

**EXPLORING THE NEXUS OF TECHNOLOGY AND
FOOD PRACTICES IN YOUNG ADULTS: A VALUE-
SENSITIVE DESIGN PERSPECTIVE TOWARDS
HUMAN-FOOD INTERACTION**



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DECEMBER, 2024

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**by
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Thesis
Submitted in Partial Fulfillment of the
Requirements for the Degree of

Master of Science

in
Design, Technology, and Society

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December, 2024

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To my family and friends for their support and encouragement...



DECLARATION OF ORIGINALITY

I hereby declare that I am the sole author of this thesis and that this is the true copy of my thesis, including the final revisions, approved by my thesis committee. All data and information have been obtained, produced, and presented in accordance with the rules of research ethics and principles of academic honesty. As required by these rules, to the best of my knowledge I have acknowledged ideas, thoughts, and any copyrighted material in accordance with the standard referencing rules. I certify that any part of this thesis has not been submitted for a degree or diploma in another educational institution.

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ABSTRACT

This study explores the dynamics of young adults' food practices at the intersection of technology and tradition, utilizing a Value-Sensitive Design (VSD) framework. Through surveys and interviews with young adults, complemented by a workshop involving design and gastronomy experts, five key themes were identified: "Preservation of Culinary Heritage and Relationships," "Technological Convenience," "Uniqueness and Personalization," "Globalized Nature of Food," and "Sustainable Choices and Trustworthiness." Grounded in VSD and its 38 core values, our analysis uncovers five value conflicts and highlights the critical role of values in shaping human-food interaction (HFI). The research further contributes to HFI by presenting insights into developing a card-based design tool to bridge HFI and VSD. Preliminary findings from qualitative studies with young adults and designers inform design considerations and refinements for making knowledge about food practices and values accessible to researchers, designers, and practitioners. By combining traditional and technological elements, this study provides a value-laden analytical perspective to guide future HFI design studies and support incorporating underlying human values in diverse contexts.

Keywords: Human-food interaction, value-sensitive design, card-based design tool, food practices, young adults

ÖZET

Bu çalışma, teknoloji ve gelenek arasındaki kesişimde genç yetişkinlerin yemek alışkanlıklarının dinamiklerini Değer Duyarlı Tasarım (VSD) çerçevesi kullanarak incelemektedir. Genç yetişkinlerle yapılan anketler ve görüşmelerin yanı sıra, tasarım ve gastronomi uzmanlarının katıldığı bir atölye çalışmasıyla, beş ana tema belirlenmiştir: "Mutfak Mirasının ve İlişkilerin Korunması," "Teknolojik Kolaylık," "Benzersizlik ve Kişiselleştirme," "Yemeğin Küreselleşmiş Doğası" ve "Sürdürülebilir Tercihler ve Güvenilirlik." VSD ve 38 temel değerine dayanan analizimiz, beş değer çatışmasını ortaya koymakta ve değerlerin insan-yemek etkileşiminde (HFI) oynadığı kritik rolü vurgulamaktadır. Araştırma ayrıca, HFI ile VSD arasında bir köprü kurmayı hedefleyen kart tabanlı bir tasarım aracının geliştirilmesine dair bulgular sunmaktadır. Genç yetişkinler ve tasarımcılarla yapılan nitel çalışmaların ön bulguları, yemek alışkanlıkları ve değerler hakkındaki bilgileri araştırmacılar, tasarımcılar ve uygulayıcılar için erişilebilir hale getirmeye yönelik tasarım önerilerini ve iyileştirmeleri şekillendirmektedir. Geleneksel ve teknolojik unsurları birleştirerek, bu çalışma gelecekteki HFI tasarım çalışmalarına rehberlik edecek ve farklı bağlamlarda insan değerlerinin dahil edilmesini destekleyecek değer odaklı bir perspektif sunmaktadır.

Anahtar Kelimeler: İnsan-gıda etkileşimi, değer duyarlı tasarım, kart tabanlı tasarım aracı, gıda uygulamaları, genç yetişkin

ACKNOWLEDGMENTS

I extend my gratitude to all the volunteers who contributed to this research, members of the Design Interaction Lab and my advisor, Gökçe Elif Baykal, for her invaluable guidance and support.



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LIST OF ACRONYMS AND ABBREVIATIONS

HFI: Human-Food Interaction

HCI: Human-Computer Interaction

VSD: Value Sensitive Design

VR: Virtual Reality

AR: Augmented Reality

AI: Artificial Intelligence



1. INTRODUCTION

While food remains a fundamental necessity for human survival, it has evolved into the world's largest industry and serves as a cohesive element in social interactions (Belasco, 2008). In contemporary society, the intersection of technology and food is pervasive, influencing various facets of daily life. For instance, social media platforms frequently feature discussions and depictions of food, illustrating the extent to which culinary experiences are shared and celebrated online. Individuals utilize both digital and traditional media to seek culinary inspiration, share their gastronomic experiences, and engage in discussions ranging from food shopping and fermenting to cooking and sustainable living practices (Khot & Mueller, 2019).

Human-Food Interaction (HFI) is a subfield of Human-Computer Interaction (HCI) that examines technology-driven food practices beyond traditional HCI (Altarriba Bertran et al., 2019). For instance, studies that focus on virtual environments that provide immersive experiences through interfaces and applications, such as games and DIY interactive food content (Khot & Mueller, 2019) fall into the HFI field of studies. While HFI lacks a precise definition, it encompasses diverse research exploring the complex relationship between humans, food, and technology (Altarriba Bertran et al., 2019). This multidisciplinary subfield investigates technology's role throughout the entire food journey—from growing and cooking to eating and disposal (Khot & Mueller, 2019). HFI aims to create interactive technologies that improve food experiences, promote healthier eating, address ethical concerns, and acknowledge food's cultural and societal impacts (Khot & Mueller, 2019). However, while HCI has potential to shape food practices and experiences, current literature's technology-centric agendas sometimes prioritize technological innovation and efficiency over deeper insights into human-food

interactions (Deng et al., 2021).

Conversely, the act of cooking holds substantial sociological significance, serving as a medium through which concepts of race, nationality, personality, and class are symbolically represented. Culinary techniques and recipes associated with dishes contribute to this expressive dimension. This interpretative framework resonates not only at the level of large-scale national identities but also within familial contexts. The term "gastro-nostalgia" encapsulates the emotional resonance associated with eating practices (Counihan & Esterik, 2013). The intimate relationship formed with food, particularly through maternal culinary practices, transcends mere consumption to encompass the act of cooking itself. Collaborative cooking experiences can evoke feelings of nostalgia, memories, familial heritage, nationalism, and authenticity.

Value-Sensitive Design (VSD) serves as an analytical approach that emphasizes the integration of human values into the design process. It is characterized by collaboration among stakeholders and seeks to align technological advancements with the well-being of individuals, society, and the environment (Friedman & Hendry, 2019). By incorporating VSD principles, HFI can address cultural considerations, societal impacts, and ethical dilemmas related to food technologies, fostering a human-centric approach that respects cultural practices and social contexts (Friedman & Hendry, 2019; Khot & Mueller, 2019).

A critical aspect of HFI is the exploration of food-related interactions that extend beyond basic functionalities. Researchers within this field have emphasized the importance of hands-on, experimental food interactions and the awareness of cultural values in design (Altarriba Bertran et al., 2021). Personalized cooking practices, for instance, contribute to preserving culinary heritage, yet innovation in this area must be

mindful of potential societal inequalities (Dolejšová, et al., 2020a). Key dimensions such as creativity, pleasure, nostalgia, and familial connections are integral to understanding HFI and designing technology that enhances food experiences while preserving social and cultural connections (Dolejšová, et al., 2020b).

This study incorporates the VSD framework into the analysis of HFI, specifically focusing on young adults living independently and their food practices. By using surveys, in-depth interviews, and workshops involving designers and gastronomy experts, the research investigates how young adults engage with and preserve their cultural heritage through technology. This approach aims to highlight strategies for leveraging digital tools and technologies to sustain cultural culinary traditions while considering the values of young adults. The use of Schwartz's inventory for describing universal values (Schwartz, 2012) guides the investigation, enriching the analysis with a robust value-oriented perspective.

On the other hand, through workshops, a card-based tool was developed for designers and researchers in Human-Food Interaction (HFI). The HuValue tool by Kheirandish et al. (Kheirandish et al., 2020) exemplifies such efforts, linking abstract human values with practical design through a value framework that combines theoretical, empirical, and design-based methods. While generative tools like this design card set exist, there remains a lack of card-based resources specifically tailored for the Value-Sensitive Design (VSD) framework in HFI. To address this, this study introduces a card-based tool informed by Human-Food Interaction phases (Khot & Mueller, 2019), aiming to guide designers and researchers to enhance food technologies from the perspective of Value-Sensitive Design.

1.1 Literature Review

For the purpose of this study, a structured literature review was conducted across two distinct academic domains to examine the intersection of Human-Food Interaction (HFI) and food studies. The review was designed to be comprehensive, employing multiple scholarly databases and leveraging references from cited works to expand the scope of the investigation.

ACM Digital Library Search: The first phase of the literature review targeted the field of Human-Food Interaction (HFI) using the ACM Digital Library. Given its focus on computing-related research, specific keywords such as "human-food interaction," "gastronomy," "food," and "nutrition" were employed to conduct advanced search queries. To enrich the initial findings, the snowballing method was applied, enabling the identification of additional relevant studies and references that deepened the understanding of HFI concepts and frameworks.

Bloomsbury Food Library Search: The second phase shifted to the Bloomsbury Food Library to explore the interdisciplinary scope of food studies, particularly focusing on domestic cooking practices. This database, with its extensive collection of resources across culinary, cultural, and social disciplines, provided a valuable platform for investigation. Keywords including "domestic cooking," "family," "heritage," and "cooking at home" were used to refine the search and focus on literature relevant to traditional cooking practices. Similar to the approach in the ACM Digital Library, the snowballing method was employed to identify seminal works and additional research articles that further contributed to the analysis of domestic cooking and its connections to family heritage and values.

Additionally, Google Scholar was employed to provide a more comprehensive overview of the literature, enabling broader access to interdisciplinary studies that may not be included in the aforementioned specialized databases. By following the references of relevant papers, the literature review aimed to expand its breadth and depth, integrating diverse perspectives from both Human-Food Interaction and food studies. This iterative process ensured a robust foundation for understanding the theoretical and empirical dimensions of HFI and traditional cooking practices, thus supporting the research objectives of this study.

1.1.1 Human-Food Interaction

Human-Food Interaction (HFI) is a relatively new term that encapsulates the intersection of technology and food throughout the food journey, from farm to fork. It is often described as the "interconnection between the self and the food," emphasizing the influence of human actions on the food system. While the definition of HFI continues to evolve, Khot & Mueller's review outlines its scope across four key food phases: growing, cooking, eating, and disposing (Khot & Mueller, 2019). This includes digital tools for agriculture, cooking techniques, technologies for eating experiences, and waste management. Researchers in HFI address diverse topics, including food production, logistics, consumption, augmented practices, speculative designs, and traditional food practices. A notable feature of HFI research is the use of workshops to gather diverse perspectives, which provide insights into challenges and potential solutions in the field (Khot & Mueller, 2019).

Workshops such as "Crafting and Tasting Issues in Everyday Human-Food Interaction" (Dolejšová et al., 2019) and "Food and Interaction Design" (Comber et al., 2012) focus on similar themes, including automation of human-food relationships,

sustainability, tradition preservation, and the cultural significance of food. These workshops explore how food fosters social and personal well-being while offering transformative opportunities for critical engagement. Participants in these discussions raised concerns about technology's impact on traditions, highlighting food's role as a medium for creating and preserving cultural and ethical practices, as well as addressing global and local sustainability challenges (Dolejšová et al., 2019), (Comber et al., 2014), (Comber et al., 2012).

The transformative potential of technology within HFI has been explored across various dimensions. Grimes and Harper introduced the concept of "celebratory technology," which emphasizes positive interactions with technology, focusing on themes of creativity, pleasure, and familial connections (Grimes & Harper, 2008). This perspective complements debates on tensions between digital technology and the materiality of food, human agency versus technological efficiency, and the risk of innovation exacerbating inequality (Dolejšová, et al., 2020a). Broader themes in the future of HFI include personalization, sustainability, and social connectivity, highlighting the potential of technology to reshape traditional food practices (Velasco et al., 2023).

Several studies emphasize preserving culinary heritage and fostering family connections. Research on digitalized homemade cookbooks illustrates their cultural value, allowing users to collect and personalize recipes, adding a unique personal touch to digital platforms (Davis et al., 2014). Similarly, the Living Cookbook project demonstrates how multimedia cooking instructions can support domestic cooking while safeguarding culinary traditions (Terrenghi et al., 2006). In HCI, cultural heritage is pivotal for preserving traditions, enhancing user experience, and promoting sustainability within food practices (Paay et al., 2012).

Technological advancements in domestic food practices also emphasize balancing tradition with innovation. For instance, studies on nutrition-aware smart kitchens promote healthy cooking aligned with traditional preparation methods while avoiding excessive reliance on technology (Chi et al., 2007). Other research highlights the role of social interaction in shaping modern food practices. A study on digital food journaling revealed the significance of shared experiences, as participants recorded additional notes to capture social events with family and friends (Silva et al., 2023). Playful food interactions further underscore the cultural and familial dimensions of shared meals, showcasing how hands-on activities foster creativity and cultural awareness (Altarriba Bertran et al., 2021).

These studies collectively demonstrate how HFI bridges the domains of technology, tradition, and social connection. They emphasize the importance of preserving culinary heritage while addressing contemporary challenges such as sustainability and digital efficiency. By leveraging technology thoughtfully, HFI continues to explore meaningful ways to enhance human-food interactions.

1.1.2 Value-Sensitive Design

Values are a central component of identity and personality, distinguishing them from related concepts such as attitudes, beliefs, norms, and desires. As powerful motivators of behavior and attitudes, values play a crucial role in explaining social and personal organization and change (Schwartz, 2012). Value Sensitive Design was purposefully developed to thoughtfully incorporate values into the design process, aiming to shape the relationship between technology and society while fostering technical innovation and advancements that contribute to human and environmental well-being. This approach actively engages researchers, designers, engineers, and policymakers in the exploration of technological solutions that prioritize the interests of diverse

stakeholders. A defining feature of VSD is its adaptability, enabling it to adjust to various values, contexts, and populations without sacrificing its effectiveness. This flexibility embodies the principle of 'progress over perfection,' addressing the significant challenge of achieving robustness across diverse situations. The framework is designed to facilitate elaboration, growth, development, and discovery as necessary (Friedman & Hendry, 2019).

Technology emerges from human creativity, driven by the ability to imagine alternatives and actively shape the environment using available resources to improve the conditions of both human and non-human life. Consequently, all technologies inherently reflect and impact human values to some extent. This deep interconnection highlights the importance of considering values in the design process. Integrating values during the design phase not only creates opportunities for technical innovation but also fosters the enhancement of the human condition (Friedman & Hendry, 2019).

Human-Food Interaction (HFI) and Value-Sensitive Design (VSD) are two fields that explore different aspects of technology and its interaction with society. HFI investigates how interactive technologies influence individuals' relationships with food, encompassing the processes of growing, cooking, eating, and disposing of food (Khot & Mueller, 2019). On the other hand, VSD provides a framework for ensuring that the design of technology aligns with human values and societal needs (Friedman & Hendry, 2019). Integrating VSD principles into the development of food-related technologies within HFI allows designers to address ethical considerations, cultural sensitivities, and potential societal impacts, creating a human-centered approach that promotes responsible and value-sensitive technological innovation.

