

Master's Thesis

How can businesses reframe insects as food?

A case study of a restaurant in Berlin.

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Abstract

Edible insects have been gaining attention as an alternative protein source. While the nutritional and environmental benefits of insects attract entrepreneurs including those in countries that do not consume insects historically, negative consumer attitudes play the role of a major obstacle for them. In the absence of empirical insights into what can convince consumers to eat insects in the literature on edible insects as well as insights as to how to recategorize what does not belong to the category of food for consumers in the literature on categorization, this paper examines the strategies to reframe insects as food by strategic recategorization in the context of non-insect-eating cultures by analyzing a case of a restaurant that serves insects in Berlin, Germany. Using the Gioia method, the grounded theory analysis of 13 interviews with both the restaurant's business owners and customers as well as artifacts revealed that the strategies to recategorize insects consist of three elements: (1) shaking the mental model to reduce neophobia; (2) vertical pull to overcome negative image; (3) horizontal pull to overcome cultural irrelevance. Correspondingly, the developed model also suggests insects can be reframed as food when consumers eat insects with (1) autonomous motivation, and experience (2) a premium look and feel, as well as (3) a sense of familiarity from consuming insects. The findings highlight the significance of inducing both vertical and horizontal shifts. This contributes to the existing literature on edible insects, which has previously understated the cultural irrelevance by primarily focusing on the surmounting negative image of insects, particularly disgust. Additionally, the findings also enrich the literature on categorization by unveiling the strategies necessary for a horizontal status shift.

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1. Introduction

Businesses are greatly affected by changes in the external environment (Davidsson et al., 2023). With the increasing demand for food led by rapid population growth causing an enormous cost to the natural environment (Food and Agriculture Organization of the United Nations [FAO], 2022), the food sector is urged to make a transition toward a sustainable food system (Globocnik et al., 2020). As much as it is significant to have better control over how we source our food (Beske et al., 2014; Hamprecht & et al., 2005; Kump & Fikar, 2021), attention also has to be paid to what we choose to eat in the first place (Siegrist & Hartmann, 2019). New protein sources as meat substitutes are particularly in need of due to livestock production's significant contribution to climate change (Herrero et al., 2016). While plant-based foods have been increasingly adopted by the Western population as a way to address this issue in recent years (Saari et al., 2021), there is a likewise promising but as yet unpracticed solution, namely edible insects (Payne et al., 2016).

The effect of environmental changes on businesses includes opportunities for new business initiatives (Davidsson et al., 2023). Indeed, the nutritional and sustainability benefits of insects as food (see, e.g., Baiano, 2020; Kim et al., 2019; van Huis & Oonincx, 2017) are attracting entrepreneurs (Mancini et al., 2022), including those in Western countries where insects are not included in their diet (Han et al., 2017). However, companies that are selling insects in the non-insect-eating context have been faced with various challenges due to the lack of institutional challenges surrounding this new food source, such as negative consumer attitudes, legislative barriers, lack of industry stakeholder collaborations (Han et al., 2017), and inconsistent media coverage of edible insects (Payne et al., 2016). Convincing consumers is particularly mentioned as a significant barrier (van Huis & Rumpold, 2023). A given animal species can fall into the 'food' category in one society and the 'non-food' category in another (Bratanova et al., 2011). As insects are not traditionally eaten in the West (van Huis & Oonincx, 2017), insects are in the 'non-food' category for those societies, with only 10.3% of European consumers willing to replace meat with insects (The European Consumer Organisation, 2020). The concept of eating insects arouses negative reactions that hinder the consumption of edible insects, such as disgust (Ruby & Rozin, 2019), aversion (Circus & Robison, 2018), neophobia, and rejection (Mancini et al., 2019). However, this does not immediately negate the potential establishment of edible insects as a new market category in Western markets. People's food habits can change evoked by both environmental factors (e.g., objective channels through which food comes to the table), as well as psychological factors (e.g., values

behind food selection) (Lewin, 1943). This indicates that there is room for businesses to intervene to promote the change. Hence, given edible insects' value as a food source, it is worthwhile to reframe the perceptions of the role of insects in the food system (Tomberlin et al., 2019). Prior research proposes various strategies to promote insects as food, based on the insights derived from studies on the consumer acceptance of edible insects. For example, highlighting environmental and nutritional advantages is commonly advised (see, e.g., Balzan et al., 2016; Brunner & Nuttavuthisit, 2019; Legendre & Baker, 2020), while van Huis and Rumpold (2023) argue that this alone might not dispel Western consumers' skepticism due to ingrained biases. Factors such as product image (Baker et al., 2016) and product form (Balzan et al., 2016; Sogari et al., 2017; Van Thielen et al., 2019) are also found to be influential in increasing acceptance. However, real-life evidence as to whether these suggestions are truly effective is lacking, as there has been no empirical study that examined the attempts of businesses and how businesses can actually tackle these challenges, to the best of the author's knowledge. Therefore, for example, Baker et al. (2016) call for research to investigate the ways eating insects is justified to fit the needs of Westerners. Wassmann et al. (2021) posit that the specific nuances of how to bring insects to consumers should be investigated. Also, Marberg et al. (2017) suggest an in-depth case study of one particular firm in this field to illustrate how organizations in emerging sectors tactically gain legitimacy. This study thus aims to build on these calls and derive practical implications as to what businesses can do to change the perception of insects.

Exploring the dynamics of how businesses can bring change in the cognitive system of consumers requires a comprehensive approach. In this regard, the present paper illuminates the phenomenon through a lens of categorization. Bratanova et al. (2011) support this idea and argue that food and categorization hold the potential in revealing the cognitive aspects associated with responses to novel food, foreign food, and food aversion. Categorization is a process of grouping similar objects and separating different groups from each other, thereby categories help in processing information efficiently (Zerubavel, 1996). Categories can be analyzed on both micro-cognitive and macro-social levels (Vergne & Wry, 2014). As a social construction (Glynn & Navis, 2013; Navis & Glynn, 2010), a category consists of its members. Membership within a recognized category can be attained by isomorphism (Zuckerman, 1999). Categories also allow for judgments about value and worth (Vergne & Wry, 2014), forming a status hierarchy among subcategories within a basic category (Jensen et al., 2011). Combining these attributes, the position of a particular category within a social system is defined by

horizontal and vertical dimensions, wherein the horizontal dimension divides categories based on different traits, while the vertical dimension subdivides the social system into categories through a hierarchy among members of specific horizontal groups (Jensen et al., 2011).

Recent studies on categorization have investigated the mechanism of reframing for certain market categories often using foods as examples. The Italian spirit grappa succeeded in vertical recategorization from a low-status to a high-status product as a result of the efforts made by one distiller (Delmestri & Greenwood, 2016). A growing number of chefs in the US and the UK strategically initiating the transition of ethnic food to high-end cuisine is also an example of vertical recategorization (Lane & Opazo, 2023). However, both of these examples are recategorization of what was already consumed as food by consumers, thus it is questionable whether these examples can be directly transferred to the context of insects. On the other hand, sushi's wide prevalence in Western societies is often mentioned as an analogy that insects can possibly follow, as the idea of eating raw fish was initially reacted by Western consumers with disgust just as insects (see, e.g., Dunkel & Payne, 2016; Ruby & Rozin, 2019) but has gone a remarkable repositioning (House, 2019). This recategorization seems, at first sight, indeed more similar to insects than the vertical shift. However, it is argued that insects will not be the next sushi, because when sushi was first introduced in the US in the 60s, it was framed positively by the media as an authentic practice of Japanese culture, empathizing with its taste, virtues, adventurousness, freshness, healthiness, therefore was accepted as exotic as it was (House, 2019). It was only in the late 70s when California rolls, inside-out sushi without raw fish and seaweed on the inside, were invented to meet the needs of a wider audience (House, 2019). On the other hand, insects are framed negatively: "The word 'entomophagy' is often used. However, this word is a Western invention to indicate that people in the tropics have a strange habit of eating insects" (van Huis & Rumpold, 2023). Therefore, there is a gap in the literature on categorization as to how a culturally distant and prejudiced market category, can be reframed as a valid category for Westerners.

Combined with the lack of insights about what drives consumers to eat insects mentioned above, it can be understood that existing literature on both edible insects and categorization does not provide strategies that businesses can refer to in order to promote edible insects in Western societies. This study addresses the gaps both in the edible insect and categorization studies mentioned above and provides an answer to the following research question: how can businesses reframe insects as food by strategic categorization in the

context of non-insect-eating cultures? To answer this question, the present paper examines the case of a restaurant called MikroKosmos in Berlin, Germany, which serves dishes using insects or insect-based ingredients as well as organizes events and workshops to promote edible insects. Using the Gioia method, the study reveals the dynamics of the restaurant's strategies and their outcomes to derive insights into what is really effective in reframing insects as food, which gives great hints to business practices being faced with the challenges stated above.

The remainder of this paper is structured as follows. Chapter 2 provides the theoretical context of this study. In Chapter 3, the research design and analytical procedures taken to deliver the results are elaborated. In Chapter 4, the findings of the research are presented with figures. Chapter 5 discusses the implications of the findings, as well as the limitations and possible directions for future research. Finally, chapter 6 provides a summary including the practical implications of this study.

2. Theoretical background

2.1. The potential of edible insects in the sustainability transition

The projections show that the global population growth to reach 9.7 billion in 2050 (United Nations Department of Economic and Social Affairs, 2022) demands about a 70% increase in overall food production compared to that of 2009 (FAO, 2009), and 73% increase in meat consumption compared to 2010 (FAO, 2011). The meat production process is a significant contributor to climate change (Cesari et al., 2017; Herrero et al., 2016), accounting for 14.5% of human-induced greenhouse gas emissions (Gerber et al., 2013). Therefore, the growing demand for meat and the declining availability of agricultural land caused by it urgently call for alternative protein sources (van Huis, 2015; van Huis & Oonincx, 2017).

Edible insects are considered a great candidate for this call both in terms of their nutritional value and environmental benefits. The nutritional value of insects varies depending on different factors such as species, gender, and the environment, but for many species approximately 60% of their mass is protein (Finke & Oonincx, 2014), which is higher than meat and chicken eggs (Mlcek et al., 2014). They are also rich in essential fatty acids (Mlcek et al., 2014), vitamins, and minerals (Akinawo & Ketiku, 2000; Baiano, 2020). Moreover, in addition to being collected in the wild, insects can also be bred and raised in large numbers in confined industrial facilities (Oonincx & de Boer, 2012). Compared to livestock production, farming insects as mini-livestock has a number of benefits, such as less

land and water usage, lower greenhouse gas emissions, high feed conversion efficiencies, the utilization of low-value organic by-products, and the usability as feed, not just as food (van Huis & Oonincx, 2017). For example, the production of mealworms is realized with 23% less greenhouse gas emissions and 70% less agricultural land occupancy than broiler chickens (Dreyer et al., 2021), which are considered less harmful to the environment compared to other livestock animals (Cesari et al., 2017). These characteristics clearly indicate that insects are a more efficient protein source than meat, and it can be understood that it would be of great benefit to include them in people's diets to reduce the environmental impact. However, this field is still at a preliminary stage and more efforts both from the private and public sectors are required to realize its potential (van Huis, 2016).

2.2. Perception of edible insects in Western societies

2.2.1. Consumer acceptance of edible insects

Consumers' choice of food has a significant influence on sustainability (Siegrist & Hartmann, 2019). Studies show growing motives among consumers in the Western world to shift their eating behavior toward meat alternatives (de Boer et al., 2013; Siegrist & Hartmann, 2019). While the plant-based diet has been adopted by a larger population in recent years for this purpose (Saari et al., 2021), the concept of eating insects is not widely welcomed by Western consumers. As insects are not traditionally eaten in the Western world, it is only recently that they have started to be recognized as human food (van Huis & Oonincx, 2017). According to the survey conducted by the European Consumer Organisation (2020), only 10.3% of European consumers would be willing to replace meat with insects, whereas 76.8% would not, and 12.9% are unsure. A study conducted by Verbeke (2015) in Belgium shows the gap between genders that 12.8% of males and 6.3% of females are likely to adopt insects as a meat substitute, but the percentages are small in any case.

Efforts have been made to unfold the mechanism of consumer perception of insects. In Western societies, insects are generally synonymous with nuisance, accompanying the image as something that invades homes and transmits disease by bites or ending up in meals, which triggers disgust (van Huis et al., 2013). Consequently, Circus and Robison (2018) point out that strong disgust responses and aversion serve as important obstacles to eating insects (see also, e.g., Balzan et al., 2016). Moreover, according to Mancini et al. (2019), neophobia and personal insect food rejection also have negative effects on behavioral intention to eat insects (see also, Toti et al., 2020). While educational efforts have shown potential in reducing

food neophobia (Mustonen & Tuorila, 2010) and it is also anticipated to decrease as increasing attention to insects as food for humans coupled with the growing availability of insect-based products in the market (van Huis & Rumpold, 2023), it is pointed out that disgust holds a more significant and substantial role than neophobia in deterring individuals from consuming insects (Ruby & Rozin, 2019). Therefore, it is expected that in Western societies, edible insects have a greater potential as feed for animals than as food for humans (Kim et al., 2019; Mancini et al., 2022).

