tangibles (recipes and ingredients) with symbolic purposes, and thus, specific tasks. i.e., participants indicated that meal-kit ingredients would be stored in designated locations in the fridge and pantry to indicate to all household members the meals to be expected and what food could be casually snacked on. This represents an involvement of other actors with the meal-kit resources, which in turn streamlines the tasks of the participants, reduces potential conflict between household actors, and co-creates positive emotional responses amongst actors.

Overall, to reduce the effort associated with meal planning, interactions with actors generate service experiences in and outside of the immediate meal-kit service environment. i.e., other than using the meal-kit service, participants would occasionally use resources such as a website (Participants 1, 3 and 4), cookbook (Participant 4's household member), or an older meal-kit recipe card (Participants 2, 4, 5, 6). These all demonstrate a movement toward Food Literacy and the desire to improve the quality of food consumption options (Block et al., 2011). Participant 3 utilised the suggestions of market vendors to select new ingredients, how to cook them, and what meals they should be used in:

> "[Market vendor]'ll recommend things, so I'm quite open to, 'Oh, ok, yeah I'll try that,' and she'll say, 'You can slow roast that on – or that'll be really nice if you put some you know, something herb with it.' So, and I'll do the same at the fruit and veg [stall], when I go along to the fruit and veg, and ask, 'What's good?', and the ladies there'll be like, 'Oh, this is what you need, you need some of these this week, these are really nice this week.' So I do shop very much, and I think I've got a trusting relationship with the people that I buy from." (Participant 3)

> "Yeah, I'm not a big cook. This is probably going to add more stuff to your … I don't like thinking about things. You tell me what to do and I'll do it, whenever it comes to cooking. I don't like having to think about, 'Oh what do we have to eat for dinner tonight." (Participant 5)

Challenges faced during this phase were centred on the delivery process itself. While some participants delighted in having the home food delivery service and the degree of flexibility it offered them, freeing up time to do other activities such as spending time with their partners. Some of the participants expressed anxiety over the delivery process in terms of whether the food was sitting in the sun, whether the food would be stolen, or an early morning delivery would include the dog waking up the neighbourhood. Delivery time flexibility and being able to provide a specific delivery drop off location (for example, around the back of the property) increased the perceived value-in-use. Noted in combination with this was also the secure packaging and insulation in the packing material to protect the meal-kit from the weather.

> "Yeah, well I guess this part, like one of the things this has done for us is give us more time, and we're spending less time grocery shopping and things like that. Well with our more time, we should spend more time together." (Participant 2)

### 4.3. Co-created service experience during the preparation phase

During the preparation phase interactions with other actors and/or resources centred on the activities immediately before the cooking process. When the participant, together with other actors within their household, fully integrate the resources into their regular routines it results in co-creation of service experiences outside of the immediate realm of the meal-kit service. The data suggests that tangible elements of the meal-kit service, such as the recipe cards, provide support to the various actors in their decision-making processes as well as support actors to immerse themselves in their network contributing not only to their Food Literacy but also their Food Socialisation.

> "Now, even though [meal kit service] takes obviously longer than two minutes to cook, [yng5] can see it cooking and she can see the end picture on the recipe cards I guess and she can see, how long it's going to take and she's quite happy to … wait for her food now. Um, so that's really interesting." (Participant 5)

By providing recipe cards, the participants and the children within their networks are upskilling and providing a level of value through socialisation and connection. This facilitates cognitive skills such as reasoning when food choices and choices about cooking responsibilities are made as well as emotional responses focusing on ownership and responsibility surrounding the cooking process.

> "So ... we, you know, have a system whereby the kids make one meal each, every week… And if you say like [meal-kit] is very easy to do that, because you can just say, 'Okay, you've got four recipes, you pick one, and tell me which day you're going to do it'... I found it quite a good thing in terms of um, getting kids involved, in the process,… you give them the choice without saying this is the meal I want to cook, so it gives you some sort of ownership…"(Participant 4)

> "So with [meal kit service], I literally just come home at the end of the day and my husband and the 16-year-old,…they pick out a recipe, and they leave the recipe card on the kitchen bench, and that is the recipe I cook for that night." (Participant 5)