1.1.3 The Importance of Young Generations in Food Studies

Food and taste are more than markers of nationality; they evoke a sense of "home" and can encapsulate nostalgic memories, deeply connected to daily experiences (Porciani, 2019). These experiences range from the preparation of elaborate home-cooked meals to the use of convenience foods from supermarkets (Short, 2003). However, the concept of home cooking remains strongly tied to traditional and cultural expectations, often positioning women, particularly housewives, as primary meal preparers fulfilling their roles as wives and mothers (Daniels et al., 2012). Regardless of the meal's quality, dishes made by household cooks often hold a special resonance as a "mother's meal" for family members (Rawlins & Livert, 2019b).

The notion of a favorite food frequently carries with it associated memories. For many individuals, responses to the question "what is your favorite food?" often reference meals prepared by their mothers or grandmothers. This generational transmission of cooking practices underscores the importance of family culinary traditions. Dishes that are unique to a family often include a "secret ingredient," symbolizing a culinary "trademark" known only within that family (Khot & Mueller, 2019). For home cooks, preparing traditional meals serves as a means of constructing familial identity and connecting with ancestral roots (Rawlins & Livert, 2019a). As West (2016) notes, the preservation of culinary heritage transcends mere conservation and encompasses the promotion, reproduction, transmission, and transformation of culinary traditions. The fear of losing these traditions can intensify the desire for their preservation (West, 2016).

Conversely, media narratives and marketing reports in the UK and USA often lament the decline of home-cooked meals, attributing this trend to busy lifestyles, reliance on convenience foods, and the perceived erosion of cooking skills (Murcott, 2019b).

Murcott suggests that these narratives may stem from a range of motivations, including dietary, commercial, economic, and health-related concerns, raising questions about whether the issue is public or private in nature (Murcott, 2019a). However, there are alternative perspectives that highlight the evolving nature of cooking. Research in England has shown that participants often prioritize convenience over tradition, opting for industrially produced foods instead of engaging in labor-intensive cooking methods (Lang & Caraher, 2001). Furthermore, some individuals view modern appliances such as microwaves not as a decline in culinary practices but as symbols of progress and modernity (Murcott, 2019b).

The stage of young adulthood is marked by identity development and changing interpersonal influences, factors that affect food-related practices (Freeman et al., 2016). Today, young adults' food practices are influenced by social media and online platforms. For example, food content is a popular genre on TikTok and plays a major role in shaping teenagers' perceptions of food and eating habits (Wang et al., 2022). While taste is a crucial factor in driving food selection behaviors, convenience, cost, nutrition, and sensory properties also play important roles (Hebden et al., 2015). Researchers have emphasized that promoting healthy food practices for young adults should include making nutritious and tasty foods available at low cost and offering educational nutrition-related programs to encourage healthier choices (Hebden et al., 2015). Comprehensive nutrition literacy, extending beyond basic knowledge of healthy eating, is essential for empowering healthy food practices.

A related issue is disinformation or the circulation of ambiguous and unreliable information that creates confusion and leads to poor dietary choices (Kalkan, 2019). Studies examining food safety knowledge and practices among young adults

reveal a general lack of awareness, highlighting the need for educational approaches and awareness initiatives aimed at enhancing safe food handling practices (Green & Knechtges, 2015). This research underscores that food knowledge and engagement in food preparation impact the food practices of young adults. For instance, studies have shown that factors such as time constraints influence home cooking habits, with cooking at home associated with reduced fast-food consumption and a higher likelihood of meeting dietary goals (Larson et al., 2006). This finding emphasizes the importance of interventions designed to teach skills for preparing quick and healthy meals. Additionally, research shows that healthy food practices are linked to regular home food preparation, evening meals, and breakfast consumption, while unhealthy habits are associated with eating while using media and purchasing foods/beverages on campus (Laska et al., 2015).

Sustainability is another factor that influences the food practices of young adults. Scholars have suggested that valuing sustainable production methods is associated with healthier eating habits from the perspective of young adults (Pelletier et al., 2013). Recognizing the social and environmental implications of food production can capture the interest of the younger generation, emphasizing the importance of sustainability in shaping food practices.

In summary, understanding the various factors that influence young adults' food practices is essential. While technology poses challenges for their relationship with food, it also presents opportunities for education and engagement in food preparation that can foster healthier and more sustainable habits. A holistic understanding of these dynamics is crucial for developing design guidelines that positively impact young adults' food practices. As an initial step towards this goal, this study aims to bridge between HFI and

VSD, and a card-based design tool was developed to to translate the young adults' food practices from the analytical lens of value-laden perspective.

1.1.4 Role of Card-based Design Tools

Design cards are a methodological approach used to present academic or conceptual knowledge clearly and concisely, particularly for designers in the field of Human-Computer Interaction (Wölfel & Merritt, 2013; Roy & Warren, 2019). Over time, this method has developed into versatile tools that support creative thinking, user engagement, and domain-specific design processes, while also enhancing creativity and team collaboration (e.g., IDEO, 2003; Deng et al., 2014; Bekker & Antle, 2011; Lucero & Arrasvuori, 2010; Çelik et al., 2023). The primary inspirations for this study are the HuValue Cards by Kheirandish et al. (2020), the Envisioning Cards by Friedman & Hendry (2012), and the Metaphor Cards by Logler et al. (2018). Card-based design tools share a common goal of linking abstract human values with practical design activities, blending theoretical insights and empirical methods to enhance the development of design concepts. These tools serve as models for embedding human values into the design process, assisting designers in crafting impactful and purposeful solutions. These tools encourage designers to reflect on values such as time, pervasiveness, and stakeholder needs (Rokeach, 1973; Friedman & Hendry, 2012) and define values as enduring beliefs that shape human actions and decisions. However, none of these tools specifically address food practices, which are integral to culture and values. For instance, while the HuValue cards (Kheirandish et al., 2020) are comprehensive, they encompass only 45 human values, leaving many others unaddressed that are identified in Schwartz's universal human values inventory (Schwartz, 2012).

The main contribution of this thesis is twofold: 1. To gain insight into young adults' current food practices in relation to technology and analyze them from a value-sensitive design perspective, 2. To develop a card-based design tool to translate young adults' food practices by incorporating VSD as an analytical lens into HFI and make the information accessible to experts in design and gastronomy related fields. Below, the aim and scope of the study is described in more detail.

1.2 Aims and Objectives

Research underscores the pivotal role of food knowledge and culinary skills in shaping the dietary habits of young adults (Larson et al., 2006). A study conducted in Türkiye highlights that inadequate knowledge and misinformation are important factors contributing to confusion and incorrect dietary choices within this demographic (Kalkan, 2019). Insights gleaned from workshops on Human-Food Interaction (HFI) designs elucidate debates encompassing concerns about the neglect of traditional food experiences (Davis et al., 2020). Recognizing the important impact of factors such as home cooking on the dietary choices of young adults (Larson et al., 2006), there is a pressing need for targeted research focusing on this demographic. Such research endeavors hold the potential to elucidate the unique dietary challenges faced by young adults and explore avenues to leverage technology to reintroduce the young population to traditional culinary practices that have yet to be thoroughly examined. Notably, while there is a dearth of research specifically targeting young adults that examines the intersection between HFI and Value-Sensitive Design (VSD), both fields share a common ethos of human-centric design. This shared commitment underscores a symbiotic relationship between HFI and VSD, as both emphasize the importance of incorporating human values into the development of technologies to yield positive impacts on

individuals and society as a whole. The convergence of HFI and VSD lies in their shared objective of integrating human values into the technological innovation process.

This study aims to advance understanding of young adults' food practices through the lens of value-sensitive design (VSD), focusing on their engagement with technology while maintaining traditional culinary habits. It explores the intersection of traditional and familial food practices among younger generations with the influence of technological advancements, incorporating VSD principles to propose culturally and socially responsible design solutions. Furthermore, the research seeks to develop a card-based design tool tailored to Human-Food Interaction (HFI), employing the VSD approach to foster a nuanced understanding of young adults' food practices and to support the creation of meaningful and responsible technological innovations. The main purpose of using the cards is to facilitate a collaborative and flexible approach to problem-solving across a wide range of audiences, including designers, gastronomy experts, and not just those specialized in Human-Food Interaction (HFI). By allowing participants to categorize, prioritize, and brainstorm based on the cards, the method ensures that diverse perspectives contribute to the exploration of food-related challenges. This broad applicability helps create more comprehensive solutions that are grounded in varied expertise and insights.

2. METHOD

This study comprised three steps: initial surveys and in-depth interviews with young adults, followed by three workshops to design, develop and evaluate the card-based design tool respectively. The participant recruitment, data collection, and analysis procedures for each phase are detailed below.

The project received ethical approval from the university, and all participants provided written consent (approval number: 2024/01/04).

2.1 Data Collection

The data collection methods, contents, and participant information are presented in detail below. Table 2.1 outlines the survey questions, while Table 2.2 presents the in-depth interview questions. Table 2.3 provides participant details, including age, gender, and profession, for all methods utilized. In table 2.3., in-depth interview participants are denoted by the letter "P," while participants in the workshops are represented by "EP," indicating Expert Participants.

2.1.1 Survey

To gain comprehensive insights, an online survey was conducted targeting young adults born between 1999 and 2004. The survey was distributed using Google Forms through convenience and snowball sampling via WhatsApp and Messenger. The survey consisted of 13 questions (including two open-ended questions), divided into three primary sections: Demographic Information, Cooking Habits and Food Culture, and Opinions on Technology and Food Culture (see Table 2.1).

Table 2.1 *Survey Questions*

	Survey Questions
Demographic Information	What is your birth year? What is your gender? What is your living arrangement?
Cooking Habits and Food Culture	How often do you cook? Do you think your family's food culture is influenced by the geography you live in? How much do you follow your family's food culture and habits in your personal life? What are the three most important values for you in the food experience? (Select up to three) What is your primary source of information when cooking?
Opinions on Technology and Food Culture	How effective do you think technology and digitalization are in the food preparation process? Why? (Open-ended) How important is it to preserve your current food culture habits? Why? Do you think local flavors and techniques contribute to sustainability? Why? (Open-ended) How do you imagine your family's food habits in the future? How do you think technology will influence interaction with food and the eating process?

The Demographic Information section included questions about the respondent's birth year, gender, and living situation. The Cooking Habits and Food Culture section examined how frequently respondents cooked, their perceptions of the relationship between family food culture and geography, the extent to which they incorporated their family's food culture into their personal lives, the values they deemed important in the food experience, and their sources of information for cooking. The Opinions on Technology and Food Culture section explored respondents' perspectives on the impact of technology on food practices. Lastly, respondents were asked to provide their email addresses to facilitate follow-up for in-depth interviews.

100 participants (65 female, 33 male, 2 unspecified) responded to the survey within the research time-frame. It was also observed that the percentage distribution of responses stabilized and reached a saturation, showing minimal variation in the extracted responses.

2.1.2 In-depth Interview

To gain in-depth insights, interviews were conducted with participants from survey respondents who shared their contact information. The responses of these participants were selected among those who met the criteria of cooking at least three times per week and having either lived independently for a defined period or currently living independently were included in the interview process. The interviews focused on family food culture, personal habits, and future aspirations, aiming to uncover detailed perspectives on participants' food practices, and adding qualitative depth to the research. A total of ten participants (6 female, 4 male) were interviewed.

Table 2.2 *In-depth Interview Questions*

	In-depth Interview Questions
Familial Experience	Can you describe your family's food culture? To what extent do you incorporate your family's food culture into your own life? Would you say that you continue certain family food habits in your personal life? If so, which ones? What similarities and differences exist between your food practices and those of your family?
Personal Experience	What resources do you typically use while cooking, and how do you access this information? Are there specific ingredients, flavors, or sensations that influence your cooking choices? If so, what are they? What do you consider to be the most important aspect of our relationship with food, and why?
Technology and Future Projections	How do you integrate technology into your food-related activities (e.g., cooking, meal planning)? In what ways does technology impact your relationship with food? Would you like greater technological assistance in your food-related activities? If so, in what ways or areas? Do you believe that emerging technologies such as AI, VR, or robotics could alter our relationship with food in the future? How so? Do you envision continuing your family's food experiences and traditions in your future family? How likely do you think this is, and why? How would you prefer to store food-related information (e.g., recipes, traditions), and why? How do you imagine your food experiences will evolve in 20 years? What aspects would you prefer to change or remain the same?

The in-depth interview included 13 questions focusing on three areas: Familial Experience, Personal Experience, and Technology and Future Projections. Familial Experience explored respondents' family food traditions, how these were integrated into their lives, and the similarities or differences from their family practices. Personal Experience examined resources used while cooking, sensory influences, and key aspects of respondents' relationships with food. Technology and Future Projections investigated the role of technology in food-related activities, its perceived impact, and views on emerging technologies like AI, VR, and robotics. Additional questions were also asked

to address young adults' intentions to preserve family traditions, preferred methods for storing food-related information, and expectations for future food experiences.

2.1.3 Workshop with Experts

Three workshops were conducted to gather insights from young adults, focusing on the design, development, and evaluation of the cards to elicit information to further development and use.

1st Workshop with Designers: The first workshop focused on testing the first prototype of the card-based design tool, created to translate the knowledge gathered from young adults into a format accessible to experts. Designers were recruited for the first workshop to test and develop the tentative version of the cards. Five participants (three female, two male) designers participated in the workshop. Notably, one of the designers had experience collaborating with gastronomy students, which was helpful for empathizing with and incorporating interdisciplinary perspectives. The primary aim of the workshop was to test the categorization of the insights gathered from young adults based on Schwartz's value inventory and incorporating the Value Sensitive Design approach implemented in the card-based design tool (Schwartz, 2012; Schwartz et al., 2012; Friedman & Hendry, 2012).

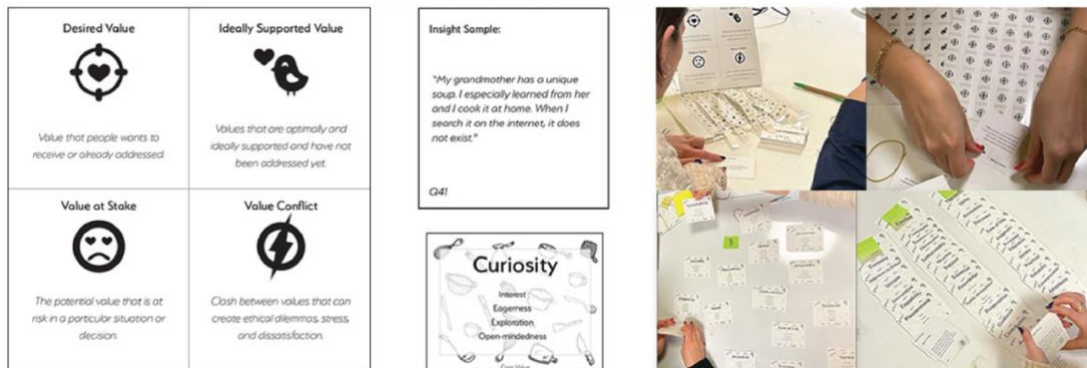
Figure 2.1 Card Design of the First Workshop and Use of Cards



Note. The initial visual serves as a two-piece representative example illustrating the design of the cards. The subsequent visuals, the second and third, consist of photographs demonstrating participants using the cards.

A total of 31 cards were developed: 26 value cards, divided into 13 core values, 13 new values, and 5 value conflict cards. Each card featured front and back content, including 70 utterances collected from young adults (Balkaya & Baykal, 2024). The cards were designed to facilitate discussions about values and to identify potential design solutions related to food practices and cultural issues. These value cards were categorized into four groups: desired values, ideally supported values, values at stake, and value conflicts (see Figure 2.1). During the first workshop, participants worked in small groups, using the cards to explore and classify these values. The goal was to identify potential patterns and connections between values, direct/indirect stakeholders, and areas where conflicts between values might arise. This workshop also served as an opportunity to gather feedback on the tentative card set, testing their usability and effectiveness in engaging experts with the data.

Figure 2.2 Card Design of the Workshop with Experts and Use of Cards



Note. The figure shows, on the left, the icon guide provided to the experts; in the middle, representative examples of the cards (utterance card on top, value card on the bottom); and on the right, the use of the cards during the workshop.