However, perceptions of what is food and what is not can change. Food tradition and food innovation are often considered antonyms (Kuhne et al., 2010). However, while abrupt changes can cause a threat to identity as food and identity are intimately connected, innovation and tradition are two sides of the coin that cannot be separated from but rather feed into each other, and food is not an exception (Geyzen et al., 2019). Lewin (1943) argues that the food habit change in an individual is evoked by both environmental factors, such as objective channels through which food comes to the table and the gatekeeper who controls the channels, as well as psychological factors, such as what the gatekeepers consider as food and their values behind food selection. This implies that there is room for businesses to intervene with consumers' food selection.

2.2.2. Business climate and challenges of the edible insect sector

The health and environmental benefits of edible insects as stated above encourage entrepreneurs worldwide to launch businesses in this field (Han et al., 2017), thereby the industry is rapidly growing (Payne et al., 2016). However, the current business environment is not in their favor. Companies who promote and sell edible insects to a population that traditionally does not eat insects are facing a set of challenges, not only the negative consumer attitudes as mentioned above, but also legislative barriers, lack of industry stakeholder collaborations, and inconsistent media coverage of edible insects (Han et al., 2017; Payne et al., 2016). In the specific context of the Netherlands, Marberg et al. (2017) argue that the legitimacy of edible insects has been partially achieved on the sociopolitical level by these entrepreneurs' convincing their stakeholders ranging from the employees to investors and policymakers to run the businesses, but still, the environment is not ready for them to sell the insect products on a commercial scale, with efforts to gain overall society's knowledge and understanding about the new practice still being at the beginning stage. Overall, studies indicate that the legitimacy of the edible insect sector is still far from being present. These barriers add up greater uncertainties to the business activities such as new consumer

acquisition, market penetration, and product development and extension (Legendre et al., 2019).

With regard to how business actors can possibly tackle these challenges, earlier research provides various suggestions about what and how to communicate with consumers to convince them. Regarding what should be told to consumers, it is commonly suggested that promoting the environmental and nutritional benefits of edible insects would attract a certain population of Western consumers (see, e.g., Balzan et al., 2016; Brunner & Nuttavuthisit, 2019; Legendre & Baker, 2020). Protein is found to be seen in a rather positive light (Aschemann-Witzel et al., 2019). However, van Huis and Rumpold (2023) argue that stressing information regarding nutritional value, health or sustainability benefits may not be sufficient in making Western consumers less skeptical about consuming insects due to the strong prejudice toward insects, because sustainability-conscious consumers do not necessarily accept insects as food (Dagevos & Taufik, 2023). Another study suggests that vague descriptions were preferred over explicit descriptions in increasing purchase intention (Baker et al., 2016).

Regarding the means of communication, a study by Legendre et al. (2019) reveals that trust-based media information is effective in persuading consumers to eat insects, because it is through media when the consumers first come across the idea. Baker et al. (2016) identify the factors that would reduce risk perceptions through the experimental approach and suggest that image is the most important factor in a retail setting while in the restaurant setting menu is the most important. The visual appearance of the product, i.e. whether visible or unrecognizably processed, is also found to be an essential factor affecting people in deciding on whether or not to eat insects (Balzan et al., 2016; Sogari et al., 2017). In line with this, Soares and Forkes (2014) suggest using 3D printing technologies to realize the aesthetics of insect food. In the case of mealworms, Van Thielen et al. (2019) found that potential consumers are more likely to accept them when introduced invisibly in familiar products such as energy shakes, energy bars, burgers, soup, sandwich spreads, and so on, and that consumers want these products to be available primarily in the supermarket. In the home setting, Balzan et al. (2016) found that for many people eating insects would be easier if prepared by someone else, while for others the opposite was true. Shelomi (2015) suggests that different recipes with different species of insects, not only those with crickets and mealworms that are more prevalent in the literature, should be posted online alongside everyday foods.

From another perspective, Shelomi (2015) also argues that increasing insect supply with mass production is needed first to lower the prices of insects that are currently more costly than any meat to overcome the passive rejection of consumers rather than worrying over how to convince consumers because demand will follow after a safe and steady supply.

However, these suggestions and implications were driven logically from the understanding of consumer acceptance, or have arisen from experimental research approaches, and no study has yet tested these suggestions, to the best of the author's knowledge. Therefore, the present paper seeks to provide insights into these points by analyzing a real-life business case. In order to achieve it, the paper grounds its analysis of the case on a perspective of categorization studies, which is elaborated on in the next section.

2.3. Recategorization of food

2.3.1. Vertical and horizontal dimensions in categorization

Categorization is a process of grouping similar objects together and separating different groups from each other (Zerubavel, 1996). Categorization enables the conveyance of maximum information while minimizing cognitive effort, facilitating the perception of the world as structured information rather than unpredictable attributes. (Rosch & Lloyd, 1978). Categories and their consequences are studied both at micro and macro levels, with cognitive psychology scholars examining micro-cognitive mechanisms of category properties and perception processes, while social scientists focus on the wider macro-social effects on actors and organizations stemming from established categories and their shared interpretations (Vergne & Wry, 2014). The categorization process can thus span multiple levels from individuals to organizations and markets (Glynn & Navis, 2013), and can occur in a diverse range of situations, which leads to the application of fundamental research of this concept to the management literature, with more sociological orientation (Vergne & Wry, 2014).

Categories are organized beneath broader overarching categories (Boghossian & David, 2021), creating a classification hierarchy (Rosch & Lloyd, 1978). In other words, as a social construction (Glynn & Navis, 2013; Navis & Glynn, 2010), a category consists of its members. According to Vergne & Wry (2014), an organization's category membership is defined by two factors when the audience and other members believe that "the organization's offerings fall into the boundaries of the category" (p. 69) and that "the organization is focused enough" (p. 69). To attain membership within a recognized product category, organizations must actively engage in isomorphism while also setting themselves apart from other members in the same

category (Zuckerman, 1999). Categories also allow for judgements about value and worth (Vergne & Wry, 2014), forming a status hierarchy among subcategories within a basic category (Jensen et al., 2011), which leads to either privilege or discrimination (Washington & Zajac, 2005). A status encompasses a set of rights and duties, exercised by a status holder to perform their role (Linton, 1936). Combining these characteristics of categories, the category's status within a social system is defined by its horizontal and vertical dimensions, as defined by Jensen et al. (2011), wherein horizontal categorization entails the division of the social system into distinct categories defined by diverse properties and attributes and vertical categorization involves segmenting the social system into distinct categories according to a shared hierarchy or ranking of members belonging to a specific horizontal category. An instance of the horizontal dimension could involve an assortment of product categories, while the vertical dimension entails the ranking of organizations within a given product category, which could be influenced by factors like size, quality, exchange partners, or other considerations (Jensen et al., 2011).

Categories dynamically “emerge, change, dissolve, are combined, or contested” (Delmestri et al., 2020, p. 910). Among diverse aspects of categorization, Vergne & Wry (2014) highlight that while category emergence studies center on the processes of constructing new categories, there are ample opportunities to delve into strategic categorization, which deals with how organizations strategically indicate their affiliations within an established category system. Similarly, Delmestri et al., (2020) point out that recategorization within well-established categories remains an unexplored phenomenon. Based on the basic attributes of categories presented in this section, this study focuses on this aspect of categorization to understand the phenomenon of reframing insects as food.

2.3.2. Recategorization of food in the vertical and horizontal dimensions

Recent studies on categorization have investigated the mechanism of reframing for certain market categories often using foods as examples. Food holds significance beyond nutrition for humans, encompassing social and cultural meanings (Rozin, 2007). Different cultures classify particular animals as either food or non-food, thereby food and categorization hold the potential in revealing the cognitive aspects associated with responses to novel food, foreign food, and food aversion (Bratanova et al., 2011). According to Delmestri and Greenwood (2016), the Italian spirit grappa has succeeded in radical recategorization from low status to high status through the active intentional efforts of a traditional distiller. Their success consisted of three mechanisms: (1) category detachment - attempts to signal

difference from the object's existing low-status category by the object's visual, material, and price, as well as personally and organizationally ; (2) category emulation - presentation of the given object in a way that subtly suggests it follows the practices of a high-status category; (3) category sublimation - broadening it from local, field-specific references to broader, societal-level frames, which contributes to the overall claim and fosters the other two mechanisms in building legitimacy (Delmestri & Greenwood, 2016). For another example, Lane and Opazo (2023) reveal that a growing number of chefs in the US and the UK are strategically initiating the transition of ethnic food to high-end cuisine by category detachment, category emulation, and horizontal differentiation within the category. However, both examples are recategorization of what was already consumed as food by consumers. In other words, grappa and ethnic cuisines already held category membership as drinks and food, thus it is questionable whether these examples can be directly transferred to the context of insects.

On the other hand, sushi's wide prevalence in Western societies is often mentioned as an example relevant for insects (see, e.g., Dunkel & Payne, 2016; Ruby & Rozin, 2019). Due to the consumption of raw fish as well as other unfamiliar ingredients such as seaweed, the majority of the consumers in Western societies did not want to eat it until relatively recently, but it has then undergone a remarkable repositioning and is now widely enjoyed (House, 2019). This indicates that sushi did not have a membership for the category of food, hence this recategorization may seem indeed more similar to insects than the vertical recategorization. However, studies show that this event cannot be necessarily accounted for by the efforts of a few key business actors, but rather by a complex set of social, cultural, political, economic, legal, technological, and ecological factors that provided a context in which sushi was able to flourish (House, 2018), and it was also without concentrated efforts of scientists and politicians (Johnson et al., 2010), implying that the process of sushi's wide acceptance cannot be necessarily explained as strategic recategorization done by businesses. In particular, the establishment of sushi in the US was closely related to the increasing popularity of Japanese cuisine in general during the postwar era in the 60s (House, 2018). Sushi was framed positively by the media as an authentic practice of Japanese culture and accepted as exotic as it was when first introduced in the US, and it was only in the late 70s when California rolls, inside-out sushi without raw fish and seaweed on the inside, were invented to meet the needs of a wider audience (House, 2019). Therefore, House (2019) argues that insects will not exactly follow the path of sushi. In contrast, insects are framed negatively as illustrated by the following statement: "The word 'entomophagy' is often used.

However, this word is a Western invention to indicate that people in the tropics have a strange habit of eating insects” (van Huis & Rumpold, 2023, p. 1). Insects are also not considered an authentic practice of a certain culture. This suggests that insects require yet another type of recategorization different from grappa, ethnic restaurants, and sushi. Therefore, there is a gap in the literature on categorization as to how a culturally distant and prejudiced category such as insects, can be reframed as food and gain membership in the food category for Westerners.

Combined with the previously mentioned absence of understanding regarding the factors that motivate consumers to consume insects, it becomes apparent that the current body of literature on both edible insects and categorization does not offer effective approaches for businesses to increase the acceptance of edible insects within societies that do not consume insects as food. This study thus aims to fill this gap and identifies a set of business strategies that bring perceptual change to the customers by revealing the dynamics of the change process as a result of the business strategies taken in a restaurant that serves dishes using insects in Berlin, Germany.

3. Method

3.1. Overview of the research design

A single qualitative case study (Yin, 2017) was performed to answer the said research question: how can businesses reframe insects as food by strategic categorization in the context of non-insect-eating cultures? To answer this question, the study was designed to identify what it actually takes to change the perception of insects as food for humans. The case study approach was considered suitable for this end as it allows us to gain in-depth insights into the question of how a certain social phenomenon works (Yin, 2017). The case setting is MikroKosmos, a restaurant that serves insects located in Berlin, Germany. The business was founded in 2017 by one of the current owners and started with catering services as well as joining events and street food markets, and joined by the other owner and chef in 2020. The restaurant opened in December 2022 in Kreuzberg, one of Berlin’s busy districts, with a seating capacity of about 40, where they have one part-time employee working as a server and supporting the daily restaurant operations. The restaurant puts a focus on addressing the environmental issues surrounding food, which leads to the use of insects as well as the emphasis on locally sourced organic and seasonal products (Sartirani, n.d.-d). Among other edible insect initiatives (e.g., startups producing insect-based protein bars and selling online), MikroKosmos is unique in its approach to communicating with consumers and

society. They take an active role in promoting edible insects in Berlin or in Germany not only by running a restaurant, but also by organizing events and workshops, frequently communicating on social media, or collaborating with TV and news media.

3.2. Data collection

The purpose of data collection is to gain insights into how the restaurant reframes eating insects through both direct and indirect communications with customers, which includes conversations with customers, menus, served dishes, decor, social media activities, news media appearances, and so on. To fulfill this purpose, data were collected through two approaches: interviews and artifacts. Having multiple data sources also serves to ensure data triangulation, which is recommended as a good practice in qualitative case studies (Farquhar et al., 2020). As the first and main approach, the present study adopted a semi-structured interview with open-ended questions regarding the business strategy employed by the restaurant, the motivations behind it, customers' beliefs and values regarding eating insects, and the change in the perception and attitude brought to the customers. Collecting data through interviews was considered suitable when the research strives to grasp the interviewee's subjective perspective on a particular phenomenon (McGrath et al., 2019). To gain the most comprehensive understanding of strategies aimed at altering perceptions of insects, it is crucial to understand the owners' subjective intentions. Moreover, assessing the effectiveness of the strategy, that is, whether it successfully changes perceptions of insects, along with the underlying process involved, can be achieved by conducting a meticulous analysis of the subjective experiences shared by each customer who visits the restaurant. Accordingly, different interview guides were prepared for interviews with the business side and with the consumer side (see Appendix A). From May 2023 to June 2023, a total number of 13 interviews were carried out, among which 3 are involved in the business (2 business owners and 1 employee) and 10 are from the consumer side (9 first-time customers and 1 Instagram follower). All the participants were based in Berlin, aged between 24 and 43, and their nationalities covered German, Dutch, Italian, Czech, Belarusian, Canadian, Chilean, Peruvian, and Turkish, none of whom possesses a cultural background that practices eating insects. 8 consider themselves as female and 5 as male. The interviews were carried out either in person or online and took around 30 to 60 minutes per person, all of which were audio-recorded and transcribed with the consent of the participants (see Appendix B). In addition, artifacts including the restaurant's menus (as of June 2023, see Appendix C), photos of the dishes taken by the author, website descriptions and photos, 293 Instagram posts (as of July

20, 2023) including photos and captions, and 14 news articles were also collected as data of concern in order to compliment interviews and to validate how their business strategy is demonstrated.

