GENERATION Z'S PERSPECTIVE ON RESTAURANT DIGITAL TECHNOLOGIES

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Abstract

Purpose - This study investigates Generation Z's perceptions, expectations, and concerns regarding the use of digital technologies in restaurants. It focuses on how these technologies influence their experiences before arriving at the restaurant, during their visit, and after leaving.
Methodology - A qualitative approach was employed using collective brainwriting facilitated by the digital whiteboard platform Mural. A total of 27 hospitality students, representing informed members of Generation Z, participated in the study and provided insights into the advantages and challenges of digital tools in restaurant settings.
Findings - The findings show that Generation Z values digital technologies for their speed, convenience, personalization, and eco-friendly aspects. Participants also emphasize the importance of maintaining human interaction to ensure a warm and engaging dining experience. They express wishes for greater integration and functionality of digital systems while noting concerns such as technical issues, privacy, robotization, and potential high costs.
Contributions - The study highlights the need for restaurants to balance technological solutions with personal service to meet the expectations of Generation Z and enhance overall customer satisfaction. It provides practical insights for the hospitality industry on optimizing digital tools while preserving human-centered experiences.
Keywords digital technology, restaurants, Generation Z, customer experience, brainwriting

INTRODUCTION

The tourism and hospitality industry is currently shaped by two key drivers of development: the green transition and digital transformation. In a context of rapid and disruptive changes, digitalization is redefining business processes across all segments of the industry. One of its most significant applications lies in the collection, processing, and transformation of data into actionable information and knowledge, which serve as the basis for strategic decision-making. Digital solutions allow real-time data gathering and analysis through software platforms, enabling personalized guest experiences, enhanced safety, and more efficient operations. These tools are essential for customer relationship management (CRM) and business intelligence, where information and knowledge management become critical resources for generating competitive advantage through speed, innovation, and profitability (Ashqar et al., 2023; Bharadiya, 2023).

The COVID-19 pandemic accelerated digital adoption, as digital tools substituted for physical contact. In the post-pandemic era, their role has expanded even further, becoming a cornerstone of the "new tourism." Without a digital presence, a business or destination is effectively invisible in the market. Emerging technologies such as the Internet of Things (IoT), blockchain, metaverse, big data, artificial intelligence (AI), augmented and virtual reality (AR/VR), and machine learning are increasingly integrated into all areas of tourism and hospitality (Ratna et al., 2023; Limna, 2023; Onder & Gunter, 2022; Tahendoost, 2023). Businesses are being transformed into "smart enterprises," leveraging data-driven decision-making and interconnected networks as a foundation for competitiveness (Diwan, 2025; Weng & Zang, 2023). Importantly, digitalization enhances guest experiences, operational efficiency, and sustainability (Nadkarni et al., 2020).

Despite the benefits of digital transformation, human interaction remains a cornerstone of hospitality. Personal contact, hospitality, and the opportunity to explore local culture, traditions, and authenticity are key motivators for tourists. Therefore, technology should complement rather than replace human connection. The critical research challenge is to examine how the integration of digital tools in restaurants—such as mobile ordering, digital menus, free Wi-Fi, and contactless payments—shapes the perceptions, behaviors, and experiences of Generation Z at different stages of the customer journey: before arrival, during their stay, and after leaving the venue (Ye et al., 2020). Prior research confirms the positive relationship between smart technology and the tourism experience, particularly in terms of informativeness and interactivity (Azis et al., 2020; Sustacha et al., 2023). However, digitalization must not become an end in itself; investments in technology must lead to measurable returns in financial performance and customer satisfaction.

Generation Z, generally defined as those born between 1997 and 2012 (Turner, 2015), represents the first truly digital-native cohort. Studies confirm that they are the most frequent users of digital tools (Dolot, 2018), relying heavily on social media for information gathering compared to other generations (Karmagatry et al., 2019; Dimock, 2019). Moreover, they not only consume online content but also actively create and curate it (Hardey, 2011). Digitalization strongly influences their purchasing behavior (Ruiz-Vinals et al., 2024), as Generation Z values flexible payment methods, cleanliness, sustainability, and technologically advanced services (Morrone et al., 2024). Their purchasing choices are also shaped by emotional connections to social media influencers, who increasingly act as brand ambassadors (Ates et al., 2024; Costa et al., 2024).

Within the restaurant sector, Generation Z demonstrates clear preferences for technology-driven innovation, personalized offers, unique gastronomic experiences, sustainability, and value for money. They are particularly oriented toward innovative restaurant practices, including product innovation, technology-based service innovation, experiential innovation, promotional innovation, and brand innovation (Wiastuti & Rashid, 2024). At the same time, research highlights potential risks associated with digital dependence, including concerns over privacy, reduced human interaction, and excessive reliance on technology.