2nd Workshop with Interdisciplinary Teams: The second workshop aimed to discuss the insights gathered from the young adults and develop potential design solutions about their concerns in food practices with experts from different backgrounds. The workshop participants were recruited from the gastronomy and design departments via personal invitations and an open call to the mailing lists of the departments in the university. Nine experts (two research assistants in the gastronomy department who are doing their PhD, two chefs who are doing their master's degree, two PhD students in industrial design, two research assistants, two master's students, one communication design graduate, and one assistant professor from a communication design department) involved in the workshop. The participants were selected for their expertise and academic involvement, ensuring a rich exchange of perspectives between the fields of design and gastronomy. The timing and location of the workshops were determined in consultation with the participants. All workshops were conducted face-to-face on the university campus.

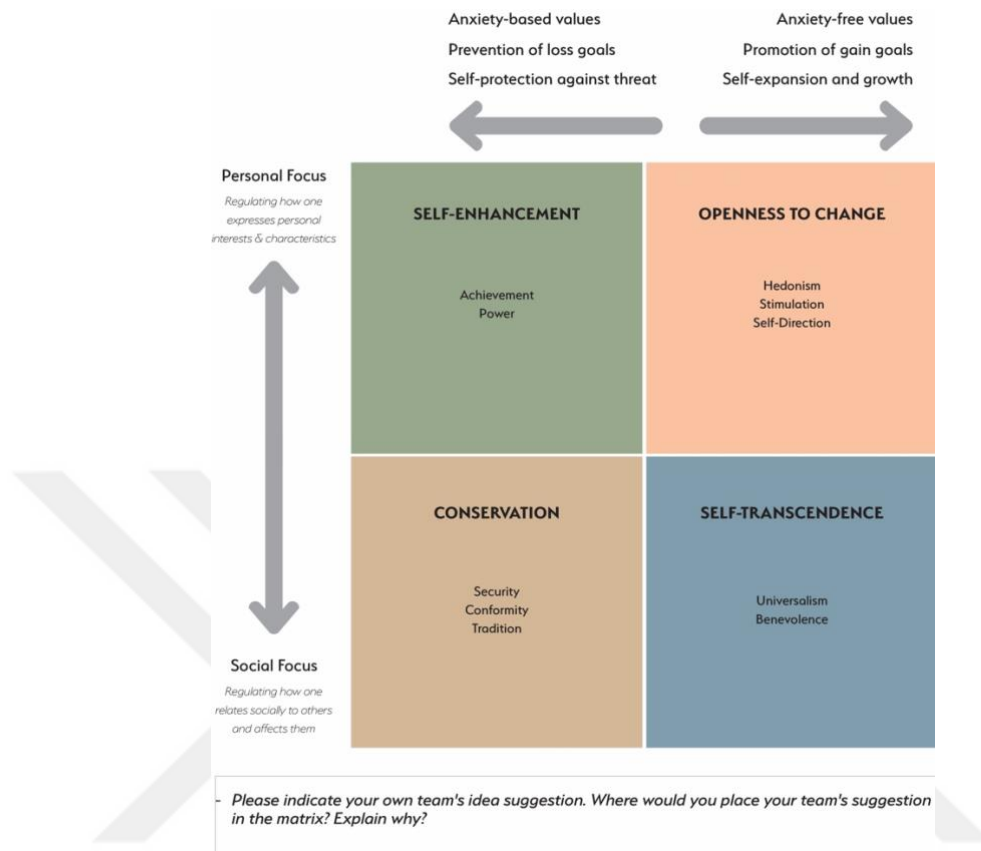
In the interdisciplinary workshop, the card set was utilized to make the insights readily accessible to the experts to be able to explore and ideate on the main topics about

young adults' food interactions from a value-sensitive perspective. The core value list was expanded to 38 values, and the descriptions of the values were clarified. The post-pilot deck included 38 one-sided value cards, updated and clarified based on the feedback, and 70 utterance cards that represented specific statements or insights from the interviews with young adults. These utterances were organized to reflect themes and refined in the first workshop.

In the interdisciplinary workshop, participants worked in dyads (one designer and one gastronomist, or in some cases, two designers and one gastronomist). They were given the flexibility to classify the utterances and categorize the values using stickers to represent each value type. The card deck included the value-type stickers and refined content to facilitate the classification process. Participants used the cards to cluster related values by grouping similar values together and identifying connections based on thematic relevance using the value cards (see Figure 2.2). They also established relationships by examining how different values interacted, where conflicts occurred, and where they overlapped using the utterance deck.

Finally, using stickers, participants classified the values into four groups: desired, ideally supported, values at stake, and value conflicts (see Figure 2.2). This session allowed the participants to explore food-related values and their implications in depth. The task was not only to engage with the research data but also to generate ideas that could inform potential design solutions to improve food practices among young adults.

Figure 2.3 *Provided Evaluation Board in the Second Workshop*



Note. It was provided as 50x70 cm boards for participants to place their idea pins in "Dynamic Underpinnings of the Universal Value Structure" (Schwartz, 2012).

After using the cards, the workshop concluded with an evaluation session focusing on two main tasks. Participants spent considerable time brainstorming and ideation based on the values and problem definitions established in the first session. In the final task, they evaluated their ideas using the "Dynamic Underpinnings of the Universal Value Structure" (Schwartz, 2012) on a cardboard (see Figure 2.3). This board enabled a reflective evaluation of how well their ideas aligned with and addressed the identified problem within the established value framework.

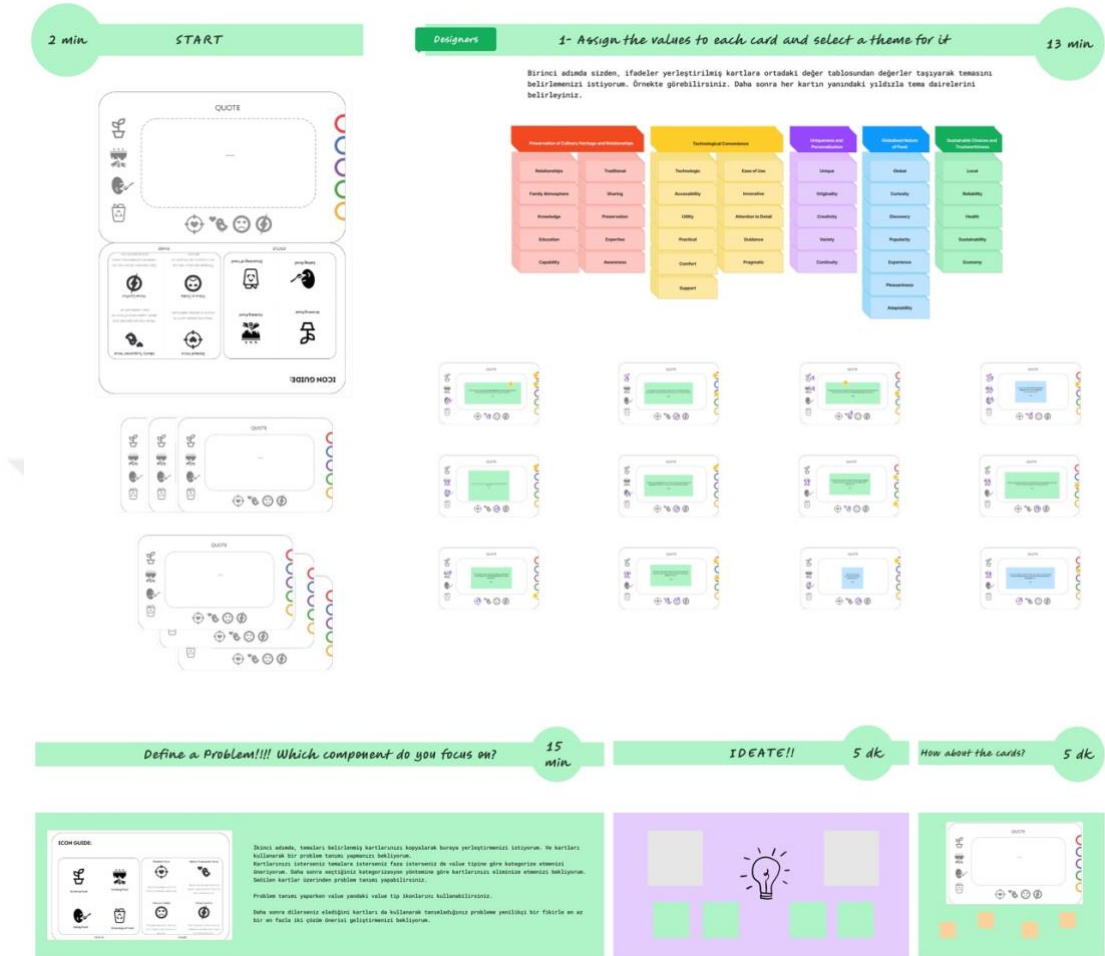
Third Workshop with Experts: In the third iteration of the cards, final evaluations were conducted via task-based walkthroughs with experts from design and gastronomy fields separately. For these sessions, retrospective interviews were conducted with young

adults to introduce them to the icon guide, which included value types (Friedman & Hendry, 2012) and HFI phases (Khot & Mueller, 2019), information previously shared only with experts. Participants were asked to assign value types and HFI phases to their provided utterances. Based on the insights gathered in the previous two workshops, the card set was further developed for evaluation, featuring an icon guide on the back and three components—utterance, value type, and HFI phase—on the front. Each icon, representing a value type and HFI phase, was displayed on the card and designed for selection using a marking method (Balkaya & Baykal, 2024).

In the evaluation session, experts were provided with a set of 12 pre-selected cards marked by participants, along with a table containing 38 core values aligned with the identified themes (VASE, n.d.). The card design was evaluated by design experts, who represented the anticipated end users of the cards. The primary goal of this iteration was to improve the cards' usability for researchers and designers, enabling them to effectively apply the cards to their data. This structure allowed researchers to utilize their own data, analyze it from a VSD perspective, and explore connections within the HFI framework (Balkaya & Baykal, 2024).

Two designers (one male, one female) participated who had not participated in the earlier process to test the final card design. These sessions, lasting between 50 minutes and one hour, included a briefing on the cards and their intended use. Valuable insights were gained from these designers, particularly regarding the usability of the cards and their potential applications, given their lack of prior exposure to the process.

Figure 2.4 Design of Online Workshop



Note. The detailed design of the workshop is available via the Figma link (2024): [Link](#).

Consequently, an online interdisciplinary workshop session was conducted via Zoom in which five participants evaluated the refined cards on Figma (see Figure 2. 4). This session, lasting approximately 40 minutes, involved two gastronomy experts (one male and one female) and three designers (one male and two female) who had participated in the second workshop and agreed to continue. In this workshop, gastronomy experts and designers collaborated within their respective disciplinary teams. This approach was adopted to examine how each discipline independently interacted with the cards and to analyze the relationship between the two fields in the context of the card usage process.

The experts evaluated the cards by marking the thematic components, selecting corresponding values from the value list for each card, and the feasibility of the cards. Additionally, they engaged in ideation processes similar to those conducted in the previous workshop.

All participants reside in Türkiye's major metropolitan areas of Southeastern Europe, where social life and traditions are influenced by multicultural environments. Survey and interview participants were students or recent graduates, while workshop experts included chefs, managers, and academics in gastronomy, as well as graduate students, academics, and designers in the field of design.

Table 2.3 *Participants' Information*

Method	Participant	Age	Gender	Profession
Interview	P1	24	Female	Architect
	P2	23	Female	Landscape Architect
	P3	22	Female	Student
	P4	22	Female	Student
	P5	20	Female	Student
	P6	23	Female	Dietician
	P7	23	Male	Physiotherapist
	P8	21	Male	Student
	P9	24	Male	Designer
	P10	23	Male	Engineer
Workshop 1	EP1	36	Female	Designer
	EP2	40	Female	Designer
	EP3	27	Male	Designer
	EP4	38	Female	Designer
	EP5	27	Male	Designer
Workshop 2	EP1	36	Female	Designer
	EP6	29	Female	Research Assistant (Gastronomy)
	EP7	30	Female	Research Assistant (Gastronomy)/Chef
	EP8	28	Male	Research Assistant (Industrial Design)
	EP9	27	Female	Teaching Assistant (Communication Design)
	EP10	31	Male	Research Assistant (Industrial Design)
	EP11	33	Male	Lecturer (Communication Design)
	EP12	31	Female	Business Development Executive in a Gastronomy Platform
	EP13	37	Male	Lecturer in Gastronomy Department / Chef
Workshop 3	EP12	31	Female	Business Development Executive in a Gastronomy Platform
	EP13	37	Male	Lecturer in Gastronomy Department / Chef
	EP8	28	Male	Research Assistant (Industrial Design)
	EP1	36	Female	Designer
	EP9	27	Female	Teaching Assistant (Communication Design)
	EP14	26	Male	UX Designer
	EP15	32	Male	UX/UI Designer

2.2 Data Analysis

2.2.1 The Analysis of Survey and Interview with Young Adults

The survey data were primarily analyzed through descriptive statistics, starting with a review of basic demographic information. The responses to the structured survey questions were analyzed to identify trends and patterns in young adults' food habits,

family food culture, and their attitudes toward technology's role in food-related activities. After collecting responses, a descriptive analysis to present the percentage distribution of answers was examined, revealing that the responses began to stabilize after a certain number of participants, indicating saturation in the variety of responses. These findings were then used to inform the questions for the in-depth interviews.

The interview data were analyzed using a reflexive thematic analysis approach (Clarke & Braun, 2017; Byrne, 2022). The thematic analysis of young adults' food practices from a value-laden perspective yielded recurring themes derived from the in-depth insights. The analysis process followed several steps: First, all interviews were transcribed and translated to ensure consistency and clarity. An interpretative and latent analysis approach was employed, with a constructionist epistemological perspective, to understand both latent and observable content in the participants' responses (Van Mechelen et al., 2019). Following this, the research team reviewed and refined the themes to ensure they accurately reflected the data and aligned with the research objectives. In total, 300 utterances from the interview transcripts were analyzed and categorized according to a value inventory (VASE, n.d.) into 38 value clusters by using an affinity diagram, which was then refined into themes using a reflexive thematic analysis approach. In the thematic analysis, an external researcher systematically organized the transcribed data into themes, with 70 of the most representative utterances selected to illustrate the themes that emerged during the analysis process.

An initial review of the transcripts was conducted to capture preliminary ideas or insights, after which the data were coded into smaller segments based on key ideas and concepts. Data-driven categories were applied to the coded segments, such as "Technology's Clear Visual Roadmap," "Curiosity about Global Cuisines," and

"Discovery and Creativity," to organize the data into meaningful patterns. This coding process was iterative, repeated three times across all ten interview transcripts to ensure consistency and category saturation, meaning that further analysis would yield minimal new insights. To ensure reliability, an external researcher was involved in the final round of coding. The individual categories were then grouped into broader themes that reflected critical aspects of the data, such as the preservation of culinary heritage, fostering relationships, and the globalized nature of food.

2.2.2 The Analysis of the Workshop with Experts

The workshops with experts provided feedback that helped to refine the card-based design tool and generate insights for potential design solutions rooted in the values and practices identified in earlier phases of the study. Participants engaged with interview data during the workshops, using the cards to explore, categorize, and reflect on values relevant to food practices. With this process, the classification of information placed in the cards were re-evaluated and validated from surveys and in-depth interviews, enriching the research while identifying key patterns in how experts classified and interconnected these values.

Discussions emerged in the workshops revealed critical aspects of food culture, values at stake, and potential conflicts in how these values were perceived by interdisciplinary experts. Workshop outputs related to card design and feasibility for the use of the cards were examined using the affinity diagram method and grouped into themes, which highlighted priorities for card design, areas for improvement, and design challenges to address in future iterations.