3.3. Data analysis

In the absence of an established framework to refer to for promoting something not considered food such as insects, this study opted for a grounded theory approach by following the Gioia methodology to create a theory transferrable to other comparable contexts (Gioia, 2020). While traditional grounded theory approaches lack the ability for theoretical innovation due to their commitment to induction (Timmermans & Tavory, 2012), the Gioia method allows for creative theory development while the emergent theory is rooted in the collected data (Gehman et al., 2018) by combining both induction and abduction in the procedure, thereby meeting the rigor standards demanded by top journals (Magnani & Gioia, 2023). In this project, using the qualitative research software ATLAS.ti 23 and an online whiteboard as tools, the following steps introduced by Magnani and Gioia (2023) were implemented to analyze the interview transcripts and the other data in written form. The data was distinguished between the business-side and consumer-side inputs. The first step is developing a data structure, which is constituted of informant-based (1st-order) codes inducted from the raw data, researcher-based (2nd-order) themes abducted from the first order, and aggregate dimensions abducted from the second order. As “every analysis should begin with a depiction of the informants’ understandings of their work” (Magnani & Gioia, 2023, p.2), the first-order codes were generated to portray the informants’ experience in their terms, which were then interpreted by the researcher in the second order and aggregate dimensions. The analysis revealed a total number of 170 codes, 22 second-order themes, and 10 aggregate dimensions. Based on the data structure, two illustrative models were created to highlight the key relationships among the emerging concepts that explain the phenomenon examined in this paper. As the last step, the findings for each of the research questions were summarized in tables and figures in a convincing manner (Magnani & Gioia, 2023).

Figure 1 depicts the data structure concerning the reframing of perception toward insects. Codes pertaining to the frames and the individual change process were derived from data collected from the interviews with the customers. On the other hand, those associated with the restaurant’s mission and strategies of the restaurant were extracted from the data collected through the interviews with the business owners and employees, as well as from other artifacts such as news articles, website descriptions and photos, and Instagram posts.

Figure 1.
Data structure.

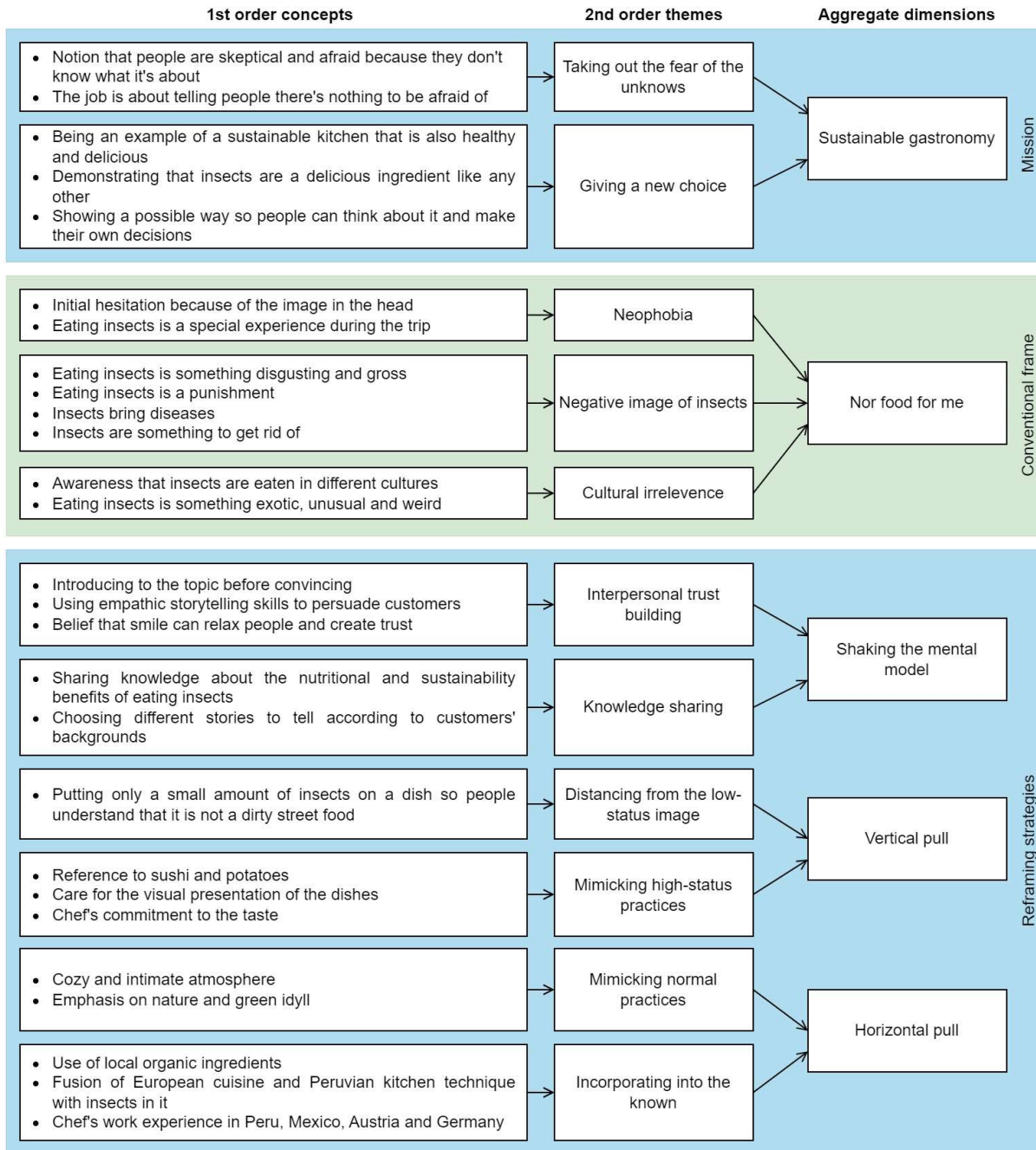
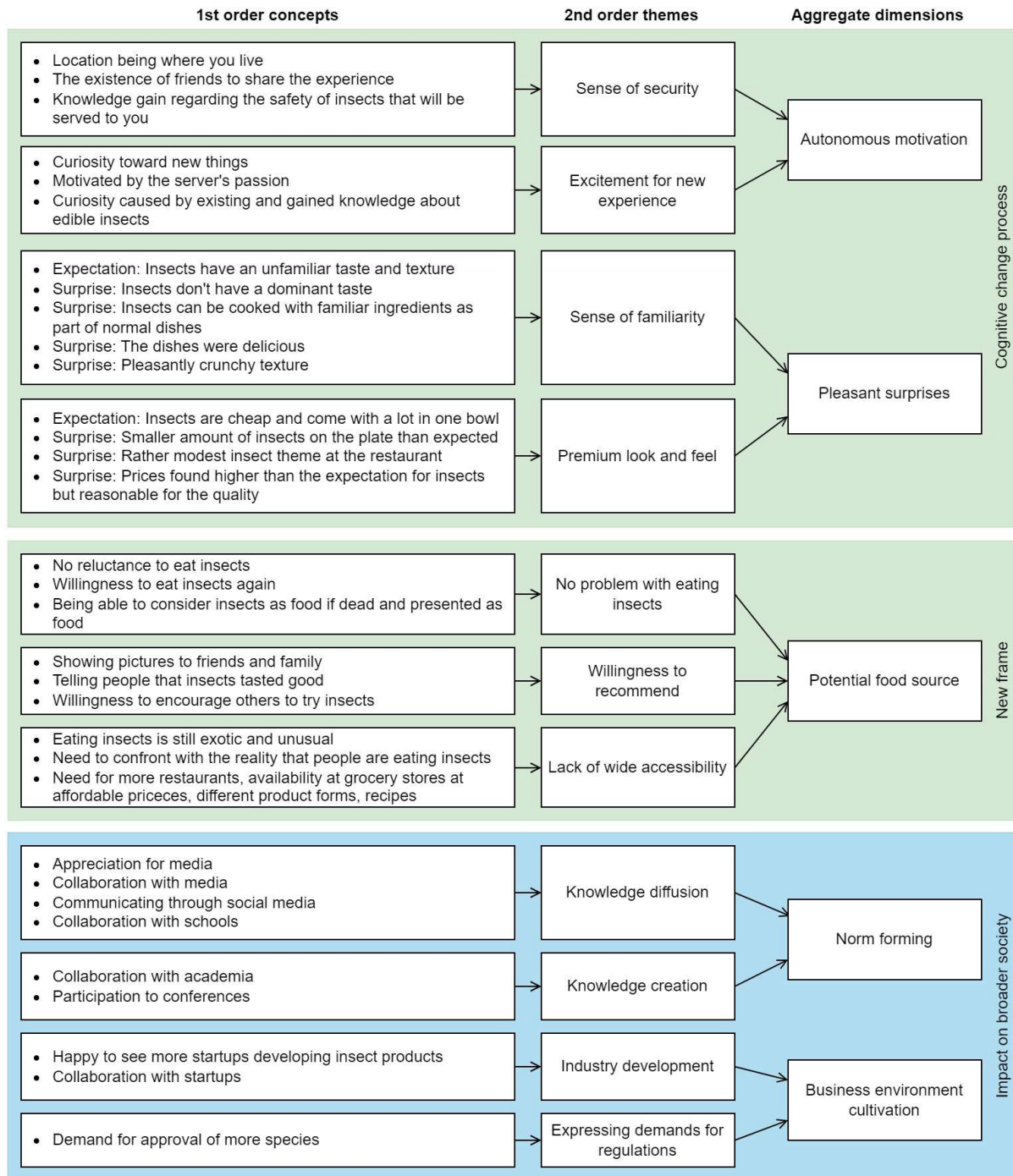


Figure 1.

Data structure continued.

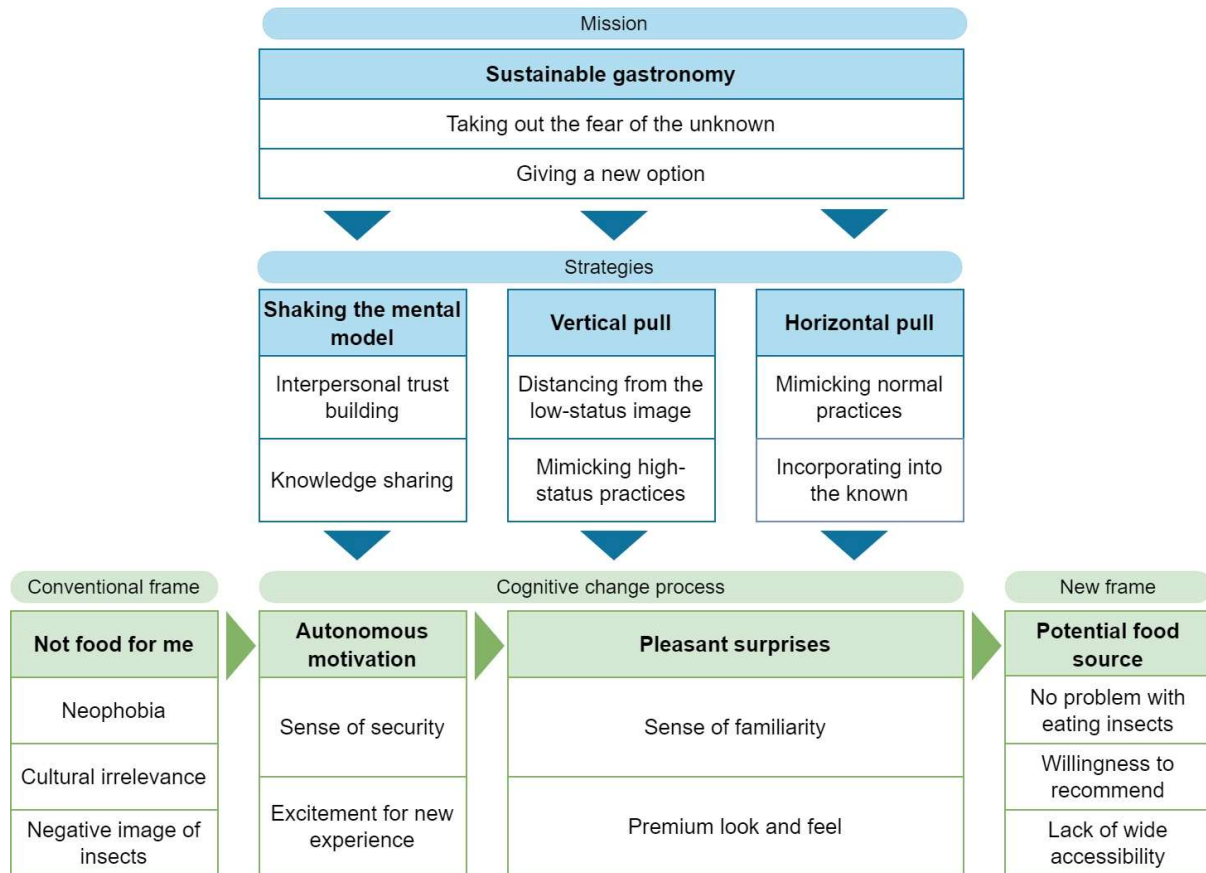


4. Findings

This chapter presents the findings of the data analysis. Section 4.1 to 4.5 reports the dynamics of MikroKosmos' strategies as causes of the frame change brought to customers as well as the cognitive process of recategorization in individual customers to reach the reconstructed frame. In addition, section 4.6 shows the restaurant's further efforts to turn this recategorization into an institutional-level change.