### 4.4. Co-created service experience during the cooking phase

In this phase participants and other actors involved used the meal-kit, other ingredients, and their cooking skills to cook a meal. Different levels of cooking skills resulted in different meal-kit resource integration into the cooking routine. Participants with lower cooking skills interacted with the meal-kits ingredients and recipes by following instruction and sticking to the ingredients provided. This resulted in an overall positive co-created service experiences due to positive interactions with other actors over the meal to be prepared, and less anxiety about the "technicalities" of cooking. This reflects increased Food Literacy through increased ability related to food-skills and knowledge for all participants involved (Machin et al., 2021). For example, participants with higher cooking skills interacted with other actors and the resources provided differently. These actors appreciated the ease of use of the meal-kit services. They considered the meal-kit services as a means to an end i.e., reduction in meal related time and would regularly amend or ignore proposed recipes and add/drop ingredients based on their personal preference and their food preparation skills. Hence, regardless of the participants' personal situation they all co-created a service experience when integrating the meal-kit resources and other actors into their regular routines. For actors with lower cooking skills this co-created service experience resulted in newly generated interest in learning to cook and curiosity about pushing the envelope and discovering new meals and new skills. For actors with higher cooking skills the interactions with the meal-kit service only resulted in a positive co-created service experience when it offered them an economic rationale for using it i.e., saving time, reduced discussions over meal options, knowledge enhancement.

> "If it was just [partner] and I, *I wouldn*'t do [meal kit service] either, because then we would just be doing some more interesting things with food. Well I regard [meal kit service] as a very easy, bit like fast food almost. You know, it's an easy and convenient thing to be doing …" (Participant 4)

"Since having [meal kit], I have increased my ability to cook massively… I'm not afraid to put herbs, put sauces, mix different types of food with other types of food which I would have never thought to do. Um, when you read off I guess a recipe book,… without actually forcefully having the ingredients put in front of you, I guess you've got the option to not buy the ingredient … and therefore you don't put that ingredient in your cooking, whereas here [with the meal-kit], it's physically in your hand,… so you may as well put in the recipe when it tells you to." (Participant 5)

### 4.5. Co-created service experience during the food intake and clean-up phase

The research data revealed co-created service experiences during the consumption of the meals, as well as post-consumption during activities related to cleaning and tidying up. All participants perceived the main meal of the day as an important part of their household routine, which i.e., facilitates interactions (conversations) amongst the actors. This generates Food Socialisation and the creation of meal traditions through food-based rituals and passing the value of food connections through generations, contributing to FWB by establishing positive relationships with food through parenting, family and with peers (Block et al., 2011).

"It's for, having something central and you know, same with food. Food is a … uh, you know, one of the bits of collateral that uh, you use you know. And you have a, some sort of regime and regularity and you have food, and you know, nice food is, is certainly part of it, but it's not, it's, it's, you sit down together not for the sake of being able to appreciate the nice food, but um, to be able to interact with each other, and the nice food just … makes it … more, a more enjoyable process." (Participant 4)

The interactions with and consumption of the cooked meals resulted in all actors having a co-created service experience with positive emotions as well as feelings of achievement and various levels of cognitive tasks such as decision-making, problem-solving, etc. Participant 2 considered the meal-kit meals more "extravagant" than what she would otherwise prepare. The integration of the meal-kit resources facilitated a positive interaction with Participant 2's network where the "extravagant" meal would call for a more formal dining setting at the dinner table together with her partner, which in turn resulted in co-creation of social benefits reflecting the Food Socialisation component of the meal-kit, and more conversations amongst them. The research data also shows that the meal-kit resources were utilised to interact with younger actors (children) within households. The integration of the meal-kit into the dining routines resulted in an increasingly holistic service experience amongst children. The co-created service experience enabled children to develop cognitive skills where they learned about different ingredients, how to prepare meals and reasoning behind the need to consume different types of ingredients. The role of family is considered central in Food Socialisation and establishing strong sociocultural ties between food choices and family influences (Moore et al., 2002).