A card-based design tool emerged as a key outcome of the workshops. Each session contributed to the growing dataset that informed both the iterative development

of the cards and the structure of subsequent workshops, ensuring the tool remained responsive to user needs and contextual requirements. Observations on how experts interacted with the cards, including their approaches and preferences, were transcribed and categorized to refine the card design and workshop structure in terms of content and physical format.

Experts also contributed to problem definition and ideation sessions, with their reflections helping to identify values aligned with potential design suggestions and facilitating the generation of novel ideas. The comprehensive feedback loop established through thematic analysis and workshop observations was instrumental in finalizing the card design and enhancing the overall effectiveness of the workshop methodology.

3. FINDINGS

3.1 Insights Gathered from the Survey

In the demographic analysis, it was observed that 31% of the participants cohabited with siblings, 22% lived independently, and 14% shared living spaces with roommates. Notably, 10% resided with their parents, while 19% were situated in dormitories. The frequency distribution of cooking habits revealed that 35% of participants cooked frequently (4–5 times per week), whereas 27% engaged in cooking occasionally (1–2 times per week). These findings provided valuable insights into the participants' culinary practices and residential arrangements.

Geographical location was identified as an important factor influencing family food culture, with 61% of participants perceiving it as a major influence, 36% regarding it as somewhat impactful, and only 3% considering it irrelevant. Incorporation of family food traditions into personal life was prevalent, as 52% of participants reported doing so frequently, while 31% integrated these traditions occasionally. Attitudes toward preserving existing food habits varied: 26% of participants considered it highly important, 26% expressed a neutral stance, 16% deemed it unimportant, and 6% regarded it as negligible. Furthermore, the primary sources of culinary information were identified as the internet and social media, cited by 64% of participants, followed by maternal figures, mentioned by 25%. This data highlights the complex interplay between geographical influences, family food culture, and individual culinary practices.

Taste emerged as the most notable factor in food choices, with 89% of participants emphasizing its importance. Health considerations were the second most prioritized factor (42%), followed by practicality (39%). Additional considerations included visual appeal (32%), odor (26%), naturalness (6%), and sustainability (4%). Regarding

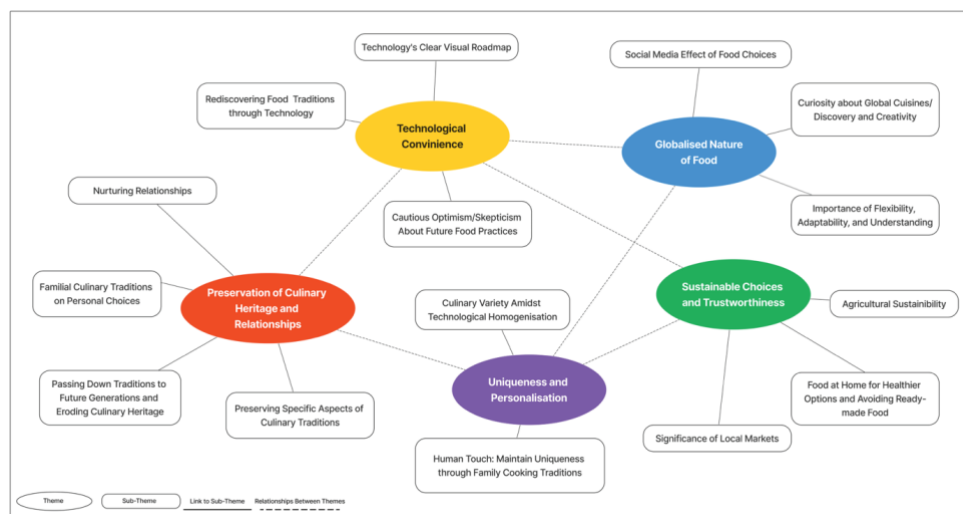
anticipated future eating habits within their families, 58% of participants envisioned variations while maintaining cultural elements, 23% preferred continuity with current practices, 9% anticipated changes driven by technological advancements, and another 9% were uncertain about future trends. When assessing the potential impact of technology on food interaction and practices, 44% anticipated minimal changes, 37% predicted improvements in convenience, and 16% expressed concerns about negative consequences, particularly the potential erosion of traditional flavors and the unifying role of food.

Overall, these findings show the prominence of taste in shaping food practices while highlighting diverse expectations about the evolution of family eating habits and the role of technology in culinary experiences.

3.2. In-depth Insights from the Interviews

The thematic analysis revealed five overarching themes, each comprising several sub-themes (see Figure 3. 1), which were described in detail below.

Figure 3.1 *Thematic Map Demonstration 5 Themes and Sub-themes*



3.2.1 Preservation of Culinary Heritage and Fostering Relationships

The theme of Preservation of Culinary Heritage and Fostering Relationships emerged prominently in our study, reflecting participants' perspectives on maintaining traditional culinary practices, the influence of familial cooking traditions, and the significance of communal meals in nurturing social bonds. This overarching theme is further explored through the following sub-themes:

Passing Down Traditions to Future Generations and Eroding Culinary Heritage:

Participants expressed concerns about the preservation of culinary heritage, underscoring the importance of safeguarding traditional dishes and practices for future generations. One participant emphasized the vulnerability of traditional cuisine, particularly due to the younger generation's limited engagement, especially within digital contexts.

P7: “Given that the young population exhibits limited affinity for traditional dishes, which are consequently underrepresented on digital platforms, there exists a risk of these culinary traditions fading into oblivion.”

Furthermore, it was acknowledged that food culture is inherently dynamic and evolves in response to societal transformations, as articulated by another participant:

P10: “As societal affluence increases, there is a likelihood of food culture transforming, potentially diverging from established traditions.”

Participants emphasized preserving culinary heritage while recognizing food culture's dynamic nature, highlighting the need to balance tradition with adaptation in modern contexts, particularly through digital engagement.

Familial Culinary Traditions on Personal Choices: Familial culinary traditions emerged as an important influence on participants' cooking preferences and methods.

Many participants reported adopting their mothers' cooking styles, often without conscious intent:

P5: “I unwittingly replicate my mother’s cooking techniques, having developed an affinity for her culinary style, a realization that was rather surprising.”

Instances of mutual adaptation within families were also highlighted. One participant described how their mother adjusted traditional recipes to incorporate healthier options based on family feedback:

P4: “For example, my mother puts a lot of butter in food. I find it unhealthy, and now she has learned from me to make it with less butter or with olive oil. In other words, we learn from each other.”

Familial culinary traditions shape personal cooking choices, with participants often inheriting techniques unconsciously while influencing and adapting family practices to reflect contemporary preferences.

Preserving Specific Aspects of Culinary Traditions: Participants underscored the necessity of safeguarding distinct elements of culinary traditions, such as unique cooking techniques and cherished family recipes. The value of intergenerational culinary knowledge was highlighted, with one participant sharing a personal family tip:

P4: “My grandmother says to squeeze lemon and add a cube of sugar when making rice; the internet and technology do not tell me this. Such things harm the preservation of the culture.”

The diversity inherent in traditional recipes and the practice of preserving homemade foods for convenience were also appreciated. One participant described their reliance on family-prepared ingredients to facilitate meal preparation:

P6, P7: "I carry sarma, tomato sauces, olive oil, cheese, and canned food (homemade) to my home from my parents' home. So, I make meals quickly in my personal life. These foods are canned or in the freezer in my home for long-term use."

Participants emphasized preserving unique culinary techniques, family recipes, and intergenerational knowledge while valuing the convenience of traditional homemade ingredients, which support both cultural continuity and modern lifestyles.

Nurturing Relationships: Participants identified communal meals as integral to fostering interpersonal relationships and strengthening social bonds. The shared experience of dining and cooking was highly valued, even when family members were not physically present. However, some participants expressed concerns about the potential decline of these traditions over time:

P9: "I think food is a unifying factor; it means getting together in the evenings even if everyone is working. After 20 years, this unifying effect may decrease..."

The communal nature of food preparation was further emphasized through the joy derived from cooking with friends. One participant reflected on the meaningfulness of shared cooking experiences, regardless of the culinary outcome:

P5: "Even if the outcome is a bad meal, the enjoyment and memorable experiences from the cooking process, especially when shared with friends, are always more meaningful and rewarding."

Participants highlighted communal meals and shared cooking for nurturing relationships, valuing these traditions despite concerns about their potential decline over time.

The preservation of culinary heritage and the nurturing of relationships through communal meals emerged as one of the central themes in participants' narratives. Participants expressed a strong commitment to transmitting culinary traditions across

generations, adapting family practices to align with personal preferences, and safeguarding unique aspects of culinary heritage. Additionally, shared meals were recognized as a powerful medium for strengthening interpersonal connections and fostering communal bonds. These insights indicate the potential for culinary practices to serve as milestones in developing sentimental attachments and upholding traditional values, even as technological advancements enable new forms of interaction across distances.

3.2.2 Technological Convenience

The theme of Technological Convenience illuminated participants' perspectives on the transformative effects of technology on food practices. This theme encompassed discussions about how technology supports the revival of traditional food practices and its potential for driving future innovations in food preparation and consumption. Participants expressed a sense of cautious optimism about these advancements. The three sub-themes related to this topic are detailed below:

Rediscovering Food and Traditions Through Technology: Participants acknowledged the essential role of technology in rekindling interest in culinary practices and facilitating the rediscovery of traditional food knowledge. One participant emphasized the transformative impact of technology in making previously inaccessible culinary knowledge more widely available:

P8: “Previously inaccessible traditional food knowledge is now being rediscovered and disseminated through technology.”

Technology was viewed as a bridge between generations and an important tool for preserving cultural culinary legacies. The enhanced accessibility to diverse recipes and

cooking knowledge resulting from technological advancements was recognized, with one participant noting:

P10: “With the development of technology, there has been a notable surge in people's interest and knowledge in cooking.”

Participants also highlighted the value of utilizing multimedia to archive recipes and document cultural food activities to ensure their long-term preservation:

P7, P8: “Audio recordings and video footage documenting recipes and cultural food activities may be archived to ensure the preservation of the culinary environment.”

Participants recognized technology as a powerful tool for rediscovering and preserving traditional culinary knowledge, bridging generations, and enhancing access to diverse recipes. Multimedia archiving was highlighted as a key strategy for safeguarding cultural food practices for future generations.

Technology's Clear Visual Road-map: Participants highly valued technology's visual clarity and accessibility in the realm of culinary exploration. They found detailed visual guides on online platforms particularly beneficial for enhancing their cooking skills. One participant shared their experience:

P4: “I follow a website curated by housewives, which offers step-by-step visual guides, mirroring real home settings; it's quite insightful.”

The convenience of digital archives was frequently preferred over traditional notebooks due to its accessibility and user-friendliness. One participant remarked on this advantage:

P6: “Digital recipe archives offer unparalleled accessibility and ease of use compared to traditional notebooks; I prefer using Instagram to archive recipes...”

Participants appreciated technology's visual clarity and accessibility in culinary exploration, particularly valuing step-by-step visual guides and digital recipe archives for their convenience and user-friendliness.

Cautious Optimism/Skepticism About Future Food Practices: Participants recognized the potential of technology to enhance culinary experiences but expressed caution regarding the future direction of food practices increasingly dominated by technological advancements. Concerns were raised about the potential loss of the intrinsic value and enjoyment associated with cooking in an era characterized by excessive convenience:

P5: "Over-reliance on technology and overly simplified dining experiences could detract from the essence of culinary enjoyment."

There were also reservations about the increasing automation of kitchen tasks, with a clear preference for maintaining human oversight. However, participants acknowledged the potential benefits of integrating IoT products for convenience:

P3: "Integration of IoT products in the kitchen for enhanced convenience is a plausible future development, albeit with reservations."

Participants expressed cautious optimism about technology's role in future food practices, valuing its potential benefits while voicing concerns about over-reliance on automation. Maintaining a balance between technological convenience and human control was emphasized.

The theme of Technological Convenience reflected participants' nuanced perspectives on the impact of technology on culinary practices. While participants appreciated technology for enabling culinary exploration, preserving traditions, and providing visual guidance, they also raised concerns about the potential for excessive

reliance on technology to undermine the authentic human experience of cooking. Nevertheless, technology presents numerous opportunities across all themes, facilitating advancements and enriching the culinary landscape among young adults in this study.

3.2.3 Globalised Nature of Food

The theme of Globalised Nature of Food prominently emerged in our study, capturing participants' perspectives on the accessibility of global cuisines, the importance of flexibility in food choices, and the influence of social media on culinary preferences. The sub-themes associated with this topic are explained in detail below:

Curiosity about Global Cuisines/Discovery and Creativity: Participants demonstrated a strong curiosity about global cuisines, a trend facilitated by globalization and the accessibility of digital platforms. This curiosity often led participants to express a willingness to experiment with new foods, driven by a desire for discovery and creativity. One participant highlighted this expanded access:

P8: “Globalization has made it easier to access not only the food of one's own culture but also the food of other countries, enabling exploration of diverse tastes.”

Social media and television were identified as important catalysts for culinary curiosity, sparking interest in foods from various cultural backgrounds:

P7, P9: “When I encounter diverse culinary content on social media or television, it sparks my curiosity about different cultures' foods.”

Participants showed curiosity about global cuisines thanks to the digital platforms. Social media and television were key in inspiring interest and experimentation with diverse foods.

Importance of Flexibility, Adaptability, and Understanding: Flexibility and adaptability were deemed essential for navigating the complexities of the globalized food

landscape. Participants acknowledged the dynamic nature of food culture and emphasized the importance of adapting to societal changes to remain responsive to these shifts:

P10: "Food culture is evolving with increasing affluence."

Participants also pointed out the challenges involved in accommodating diverse dietary preferences, highlighting the need for understanding and consideration when preparing meals for others:

P2: "My friends' dietary preferences differ from mine, which poses challenges when preparing meals they might enjoy."

Participants emphasized the importance of flexibility and adaptability in navigating the evolving global food landscape, recognizing the need to respond to societal changes.

Social Media Effect on Food Practices: Social media platforms were identified as strong influences on food choices and food practices. Participants shared that they frequently used social media to discover healthy recipes and meal ideas:

P1: "I actively search for and save healthy recipes and meal ideas on TikTok to incorporate into my diet."

The repeated appearance of certain recipes on social media motivated participants to experiment with new dishes, with many indicating that consistent exposure increased their likelihood of trying new recipes. Additionally, participants recognized the potential of social media as a modern repository for preserving family recipes:

P5: "Social media could serve as a contemporary recipe book for the next generation."

Participants highlighted social media's role in influencing food choices, discovering recipes, and encouraging experimentation. It was also seen as a potential tool for preserving family recipes for future generations.

The theme of the Globalised Nature of Food was a central element in participants' narratives, emphasizing increased accessibility to and curiosity about global cuisines, the importance of flexibility and understanding in food choices, and the influence of social media on food practices. Participants demonstrated a willingness to explore diverse culinary experiences while navigating the complexities and opportunities inherent in a globalized food environment. This theme has the potential to share numerous values with the theme of Technological Convenience, suggesting potential areas for synergy and collaboration between all themes, creating opportunities for further exploration and integration.

3.2.4 Uniqueness and Personalisation

The theme of Uniqueness and Personalisation emerged prominently in our study, reflecting participants' perspectives on preserving distinct culinary traditions and the challenges that technology poses to maintaining culinary individuality. The sub-themes related to this theme are detailed below:

Human Touch/Maintain Uniqueness Through Family Cooking Traditions: Participants emphasized the irreplaceable value of the human touch in maintaining culinary uniqueness, particularly through family cooking traditions. They acknowledged a generational shift in cooking practices but underscored a strong commitment to preserving essential elements of family traditions. Despite the advancements in technology, there was notable skepticism regarding its ability to replicate the nuanced flavors and personal touches inherent in family recipes. One participant highlighted this sentiment:

P6: *“While it may be possible to program a robot to replicate certain recipes in the future, capturing the distinctiveness and subtle nuances of my mother's cooking remains unattainable.”*

Another participant expressed a clear preference for familial culinary experiences over those mediated by technology, stating:

P7: *“Given a choice between a meal prepared by my mother and an identical one from a robot, I would invariably opt for my mother's rendition due to its sentimental value and unique touch.”*

Participants valued the human touch in family cooking traditions and doubted technology's ability to replicate the unique flavors and sentimental value of homemade meals, emphasizing the importance of preserving these traditions.