Figure 2 provides a visualized summary. As an overview, the restaurant's core motivation for running its business lies in cultivating *sustainable gastronomy*, and insects serve as a means to fulfill this mission. To change the customers' perception of insects from *not food for me*, three distinct strategic approaches were identified, with one oriented toward preparation for the change and the other two toward recategorization. Firstly, by *shaking the mental model*, customers foster their *autonomous motivation* to try insects. Secondly, by both a *vertical pull* and a *horizontal pull*, customers encounter *pleasant surprises* with a *premium look and feel* and a *sense of familiarity* given off by the dishes and the setting of the restaurant, in contrast to their expectations from insects. These unexpected positive experiences challenge their conventional frame, leading to the recategorized new frame that regards insects as a *potential food source*. The following sections provide further detailed elaboration on each of these elements, revealing the dynamics of the change.

Figure 2.
Reframing dynamics.



4.1. Mission: sustainable gastronomy

Although MikroKosmos does not have an official mission statement, the analysis identified their mission in order to understand the motivation behind their activities. The interviews revealed two pillars underlying their business activities, namely: *taking out the fear of the unknown* that people have, and *giving a new option* to them. Firstly, regarding the first component, all three interview participants from the business side shared the notion that the firsthand experience of eating insects is crucial. Coming from cultures where eating insects is not common, they understand well from experience that people's perception toward eating insects doesn't change unless they try them, yet that there is a psychological obstacle to it. As they put it, "people were afraid and skeptical of trying insects because they had no idea what

it was about”¹ (IP_12), therefore, the project’s focus is on “the universe of insects with the purpose to help overcome the gap of disgust and fear towards them” (Sartirani, n.d.-e).

Secondly, regarding *giving a new option*, the restaurant does not stand on an argument that everyone has to switch to insects from meat to save the planet, but they aim at *giving a new choice* for people to consider as an option and to make a decision by themselves, which is reflected on their words: “food is a delicate and personal decision. I respect every opinion. And I have mine, too” (Sartirani, n.d.-a); “It's not about convincing to eat insects, it's about making them think about what it is and why they should eat it and why they could even think about growing them to eat at home themselves” (IP_12); “showing a way which is possible to follow, and . . . being an example of something that can be done” (IP_12). This understanding attitude can be attributed to their food selection criterion. Besides the sustainability aspect, one of the owners also named health and the other named taste as important elements in choosing their own food. They do not believe that we need to compromise on taste and health for the sake of eating more sustainably. Therefore, what they intend to show as “an example” (IP_12) is, more specifically, “how you can eat sustainably to help the planet and stay healthy and still eating delicious food” (IP_12). Besides, they also seek to convey this message to wider society by “demonstrating that insects can be a delicious ingredient and especially that they are an ingredient like any other” (IP_12). In fact, the restaurant’s menu includes not only insect dishes but also dishes for vegetarians and vegans, or even those with meat, because “we also need to take amino acid. So . . . 10% of the protein needs to be sourced from animals” (IP_11).

Combining these two aspects, the mission of MikroKosmos can be concluded as realizing *sustainable gastronomy* with edible insects as one of the options that can be chosen by a certain number of the population in society. Though this is a result of abduction done by the researcher, this can also be confirmed by the owners’ statements. Both of the business owners (a founder and a chef) stated that the concept of MikroKosmos is more related to sustainability than insects themselves. For example, one of them stated, “Only one small part of all the concepts is insects. This is more about sustainability” (IP_11). This reflects the circumstances that led them to founding this business. The owners themselves are from cultures where eating insects is not common. They shared a concern with the sustainability aspect of food when they met in a different restaurant as employees in 2013, then gradually

¹ Direct quotes from the interviews were slightly edited to increase readability.

learned about the potential of insects and started consuming insects in 2015. In this way, insects came later, and became their way to fulfill their mission. The effects that were brought to the customers are a good reflection of this. The following sections start from elaborating on the conventional frame, followed by the restaurant's strategies executed and the customer experience, to the new frame gained by the customers.

4.2. Conventional frame: not food for me

Among the 10 interview participants from the consumer side, 9 people were customers who visited the restaurant for the first time prior to the interview and one person was an Instagram follower who has not visited the restaurant yet. 8 out of 9 customers did not consider insects as food for them prior to visiting the restaurant, even if they had experience of eating insects before, e.g., at food events (IP_2, IP_4), during the trip to Thailand (IP_6). Exceptionally, the remaining customer shared that they considered insects as food that they can try even before actually doing so for the first time at the restaurant (IP_8). Notably, one participant who follows the restaurant's Instagram account and has experience eating insects at a Chinese restaurant but has not dined at MikroKosmos also did not consider insects as food for them. In light of this result, the conventional frame of insects can be defined as *not food for me*, in line with business owners' understanding of it as well as with previous studies (see, e.g., Circus & Robison, 2018; Mancini et al., 2019).

This frame is constituted by three factors. Firstly, many participants found insects challenging to eat, showing their *neophobia* toward eating insects. Food neophobia is defined as "a reluctance to ingest unfamiliar or novel foods" (van Huis & Rumpold, 2023, p. 5). Interviewees shared their reluctance before eating the insect dishes at MikroKosmos: "At first you are maybe a little bit hesitant to try just simply because of barriers that you have in your head" (IP_4);

I was scared that I would be able to tell that, "Oh, now I'm chewing its legs and now I have its wings and its wing is stuck between my teeth or its head is too crunchy to chew." I guess these are all the fears that you'll be completely aware that there's a bug in your mouth. (IP_1)

In addition, those who had insects before visiting MikroKosmos described their first experiences as challenging: "They were served just like in a plate. There were only insects

there on the plate. That was pretty challenging for me to try them. It was the most challenging stuff" (IP_3). Another remarked the following:

We had three bowls of those little things with about 100 insects in each of them. We were three and we all tried one or two of each, and then we were like, "Okay, we tried it now. That's enough." (IP_6)

Therefore, even if one tries, it is not because eating insects is appealing, but instead, it is perceived as a challenge to do just for the sake of an experience, which indicates the initial reluctance to eat insects. This is attributed to the following two elements.

The second factor identified from the interviews is the negative image of insects. For the participants, insects were mostly something to get rid of for their convenience in life, just as pointed out by van Huis et al. (2013). In their terms, "We are taught that insects bring diseases. We need to kill them because . . . anywhere where you have insects, you are trying to get rid of them" (IP_9). Consequently, the idea of eating insects is perceived as a "gross, disgusting punishment or something that you would have to do" (IP_1). Another participant also revealed: "At some point, I must have thought that insects are also disgusting to eat just because it was just a thing in general, like culturally" (IP_4). This suggests that insects are not only outside the scope of what is food for a person but also are treated as negative attributes implying their low status.

The third factor is the *cultural irrelevance* of insects. Even if they were aware that insects are eaten in some other cultures, it is not the case in their cultures, therefore they see it as something unusual, weird, and exotic, as represented in their terms such as "it's mostly frowned upon" (IP_4), "in my culture or in the regions that I lived in, it's not common at all. Like, it's super rare" (IP_9). Furthermore, one participant described as follows:

So in my culture, you only joke about eating insects because you would never eat them. So never in Germany would I have thought I'd eat insects. There was not a single thought in my mind that these creepy crawlers would put them in your mouth for some enjoyment. . . . so when I learned that, especially in a lot of Southeast Asian cultures, grasshoppers are a normal thing to include in your diet, I was intrigued but still wouldn't have tried it. (IP_2)

This indicates that what is considered normal food for a person is formed based on what their culture considers as food. Foods from other cultures are hard to be within the range of normal

food. In particular, foods from distant cultures such as insects, tend to be placed outside the scope in their mind.

This frame echoes the restaurant's understanding of how consumers react to insects, as stated in Section 4.1. In the following, section 4.3 with three subsections elaborates on the restaurant's strategic measures aimed at changing this perception.

4.3. Reframing strategies

4.3.1. Shaking the mental model

MikroKosmos puts an emphasis on communication and storytelling. This comes from the founder's experience in studying and performing in theaters. In their terms, "A restaurant is like a theater: real life on a stage, food, and drink are the main actors, and every evening is a show" (Sartirani, n.d.-a). From welcoming customers and getting them seated to the presentation of food, table, and the whole atmosphere, operating the restaurant can be a metaphor for directing a stage show. With this mindset, the restaurant has distinct intentions as to what and how to tell customers both interpersonally and indirectly via food and setting, through which they lay the focus on reframing the perception of insects. This is illustrated by an owner's response during the interview: "It's not important how much you got [to sell] on this day, but at least you changed the mind of someone. And this then made everything so meaningful" (IP_12).

Before serving insects, the restaurant makes sure that the customers are prepared for the experience, by *shaking the mental model* through direct interactions with customers. This process involves two key elements: *interpersonal trust building* and *knowledge sharing*. *Interpersonal trust building* is the first focal essence that the restaurant places emphasis on. The owner is aware that "people are afraid and skeptical of trying insects", therefore aware of the importance of telling them that "there is nothing to be afraid of" (IP_12). This indicates the restaurant's awareness of neophobia held by consumers. The owner explained their way of communication as follows: "It's a sort of empathic way how I feel people and also because of my theater skill" (IP_12). Furthermore, they execute understanding and consideration for customers' concerns "by just observing, understanding a bit of their background. . . . so it's just about being sensible and understanding who you're talking to and find and place the right story" (IP_12). An employee who works as a server shares this emphasis in their interactions with customers, describing their role as "like a cheerleader" (IP_13) who helps customers overcome their "psychological obstacles" (IP_13). To do so, the employee believes that:

“When you meet someone who is smiling at you, you would be like, ‘ah, relax’, you know? Then you say, ‘okay, maybe I can trust this person and I can also trust what she or he is offering me’” (IP_13).

Moreover, it was discovered that the restaurant put efforts into *sharing knowledge*, such as “the sustainable aspect, how much water insects need, the rational value, and rational conversion, this kind of knowledge” (IP_12), or “which are the legal insect in Europe, where they come from, how they are grown, [and the fact that] there are certifications for human consumption” (IP_12). Especially in the case of the owner, they judge what to tell based on the understanding of the customers’ backgrounds and pass fact-based information. The following statement illustrates the diverse range of stories they have ready for different types of customers:

For some, it's better to make a comparison with other foods. If you see that they are people who eat crabs, it's useful to compare with crabs. . . . if they are more skeptical, it's better to push on hygienical things and information about how everything is extra grown and this and that. . . . And for Germans, there are testimonials that survived Auschwitz and concentration camps. They’ve eaten insect sort of things. . . . For them, food is food. (IP_12)

For another example:

Human beings have always been eating insects. This was our first nutritional source and then we learn to domesticate mammals. But this came after. Since we did not domesticate animals and we didn’t get to fish, we’ve always been eating insects and there is an enzyme in our stomach which is there to digest some parts of insects. So this proves that we are aimed at eating them. And second, for example, in Europe we do not have insects, but just because our climate is not ideal for them, insects are widely consumed in the equator belt. (IP_12)

As illustrated above, through these empathetic trust-building efforts and knowledge-driven communication, the restaurant aims to foster the customers’ readiness for the experience by reducing neophobia, i.e., shaking the mental model associated with the concept of eating insects.

4.3.2. Vertical pull

Shaking the mental model is merely the beginning of the show. The highlight of their theater show is the presentation of the table and the meal. In this scene, MikroKosmos skillfully executes their ability to surprise the audience in a positive way, by a *vertical pull* and a *horizontal pull*. This section introduces the former.