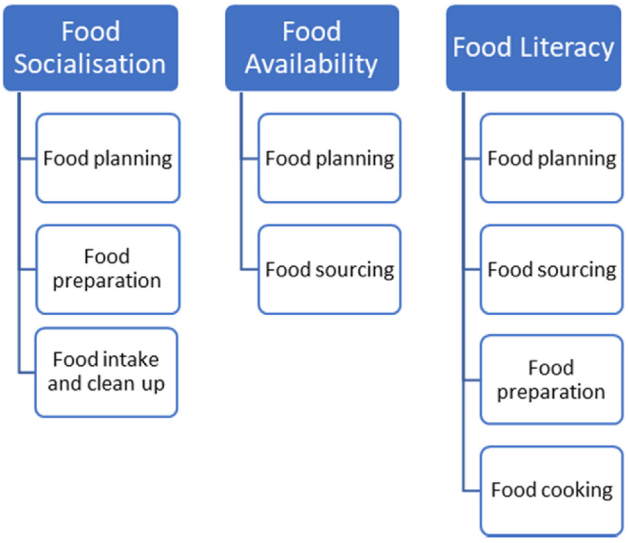


**Figure 5.** Results framework.

"But [meal kit service] did that to us as well, so, it was, I found it exciting to look at the recipes for the week and think, um, and having teenage girls who, one is a little bit fussy, and I think at the time, I said, 'This is what we're doing,' and they seemed pretty keen about it. Umm, and they, I said, 'Just gotta give it a go, you know. Like, let's try that,' you know, cause they might have turned their nose up a bit at particular, something that we hadn't had before, and, my youngest who is fussy, she, she just had such a good attitude towards trying these new foods, in these recipes and things like that." (Participant 3)

"Lack of enthusiasm from my children is, is the main reason ... they tend to turn their nose up at anything that's new, and that was one of the great things about having the vegetarian for [meal-kit service] I think, that you know, 'That's what we were having,' and so they tried it." (Participant 4)

The area which did concern three of the participants (Participant 2, 6 and 7) was the area of the meal-kit service provider managing the waste removal of the packaging and the recipe cards, rather than leaving the onus on the participants themselves. Although Participant 6 and 7 tried to find ways to reuse the packaging (e.g., to collect their recycling and to use within their vegetable patch) they did find the amount of waste a disappointment.

"Yeah, cause we end up with so many boxes, cause they deliver a brand new box every week and I thought we put out our old box and collect it and then swap it over, but it just has to go into recycling. And all the cool packs as well, I know they can be recycled but it just seems like a lot of stuff every single week, whereas I'd love to just swap it over." (Participant 2)

"The box. I feel, I feel like they used to collect it and they used to recycle it. It would be awesome if they still did that … 'cause it's a pain for us to have it … and … um, it makes you feel like you're doing the right thing by recycling it." (Participant 7)

## 5. Discussion

This research study set out to investigate how non-dyadic, multi-actor interactions generate co-created service experiences within the food industry. Specifically, this study addressed the overall research objective, what is the role of the meal-kit industry for enhanced food well-being? To address this objective two research questions were asked; 1) which stages are there in food preparation and consumption routine when using meal-kits and 2), how do these relate to the components of FWB. Considering food as well-being (Scott and Vallen, 2019) this research assessed value-in-use as an outcome from co-created service experiences in an individual's network, contributing to FWB. The results indicate that value-in-use occurs most prominently when the service interacts with pre-established processes between the meal-kit consumer, other actors within their network, and the service provider's resources throughout the whole co-created food service experience. The FWB framework was shown to be an appropriate guide to this research as the relationship participants gained with food by improving FWB dimensions of Food Socialisation, Food Literacy and Food Availability predicted positive outcomes which were associated with general well-being. These additional FWB insights contribute toward greater understanding of the role of food research as part of transformative service research. The findings indicate that there were five stages in food preparation and consumption

within meal-kits which map onto the three identified components of FWB. The relationships between these emerged stages and the three conceptual components of FWB are outlined in Figure 5. This research supports that the users are at the centre of any multi-actor network as they determine their own value-in-use and choices about better food experiences, which are facilitated by co-created service experiences.

Interactions between actors are crucial for the generation of co-created service experiences and determining value-in-use (Jain et al., 2017). Within the context of meal-kit services, service design tools were employed to identify how service providers can increase the evolving interactions of their consumers with their network to generate value-in-use through co-creation of the service experience. In this research five phases of co-created service experiences with meal-kit services were identified; the planning phase, the sourcing phase, the preparation phase, the cooking phase, and the food intake and clean up phase. Perhaps the most notable factor identified was the evolving interactions with the resources within the actor's network across the five phases of consumption. This reflects the co-created service experiences which help to improve relationships with food, aiding with overall FWB. In line with how the FWB framework was developed as a continuum, the meal-kit service acted as the facilitator by recognising what attitudes and behaviours needed to be changed for better food consumption (Bublitz et al., 2013). Objective perceptions of well-being are difficult to measure when offering a service on a commercial level (Scott and Vallen, 2019), therefore this research study benefited by investigating contextual influences which impact an individual's FWB.