Culinary Individuality Amidst Technological Homogenization: Participants raised concerns about the potential for technology to homogenize culinary experiences. While acknowledging the efficiency and convenience that technology offers, participants felt that it often standardizes recipes, thereby diminishing the individuality and distinctive techniques associated with traditional cooking. One participant noted:

P4: *“Technology tends to standardize culinary recipes, undermining the individuality and unique methods associated with traditional cooking practices.”*

There was also a clear desire among participants for culinary creations that reflect personal or familial approaches, as opposed to conforming to technological trends. One participant mentioned a soup recipe specifically that her grandmother cooks:

P1: *“I aspire for culinary creations that embody my unique approach or my grandmother's recorded methods, resisting the homogenizing influence of technology.”*

Participants expressed concerns that technology could standardize recipes, reducing the individuality and unique techniques of traditional cooking. While recognizing technology's convenience, they valued personal and familial approaches to cooking that resist homogenization.

The Uniqueness and Personalisation theme underscored participants' commitment to preserving the distinctiveness of family cooking traditions and highlighted the challenges that technology poses to maintaining culinary individuality. Participants expressed a strong preference for human touch and familial practices over standardized technological solutions, emphasizing the importance of safeguarding unique culinary legacies amid technological advancements. This theme highlights emerging conflicts but also points to potential pathways for resolution. By integrating technological features such as customizability, responsiveness, and flexibility, there may be opportunities for further development that support both the preservation of personal culinary traditions and the benefits of modern technology.

3.2.5 Sustainable Choices and Trustworthiness

The theme of Sustainable Choices and Trustworthiness emerged as an notable aspect of our study, highlighting participants' perspectives on the importance of local markets, the preference for homemade food, and the broader concept of agricultural sustainability. The sub-themes associated with this theme are detailed below:

Significance of Local Markets: Participants expressed trust in local markets as their preferred food source, often choosing them over supermarkets due to concerns regarding product quality. This preference highlights participants' desire for fresh, locally sourced produce and underscores their trust in the quality and authenticity that local markets provide. One participant shared:

P3: “I harbor reservations about supermarkets when it comes to vegetables and fruits, perceiving them as lacking in organic quality.”

Another participant recounted a personal experience of seeking out local markets for family-specific foods that were not available in mainstream stores:

P2: “We frequented the local market for a particular meal that is quite popular in our family during the summers...”

Participants preferred local markets over supermarkets for their trust in the quality and authenticity of fresh, locally sourced produce. This preference reflects a desire for high-quality ingredients and unique foods.

Food at Home for Healthier Options and Avoiding Ready-made Food:

Participants emphasized the value of homemade food for its health benefits and nutritional integrity. One participant noted a preference for home-prepared meals, even when frying, due to the belief that it is healthier when done at home:

P3: “I opt for homemade food for its health benefits. While frying is generally considered detrimental to health, it remains a healthier option when prepared at home.”

Another participant shared their avoidance of ready-made meals, citing concerns over their nutritional adequacy:

P7: “I abstain from purchasing ready-cooked meals, consistently opting for natural foods due to my reservations about the nutritional adequacy of ready-made options.”

Participants valued homemade food for its health benefits and nutritional integrity, preferring it over ready-made meals due to concerns about their health and nutritional quality.

Agricultural Sustainability: Participants highlighted the sustainability associated with local delicacies, noting their minimal resource use and contribution to waste reduction. One respondent emphasized this point:

P10: “Certain local delicacies hold intrinsic value in terms of sustainability, owing to their minimal resource consumption and waste production during times of scarcity.”

Concerns were also raised regarding the decline of local dishes and its potential negative impact on sustainable agricultural practices:

P1: “Not all crops thrive uniformly across the same soils; gastronomy and agriculture share an intimate bond, and the waning popularity of local dishes poses a threat to sustainable agricultural practices.”

Additionally, participants expressed apprehensions about the potential effects of advanced technology on both taste and soil composition:

P2: “Artificial intelligence has minimal effects. Other than that, there is taste, it will definitely not be the same taste; the product and the soil change.”

Participants valued the sustainability of local delicacies for their minimal resource use and waste reduction. They expressed concerns about the decline of local dishes affecting sustainable agriculture and the potential impact of technology on taste and soil quality.

Sustainable Choices and Trustworthiness are pivotal factors influencing food practices, encompassing agricultural sustainability, the health advantages of homemade food, and the essential role of local markets in maintaining quality and authenticity. Food systems are integral to achieving sustainable development, impacting 12 of the 17 United Nations Sustainable Development Goals (Asikis et al., 2021). Emphasizing sustainable practices and integrating technology could strengthen food production and shopping practices, fostering a more resilient and eco-friendly food system.

The thematic map resulting from the thematic analysis illustrates the interconnectedness of themes through subthemes (see Figure 3. 1), a connection identified by researchers and reinforced during workshops with experts. Food practices and experiences cannot be fully isolated from one another; these insights collectively inform the identified design challenges and potential implications. Addressing a specific theme and its associated design problem can be supported by insights from related and different themes. Thus, while themes may be evaluated individually, their interdependence remains important. Technology serves as the underlying thread or focal point across all themes, whether its influence is perceived as positive or negative.

3.3. Outcomes of the Workshop Studies

This section highlights the iterative design and development process of the cards while emphasizing efforts to understand young adults' perspectives, identify key problems, and analyze and evaluate these issues through in-depth insights gathered from interviews.

3.3.1 First Workshop with Designers

The initial card designs were developed using insights from a literature review, a survey, and in-depth interviews. Following this, five designers assessed the card deck (see Figure 2.1). Each card featured a value on the front, with corresponding sample insights from young adults displayed on the back. Prior to this process, the values were categorized into four types based on the stakeholder value analysis framework (Friedman & Hendry, 2019), as outlined in Envisioning Cards (Friedman & Hendry, 2012). The objective of the initial workshop was to assess the tentative card design, which were evaluated by five designers (Balkaya & Baykal, 2024).

In the workshop, participants were briefed on the topic and stakeholders, explored indirect stakeholders, familiarized themselves with the card components, and proposed potential solutions. The feedback revealed several concerns: the color scheme, designed to improve the experience, created confusion, and the back-and-front layout hindered usability. Participants suggested separating insight samples to simplify categorization and noted that pre-assigned value types limited flexibility and introduced possible biases. Furthermore, experts recommended involving professionals from related domains, such as gastronomy, to bring diverse perspectives and enhance the study's exploration of Human-Food Interaction (Balkaya & Baykal, 2024).

3.3.2 Second Workshop with Experts

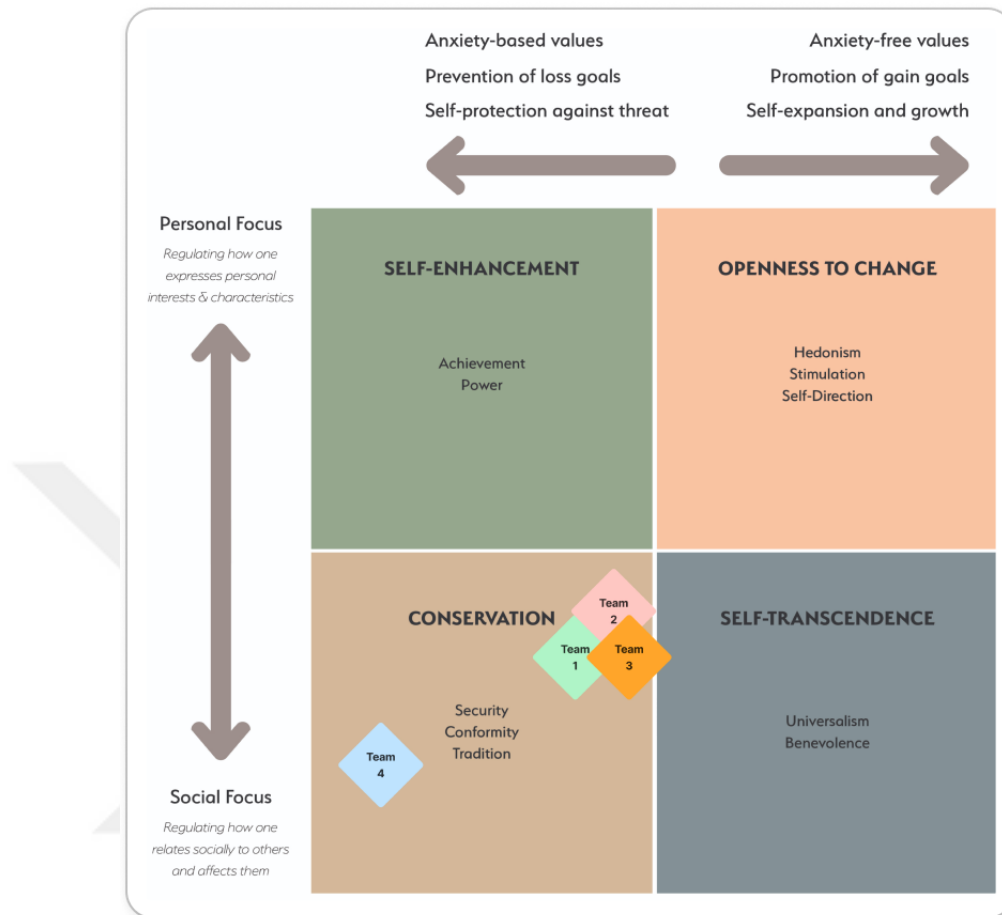
Following the first iteration, revisions were undertaken to refine both the physical design and content. Each utterance was assigned to an individual card, eliminating supplementary information on the reverse side. Participants expressed a preference for independently identifying value types in the previous workshop, leading to the development of distinct decks and the inclusion of value type stickers. The updated materials, comprising an utterance card deck, a value card deck (featuring keywords beneath each value), and value type stickers, were presented to experts during the workshop. Experts were invited to cluster the cards and establish relationships between them (see Figure 2.2).

Teams comprising designers and gastronomy experts collaborated, integrating diverse perspectives from related yet distinct disciplines to strengthen the integration of Value Sensitive Design (VSD) and Human-Food Interaction (HFI) within the study's framework. Experts applied value type stickers to utterance cards and arranged the value

cards into clusters before participating in problem definition and ideation sessions (see Figure 2.2).

The workshop with experts aimed to clarify young adults' perspectives and priority values regarding food practices, ultimately generating design solutions informed by these insights. The participants were divided into four interdisciplinary teams, each comprising designers and experts in gastronomy. This composition ensured a blend of perspectives, balancing technical expertise with cultural and culinary understanding. After the sessions, each team evaluated their proposed ideas using Schwartz's framework of values (Schwartz, 2012) to position their solutions within the broader context of conservation and openness to change (see Figure 3.2).

Figure 3.2 *The Evaluation of the Teams in the Second Workshop with Experts*



Note. The evaluation board was based on the “Dynamic Underpinnings of the Universal Value Structure” (Schwartz, 2012).

Team 1 (EP11 and EP12): This team analyzed values through three overarching categories: Local, Global, and Exclusive. Local values included knowledge, sharing, family, sustainability, and traditions. Global values, relevant to Gen-Z, encompassed ease of use, practicality, pragmatism, and popularity. Exclusive values highlighted creativity, innovation, and curiosity. Despite identifying “sharing” as the most important value, the team acknowledged its dual nature, proposing mechanisms to mitigate oversharing and reduce information pollution. For example, ethical control measures were suggested to protect personal space and ensure accurate information transmission. They also noted a disparity in awareness between lesser-known local items (e.g., Cemele Pepper) and

globally recognized ones (e.g., Wasabi). Their proposals aligned with the Conservation area on Schwartz's framework (see Figure 3.2), reflecting a focus on "Self-Transcendence" values while emphasizing ethical sharing practices.

Team 2 (EP9 and EP13): This team categorized values into five groups: Knowledge, Family Values, Traditional Values, McDonaldization (named by the workshop participants), and Communication Design. Initially emphasizing family relationships and sharing, the team ultimately focused on traditional values. Their proposed solution was an AI-supported bot that functions as a dynamic blog to preserve culinary traditions. This bot would highlight ingredients, authenticity, and users' ability to personalize and reinterpret recipes, fostering culinary innovation while safeguarding tradition. Positioned in the Conservation area, their proposal aligned with preserving traditional values while addressing the tension between innovation and cultural preservation, steering away from openness to change and self-enhancement values (see Figure 3.2).

Team 3 (EP1, EP10 and EP7): Team 3 categorized values into two broad areas: Culture and Technology. Cultural values included global aspects like communication and popularity, as well as local aspects such as preservation and tradition. Technological values, on the other hand, focused on ease of use and discovery. Recognizing the dual role of technology, the team chose to prioritize cultural aspects. They proposed a social-media-integrated app designed to foster intercultural interaction, promote culinary diversity, and transmit traditional values and tastes across generations. AI would enable users to capture and process images of traditional cooking techniques, supporting the preservation of these practices. This solution addressed the challenge of bridging generational gaps and interpreting values variably across demographics. Their app was

positioned in the Conservation area (see Figure 3.2), balancing cultural preservation with technological innovation and emphasizing a social, community-oriented approach.

Team 4 (EP6 and EP8): This team worked on five main themes: tradition, discovery, sustainability, ease of use, and relationships. They explored ways to preserve traditional practices amidst modern technological trends and ensure their transmission to younger generations. Their solution, an app named Ask My Grandmother, offered an accessible platform for sharing unique recipes and safeguarding regional culinary traditions. With features such as short, TikTok-like videos and a focus on local ingredients, the app emphasized authenticity. The team also advocated for promoting heirloom seeds to sustain flavor and authenticity, contrasting these efforts with concerns about Napoli tomatoes produced outside their traditional regions. Additionally, they proposed integrating recipes into state systems and genealogy through a concept called e-seed to deepen preservation efforts. Their proposal was positioned in the Conservation area (see Figure 3.2), underlining a focus on protecting cultural heritage through a social and intergenerational lens.

Table 3.1 *Summary of Teams and Design Proposals*

	Categorized Values	Proposed Design Solution	Placement
Team 1	Local: Knowledge, Sharing, Family, Sustainability, Traditions Global: Ease of Use, Practicality, Pragmatism, Popularity Exclusive: Creativity, Innovation, Curiosity	Controlling oversharing and information pollution through technology. Recommendations for managing sharing practices to protect personal space and ensure accurate transmission.	Conservation Self-transcendence
Team 2	Knowledge, Family Values, Traditional Values, McDonaldization, Communication Design	AI-supported bot for culinary tradition preservation. Bot emphasizes authenticity and allows users to add recipe interpretations, harmonizing tradition with innovation.	Conservation
Team 3	Culture: Communication, Popularity, Preservation, Reliability, Tradition Technology: Ease of Use, Discovery	Social media app fosters intercultural exchange, using AI to analyze traditional cooking images for recording and sharing techniques, bridging generations and cultures.	Conservation
Team 4	Tradition, Discovery, Sustainability, Ease of Use, Relationships Tradition, Discovery, Sustainability, Ease of Use, Relationships	"Ask My Grandmother" app showcases TikTok-style videos of traditional recipes Promotion of heirloom seeds, and integration of genealogy with an "e-seed" concept to preserve cultural heritage.	Conservation

As shown in Table 3.1 the teams' compositions, focus areas, and proposed solutions alongside their positioning on Schwartz's framework. This structured approach not only clarifies the contributions of each team but also situates their proposals within the larger value-based framework of the study. The workshop findings underscore a collective emphasis on preserving cultural heritage, fostering community relationships, and leveraging technology to bridge generational gaps and sustain culinary traditions.