Vertical pull refers to the vertical recategorization efforts to bring insects to a higher status in the customers' cognition and is tactically executed through the served dishes in two ways: *detaching from the low-status image* and *mimicking high-status practices*. The first point is about how they deal with insects in dishes. Instead of making the dishes just about insects, they put only a small number of insects on the dish (see figure 3). As they put it:

I think that it's important that they are valuable, to give them value in the kitchen like they are a special delicacy and something precious that we can eat. We do not put a lot because it could be disgusting. So we put a few of them with value in a nice composition of the dish so that they [customers] really understand that it's not exactly a dirty street food. (IP_12)

The act of detaching insects from their existing image as "dirty street food" can be interpreted as a way to address the negative image of insects in consumers. Moreover, they try to tell that it is "a fine gourmet thing" (IP_12), which leads to the second point: *mimicking high-status practices*. The basis of this is an awareness of the owner of the instances of how novel foods that were initially viewed negatively earned a certain status in society. As put by them, "Think about sushi. No one wanted to eat sushi at the beginning. It took time, and the fact that the best chef in the world cooked it and that it was expensive helped". For another example, they also mentioned the story of how potatoes were first introduced in Spain:

When the Spanish king brought potatoes from Latin America, no one wanted those potatoes. And once he said, "Okay, close those potatoes in my private garden and tell everybody that this food is just for the king", people started to climb the wall and steal the potatoes. Potatoes were always the same, but the fact that the king wanted to eat them and that it was something private for the king made it immediately special. And this, I think, is the way. (IP_12)

As a means to realize this, the chef commits to the quality of the dishes, based on the Peruvian kitchen techniques which are "complex in terms of ingredients" (IP_12) and "shaped by many

flavors and textures” (Sartirani, n.d.-c). As in one of the Instagram posts, “My aim is not just to add insects to make a dish fancy, but to integrate them in a way that enhances the flavour of the other ingredients” (mikrokosmosberlin, 2023b). Drawing an analogy with these precedents, they are committed to ensuring that their food is visually appealing to show fineness. This part of the strategy has similarities with that of grappa (Delmestri & Greenwood, 2016), as well as the ethnic restaurants (Lane & Opazo, 2023)

Figure 3.

Photo of a dish ‘White asparagus-Ceviche’



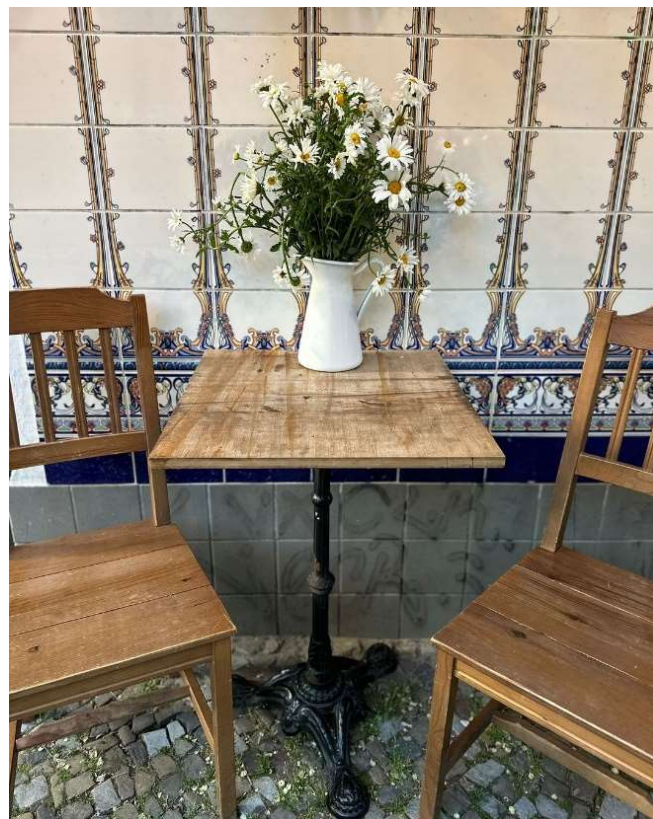
Note. Photograph of a dish served at MikroKosmos. Own work.

4.3.3. Horizontal pull

In addition to the vertical pull by creating unexpected fineness as reported above, the restaurant also aims at *horizontal pull*, which is composed of two factors: *mimicking normal practices* and *incorporating into the known*. Regarding the first point, contrary to the unusualness of insects, the restaurant puts emphasis on being normal and natural instead of standing out by pushing the insect theme. The restaurant claims to offer “a cosy and intimate atmosphere” (Sartirani, 2022). For another example, they also state, “Although we opened our restaurant in the heart of Kreuzberg in Berlin, we never want to miss out on nature and green idyll!” (mikrokosmosberlin, 2023c). This is demonstrated in the décor such as the use of wooden tables and chairs, flowers, lighting, and art pieces hung on the wall, as can be seen in figures 4 and 5.

Figure 4.

Photo of the outside area of the restaurant.



Note. From “Willkommen in unserem kleinen Paradies im Freien... Obwohl wir mitten im Kreuzberger Herzen von Berlin unser Restaurant eröffnet haben, möchten“, by mikrokosmosberlin, 2023, Instagram (https://www.instagram.com/p/CtBMiZlswEk/?utm_source=ig_web_copy_link&igshid=MzRIODBiNW FIZA==). Copyright 2023 by mikrokosmosberlin.

Figure 5.

The inside area of the restaurant



Note. From “-2 days until Easter! The doors of our cozy restaurant are open for you! photo by @hug_o_p mikrokosmosberlin #edibleinsects #insectrestaurant”, by mikrokosmosberlin, 2023, Instagram (https://www.instagram.com/p/CqvNXqQIMpc/?utm_source=ig_web_copy_link&igshid=MzRIODBiNWFIZA==). Copyright 2023 by Hugo Paulinich.

This intention also goes to their dishes. They create familiarity in their insect dishes by *incorporating into the known*. This is reflected in their choice of ingredients. Along with their concept being more about sustainability, they naturally take the source of ingredients into consideration, leading them to use of vegetables sourced from the local small-production suppliers. In the founder’s terms, “It’s about local food, small producer, it’s ethic of the production” (IP_12). The chef shares this belief:

the future of the restaurant needs to be like this. Now I stopped buying watermelons or ananas or avocados from South America. We need to start using the products from here. And of course, you can eat a home one time, one avocado, but it’s not comparable if you have butter here, use butter, not just avocado. (IP_11)

Coming from Peru and having work experience in Peru, Mexico, Austria, and Germany, the chef knows how to apply Peruvian or Latin American cooking techniques to insects and the local ingredients from Berlin, Germany. The way the chef indirectly communicates with customers through the dishes was described as “how I can fusion the Peruvian techniques with products from here. I make Peruvian food with the products from Berlin” (IP_11). For example, ‘White asparagus-Ceviche’ (see figure 3 and 6) is a dish using white asparagus, a vegetable widely enjoyed in spring in Germany, as a main ingredient and cooked as Ceviche, a kind of Peruvian dish, with insects as toppings. Though this may not necessarily be meant to create familiarity but to establish a more sustainable supply chain, creating a fusion dish integrating insects with local seasonal ingredients can be interpreted as an act that addresses cultural irrelevance.

As described above, MikroKosmos first prepares customers for the change by shaking the mental model through interpersonal communication before through unspoken communication by the overall atmosphere of the restaurant and their dishes, addressing neophobia. The restaurant skillfully makes use of sophisticated Peruvian cooking techniques in cooking with a small number of insects, aiming to give the food an upscale feel and dispel the expectation that insects are cheap, addressing the negative image of insects. The restaurant is also characterized by the use of the unusual ingredient that is insects yet has a homey atmosphere. By incorporating familiarity factors such as local vegetables and Latin American cuisine into the unusual factor of insects as food, they subvert the notion that insects are exotic, addressing cultural irrelevance. The next section reveals the process of cognitive change and how it is linked to the strategic actions of the restaurant presented in this section.

Figure 6.

A part of the restaurant's menu.

...mikr  kosmos...

INSECT EXPERIENCE

Fritto Misto

Fried grasshoppers, crickets, and mealworms
with herbs and dipping sauce
€12.00

Chapulines

Marinated crickets on organic corn tostada with sour cream, beer beans,
lime-chili sauce, onions, and fresh coriander and chili
€13.00

Leek

Roasted Leek in Buffalo Worms Tempura with "Vichyssoise" (cold asparagus-leek cream),
fermented asparagus, wild garlic, lima beans, and "Aji Amarillo" (yellow chili-sauce)
€14.00

White asparagus-Ceviche

Beelitzer asparagus, strawberries, wild herbs, rhubarb tiger milk,
and roasted crickets
€13.00

Puntarelle

Volcano asparagus salad with capers-crickets
and lemon-seaweed vinaigrette
€12.00

Carrots

Roasted carrots on dill sour cream, carrot's leaves pesto, blueberries umeboshi, black tahini,
and mealworms in carrot honey
€12.00

Eggplant

Baked Eggplant in Mirasol chili sauce
with fresh coriander, creamy pea rice, red onion chili salad,
grasshoppers and crispy insect chips
€18.00

Bread and Butter

Sourdough bread and homemade focaccia made from cricket flour
€3.80

Note. From "Menu," by N. Sartirani, 2023, (<https://mikrokosmosberlin.com/menu/>). Copyright 2023 by MikroKosmos Berlin.

4.4. Cognitive change process

4.4.1. Autonomous motivation

As mentioned in section 4.2, most interviewees did not consider insects as food before dining at MikroKosmos. However, they experienced changes in their perceptions after having meals at the restaurant, which will be reported in section 4.5. This suggests that the firsthand experience of eating insect dishes at the restaurant was a crucial cause of the changes. The change process that led individual customers to change their perception of insects in their minds can be summed up in two elements: *autonomous motivation* and *pleasant surprises*. This section reports on the former.

Autonomous motivation means that an individual needs to be willing to try insects, not be forced or pushed. According to a participant, “I was in no way tricked into it. I knew exactly what was going on and I wanted it” (IP_4). In developing this willingness, two types of feelings were experienced: a *sense of security* and *excitement for new experience*. With regards to the former, participants showed their appreciation for the information provided by the restaurant regarding the legal aspect of the served insects, which is part of the restaurant first strategy: shaking the mental model. For example, one person remarked the following:

I think the waitress was very helpful. I think she recognized quite well that for a lot of people, it's probably their first time. And she also said without anyone asking, “Hey these are one of the very few legally approved insects that you can use”, to take away any concerns anyone might have. I think that was very nice. (IP_6)

In addition, the social situation created by the restaurant setting was found to have contributed to this. Some were encouraged by the existence of friends to share the experience together and to not feel alone: “A friend was also there who also wanted to try. So I didn't feel alone” (IP_10). Another also remarked, “With a couple of friends, either you share the excitement, or you can also help each other if you are super disappointed by it. I think that helps” (IP_9). Moreover, the interviews also revealed the importance of location and setting. For example, one person remarked, “The spirit of Berlin is always kind of giving me the courage to try out new things” (IP_10). Furthermore, the fact that MikroKosmos was a local restaurant for the interview participants was also found to be of help, meaning that it is within their daily sphere of life where they know what can be trusted, instead of a special occasion during their travels. Despite the specialness of the food, the experience was able to be made

in a safe space. As they put it, “I trust the food evaluation in Germany. If someone cooks something so unhealthy or so dirty, I don't think this restaurant can exist for so long, which gives me a sense of security for sure.” (IP_10);

This time was in Berlin where I feel quite confident to eat anything in restaurant offered and Thailand was my first time in Asia and we heard some stories about, “Oh yeah, there was something wrong. I was sick for a few days”, so maybe subconsciously that was maybe also in the back of my mind there. So I think the setting is important (IP_6);

Regarding the second factor, participants also reported their *excitement for new experience*. First, several participants described their inherent open-mindedness and curiosity toward new experiences, which may be more associated with their personal traits than the influence of the restaurant: “I have an innate curiosity anyway, so I like to try out new things” (IP_2); “I think it's always good to broaden your horizon food-wise and also otherwise” (IP_4); “I was also curious to try it” (IP_7). Second, the enthusiasm of the server was found to be motivating. For example, an interviewee reported that the engagement with the server drove their interest:

I thought the staff was extremely helpful. She described the dishes to us and she also told us the different options we had and how we could order, she seemed passionate about what they're selling, which always makes me more interested in whatever I'm about to engage in. (IP_1)

Third, it was also found that both existing knowledge about insects and new information gained from the restaurant or fellow diners sparked curiosity among customers. Learning about insects, whether from prior knowledge or during the dining experience, played a role in stimulating customers' interest and curiosity: “I didn't know there were only three types. And now I'm curious about why they are allowed and not the others, what makes them different. So now I want to redo some research about it” (IP_5);

my perception was always that I need to try it because I've heard that they have a lot of protein, and I've always tried to find a diet that is also sustainable. For me, it's more about whether I can digest them properly. (IP_8)

Based on these findings, it can be concluded that the restaurant's strategy, shaking the mental model, contribute to customers' autonomous motivation, by fostering a sense of

security and excitement for a new culinary experience, which suggests that the customers' neophobia has been reduced or overcome. However, it is important to acknowledge that customers' personal traits also play a role in their receptiveness to these efforts and their willingness to explore and embrace new experiences with insects as food.