In line with Grönroos (2006), when a participant realised a challenge in their circumstances, they determined what value-in-use was possible by interacting with external resources and actors (i.e. the meal-kit) to improve their personal capabilities. It seems that consumers' value-in-use evaluation strategies were determined by seeking control over modifying the resources to their unique needs and multiple emotional, social and cognitive actors in their network (Ellway and Dean, 2016). More specifically, an innovative food service does not create individual value-in-use through a single interaction with the consumer but facilitates a holistic co-created food service experience by involving multiple actors in a network.

Through the continuous interactions of the participants with the meal-kit resources, the participants consumed food experiences and, in the process, changed the network functions of the actors and the meal-kit resources. i.e., due to the reduced cooking difficulty the meal preparation and cooking became a collaborative process. For example, during the *preparation phase of the co-created service experience*, participants often amended the meal-kit's resources to their own specific circumstances and value-in-use perceptions i.e., teaching children to cook or using the higher quality meal-kit meal as a reason for a family event (a meal together at the dinner table). These social interactions contribute to the learned food and cultural behaviours that are passed on for future positive food experiences (Block et al., 2011) and indicate that positive social occurrences can directly lead to positive food relationships (Holder, 2019). Thus, the actors determined value-in-use by converting a mundane yet necessary process through co-created service experiences into a highly valued activity.

Meal-kit services are heavily promoted as services for pre-planned and delivered meals that provide unique value to users while operating at the commercial level. Allocating these tasks to the meal-kit service therefore also seemed to be at the forefront of the participants' minds such as in the *co-created service experience planning and sourcing phases*. Service providers, however, need to acknowledge that the services they provide may not perfectly align with the needs of their consumers, but some consumers are willing to make concessions to their consumption activities if the interactions with a service via a resource or another actor within their network will generate value for them. Additionally, participants were able to use the resources of the meal-kit service to involve other actors within their network by improving food literacy during the *co-created service experience at the preparation and cooking phases*. For example, the service offered an opportunity for improving the gap between nutrition and cooking procedures.

Unfortunately, this positive outcome is not always achievable. When a service delivery does not meet the expectation of the consumer and the consumption of the service experience stops (i.e., Participants 3 and 4 cancelled their subscription) then service providers can apply the same multi-actor approach and initiate a co-created service recovery process (Arsenovic et al., 2019) by questioning the value proposition of their resource composition to the consumers and how well the provision of these resources match with the roles the consumers place on these resources. When consumers are challenged by the integration of the resources into their value evaluation, i.e., limited choices of meals available, it will encourage them to evolve their interactions with the resources within their network over time (Cambra-Fierro et al., 2018) and to seek alternative options by engaging with other actors and/or resources (Ellway and Dean, 2016).

Determining value-in-use based on the integration of resources is a basic principal of services (Badinelli, 2012). Therefore, consumers' interactions with their network keep evolving to determine the value that best represents their needs at any given time. During the *co-created service experience planning phase,* the interactions were consistently low, yet this was perceived as a positive co-created service experience as they wanted little interactions and an easy meal-kit service. Whilst during the *co-created service experience in the preparation and cooking phases* the interactions with other actors and resources was high, routine preparation/cooking processes were strongly undesired, therefore, significant interactions with the meal-kit service centred around reduction of preparation/cooking efforts or assigning it to another household member. This also suggests that the process of interacting with the resources is as important as the composition of the resources provided, and that service providers are to be considered extensions of consumers' co-creating processes (Storbacka et al., 2016). With the use of service design tools this research has highlighted how non-dyadic multi-actor co-created food service experiences are contributing to determining value-in-use, and in turn FWB and an increase in healthy food consumption. Furthermore, this research supports the usefulness of participatory research when developing service offerings for the 'users' of the service (Sanders, 2008).

### 5.1. Managerial and academic implications

Co-created service experiences are unique in their offering within the consumer's context. They focus on specific service experiences (Sindhwani and Ahuja, 2014) co-created along with the consumer. Consumers therefore determine their own unique value-in-use assessment attributed to the services they consume. When other actors and resources are accessible within their network, consumers are empowered to co-create the service experience that produces the maximum value-in-use for them.