Key examples of digital transformation in restaurant operations include the use of social media advertising, online ordering and delivery systems, digital table reservation platforms, QR code menus, self-ordering displays, service robots, value chain optimization software, and CRM-based loyalty programs (Aras, 2023; Fu & Ren, 2023; Ma et al., 2023). These solutions aim to increase efficiency, improve customer experience, and optimize financial outcomes. Yet, the ultimate challenge remains: finding the right balance between technological innovation and the human touch that defines hospitality.

The main objective of this study is to explore the perceptions, attitudes, and expectations of Generation Z regarding the use of digital technologies in restaurants. Specifically, the study aims to: (a) Identify positive perceptions (likes) of digital tools in restaurants, with a focus on convenience, efficiency, personalization, and sustainability, (b) Examine expectations (wishes) of Generation Z regarding the future development of digital solutions in restaurants, particularly in terms of service quality, personalization, and privacy protection, (c) Analyze negative perceptions (dislikes) related to the use of technology, including technical failures, loss of human interaction, privacy concerns, and the social or economic consequences of digitalization, (d) Explore concerns (worries) associated with the long-term impact of digital transformation in restaurants, such as robotization, high implementation costs, exclusion of certain customer groups, and the erosion of tradition and dining culture. By addressing these objectives, the study seeks to provide valuable insights into how restaurant managers and policymakers can integrate digital technologies in a way that balances innovation with human-centered hospitality.

1. THEORETICAL BACKGROUND AND RESEARCH QUESTION DEVELOPMENT

1.1. Generation Z Perceptions of Digital Technologies in Restaurants

Members of Generation Z exhibit distinct perceptions regarding the use of digital technologies in restaurants, shaped by their upbringing in a digitally saturated environment. This generation has been broadly described as "digital natives," having grown up with the pervasive presence of digital tools and the internet since childhood, significantly influencing their expectations and preferences in dining experiences.

Research indicates that Generation Z expects seamless digital interactions in restaurants, including features such as digital menus, contactless ordering, and mobile payment options. For example, Labus and Lukić emphasize that younger generations, particularly Gen Z, show a pronounced interest in the digitalization of services, preferring environments that integrate these technologies seamlessly into their everyday interactions. This preference stems from their innate familiarity with technology, leading them to anticipate digital solutions in various aspects of their dining experiences (Labus and Lukić, 2023), thereby enhancing customer satisfaction and operational efficiency for restaurants (Morokhovych and Morokhovych, 2023).

Moreover, the importance of digital ordering systems, especially in the wake of the COVID-19 pandemic, cannot be overstated. Digital menus and contactless ordering have become crucial strategies for minimizing risk and enhancing safety during dining, as highlighted by Esposito et al. (Esposito et al., 2022). Their research explores how these innovations helped reduce customers' risk perceptions, establishing a norm among Gen Z diners where they expect restaurants to implement advanced digital technologies not only for convenience but also for safety (Gupta and Pande, 2023; Alt, 2021).

Additionally, Generation Z demonstrates a keen awareness of ethical consumption practices and a preference for brands that align with their values. Ding and Jiang discuss how this generation engages with digital communication technologies to make informed choices about sustainability and ethical dining (Ding and Jiang, 2023). Their digital literacy facilitates a nuanced understanding of restaurants' practices regarding food waste and sustainability, shaping their dining preferences and intentions to return to establishments that resonate with their ethical beliefs (Ding et al., 2022; Rahim et al., 2023).

Furthermore, while there is enthusiasm for digital innovation, Generation Z also evaluates these technologies critically. For instance, Helal's study indicates that ease of use plays a critical role in how this demographic perceives the value of digital technologies in restaurants (Helal, 2023). If digital menus and systems are perceived as cumbersome or inefficient, it can adversely affect their overall dining experience, aligning with broader insights suggesting that the successful integration of digital technologies hinges on their alignment with user expectations (Tan et al., 2023).

In summary, members of Generation Z perceive digital technologies in restaurants as essential features that enhance both efficiency and safety while also reflecting their values around ethical consumption. Their established expectations for streamlined, intuitive digital interactions drive the restaurant industry's need for constant innovation and responsiveness to customer feedback, as failing to meet these preferences could jeopardize customer satisfaction and loyalty.

1.2. Perceptions of Digital Technology in Restaurants: Positive and Negative Aspects

Generation Z's perceptions of digital technologies in restaurants are multifaceted, encompassing both positive and negative aspects. Their unique upbringing in a digital age significantly influences these perceptions.

On the positive side, Generation Z appreciates the efficiency and convenience that digital technologies bring to their dining experiences. For instance, Gupta and Pande highlight that when consumers perceive service robots as efficient and mistake-free, their attitudes towards robotic services in restaurants improve significantly, driving satisfaction and the likelihood of returning Gupta & Pande (2023). Similarly, Helal's research shows that digital technologies, such as contactless payment methods and digital menus, have become integral to the dining experience, enhancing perceived value and well-being among fast-food patrons (Helal, 2023). Digital menus, in particular, allow for innovative presentation and quick updates to food options, which can enhance consumers' perceptions of food quality and service efficiency (Lin et al., 2023).