4.4.2. Pleasant surprises

The dining experience at MikroKosmos left the customers with *pleasant surprises*, which were caused by a *premium look and feel* as well as by a *sense of familiarity*. The former reflects the *vertical pull* and the latter is the *horizontal pull*. Regarding the first point, it was found that the experience at the restaurant offers a *premium look and feel*, which indicates that the negative image of insects has been dispelled. Interview participants reported that the dining experience at the restaurant was of high quality, unlike the image that the dishes come with quantity rather than quality which was initially associated with eating insects. For example, the following remark illustrates this:

In the beginning, I thought that we would get a bowl full of insects just like to eat as chips, but it was more like a fine dining experience there. So my expectations were a little bit different from the restaurant that it'd be more like casual dining, and I think this was a little bit better dining. (IP_9)

Comments on pricing also suggest this point. Some found the prices higher than expected, but many including them found it reasonable for the quality and experience. For example:

I was expecting a little bit lower prices, but maybe it was also because I was expecting a completely different style of restaurant, more normal than this fine dining. But for fine dining, I feel like it was very cheap because the dishes were very nicely made, and tasted great for a very good price. (IP_9)

Or another commented: "It almost seems like a fine dining experience, almost. And the prices were completely reasonable" (IP_1). In addition, the gesture of the server to describe the food as they brought it to them, and the content conveyed in this gesture, also gave an impression about the quality of the food. As they put it, "You could tell the quality was important, and they really put effort into their focaccia and the sourdough bread that they baked" (IP_1);

They come and they explain to you the kind of insects and how they use them also within the bread, that they use some sort of flour made of insects. And it has a little bit

of an extraordinary dining experience because they come to your place, explain to you the dish and what is on the dish. Not only the insects but also the other ingredients that I used, which I liked. (IP_4)

For the second point: a *sense of familiarity*, the interviewees noted their expectation that insects would have a strange taste and texture, and the surprise that this was not the case: “taste-wise and also mouth feel-wise, it's not at all disgusting (IP_4)”; “I thought the taste wasn't very special but just eating the insects was special” (IP_6);

I was expecting a more dominant taste and maybe a dominant existence. But with the texture, and with the wings of grasshoppers, you don't really feel that. I mean it's there. Of course, it looks like insects, but there is no difference. (IP_10);

I think what made it so accessible or so pleasant to eat the bugs today was how great the texture was. It didn't have anything of what I think you would imagine a bug texture to feel like, which made it easy to eat them. I think if the texture was different, it would become more challenging. (IP_1)

Moreover, it was observed that this unexpected normalcy extended to the overall atmosphere of the restaurant. Some participants sensed it from the server's attitude, as follows: “I liked that she was like treating it as if it was completely normal. She just briefly explained the different insects that you see but didn't make a big show or big fuss about it” (IP_2). Participants also reported, not necessarily with positive feelings, that elements such as restaurant tables, décor, exterior, and music offered an impression akin to any other dining establishment in Berlin. According to them, for example, “[the restaurant] didn't really stand out or anything. It just didn't look that special. . . . It wasn't bad, but it was just like any other place in Berlin” (IP_7); “I liked the atmosphere a lot. The seat I was sitting was so cool. I really liked the outdoor area, the design, architecture, or the decoration” (IP_10); or,

The restaurant looked very cool and hip. . . . the whole free atmosphere was very much like any other cool restaurant. And I like that they didn't push the insect theme too much. I mean, you could go, you could go overboard with it and also include decor and everything. But I appreciated that they didn't want to make it too exotic because it's already exotic enough to be eating it, but yeah, to not like fetishize the insects in a way. So I thought that was very good. (IP_2)

Furthermore, a notable observation was that a considerable number of participants expressed their amusement at the restaurant's ability to incorporate insects seamlessly into regular dishes (see figure 6), except for one dish called Fritto Misto, a plate with three different types of deep-fried insects which was found to be "adventurous" (IP_2, IP_6). Their amusement was expressed in their words, for example: "I was impressed at the creativity, how you can incorporate insects into everyday eating" (IP_1). This was surprising to the customers because the way insects were presented by the restaurant was contrary to their initial expectations of insects being the "main character" (IP_4) in each dish, rather than the innovative integration they encountered. This can be understood as a sign of reduced cultural irrelevance. This realization was described in their terms as follows:

I came to realize that it can be very well incorporated into dishes that you would normally eat. For example, tortillas. That's nothing super extraordinary nowadays at least. So that was something that I liked because as I've mentioned, the first time I tried insects it was very prominent and sort of the only thing and it was kind of a spectacle to eat insects. And the food market also kind of promoted it as such. At this restaurant, of course, it was still sort of an experience overall, but a lot more normal than the first time I tried. (IP_4);

It was pretty incorporated into the dish as you normally know as a tortilla. It looked a lot like a regular tortilla. If you didn't pay too much attention, you wouldn't realize there were insects. So it was a lot like eating a tortilla with something crispy. And it tasted good. So the impression was pretty good. It was like eating a regular tortilla. (IP_5);

I think [what caused the perceptual change is] the presentation of the table, especially with carrots. I loved the taste. It was so good. Of course, it was not the taste of the insect, it was just caramelized carrots, which was amazing. I think insects could be good toppings for dishes. (IP_10)

In short, customers discovered that the dishes did not abound with a large quantity of cheap insects; instead, they were nicely presented with a modest amount, evoking a sense of premium. Insects lack a distinct exotic taste and texture. Rather, they were seamlessly integrated into normal dishes, offering a pleasantly crunchy texture in them. This set of surprises perceived after the first-hand eating experience which was initiated by their own

motivation explains the process of how the existing frame was dismantled and the construction of a new frame was facilitated in the customers' cognitive system.

4.5. New frame: potential food source

Despite the observed cultural factors that stop people from seeing insects as food as reported in section 4.2, the participants recognized that their perception of insects has changed to a *potential food source* after having a meal with insects at the restaurant. As intended by the restaurant, the customers became able to consider insects as an option to consume in their diet. This is defined by three factors: *no problem with eating insects*, *willingness to recommend*, and *no change in daily diet*. First, the experience at the restaurant left the customers with no reluctance or have a willingness to eat insects again. For example, one participant described how they reached this state: "When you first tried, and then after a while, it's fine. It's not like I wasn't thinking about it . . . I was like, "yeah, it's insects. Okay." And then they were just part of the dish as an ingredient" (IP_4). In another participant's words, "It's kind of like now the band-aid really ripped off" (IP_2). This interviewee also stated the following:

If it's presented to me as food, I would think of it as food. So I think that has changed a bit. Normally when you go to a restaurant and you have a little bug or something in your food, you send the food back. But in that restaurant, you order it specifically for little bugs. So it was an interesting experience and definitely shifted my perception a little bit. So now I consider insects as a food source. (IP_2)

Second, not only consuming on their own, but the participants also showed a *willingness to recommend* the restaurant or insects as food in general to others. The uniqueness of the experience naturally leads them to share with friends and family in their preferred ways such as by posting pictures on social media, by showing pictures, or simply by telling the fact that they ate insects and how it tasted. What is notable, however, is that they are also willing to encourage others to eat insects because the experience was positive. As "food is a major source of pleasure for almost all humans" (Rozin, 1996), positive feelings can be considered inevitable to perceive a certain item as food. In their terms, "I will definitely tell my friends about it and encourage them to go for a unique gastronomy experience" (IP_1), or "If someone wants to do something crazy, I will totally recommend this place because their dishes are delicious" (IP_5).

Thirdly, however, the frame of insects remains a 'potential' food source, not completely normal, even though they could now consider insects as food because the customers see a *lack of wide accessibility* so far, which leaves the practice of eating insects remaining an unusual behavior. The participants clarify the reason for it as "I could consider insects as food, but it isn't really something that you buy in supermarkets or that you eat regularly just because it's not mainstream to do so. But I think it could be" (IP_4), or "I think it's [still] exotic because it's not easy to find edible insect products. If I could find it in a supermarket, for example, I will buy it again for sure" (IP_5). Interviewees also expressed the need to witness others consuming insects regularly, stating, "I think before cooking it myself, I need to be confronted with the reality like 'okay, people eat insects. This is being cooked on a regular basis'" (IP_9). This includes factors such as the presence of insect dishes in various restaurants, their availability at grocery stores, affordability of insect food products, diverse product forms, and a variety of recipes. This covers factors identified by earlier research (see, e.g., Balzan et al., 2016; Sogari et al., 2017; Van Thielen et al., 2019). For instance, one interviewee commented: "And I then I also think like there should be many more restaurants actually" (IP_9). Another participant shared that, if they were to consume insects on a daily basis, they would prefer having them "mixed in the bread or in some other kind of products" (IP_2).

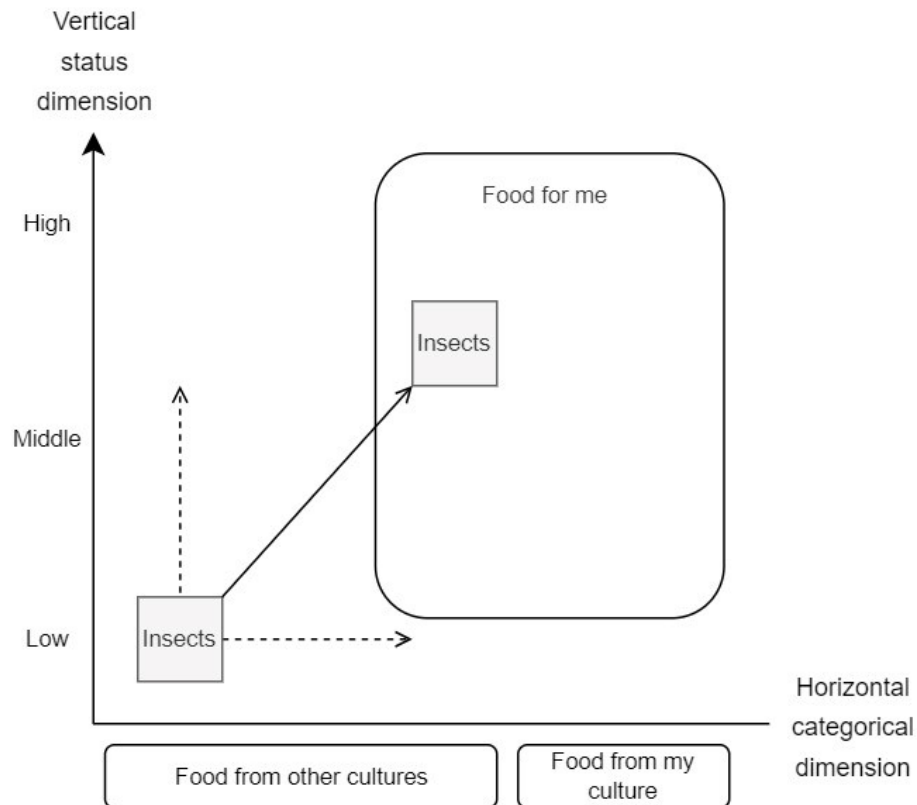
Overall, customers reached the point where they are able to consider insects as food and potential daily use if the market conditions follow. This indicates that the experience offered at the restaurant effectively changes people's frames for insects. The key to this change is twofold (see figure 7). Firstly, there's a focus on creating an upward vertical shift by introducing a premium look and feel. This includes serving small portions of insects in an artistic manner. While insects are usually attributed with low status such as something inexpensive and served in larger quantities, this approach seeks to change that perception and position them as middle-to-high status. Secondly, there's an emphasis on achieving a horizontal shift. This involves combining insects that are not traditionally considered food in the cultural context with local and seasonal ingredients (e.g., asparagus) and familiar dishes from other cultures (e.g., tortillas). This approach aims to familiarize people with these insect-based dishes and bring them closer to what they consider food for them.

Nonetheless, the perception hasn't changed to the point where it is completely normal to eat insects. As categorization is "not purely cognitive, but socio-cultural as well" (Glynn & Navis, 2013, p. 1127), institutional change is needed for this recategorization to be

a common view shared by members of the society. Therefore, the next section introduces the actions taken by the restaurant to influence beyond the restaurant aiming to bring a societal level change.

Figure 7.

Vertical and horizontal recategorization.



4.6. Impact on broader society

Thus far, the research findings have reported the mechanisms underlying the transformation process of the perception of insects within each individual toward edible through their strategic approaches. However, the perception of insects among individuals after a meal in a restaurant remained limited to their 'potential' as a food source, which is attributed to the *lack of wide accessibility*. The ultimate aspiration of MikroKosmos is to foster a societal shift wherein insects are widely regarded as an option by everyone in society as a whole, i.e., insects become a part of a normal diet in society. Thus, this section reports the restaurant's further efforts to impact broader society as additional findings.

4.6.1. Norm forming

MikroKosmos' efforts to influence society can be divided into two major categories: *norm forming* and *business environment cultivation*. This section reports on the former. They take two distinct actions in collaboration with stakeholders to establish norms in society: *knowledge diffusion* and *knowledge creation*.