The results from this study, while drawn from the fuzzy front end of service design, do provide initial insight for service providers within the meal-kit industry. It seems that the evolving interactions of consumers warrants a continuous dialogue between organisation, broad potential customers, and their networks. This will enable practitioners to identify early indications for changing or expanding consumer preferences and thus can be a source for service innovation such as health and food requirements or trends such as gluten free, vegan, keto diets or food aimed at vulnerable groups such as the elderly or those on restricted diets in the lead up to or following surgery. Outside of designing the meal kit's value proposition, the findings from this study about increased food literacy suggests that meal-kit services could be tailored to assist dieticians in planning a multi-faceted cooking intervention that holistically addresses food literacy (Begley et al., 2017). Where often food services provide pre-prepared food as a dimension of FWB for portion control (e.g., Jenny Craig, Lite n' Easy, and Diet-To-Go), meal-kit services guide users about what resources are appropriate and help educate the users.

Given that social and contextual factors must be addressed to successfully resolve food literacy (Azevedo Perry et al., 2017) and the results of the current study indicating that the participants often modified the

meal-kit through spices, portion sizes and additional ingredients, meal-kit service providers may like to follow other retailers and provide a platform for consumers of their services to share ideas and create a community of practice with other users. Where often these are run separate to the organisation, such as: https://www.ikeahackers.net/or https://www.airtasker.com/blog/50-kmart-hacks/(accessed 21th June 2020) in order to observe the modifications and co-creation processes, the meal-kit service providers may wish to keep this in-house so as to be able to fully understand the evolving value-in-use evaluation and identify further potential service improvements.

### 5.2. Limitations and future research

This service design led research into the understanding of consumption phases of meal-kit co-created service experiences and their contribution to FWB has offered insights into how actors and networks are involved in non-dyadic, multi-actor value-in-use evaluations. Academic research into consumers' co-created service experiences and value-in-use assessments within non-dyadic relationships is still expanding. Despite this contribution, a complete service design exploration should be undertaken to expand the fuzzy front-end research undertaken in this current study. Future research should focus on co-design methods to design service advancements in the meal-kit industry particularly focusing on specific areas of food consumption for well-being such as low carbohydrate, high protein, low sugar, or vegetarian. Examples could include co-design journey maps to understand the consumer decision-making process from planning, purchase, consumption, post consumption evaluation both in the meal-kit industry but also the wider co-created food service experience. Critical Incident Technique (CIT) could also be useful here to explore incidents, actors, sentiment, and outcomes both incident based and ideal (Hanington and Martin, 2019). Co-design workshops could then explore potential options to reinforce the decision-making process along this customer journey or via the critical incidents and identify key elements that move the consumer from their desired food service experience path. Technology could be introduced into these workshops to explore message suitability and framing that could be used to complement customer journey maps and CIT. Future research needs to also investigate how the evolving interactions with other actors and resources over time influences determining value and the associated value propositions as shown in our examples. Also, future research may overcome a limitation of this study by ensuring the sample size includes participants who are millennials as meal kits are most popular among this age bracket and by examining a larger sample size. The small number of participants of this study is not generalisable yet has enabled an in-depth analysis of the individual participants. Finally, a longitudinal analysis of changing perceptions of value propositions and their role in determining value-in-use is warranted.

## 6. Conclusion

This research has answered the research objective, what is the role of the meal-kit industry for enhanced food well-being by answering two research questions; 1) which stages are there in food preparation and consumption routine when using meal-kits and 2), how do these relate to the components of FWB. This research demonstrated that there were five stages in the food preparation and consumption process including planning, sourcing, preparation, cooking, and food intake and clean up. These five stages mapped to the three FWB components of Food Availability, Food Socialisation and Food Literacy illustrating the role that meal-kits can have in establishing FWB for consumers.

This research has shown that consumers' interactions go beyond a dyadic multi-actor relationship. It has provided insights as to how consumer interactions with service offerings and actors within their network continually evolve over time and can lead to deviant, yet positive consumer behaviour whereby new applications of a service's value propositions are discovered and implemented based on one's specific need and situational context. It has shown how these multi-actor activities can lead to FWB and contributing to our transformative service knowledge. Furthermore, consumers do not necessarily differentiate in their approach to other actors within their network and the service provider's resources when co-creating service experiences. This suggests that academia also needs to stop assessing the impact of actors and resources from different perspectives. Finally, service design tools facilitate the scrutiny of service functions offered and their alignment with the consumers' value assessment. Considering a still strong servitization move, this research has shown that service design tools can offer alternative research tools to gain deeper insights into the complex network of consumers' co-created service experiences.

## Declarations

### Author contribution statement

Udo Gottlieb: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Amanda Beatson: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Marianella Chamorro-Koc: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Brett Camilleri: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data.

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### Data availability statement

Data will be made available on request.

### Declaration of interest's statement

The authors declare no conflict of interest.

### Additional information

No additional information is available for this paper.

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