Feedback on Card Design: Participants provided detailed feedback on the card design during their evaluation of the workshop. They noted that keywords and graphics on the value cards were largely overlooked, deeming these elements unnecessary for visual clarity and functionality. Assigning value types was considered time-intensive, and participants suggested that all icons should be pre-marked by the participants themselves

for efficiency, as the utterances reflect their perspectives rather than being provided by experts. They emphasized that assigning value types disrupted the fluidity of insights, which are influenced by variations in participants' age and cultural backgrounds. Participants proposed that predefined value types could improve their ability to empathize more effectively (Balkaya & Baykal, 2024). The importance of adopting an empathetic perspective was particularly highlighted, with participants commending the utterance card deck for supporting this approach. They recommended that interview participants select value type icons for their utterances, believing this method would streamline data collection and analysis while accelerating the ideation process (Balkaya & Baykal, 2024).

Experts appreciated the opportunity to learn value-sensitive design (VSD) terminology but requested more extensive information on Human-Food Interaction (HFI) literature. They also suggested incorporating a visual component into the cards to facilitate thematic analysis and expressed interest in viewing the team's analytical results to further enrich the data (Balkaya & Baykal, 2024).

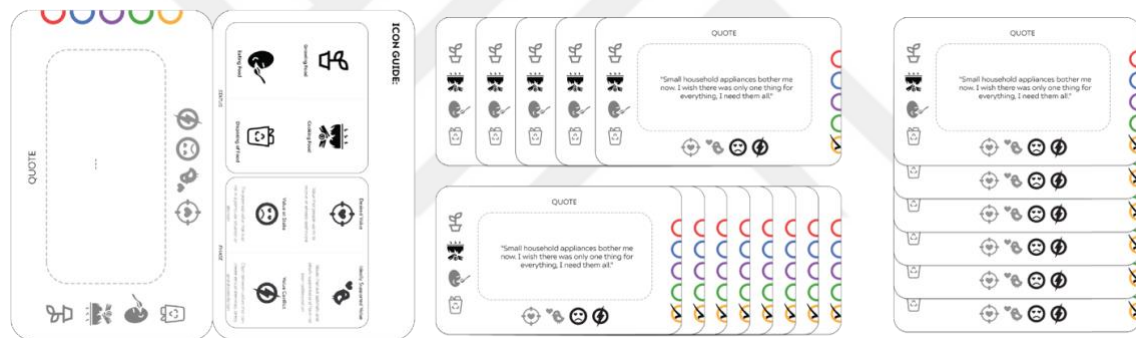
3.3.3 Third Workshop for Evaluation of the Card-based Design Tool

After the second workshop session, it became clear that the card design could be enhanced to more effectively fulfill its intended purpose. The redesign aimed to create a tool that would support researchers studying Human-Food Interaction (HFI) from a Value-Sensitive Design (VSD) perspective. Unlike previous versions, this iteration did not include specific value and utterance cards. Instead, the redesign prioritized flexibility, allowing researchers to explore a range of topics using blank cards provided at the start of the process.

Each participant was provided with the redesigned cards and a value list. Based on the feedback from the previous workshop, selected utterances from in-depth interviews

were chosen to be included in the third workshop. Follow-up interviews were conducted with the young adults who provided the utterances, during which participants were asked to assign the value type and HFI phase associated with the utterances. Feedback from the previous workshop informed additional refinements. It was recommended to introduce themes as a fourth component, represented with color codes on the right side of the card to facilitate data categorization by designers. Separating the components across different sides of the card while allowing for overlap was identified as a visually effective approach to support data analysis (See Figure 3.3).

Figure 3.3 *Final Card Design and Use of Cards for Categorization*



Participants in the workshop who had not attended the previous session (two designers) observed that the cards could be effectively adapted for digital use, enabling interaction through clicking rather than manual marking. This feedback led to the development of a digital card template designed to support researchers and designers working on Human-Food Interaction (HFI) from a Value-Sensitive Design perspective, eliminating the need for a physical value card deck and ensuring applicability across diverse age groups and cultural contexts.

Participants highlighted the dynamic nature of food practices, emphasizing their adaptability based on individuals' backgrounds and cultural influences. Additionally,

some participants proposed that analyses conducted with the cards be compiled into an online repository, enabling robust and comprehensive multicultural research (Balkaya & Baykal, 2024).

Figure 3.4 *The Workspace of the Third Workshop*



An online workshop was conducted via Zoom, utilizing Figma (see Figure 2.4, see Figure 3.4), with the participation of experts from gastronomy and design fields. The detailed design of the workshop is available via the [Figma \(link\)](#) (2024). The decision to use a limited number of cards, each representing a specific theme, was made to facilitate the observation of participant interaction with the cards. All participants reported no difficulty comprehending the concept, as they were already familiar with it.

The workshop's initial task required participants to assign values to each card based on a predefined value table and subsequently assign a theme to each card. Gastronomy experts exhibited a tendency to make quicker decisions and act immediately when assigning values, whereas design experts engaged in more deliberate thought, carefully analyzing each statement to discern underlying values. Despite these differing

approaches, the two groups assigned the same themes to 11 out of 13 cards, differing only in the categorization of two cards. Across both groups, it was noted that values were represented using a consistent color intensity code and a table structured according to themes. While each card predominantly reflected the values of a specific theme through its dominant color, many cards also incorporated values associated with other themes. This observation underscores the dynamic and variable nature of the values represented.

The second task of the workshop involved defining a problem by categorizing the cards according to their assigned themes. During the session with gastronomy experts (EP12 and EP13), participants primarily relied on the components presented on the cards. They began by utilizing the HFI phases to exclude all cards except those related to "cooking." Subsequently, they categorized the remaining cards based on the type of values they represented and then proceeded to analyze the cards. In this process, the participants utilized cards identified as "Value at Stake" to define the problem. The problem they came up with was: *"The integration of technology into daily life will negatively affect our cultural food heritage and sentimental bonds."* In contrast, the designers (EP1, EP8 and EP9) approached the task by thoroughly analyzing the cards before categorizing them. They chose not to rely on the provided components and instead developed their categorization independently. Based on their analysis, the problem they identified was: *"Moving away from originality while using technology."*

For the third task, participants were asked to engage in a 10-minute ideation session and propose solutions to the identified problems. The gastronomy experts initially discussed avoiding the use of technology but, upon reviewing the cards, recognized that technology represented both an avoided and a desired value. Their first solution was *"Family recipes could be archived through technological means, such as blog, digital*

diary, app, and even made accessible to a broader audience.” The second solution was systematic archiving, which facilitates the adaptation of local food cultures to global contexts. For example, a dish like *"my mother's meatballs"* could gain recognition and value on an international scale. On the other hand, the designers approached the task with a technology-centric perspective, incorporating the desired and ideally supported values emphasized during the workshop. Unlike their gastronomy experts, the designers utilized the provided components in their solution development. Their proposal was a comprehensive and interactive chatbot. This chatbot could provide both traditional and global recipes based on user prompts, allowing users to decide when to adhere to or deviate from traditional culinary practices. The envisioned bot would address all phases of the dining experience, aligned with the HFI framework—from cultivation to presentation. It could offer features like plate design suggestions, recipe tips, and a personalized dining experience. Additionally, the bot would allow users to tailor their experience by selecting parameters such as culture, trends, and originality to match their preferences. The designers’ solution was notably more detailed and focused on leveraging technology to enhance user engagement and culinary exploration.

Finally, participants were asked to evaluate the design of the cards and compare them with those used in a previous workshop. The gastronomy experts emphasized the advantages of the value types and HFI phases assigned by young adults, particularly in comparison to the previous workshop where these assignments were made by the experts themselves. They noted that these features greatly enhanced the clarity of the statements and provided a more concrete framework for their work. This increased clarity enabled them to more effectively identify key areas of focus when grouping the cards and defining problems. Additionally, the experts highlighted the benefits of working with fewer cards,

which streamlined the process. However, they also acknowledged that the improved card design could support efficient elimination even with a larger set of utterance cards. As gastronomy experts summarized:

EP12 and EP13: "It was useful for us to see the big picture. We were able to focus more effectively by grouping similar components. Working with fewer cards was more efficient compared to the previous workshop, but we must note that having more cards could also be effective with this improved card design."

The designers also provided detailed feedback on the card design, highlighting its benefits. They observed that the presence of predefined themes simplified the process by making it easier to focus and understand the subject matter. The inclusion of different values under each theme was particularly useful, as it allowed them to identify commonalities while offering flexibility in categorization. The digital format of the cards was seen as a strength, enabling better concentration and more efficient work due to its interactive nature. The use of icons and colors was also appreciated for enhancing usability and interpretation. Designers commented:

EP 1 and EP9: "Having themes made it easier to focus and understand the subject. Including values under themes allowed us to group commonalities effectively while maintaining freedom in categorization."

EP8: "Using the cards in a digital format was not a disadvantage. The interactive platform kept us focused and made the process efficient. Additionally, the use of icons and colors provided clarity and guidance."

The designers also appreciated how the card design encouraged adherence to themes and maintained focus on evaluation criteria, which they found helpful for aligning

with research objectives. They further noted that the difference between digital and physical formats was minimal, though the digital format was deemed more accessible and convenient.

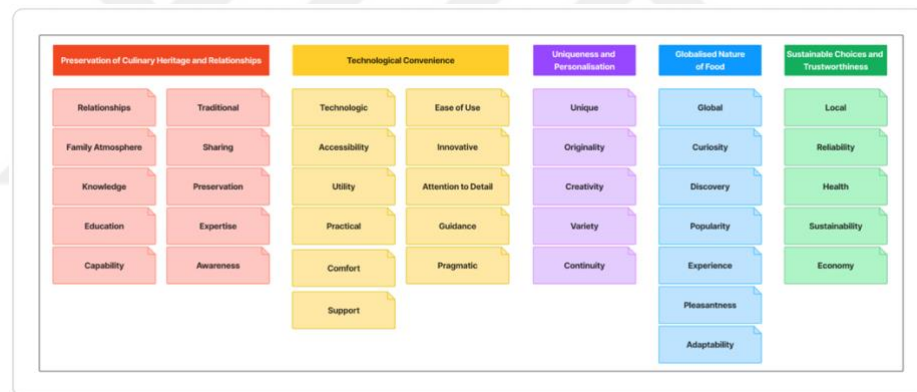
In summary, both the gastronomy experts and designers valued the structured and interactive design of the cards. They highlighted the improvements in clarity, efficiency, and usability compared to the earlier workshop.



4. DISCUSSION

This research examines the intersection of technology and tradition in young adults' food practices through a value-sensitive design (VSD) approach. Data collected through surveys and in-depth interviews were analyzed using reflexive thematic analysis and evaluated through an iterative workshop process. This led to the identification and categorization of 38 key values into five themes, as shown in Figure 4. 1. These themes, informed by young adult insights, interact dynamically, creating various value conflicts, which are reflected in the generative card-based design tools developed during the study.

Figure 4.1 *Value List to Adapt Food Practices of Young Generation*



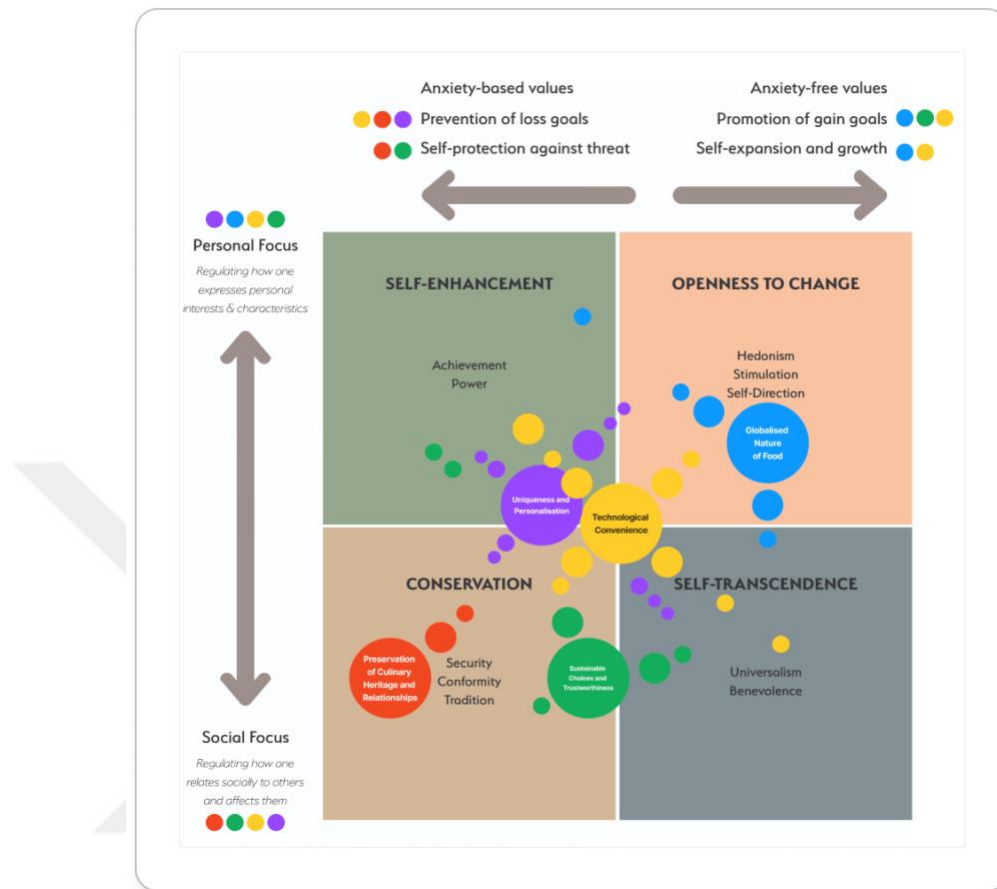
These themes, detailed in Figure 3.1, reflect the complex balance between advancing technology and maintaining traditional values in food practices. The identified themes were evaluated through Schwartz's "Dynamic Underpinnings of the Universal Value Structure" diagram, which helps in understanding the complex interactions among values. Schwartz's theory of Basic Values identifies universal values recognized across diverse cultures, emphasizing their fundamental role in human needs for social interaction and survival. This theoretical framework was employed due to its capacity to address how values, much like food practices, are not static but evolve over time and across cultural

contexts. Our analysis highlighted four major value conflicts, reflecting the dynamic and sometimes conflicting nature of these universal values in relation to contemporary food practices (Schwartz, 2012; Friedman et al., 2013; Alhasan et al., 2022).

4.1 The Themes Placed on the Universal Human Values

The categorization of themes in this study utilized Schwartz's "Dynamic Underpinnings of the Universal Value Structure" diagram to analyze the insights gathered from the young adults and interpret the interplay between the practices and values. Schwartz's theory identifies ten fundamental values recognized across cultures, each with distinct motivational drivers, and highlights common conflicts, such as those between openness to change versus conservation and self-transcendence versus self-enhancement (Schwartz, 2012). This tool enabled a systematic assessment of themes, illustrating their alignment with fundamental values and revealing key conflicts. The diagram visually mapped these complex relationships, and our analysis identified five primary value conflicts.

Figure 4.2 Themes in "Dynamic Underpinnings of the Universal Value Structure"



The interpretation of insights based on the a priori classification of Schwartz's value inventory is illustrated to show how themes were placed within the diagram (see Figure 4.2). Notably, during the workshop with experts, the majority of the proposed solutions fell within the "Conservation" area, although experts demonstrated flexibility in their interpretations of the diagram.