To propagate accurate knowledge about edible insects, MikroKosmos undertakes diverse initiatives. Firstly, they make use of media. Not only through their Instagram account which currently has 1981 followers (as of July 20, 2023), they also engage in collaborating with the media, striving to disseminate their message to a broader audience through regular appearances on TV and online news platforms. One of their Instagram posts reporting their appearance on TV illustrates the motivation behind this: “We are so incredibly proud! A few weeks ago, the German national tv channel #ZDF had filmed at our restaurant and helped us to spread our message and story all over Germany!” (mikrokosmosberlin, 2023e). They express gratitude to the media for their contribution, as the increased exposure enables individuals to become more informed about the various advantages associated with this innovative eating habit:

thanks also to the media, slowly the awareness of people change. They got more and more informed about the . . . advantages of this kind of kitchen, and for us, for our health, but also for the health of our planet. And so more and more people then were willing to try at least. (IP_12)

Secondly, they place great importance on education. They offer workshops on cooking and growing insects, and also actively collaborate with schools to teach children. The motivation for this is illustrated in their words as follows:

We often say that “people are afraid of what they do not know”, exactly for that reason I think it is very important, in recent years, to work on sharing knowledge related to the world of insects. This will help to fascinate more and more people and overcome the barrier of disgust. Especially the work with children and young people, who are our future, is the main mission of MikroKosmos. (Sartirani, n.d.-b)

Furthermore, they are also involved in *knowledge creation*, by collaborating with academia and participating in conferences. The founder revealed that their connection to academia began when they started their business, attending conferences and schools where

leading scholars in this field were present to gain knowledge to pass on to consumers who they realized have a fear of the unknown:

To be able to share this knowledge, I took part in several conferences in London, in Belgium on future food, on sustainable sources. And in the end, the principal schooling that I did was in the University of Wageningen. They gave summer classes on edible insects. When I attend in 2018. . . . I was sitting in the school bank with politicians but also entrepreneurs, start-uppers, and scientists, and government workers. So I really felt myself part of a nice change that was going to happen. (IP_12)

The founder values their network, as has been revealed in a published interview before the restaurant opened, "The right time will come, I am waiting patiently and enjoying working on enlarging my knowledge and my network. " (L'Entomofago, 2020, para. 7). Making use of the network, now they actively present and share their culinary and business experiences and insights with scientists, including their participation in this study. This is also evident in their Instagram posts reporting their participation in academia-sponsored events: "Yesterday we took part in the @animalesqueberlin at the @floatinguniversity at Tempelhofer Feld. . . . We shared our #insectfood experience with a nice apero!" (mikrokosmosberlin, 2019b); "The #Insecta2019 in #Potsdam was the perfect spot for us to meet inspiring people like @arnoldvanhuis, get to know more about new trends in the #insectworld and share our knowledge and experience of 3 years in #insectcooking and #insectfarming" (mikrokosmosberlin, 2019a).

While neither diffusing knowledge through the media nor working with academia to create knowledge can directly broaden the accessibility sought by consumers, it can be interpreted that they are indirectly widening the frontage, with owners reporting, for example, that some customers have visited the restaurants after watching their appearance on a TV program (IP_12).

4.6.2. Business environment cultivation

To normalize eating insects in society, MikroKosmos also sets out to *business environment cultivation*, by *industry development* and *expressing demands for regulations*. Regarding the former, their network-oriented collaborative approach is carried through to other business actors within the market. This refers to the challenges that Han et al. (2017) and Payne et al. (2016) point out as the lack of industry stakeholder collaborations facing the

insect sector. For example, they have been interviewed on owned media by another startup in Berlin, and they have also sold other companies' products at their restaurant. In a published interview, the founder made the following favorable comments about the presence of startups in the edible insect sector:

I am surprised at how many startups are already growing their own insects and developing products. This is a great development as it allows consumers to get familiar with the topic. (HERMANN'S, 2017, para. 3)

To create an enabling environment for the edible insect sector and expand their offerings, albeit in a minor way, they raise their voice and express the need for more flexibility in regulations, particularly with regard to the variety of insect species they are allowed to serve at the restaurant. The chef emphasizes the challenges posed by current laws during an interview conducted for this research, stating, “[what needs to change is] first the laws. Now it's really hard to only be able to put the insects in the list [of approved species]. . . . We have only 4 and this is too small” (IP_11). Additionally, the other owner states in a published interview before opening the restaurant, “Unfortunately in Germany, we still have to wait for the law to change.” “the European regulation is still too restrictive” (L'Entomofago, 2020, para. 7).

In summary, MikroKosmos' purposeful endeavors center around its mission to achieve sustainable gastronomy with insects in society. To fulfill this purpose, they commit to changing the category positioning hindering the progress of the sector in Western societies, addressing both micro and macro impediments. Within their restaurant operations, they actively engage in transforming their customers' perceptions regarding insects, aiming to drive changes on the micro-cognitive level. Furthermore, through various activities, including collaborations with media, academia, and other stakeholders, they strive to effect macro-social changes, even though the results of these efforts remain uncertain and are not immediate in fruition.

5. Discussion

The central aim of this research was to provide insights regarding how businesses can reframe insects as food in the context of the Western world where insects have not been eaten historically, mainly focusing on the individuals' micro cognitive level. This chapter discusses the implications of the findings for theory and practice, then addresses the limitations with suggestions for future research.

5.1. Implications for edible insect studies

This study observed the frame change from *not food for me* to *potential food source* at the customers' cognitive level through their dining experiences at MikroKosmos. This fact suggests that customers overcame the three elements of the conventional frame: *neophobia*, *negative image of insects*, and *cultural irrelevanc*. To bring about this change, the restaurant takes three steps of strategies: (1) *shaking the mental model*, (2) *vertical pull*, and (3) *horizontal pull*. This section discusses how each of the strategies addresses the components of the conventional frame while comparing with the findings of previous studies.

In the first step, the restaurant prepares customers for the experience that awaits them by building trust and sharing knowledge. Trust is identified as an essential and foundational element in the process of encouraging customers to develop *autonomous motivation* to explore insect consumption. This aligns with previous research highlighting the role of media trust and purchase intentions (Legendre et al., 2019), and indicates that trust is important in the restaurant setting as well. Moreover, the effectiveness of *knowledge sharing* including the nutritional and sustainability benefits of eating insects, which also evokes *autonomous motivation* in customers, also corroborates suggestions from existing studies (see, e.g., Balzan et al., 2016; Brunner & Nuttavuthisit, 2019; Legendre & Baker, 2020). This indicates that this first step addresses the *neophobia*, or hesitance to eat insects, by evoking *autonomous motivation* in customers. However, the fact that those who had eaten insects prior to the restaurant visits and the Instagram follower who has no dining experience at MikroKosmos did not consider insects as food suggests that the key to the change lies in how the restaurant serves insects. Therefore, it can be argued that motivating consumers to try by building trust and providing the information is not sufficient to convince consumers, but it is the other two strategies, *vertical pull* and *horizontal pull*, and their consequence of *pleasant surprises* that fundamentally cause changes in customers' perceptions of insects. Consequently, this study confirms the two arguments by van Huis and Rumpold (2023). First, sustainability and nutritional claims represent only a small part of the persuasive conditions needed. Second, reducing neophobia is also insufficient in convincing consumers and is relatively insignificant compared to disgust.

Two of the conventional frame components, *cultural irrelevance* (i.e., no association between eating insects and their own cultures) and *negative image of insects*, imply that insects exist outside the cultural boundaries of the Western world and hold a low status in their cognitive system (see figure 7). The fact that consuming insects is perceived as unrelated

to the interview participants' cultural backgrounds is in line with the statements in the previous studies that insects are historically not eaten in the West (e.g., van Huis & Oonincx, 2017). The recognition of insects in Western societies as having a negative connotation, including feelings of disgust, also corresponds to existing research (e.g., Circus & Robison, 2018; Mancini et al., 2019). While the existence of the two different aspects was clear from earlier research, the limited implications of existing research may be due to an excessive emphasis on reducing the disgust factor by downplaying the cultural irrelevance of insects as self-evident. The findings of this study suggest that addressing both factors is key to convincing consumers. For Western consumers to regard insects as edible, two different types of movement are necessary, involving both a vertical shift from a low status to a middle-to-high status and a horizontal shift from irrelevant to familiar. MikroKosmos achieves both types of transformations. On one hand, they deconstruct the cheap and mass image and build a new perception of delicacy and fineness through the presentation of the dishes, suggesting that the *vertical pull* helps overcome the *negative image of insects* in consumers. On the other hand, they also dismantle the exoticness and construct a new perception of familiarity by showing that insects can be part of normal diets using regional ingredients and South and Central American cooking techniques, which are already familiar enough to Western consumers, suggesting that the *horizontal pull* helps to overcome the *cultural irrelevance* of eating insects in consumers' cognition. In the existing studies, incorporating insects into familiar products such as protein bars is recommended as a means to eliminate the disgust factor (see, e.g., Balzan et al., 2016; Sogari et al., 2017). However, this study suggests that familiarity is to address the cultural irrelevance factor, not disgust. Consequently, the present paper reveals the importance of addressing the cultural irrelevance factor as well as of overcoming disgust by creating premium feels, both of which were overlooked in the previous studies.

Additionally, it seems what fundamentally enables this transformation is MikroKosmos' mission. They are not merely focused on promoting insects as food; their mission is to establish eating habits that are both sustainable and delectable. This broad-minded approach, which extends beyond insects, motivates their customers to take the initiative and think beyond conventional boundaries. In this way, the developed model clearly shows the factors that hinder consumers from eating insects and the strategies to address those factors and cause a perceptual change, while referring to the insights revealed by the previous literature on edible insects.

5.2. Implication for categorization studies

This study introduced strategic recategorization that involves both vertical and horizontal status shifts through the example of edible insects in Western societies. Vertical movement from low-status to high-status was done by *detaching from the low-status image* and *mimicking the high-status practices*. This corresponds to the category detachment and category emulation found in the existing studies by Delmestri and Greenwood (2016) as well as by Lane and Opazo (2023). However, because insects are food from distant cultures and exist outside the horizontal category range that one perceives as food, a horizontal shift is necessary in addition to the vertical shift. The horizontal shift was achieved by *mimicking normal practices* and *incorporating into the known*. In this study, the former was observed in how MikroKosmos adopts practices of average restaurants that serve normal foods in setting the overall atmosphere of the restaurant such as décor. The latter refers to mixing the foreign practice (e.g., eating insects) into practices of the category (e.g., eating asparagus or tortillas). Compared with the vertical shift requirements, the findings suggest that mimicking practices of a category is commonly an effective strategy in both vertical (Delmestri & Greenwood, 2016) and horizontal recategorization. On the other hand, there appears to be a significant emphasis on distancing from the prevailing low-status category in vertical recategorization, whereas, in horizontal recategorization, it seems possible to jump into a new category simply by incorporating elements of the new category without spending energy on moving away from the existing category. This comparison hints at the common understanding that changing the status hierarchy is difficult (Delmestri & Greenwood, 2016; Washington & Zajac, 2005). Overall, this study introduces a new aspect into the categorization studies that deal with the horizontal dimension, for which previous studies have mainly been concerned with horizontal differentiation among members of the category (Lane & Opazo, 2023; Zhao & Zhou, 2011), by identifying strategies to cause a horizontal recategorization. It also suggests that the combination of two types of recategorization allows a subcategory that existed outside the category with perceived irrelevance and negative image to gain membership in the given category within the individual, which provides clarification to what Zuckerman (1999) merely put as “isomorphism” (p. 1403).

In light of these findings, this study testifies to the House’s (2019) argument that insects are different from the example of sushi, which was rather accepted as it was, being perceived as an authentic practice of Japanese culture, which was gaining momentum during the 1950s and 1960s in the United States. While this study revealed that incorporating insects

into familiar food (i.e. fusion) is important for insects to be accepted as food, it can be understood that sushi had a high-end status from the beginning and gained membership in the category of 'food for me' by audiences' extending their boundaries of what is food for them, which can explain why authenticity was important for sushi.

5.3. Limitations and future research

There are also limitations to this study. Firstly, the study focused on identifying what business actors can do, and interviews with consumers were meant primarily to see the effectiveness of the strategies. Thus, the consumer-side interviewees were selected from within the author's second-tier connections and only included those who were open enough to try insects and those who were still disgusted by insects were not explicitly looked for, which may have introduced some bias in the analysis. Therefore, this study does not provide insights for businesses as to where the target group should be set, on which the existing research is divided into debates (van Huis & Rumpold, 2023). Future research focusing on the difference in the effectiveness of the reframing strategies presented in this paper among different segment groups may be beneficial for both theory and practice.

Secondly, the limitation inherent in the method lies in deriving theories from a single case study. While grounded theories are meant to be transferrable to similar contexts (Gioia, 2020), they are not aimed at generalization and may be insufficient in that sense. To derive more general insights, it may be worth examining the model presented in this paper by studying other business cases in the non-insect-eating context that successfully reframe insects as food, or cases on the recategorization of something that requires both vertical and horizontal shifts.

Thirdly, related to the previous point, it's important to recognize that the ongoing introduction of edible insects to Western consumers is a continuous process. While the reframing dynamics introduced shall be transferable to similar contexts, it is important to note that this cannot be proposed as a definitive law that can reliably cause a macro-level change. Performing a historical analysis retrospectively would be intriguing when more comprehensive data becomes accessible in the future.

6. Conclusion

By analyzing the strategies taken to reframe insects as food at MikroKosmos and their consequences, the present paper revealed how businesses can strategically reframe insects as food. Overall, the conventional frame, which consisted of (1) neophobia, (2) negative image

of insects, and (3) cultural irrelevance, was overcome by the three strategies and their consequences on customers: (1) shaking the mental model inducing autonomous motivation; (2) vertical pull inducing a premium look and feel; (3) horizontal pull inducing a sense of familiarity. In particular, a combination of (2) vertical pull and (3) horizontal pull causes shifts in the positioning of insects as a category from the outside into the inside of an umbrella category of 'food for me' (see figure 7). Moreover, while this study primarily focused on the micro-level categorization, the paper also presented MikroKosmos' further efforts to influence broader society and cause a macro-level change by norm forming and business environment cultivation in active collaboration with its stakeholders.

These findings contribute to both theory and practice. First, the present paper advances the literature on edible insects in terms of strategies to increase consumer acceptance by stepping further and revealing how the perception of insects as something edible can be changed by businesses. The developed model also brings coherence to the insights from previous studies that were scattered. As promoting insects as food is an ongoing event in the context of non-insect-eating cultures, the model can serve as a clear guidance for business players in the edible insect sector in developing their strategies to sell insects, which in turn contributes to realizing the potential of insects as food in addressing sustainability challenges. In particular, the insights put emphasis on the importance of addressing both disgust and cultural irrelevance by making it both premium and familiar. Instead of addressing the disgust factor by familiarity as is recommended by the existing studies. For example, incorporating insects into familiar products such as protein bars is recommended as a means to eliminate the disgust factor (see, e.g., Balzan et al., 2016; Sogari et al., 2017). While the findings of this study partially support this with the desire among the interviewees to rather have insects mixed into more familiar products rather than having insects as they are if they were to consume on a daily basis, this study revealed that familiarity supports only a horizontal pull. Adding a premium factor to cause a vertical shift to address the negative image including disgust can be recommended for entrepreneurs in the current phase where reframing is required for consumers to accept insects as food. Besides, the findings suggest that this micro-cognitive recategorization is yet to turn out as a macro-social recategorization, as illustrated by the customers' need for wide accessibility to include insects in their daily diet, which echoes the need for an increase in supply pointed out by Shelomi (2015). This highlights the limitation of a singular restaurant in entirely transforming the perception of insects on a macro-social level, underscoring the necessity for institutional change. In order to cause an

institutional change and gain legitimacy as a member of the food category, industry stakeholder collaborations (Ahlstrom & Bruton, 2001; Maguire et al., 2004) can be recommended to practitioners, which is lacking in the edible insect industry (Han et al., 2017; Payne et al., 2016). The edible insect sector is small yet highly competitive (Marberg et al., 2017), but it may be in a phase where cooperation with stakeholders, including competitors, is also in its own interest.

Second, in terms of categorization, the study confirmed that vertical recategorization can be achieved by detaching from the low-status image and mimicking high-status practices as previous studies suggested (Delmestri & Greenwood, 2016; Lane & Opazo, 2023), and newly revealed that a horizontal recategorization can be achieved by mimicking normal practices and incorporating them into the known, which was merely put as “isomorphism” (Zuckerman, 1999, p. 1403). The novelty also lies in showing the case of a combination of both vertical and horizontal recategorization to gain a membership in a certain category. For practitioners across various industries aiming to promote offerings that lie outside the boundaries of a category both vertically and horizontally, i.e., both prejudiced and culturally irrelevant, insights from this study would be a valuable guide in effectively addressing the challenges related to the object's perceived irrelevance and negative image.

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Appendices

Appendix A: Interview guides

Appendix A.1. Interview guide for business owners

Ice break

Thank you for your participation. First, let me ask a few questions about you.

- How long have you been living in XX? Where else did you live before?
- Do you follow a special diet? [If applicable] Why?
- How is eating insects related to your own culture? Growing up, how did you think of it?
- What was your own trajectory regarding eating insects?
 - When and where did you first try it and how did you like it?
 - How did it evolve until you open this restaurant?

Purpose, goals, and strategies of the business

Now, I'd like to hear about this business.

- Could you please briefly explain this business and your role/job in it?
- What made you decide to open this restaurant and serve insects in Berlin/Germany where people normally do not eat insects?
- How did the business evolve since the opening in 2017? What were the challenges? How did you overcome them or how are you dealing with them?
- What is the mission/purpose of this business? Why do you pursue it?
- What are the goals at hand? How are you aiming to achieve these goals? Are there strategies? What do you think are the obstacles to achieving these goals?

Working on customers' attitudes about eating insects

Now, I'd like to ask more about your strategies focusing more on customers and consumers.

- Overall, what kind of experience are you aiming to bring to your customers?
- In Europe, people are not used to eating insects and often find it disgusting. Are you actively trying to change that image of insects as food? If yes, how do you do that? What arguments/communicative strategies do you use, e.g. on the website, on Instagram, or in person?
- [if not mentioned by themselves] What are the arguments you use to link it to something edible?
- [if not mentioned by themselves] Do you perhaps try to detach it from the traditional image of insects? Or associate them with something else? (E.g. distance from "cheap

street food”, or associate them with protein and sports, or with vegetarian/vegan and environmental benefits.)

I assume there are different kinds of customers who visit this restaurant, I’d like to ask about them a bit more in detail.

- What are the types of customer groups that you have?
- [if not mentioned by them:] What different kinds of attitudes are you facing when it comes to eating insects?
- Do you have different strategies to deal with these different customer types when ‘selling’ insects to them? [Let them explain for different customer types]

Institutional environment

I think now I have a better understanding of what’s happening inside this restaurant. One last question is about your thoughts about the external environment.

- On a broader level, do you want to change the image of insects intentionally? What do you think needs to change on the societal level/in the external environment to better promote insects? (e.g. the regulation, education, etc.)

Wrap-up

- Is there anything you’d like to share besides the things I asked?
- Any questions from your side?

Appendix A.2. Interview guide for employees

Ice break

Thank you for your participation. First, let me ask a few questions about you.

- How long have you been living in XX? Where else did you live before?
- Is there any specific diet you follow?
- What are the reasons why you are following the XX diet?
- How is eating insects related to your own culture? Growing up, how did you think of it?
- What was your own trajectory regarding eating insects?
 - When and where did you first try it and how did you like it?
 - How did it evolve until you start working at/with this restaurant?

Purpose, goals, and strategies of the business

Now, I'd like to hear about your job.

- Could you please briefly explain how you're involved in this business?
- What made you decide to work at/with this restaurant and help serve insects in Berlin/Germany where people normally do not eat insects?
- What were/are the challenges of your job? How did you overcome them or how are you dealing with them?
- Do you have your own mission or purpose related to this work? Why do you pursue it?
- What are your goals at hand? How are you aiming to achieve these goals? Are there strategies? What do you think are the obstacles to achieving these goals?

Working on customers' attitudes about eating insects

Now, I'd like to ask more about your motivations in communicating with customers and consumers.

- Overall, what kind of experience are you aiming to bring to your customers?
- In Europe, people are not used to eating insects and often find it disgusting. Are you actively trying to change that image of insects as food? If yes, how do you do that? What arguments/communicative strategies do you use, e.g. on the website, on Instagram, in person?
- [if not mentioned by themselves] What are the arguments you use to link it to something edible?
- [if not mentioned by themselves] Do you perhaps try to detach it from the traditional image of insects? Or associate them with something else? (E.g. distance from "cheap street food", or associate them with protein and sports, or with vegetarian/vegan and environmental benefits.)

I assume there are different kinds of customers who visit this restaurant, I'd like to ask about them a bit more in detail.

- What are the types of customer groups that you have?
- [if not mentioned by them:] What different kinds of attitudes are you facing when it comes to eating insects?
- Do you have different strategies to deal with these different customer types when 'selling' insects to them? [Let them explain for different customer types]

Institutional environment

I think now I have a better understanding of what's happening within this business. One last question is about your thoughts about society.

- What do you think needs to change on the societal level/in the external environment to better promote insects? (e.g. the regulation, education, etc.)

Wrap-up

- Is there anything you'd like to share besides the things I asked?
- Any questions from your side?

Appendix A.3. Interview guide for customers

Ice break

Thank you for your participation. First, let me ask a few questions about you.

- How long have you been living in XX? Where else did you live before?
- What do you do/study exactly?
- Do you follow a special diet?
- What are the reasons why you are following the XX diet?
- How is eating insects related to your own culture? Growing up, how did you think of it? Did it change at some point before today or remain the same?
- What is your level of experience with eating insects (e.g., frequently, first time...; how do you like it?

Experience at the restaurant

Now, I'd like to hear about your experience regarding insects at the restaurant.

- What brought you to this restaurant today?
- How did you find the restaurant?
- How do you describe 'eating insects' presented by the restaurant? [e.g., an 'adventure', something normal....] Here's the menu if it helps.
- What did you have today? How did you like it?
- What convinced you to try insects today? [if they don't say anything, ask: E.g., social situation with friends, employees, pictures...]
- Or if you didn't try, what stopped you from it?
- If it was your first experience: How did it feel to try insects?
- You told me that you thought of insects as XX. If there are changes in your perception of insects after the experience today, what is it and how did it change? Or what did not change and why?

Now I have more general questions.

- How was the overall experience at the restaurant? What did you like and what did you not?
- How did you find the employees? What did you talk about with them? Did you gain any new knowledge or a new perspective about eating insects?
- Do you think you will share your experience here with others? If so, how would you tell them?
- Do you think you will eat insects (again) in the future? And why do you think so?
- What do you think would make it easier for you to eat insects? Any idea?

Wrap-up

- Is there anything you'd like to share besides the things I asked?
- Any questions from your side?

Appendix B: Interview agreements

Appendix B.1. Consent form

Consent for Participation in Interview Research

Project: Master thesis at University of Twente & Technical University of Berlin

Project topic: The promotion of edible insects

Researcher: Yuka Yanagawa

Supervisor: dr. Barbara Kump

Thank you for participating in the above research project. During the interview, the researcher will collect relevant personal data. This consent form is necessary for us to make sure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

Agreements

- Your participation is voluntary. You will not be paid for your participation. You may withdraw and discontinue participation at any time without having to provide a reason.
- The interview will be recorded and transcribed.
- The recording will be destroyed when it is no longer needed.
- The transcript of the interview will be analyzed by the study team and will not be shared with third parties.
- Any content from the interview used in academic publications will be anonymized so that you cannot be identified.
- Your personal information (information that can identify you) will be deleted when it is no longer needed.

By placing my signature below, I agree to participate in the study under the conditions of the agreements.

Name: _____

Date & place: _____ **Signature:** _____

Appendix B.2. Personal data form**Personal Data**

The following information will be anonymized and used for research purposes only.
The researcher will delete the data as soon as it is no longer needed.

What is your gender?

Male Female Non-binary Prefer not to answer

How old are you? _____

What's your occupation? _____

Where are you from? _____

Where do you currently live? _____

Do you follow a specific diet?

Vegetarian Vegan Other (_____)

How often do you eat insects?

Never Once Multiple times Regularly (_____)

Name: _____

Email (optional): _____

Phone (optional): _____

Appendix C: Menus of the restaurant

Appendix B.1. Menu with insects

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INSECT EXPERIENCE

Fritto Misto

Fried grasshoppers, crickets, and mealworms
with herbs and dipping sauce
€12.00

Chapulines

Marinated crickets on organic corn tostada with sour cream, beer beans,
lime-chili sauce, onions, and fresh coriander and chili
€13.00

Leek

Roasted Leek in Buffalo Worms Tempura with "Vichyssoise" (cold asparagus-leek cream),
fermented asparagus, wild garlic, lima beans, and "Aji Amarillo" (yellow chili-sauce)
€14.00

White asparagus-Ceviche

Beelitzer asparagus, strawberries, wild herbs, rhubarb tiger milk,
and roasted crickets
€13.00

Puntarelle

Volcano asparagus salad with capers-crickets
and lemon-seaweed vinaigrette
€12.00

Carrots

Roasted carrots on dill sour cream, carrot's leaves pesto, blueberries umeboshi, black tahini,
and mealworms in carrot honey
€12.00

Eggplant

Baked Eggplant in Mirasol chili sauce
with fresh coriander, creamy pea rice, red onion chili salad,
grasshoppers and crispy insect chips
€18.00

Bread and Butter

Sourdough bread and homemade focaccia made from cricket flour
€3.80

DESSERTS

Insect Chocolate Pralines
2 pieces (chocolate and coconut)
€5.00

Daily Tart
€7.00

To spread on
Caramelized buffalo worms €2.50
Chocolate Mealworms €3.30

TASTING MENU

4 courses of your choice (among which one dessert) €45.00

Note. From “Menu,” by N. Sartirani, 2023, (<https://mikrokosmosberlin.com/menu/>). Copyright 2023 by MikroKosmos Berlin.

Appendix B.2. Menu without insects



SPRING MENU 2023

Leek
 Roasted Leek in Tempura with "Vichyssoise" (cold asparagus-leek cream), fermented asparagus,
 wild garlic, lima beans, and "Aji Amarillo" (yellow chili sauce)
 12,00€

White asparagus-Ceviche
 Beelitzer asparagus, strawberries, wild herbs, rhubarb tiger milk
 €11.00

Puntarelle
 Volcano asparagus salad with lemon-seaweeds vinaigrette
 €10.00

Carrots
 Roasted carrots on dill sour cream, carrot's green pesto, blueberries umeboshi,
 black tahini, and carrot honey
 €10.00

Eggplant
 Baked eggplant in Mirasol chili sauce with fresh coriander, creamy pea rice,
 and red onion chili salad
 €16.00

Peruvian Sandwich
 with homemade turmeric ham, sourdough bread, romaine lettuce,
 pickled onions, and fermented chili
 €12.00

Bull
 Stewed bull brisket in Panca chili juice
 with potatoes and garden vegetables
 €18.00

Bread & Butter
 with sourdough bread and salted butter
 €3.50

DESSERTS

Daily Tart
€7.00

French Toast
with fruit compote and butter-vanilla zabaglione
€8.00

TASTING MENU

4 courses of your choice (among with one dessert) €40.00
with bull €50.00

Note. From “Menu,” by N. Sartirani, 2023, (<https://mikrokosmosberlin.com/menu/>). Copyright 2023 by MikroKosmos Berlin.