4.1.1 The Dynamics of "Preservation of Culinary Heritage and Relationships"

The thematic category "Preservation of Culinary Heritage and Relationships" includes values such as relationships, tradition, family atmosphere, sharing, knowledge, preservation, education, expertise, capability, and awareness. Through interviews and workshops, participants expressed concerns about the potential loss of traditional food

practices and emphasized the need to pass these traditions to future generations. They also highlighted the impact of rapid technological advancements and noted that familial food practices, while evolving, remain connected to tradition through special recipes and seasonal preparations. This theme indicates the dual understanding of food knowledge and the relationships formed around food, reflecting both individual and societal benefits. It predominantly represents "Conservation" values, focusing on tradition and family ties, but also shows alignment with "Openness to Change" through values like capability and education (see Figure 4.2). Thus, this theme introduces a minor tension within food practices.

4.1.2 The Dynamics of “Technological Convenience”

The thematic domain of "Technological Convenience" includes values such as technology, ease of use, accessibility, innovation, utility, and comfort. Participants emphasized technology's role in enhancing practicality and convenience, particularly in streamlining personal routines and accessing detailed food-related information. This theme occupies a central position in the diagram due to its inherent conflicts (see Figure 4.2). While participants acknowledge technology's potential benefits, they also express skepticism about its impact on food practices. They see technological convenience as a means to complement other thematic areas, suggesting that it can aid in preserving traditional values, improving social awareness through tech-enabled initiatives, and enriching food-related relationships by integrating new information and practices.

4.1.3 The Dynamics of “Uniqueness and Personalisation”

The theme of "Uniqueness and Personalisation" highlights the value participants place on human touch and individuality in culinary practices, emphasizing the importance

of family cooking traditions and resisting standardization. This theme, which includes values such as uniqueness, originality, creativity, variety, and continuity, reflects participants' desire for meals that are both diverse and tailored to personal preferences. While they appreciate culinary innovation, they also aim to preserve and recreate family recipes, illustrating a tension between embracing new culinary experiences and maintaining traditional practices. Participants are concerned that technological influences might alter their food practices compared to those of family members. This theme thus spans the domains of "conservation" and "self-enhancement," impacting other value clusters as well (see Figure 4.2).

4.1.4 The Dynamics of “Globalised Nature of Food”

The theme "Globalised Nature of Food" captures values such as global awareness, curiosity, discovery, popularity, and adaptability. Young adults show a strong interest in exploring global culinary trends and emerging food cultures, driven by their engagement with social media and technological tools. They are eager to experiment with diverse cuisines and embrace trends from platforms like TikTok, reflecting an openness to change and a desire for new experiences. This theme highlights their proactive approach to integrating novel ideas and culinary practices without creating inherent internal conflicts (see Figure 4.2).

4.1.5 The Dynamics of “Sustainable Choices and Trustworthiness”

The theme "Sustainable Choices and Trustworthiness" incorporates values such as local sourcing, reliability, health, sustainability, and economy. Primarily aligned with the "conservation" domain, it also reflects elements of "self-transcendence" through its emphasis on health and sustainable agriculture. Participants highlighted the importance

of home cooking and local markets for their health benefits and sustainability, connecting these practices to broader ecological concerns. The theme, which focuses on preserving food practices and resources, shows clear alignment with "conservation" but also generates tension with the "openness to change" domain, particularly among young adults (see Figure 4.2).

4.2 Value Conflicts

Drawing insights from participant data, five key value conflicts have emerged. First, there is a tension between technological convenience and cultural food practices, as participants weigh the practical benefits of technology against the potential erosion of cultural nuances. Second, a nuanced conflict exists between human touch and innovation, with technological advancements impacting familial culinary traditions and relationships. Third, participants face a dilemma between sustainable choices and convenience, balancing the benefits of locally sourced food against the appeal of ready-made options. Fourth, a conflict arises between preserving culinary traditions and the influence of social media, highlighting the tension between health trends and established culinary norms. Finally, there is a clash between diversity and standardization, as participants seek personalized food experiences while expressing concern over technology's potential to homogenize recipes.

4.2.1 Conflict Between Technological Convenience and Cultural Food Practices

While technology offers convenience in food practices, it also poses a risk of overshadowing or replacing cultural nuances in cooking, creating a conflict between efficiency and the preservation of cultural heritage. Participants recognize technology's role in enhancing cooking knowledge and efficiency but express concern about its

potential to erode cultural values and traditions. This tension manifests in fears that automated cooking tools and streamlined devices may undermine the social and artisanal aspects of home cooking, leading to a loss of cultural identity and craftsmanship. There is apprehension that cultural dishes may not be adequately represented online, risking further erosion of traditional practices. This conflict highlights the need for Human-Food Interaction (HFI) research to balance technological advancements with the preservation of traditional methods and local ingredients, acknowledging their historical and sociological significance (Khot & Mueller, 2019). Ultimately, participants navigate a delicate balance between embracing technological efficiency and maintaining cultural heritage, reflecting the ongoing challenge of integrating modern innovations while safeguarding traditional culinary practices.

4.2.2 Conflicts Between Human-Touch and Innovation

Participants highlight a powerful tension between embracing kitchen innovation and preserving the irreplaceable human touch in cooking. The clash becomes evident when comparing the benefits of modern technologies—such as IoT devices, virtual glasses, and augmented commensality—with the desire to maintain the warmth and personal connection of traditional food practices. Participants express a conflict between the ease of accessing recipes through technology and the intrinsic value of shared culinary experiences and relationships. This extends to the archiving of recipes, where digital platforms offer convenience but lack the personal touch and customization of traditional notebooks. Despite valuing both digital and manual methods, participants highlight the challenge of integrating technological advancements while preserving the essence of familial cooking traditions and the human-touch element. This conflict points out the need

for a balance that respects traditional practices while accommodating innovative advancements in the kitchen.

4.2.3 Conflicts Between Sustainable Choices and Convenience

Participants reveal a key conflict between sustainability and convenience in their food practices. They emphasize the importance of sustainable and locally sourced foods, driven by concerns over product authenticity and the impact on soil health. This preference for local markets over supermarket products reflects a desire to preserve genuine flavors and support local economies. However, this commitment to sustainability contrasts with the convenience of pre-prepared food options. This tension highlights the complex decision-making process where health-conscious goals intersect with the practical appeal of convenient alternatives.

The dynamic between sustainability and convenience underscores the complex trade-offs individuals face as they strive to balance eco-friendly choices with the appeal of convenience foods. Research on young adults indicates that time constraints affect their home cooking habits, with regular cooking linked to lower fast-food consumption and better dietary outcomes. This highlights the need for interventions to teach young adults how to prepare quick, nutritious meals (Larson et al., 2006). Participants recognize the health benefits of home cooking, even when preparing items perceived as less healthy, like fried foods or desserts. Conversely, media and marketing studies in the UK and USA point to a decline in home-cooked meals, attributed to busy lifestyles and a reliance on convenience foods (Murcott, 2019a). Digital technologies present opportunities to enhance sustainable food practices and engage with food ethics. Exploring these themes constructively can advance Human-Food Interaction (HFI) research (Dolejšová et al., 2018).

4.2.4 Conflicts Between Preserving Culinary Traditions and Social Media Effect

Social media, particularly platforms like Instagram, YouTube, Facebook, and Twitter, influences food-related practices, integrating recipes, restaurant reviews, food photography, and culinary hashtags into daily routines (Lewis, 2020). These platforms profoundly impact young adults' dietary habits (Wang et al., 2022), often shaping their meal choices and preparation methods. Despite participants' intent to preserve traditional culinary practices, they acknowledge that social media frequently dictates their dietary preferences, leading to the adoption of recipes and trends encountered online. This digital influence challenges adherence to traditional food practices and suggests a potential shift toward technologically-driven or standardized recipes. Participants anticipate incorporating more social media-inspired recipes in their future diets, reflecting a conflict between emerging health trends and established culinary norms. Future research should explore ways to enhance the visibility of traditional recipes on digital platforms to support their continued relevance and transfer across generations.

4.2.5 Conflicts Between Desired Diversity and Concerned Standardization

A delicate interplay exists between the desire for culinary diversity and personalization and the trend toward recipe standardization driven by technology. This conflict highlights the tension between maintaining a wide range of food experiences, both traditional and global, and the homogenizing effects technology can have on cherished recipes. While technology offers opportunities to broaden culinary possibilities, such as social media accounts promoting traditional recipes, TV shows discovering global tastes, and devices developing kitchen technologies, it also raises concerns about the erosion of uniqueness in family recipes, which are often underrepresented online. As individuals seek to preserve culinary uniqueness amidst contemporary technological

influences and popular trends, the challenge becomes finding a balance that respects traditional practices while incorporating modern innovations.

Food, while essential for survival, has transformed into the world's largest industry and a key element of social interaction (Belasco, 2008). Family-specific dishes, often marked by unique ingredients known only within the family, represent a culinary "trademark" (Khot & Mueller, 2019). For home cooks, preparing these traditional meals is a way to build familial identity and connect with heritage (Rawlins & Livert, 2019a). Therefore, preserving culinary heritage involves not just conservation but also the promotion, reproduction, transmission, and transformation of traditions. As West points out, the fear of losing these traditions drives their preservation, a sentiment reflected in our study. Participants frequently expressed concerns that modern changes could undermine traditional family meals, emphasizing the emotional and nostalgic value of "home-cooked" meals as symbols of familial togetherness (West, 2016).

4.3 Design Ideas Elicited from Workshops

During the both workshops with experts, participants proposed innovative solutions to address conflicts between technology and food practices, focusing on balancing technological advancements with the preservation of cultural traditions, sustainability, and culinary diversity. Despite the observed decline in conservation values—such as tradition, conformity, and security—among Millennials in Türkiye, as well as the diminishing emphasis on self-transcendence (harmony) and collectivism over time (Marcus et al., 2016), the workshop participants universally prioritized the preservation of traditional values and practices. They emphasized the importance of maintaining cultural heritage and integrating technology to facilitate its transmission across generations.

The participants highlighted the role of community and interpersonal relationships in preserving and sharing cultural values. For instance, Team 3 (second workshop) proposed an app integrated with social media to foster intercultural interaction, promote culinary diversity, and transmit traditional tastes and techniques. The app would use artificial intelligence (AI) to capture images of traditional cooking methods, enabling users to record and share practices passed down through generations. Cooking technologies could further embed cultural contexts, such as pre-programmed settings for traditional recipes and ingredient substitutions, offering a blend of tradition and innovation. These suggestions reflected a broader recognition of the need to balance continuity with adaptation, ensuring traditional practices remain relevant in modern contexts.

To resolve the tension between human touch and technological innovation, participants suggested incorporating familial and cultural elements into smart kitchen devices. These could allow users to replicate family recipes, participate in collaborative cooking sessions, or use platforms like Team 4's proposed "Ask My Grandma" app (second workshop), which integrates multimedia features such as audio from elders and personal annotations. This approach would preserve the authenticity of traditional recipes while leveraging the convenience of digital tools, fostering stronger interpersonal and intergenerational bonds. In the third workshop, gastronomy experts suggested that the regular archiving of personal or cultural recipes could facilitate the adaptation of local food culture to global and trending culinary practices. They cited the example of a recipe such as "my mother's special recipe," which could achieve global recognition and value through its dissemination on open blogs or applications.

Sustainability also emerged as a key theme, addressing the conflict between environmentally friendly practices and the convenience of modern technology. Team 4 (second workshop) proposed promoting heirloom seeds to preserve authentic flavors and integrating traditional recipes into platforms like "e-seed," which combines genealogy with culinary traditions. Online food delivery applications could connect consumers with local producers, offering AI-powered shopping recommendations to encourage sustainable choices. Additionally, AI tools could suggest recipes based on available ingredients, enabling users to make eco-friendly decisions without sacrificing convenience, thereby emphasizing the responsible use of local resources.

Social media's influence on culinary traditions was acknowledged for its dual potential to preserve and challenge traditional practices. Collaborative campaigns with influencers could promote traditional cuisines and engage users through hashtags, spotlighting cultural heritage. To ensure accuracy and protect personal space, Team 1 proposed managing and controlling sharing/oversharing practices, while Team 2 suggested developing AI-powered platforms to digitize and archive traditional recipes (second workshop). These platforms could integrate historical context, interactive tutorials, and virtual cooking communities where users participate in live-streamed workshops led by cultural experts, leveraging social media to enhance cultural continuity.

Participants also explored solutions for maintaining culinary diversity amidst the risk of technological standardization. Team 2 proposed AI-powered recipe recommendation systems offering personalized suggestions based on individual tastes and cultural backgrounds, ensuring diversity while accommodating global trends (second workshop). These systems could allow users to interpret and save recipes, reflecting the evolving nature of food. Digital archives could preserve family recipes and stories for

future generations, while smart recipe customization tools could help users adapt traditional recipes without losing their essence. This balance between innovation and tradition was a recurring theme throughout the workshop discussions.

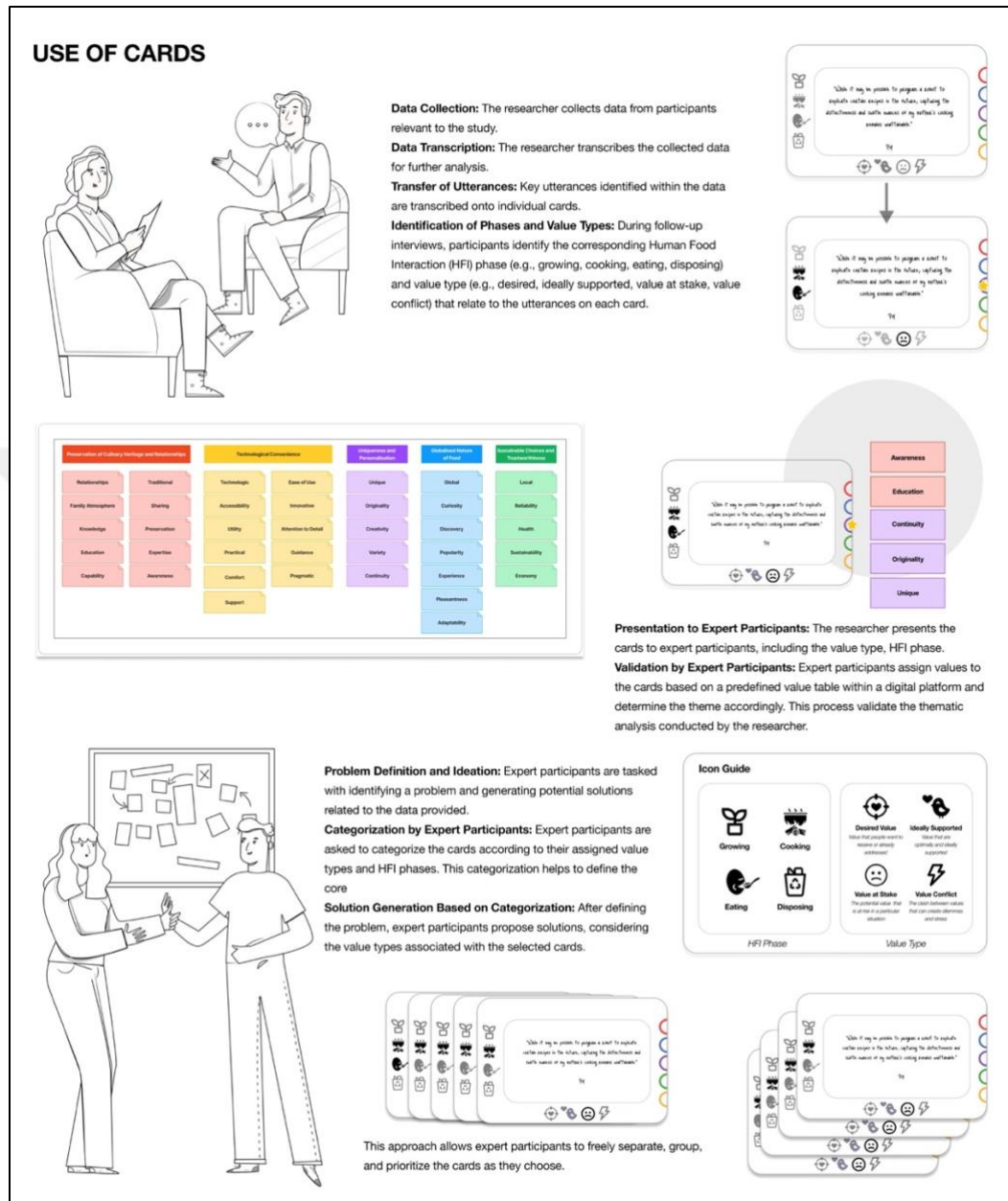
In the third workshop with designers, a proposal was made for a chatbot designed to help users balance tradition and innovation in food practices. The chatbot would allow users to choose whether to maintain the authenticity of a dish or create innovative variations. By selecting a year, users could customize details like the plate pattern and receive personalized menu suggestions based on inputs such as year and country. The system would also include a memory function for saving and retrieving menus, as well as the ability for users to add and modify recipes. This approach would support both preserving traditional roots and embracing culinary diversity.

Overall, the workshop findings emphasized the value of preserving cultural heritage, adapting traditional practices to contemporary settings, and leveraging technology to ensure their continuity and relevance. Proposals across the teams reflected a commitment to fostering community relationships, embracing innovation while respecting tradition, and promoting sustainability, illustrating the potential for technology to enhance food practices while safeguarding cultural values.

4.4 Card-based Design Tool

Drawing from the iterative development process of the cards, the key discussion points for creating the card-based design tool that incorporates a Value-Sensitive Design approach to Human-Food Interaction can be summarized as follows (Balkaya & Baykal, 2024):

Figure 4.3 Use of Final Card Design



4.4.1 Usability and Flexibility

Participants highlighted the need for usability and flexibility in the card design, recommending modifications such as displaying each utterance on individual cards and enabling participants to categorize value types according to factors such as culture, gender, dietary preferences, and age groups.

Scholars advocate for designing cards that are adaptable to diverse design activities and compatible with a range of methods (Bekker & Antle, 2011). To achieve this, cards should enable participants to evaluate value types and HFI phases while prioritizing the main element: utterances. This approach fosters empathy between designers or researchers and participants, enhancing the understanding of participants' values through the use of the cards.

Participants appreciated the utility of separating utterance and value cards during the second workshop but proposed that values could be presented in a table format rather than exclusively as cards. Incorporating this feedback in the third workshop with experts demonstrated that this approach enabled participants to engage more comprehensively with the values while maintaining a focus on the value-sensitive aspects of HFI.

4.4.2 Enhancing Data Analysis

Conceptual knowledge from design frameworks can be effectively made accessible and reusable through the use of cards, similar to Post-it Notes, which are compact and require clear, concise information presentation (Bekker & Antle, 2011). This study organizes literature knowledge on the cards in a highly compact format for ease of use.

Iterative refinements focused on improving data analysis capabilities, including recommendations such as introducing themes as a fourth component and implementing color-coded categories to facilitate categorization. Participants emphasized the benefits of effortless categorization by overlapping or removing cards based on the component of interest (see Figure 3.3). Designers can sort cards by specific components, such as value types or HFI phases, with a quick glance at the edges, without needing to review the entire card. The same approach was suggested for themes to support data analysis.

Participants underscored the necessity of incorporating user-friendly design elements to support comprehensive data analysis and interpretation, emphasizing the use of precise terminology from HFI and VSD frameworks.

4.4.3 Visual Design and Clarity

Bekker and Antle (2011) proposed that employing color codes to categorize cards and distinguish options is a valid approach. However, indiscriminate use of colors or graphics can lead to confusion. Feedback from participants emphasized the critical role of visual design elements, such as card colors and icon guides, in enhancing usability and clarity. Recommendations included refining the color palette, incorporating visual cues to represent value types, and organizing components on different sides of the card to improve visual clarity and support data analysis. As a result, the final card design consists of a streamlined deck, incorporating only essential elements: a set of icons derived from HFI/VSD literature and thematic color coding for analysis.

4.4.4 Emphatic Point of View

Value-Sensitive Design (VSD) necessitates attention to social and cultural dimensions, as existing research demonstrates that outcomes can vary across cultural contexts (Borning & Muller, 2012). Reflecting this perspective, the final card design includes blank sections for user input, recognizing that the values identified in this study may differ when applied in other contexts and cultures. This feature was praised for its role in fostering understanding and empathy. The flexible design approach aligns with the cultural and social diversity integral to VSD. Future studies could explore the adaptability of cultural elements in card-based design tools.

4.4.5 Digital Adaptability

The iterative process consistently underscored the need for digitalization. Many experts from the workshops advocated for optimizing the design for digital adaptability, allowing for interactive use of the cards across diverse target groups. Furthermore, translating scientific design knowledge into a card format requires the careful extraction and simplification of information, avoiding overloading the cards with excessive details (Deng et al., 2014). The card design in this study integrates components derived from established literature: the value types are based on envisioning cards (Friedman & Hendry, 2012), the phases are adapted from Khot & Mueller's HFI categorization (2019) and a value table drawn from value inventory (VASE, n.d.). As the body of literature continues to grow and develop, the cards can be more effectively adapted within a digital framework. Recommendations for future development include creating a digital template for online application and utilizing digital platforms for data collection and analysis, which would enhance accessibility for researchers and participants. By leveraging dynamic digitalization that incorporates HFI and VSD principles, researchers can continuously update and refine the tool to align with the cultural and social context of their study and the diverse backgrounds of participants.

In summary, digital adaptability complements other themes, with participants identifying digital cards as a more sustainable and efficient option. Digital cards enable quick access for researchers and streamline centralized data collection. Current efforts focus on developing a digital version of the cards and an online repository to support multicultural and multidisciplinary research, improving both accessibility and relevance. However, potential challenges include cultural influences on card design and the evolving nature of HFI and VSD literature, which may necessitate content adjustments. The

number or focus of themes may also change in response to societal shifts, underscoring the value of customizable cards. The cards are freely available for download on Behance (Behance, n.d.), with plans to expand distribution via the Figma community to encourage collaboration among designers.

The final card design provides a tool to make Human Food Interaction (HFI) related insights accessible to designers and researchers. Initially, data collected from participants is transcribed into key utterances (see Figure 4.3), which are then transferred onto individual cards. These cards are further enriched during follow-up interviews, where participants identify the corresponding HFI phase (e.g., growing, cooking, eating, disposing) and value type (e.g., desired, ideally supported, value at stake, value conflict) for each utterance. Once these elements are assigned, the cards are presented to expert participants, who validate the thematic analysis by assigning values based on a predefined value table within a digital platform. This step also helps to ensure the thematic integrity of the research. Expert participants are then asked to categorize the cards according to their designated value types and HFI phases, facilitating problem definition and solution ideation. The flexibility inherent in this card-based approach allows expert participants to independently organize, group, and prioritize the cards, providing them the freedom to focus on the most pertinent themes. Through this process, the final card design serves as both a tool for analysis and a medium for collaborative problem-definition and plays as a mediator for initiating discussions for generating solutions rooted in the insights.

The iterative process reflects a commitment to continuous improvement, incorporating feedback and insights to optimize the tool for investigating Human-Food Interaction through a Value-Sensitive Design framework. These tools support designers in addressing the complexities of integrating values into HFI, promoting technological

innovation while honoring value considerations and cultural practices inherent to the value-sensitive design approach.

4.5 Limitations

As every study, this study has its own limitations. Firstly, this study focused particularly on young adults aged 20–25 to examine their practices and explore how technology could support traditional food practices. Delimiting the scope with this target age group was a deliberate choice to unfold the possible value clashes between the use of technology driven sources when interacting with food and the original nurturing habits encountered within the family.

The exclusion of older individuals who actively preserve traditional practices restricted the study's scope, as their inclusion could have provided valuable intergenerational insights. Additionally, the participant pool primarily consisted of educated urban dwellers in Türkiye. Including young adults from rural settings, or young adults living in urban areas in different countries might have yielded different perspectives especially with respect to diversify the value perspectives. In Türkiye, traditional values, such as collectivism, and modernization, including higher education levels and increased affluence, collectively shape family dynamics and intergenerational relationships (Marcus et al., 2016). Similarly, the absence of participants with ethically motivated dietary habits, such as vegans or vegetarians, limited the exploration of this demographic's practices. Insights about such habits were not intended to be excluded, however did not occur in the participants' responses. Expanding the study with cross-cultural context would further extend the themes as well as the value mappings derived from young adults' insights.

The workshops also faced participant-related constraints. While they included academic designers and chefs, the exclusion of other stakeholder groups, such as rural restaurant owners, market vendors, traditional cooks, or homemakers, may have limited the diversity of insights. Although these groups were considered, the decision to prioritize English-proficient participants familiar with academic terminology aimed to ensure workshop efficiency. Another limitation was the absence of social scientists, such as anthropologists or historians, whose involvement could have provided alternative perspectives and enriched discussions. This decision was made to maintain Human-Computer Interaction (HCI) perspective as it lies in the intersection of Value-Sensitive Design (VSD) and Human-Food Interaction (HFI).

The card-based tool offers several benefits, such as providing a structured method for exploring complex food practices and revealing unexpected patterns in participant insights. By allowing a diverse range of stakeholders, including designers and gastronomy experts, to collaborate, it enhances cross-disciplinary understanding of food values and behaviors. The tool also helps clarify HFI values, promoting a deeper understanding of how values influence food-related decisions. However, a key challenge is that the insights generated by the tool remain situational and may not fully capture the dynamic nature of food practices across different contexts or over time. To address this limitation, a diary study could be conducted as a complementary method, enabling participants to document their food practices over an extended period. This would provide a more comprehensive dataset, extending the insights beyond the immediate context and allowing for a richer, longitudinal understanding of food-related behaviors and values.

The adaptability of food practices, shaped by individuals' cultural and social contexts, underscores the importance of considering these factors in research. The VSD

framework, which highlights the importance of integrating cultural and social values, suggests that findings may vary across different contexts and cultures (Borning & Muller, 2012). Acknowledging this variability, the study employed an iterative process to refine tools for exploring HFI within a VSD framework.



5. CONCLUSION

This research was undertaken to gain insights into the dynamics of young adults' food practices, specifically exploring the interaction between technology and tradition. Employing a value-sensitive design (VSD) approach as our analytical lens, we aimed to unravel the intricate nuances shaping these food practices. This study elucidates five themes that describe pivotal insights concerning the food practices of young adults, viewed through a value-laden lens, derived from in-depth interviews and surveys. These insights, encapsulated as "Nurturing Relationships and Knowledge," "Embracing Tradition," "Unique Experiences," "Global Curiosity," and "Technological Convenience," represent prioritized values within the context of young adults' food-related behaviors. The examination of these themes is grounded in the Schwartz' inventory for describing universal values (Schwartz, 2012). According to this framework, our analysis showed four value conflicts: "Technological Convenience and Cultural Food Practices," "Human-Touch and Innovation," "Desired Diversity and Concerned Standardization," and "Sustainability and Convenience," underscoring the intricate interplay of values shaping young adults' food choices.

This study introduces a card-based tool for Human-Food Interaction (HFI) research, developed through an iterative, value-sensitive design approach and a data-driven process. The tool incorporates components such as utterances from young adults, value types, HFI phases, and overarching themes, serving as a model for analyzing food practices across various age groups or cultural contexts (Balkaya & Baykal, 2024). The card-based design tool seeks to advance HFI research methodologies by providing a structured and accessible framework for examining the relationship between technology,

cultural traditions, and human values in shaping food behaviors. Continued refinement and validation aim to foster interdisciplinary collaboration and broaden its applicability.

The main purpose of using the card-based design tool is to provide a structured yet flexible method for exploring HFI concepts, which can be utilized by a diverse range of audiences, including designers, gastronomy experts, and others outside of the HFI field. This tool facilitates the identification and translation of HFI-related values by enabling participants to categorize, prioritize, and contextualize key themes. However, the absence of a study that effectively synthesizes both VSD and HFI concepts in a concise and integrated manner highlights the value of this card-based approach. By leveraging these cards, it becomes possible to examine HFI through the lens of VSD, offering a framework for understanding and addressing food-related values within human interactions. By using these cards, participants can better define and understand the values tied to HFI phases (such as growing, cooking, eating, and disposing) and value types (such as desired, ideally supported, value at stake, and value conflict), which are frequently underexplored or poorly delineated.

While the tool is valuable for clarifying and organizing these values, it still has room for further development to serve idea-generation. In its current state, its primary strength is to serve as an analytical tool that translates complex HFI concepts into tangible categories, which can then inform future design or problem-solving activities. The benefits of this approach include its ability to engage a wide range of stakeholders, enhance clarity around HFI values, and enable interdisciplinary collaboration. However, challenges may arise in ensuring the appropriate categorization and interpretation of these values, as different participants may bring varied perspectives, potentially leading to inconsistencies in how the values are applied or understood.

As HFI scholars suggested, undertaking everyday food practices in a natural environment is crucial to reflect contextual sensitivities and respect the situated nature of local food cultures, contributing to a holistic and culturally sensitive approach (Dolejšová, et al., 2020b). Due to its blend of traditional values and aspirations for modernization, Türkiye is frequently depicted as a bridge between East and West, making it an ideal setting for studying culturally influenced variables (Marcus et al., 2016). Participants deeply value preserving their family's culinary heritage and see technology as an invaluable tool for learning and cooking. They are passionate about maintaining and passing down familial recipes, recognizing their personal and cultural significance.

Researchers note that HCI professionals can help make food practices more resilient and forward-looking while preserving cultural heritage by developing technology that respects cultural contexts (Paay et al., 2023). Additionally, they appreciate culinary diversity and customization, reflecting their curiosity about global cuisine. This harmonious blend of tradition, technology, diversity, and curiosity shapes their approach to cooking, resulting in a vibrant culinary landscape that honors the past while embracing the present. The evolving nature of young people's perspectives necessitates an openness to change and innovation, even if it may result in conflict with traditions. Previous research on generational differences has noted a shift toward more individualistic and self-enhancing values among younger generations compared to older ones (Marcus et al., 2016).

Early adulthood, a period characterized by the transition to independent living, often brings shifts in food practices. Given young adults' frequent use of digital devices, technology-based interventions hold potential to strengthen their connection with food (Kerr et al., 2016). Future research endeavors should prioritize the integration of young

individuals into existing systems, leveraging technological advancements and available opportunities to facilitate intergenerational knowledge exchange. Such efforts must strive to concurrently uphold the values of conservation and diversity, ensuring the preservation of cultural heritage while embracing the dynamism of young adults. Recognizing food practices as complex, socially and emotionally charged events, HFI should promote hands-on learning, fostering common-sense food knowledge over automation (Dolejšová, et al., 2020b). Participants exhibit a cautious optimism toward kitchen innovation, foreseeing the integration of IoT products to digitize objects and facilitate shared meals using virtual glasses. Despite technological strides, there's a unanimous appreciation for the human touch in cooking, with concerns voiced about the potential drawbacks of fully robotic systems. There is a collective desire for accessible communication channels, with a preference for social media as a means to discover and share recipes. Participants emphasize the practicality and ease of use of technology in the kitchen, envisioning streamlined devices and apps that simplify recipe access. The challenge lies in striking a delicate balance between technological efficiency and preserving cultural richness and human elements in the cooking process. In an ideal scenario, there should be support for the cautious integration of IoT, accessible digital communication channels, practical kitchen tools, efficient recipe access, and the preservation of cultural richness through technological advancements, ensuring a harmonious coexistence.

The importance of food extends far beyond its consumption, encompassing cultivation methods, cooking techniques, flavor combinations, presentation aesthetics, and shared dining experiences. This symbolic significance highlights that food carries meaning beyond its basic nutritional value (al-Warrāq, 2007). This study is the first to provide an exemplar for incorporating the Value-Sensitive Design approach as an

analytical lens into Human-Food Interaction research. We hope that our methodological approach in understanding young adults' food practices would serve an inspiration for designers, researchers and practitioners for their future work in creating new paths on this topic.



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