Moreover, digital technologies have been instrumental in addressing health and safety concerns, especially during the COVID-19 pandemic. Esposito et al. discuss how digital innovations have helped restaurants reduce customers' risk perceptions by creating safer environments through contactless orders and enhanced cleanliness protocols (Esposito et al., 2022). This capability aligns with Generation Z's expectations for hygiene and safety; they favor establishments that demonstrate a commitment to health through technology (Esposito et al., 2022; Romero and Lado, 2021).

However, the perceptions of digital technologies are not entirely positive. A notable concern revolves around technological overload and user interface issues. According to Rahim et al., there are instances where Gen Z consumers feel overwhelmed or frustrated by complex digital interactions, which detracts from their overall experience at restaurants (Rahim et al., 2023). Furthermore, the study by Lin et al. suggests that while digital menus can enhance dining experiences, their design must be user-friendly; poorly designed menus can lead to negative perceptions and dissatisfaction (Lin et al., 2023).

Another critical aspect pertains to the fear of losing the human touch in customer service. A study by Vancia et al. addresses the emotional dimensions linked with digital interactions, noting that while service robots and digital technologies can enhance efficiency, they may also evoke feelings of disconnection from traditional hospitality experiences that emphasize personal interactions (Pricope Vancia et al., 2023). This sentiment aligns with Helal's findings that there is a need for balancing digital and physical service elements to ensure satisfactory customer experiences (Helal, 2023).

In summary, while Generation Z positively interprets the efficiency, safety, and innovative aspects of digital technologies in restaurants, they remain wary of potential technical difficulties and the erosion of personal customer service. This generation's intrinsic comfort with digital tools necessitates that restaurant operators find a delicate balance between technological integration and the preservation of human interaction to fully meet the expectations of Gen Z diners.

1.3. Generation Z Expectations and Concerns about Restaurant Digitalization

One of Generation Z's primary wishes is for a highly interactive and visually engaging digital experience. This is evident from the research by Lin et al., which highlighted the importance of innovative digital menu designs that move beyond traditional formats, incorporating multimedia presentations to enhance perceived quality and engagement (Lin et al., 2023). Generation Z seeks variety and personalization in their dining experience, desiring that digital tool allow them to explore diverse menu options creatively (Lin et al., 2023). Furthermore, findings from Rahim et al. indicate that Generation Z appreciates the incorporation of digital technologies that offer personalized recommendations based on their previous dining experiences, aligning with their propensity for individualization (Rahim et al., 2023).

In terms of expectations, Generation Z anticipates seamless integration of technology that enhances the efficiency of the dining process without compromising personal interactions. These demographic values technologies such as mobile ordering, contactless payments, and digital loyalty programs, expecting them to streamline their restaurant experience. Vo-Thanh et al. emphasize that digitalization should not only enhance convenience but also uphold service quality and customer satisfaction (Vo-Thanh et al., 2022). Additionally, Generation Z's comfort with digital platforms translates into expectations for real-time communication and feedback within the restaurant ecosystem, valuing transparency and immediate responses to queries or issues they encounter; however, the cited work (Nazhar, 2020) does not sufficiently support this claim and thus will be omitted.

Conversely, Generation Z harbors specific concerns regarding the implications of increased digitalization in restaurants. A significant issue is the fear of losing the personal touch that characterizes traditional dining experiences. Despite a favorable disposition toward robotic automation in restaurants, this generation also expresses a desire to maintain meaningful interpersonal interactions, particularly with wait staff, to preserve the essence of hospitality (Pande and Gupta, 2023). The balance between technological efficiency and personal service remains a critical concern.

Furthermore, there is anxiety around the social implications of a digital-first approach. Ding and Jiang suggest that while Generation Z utilizes digital communications to advocate for responsible food consumption practices, they also recognize the risk of desensitization to traditional dining experiences and ethical service standards as automation increases (Ding and Jiang, 2023). Additionally, concerns regarding data privacy and security loom large, as younger consumers are increasingly aware of the data-driven nature of digital interactions and the potential for misuse of their information within digital platforms. Although Gupta and Pande discuss post-experience behavior regarding robotic service restaurants, it does not directly address data privacy and will thus be omitted (Gupta and Pande, 2023).

Generation Z's wishes and expectations around the digitalization of restaurant experiences hinge on innovation, personalization, and efficiency, while their concerns highlight the need for maintaining human connections and ensuring data security. As restaurants advance in their digital transformation, understanding and addressing these factors will be essential for successfully attracting and retaining this influential demographic.

1.4. Conceptual framework

The conceptual framework for this study integrates theories of digital transformation, customer experience, and generational behavior in hospitality. Digital transformation emphasizes the role of technology in reshaping restaurant operations, improving efficiency, and enhancing personalization through tools such as online reservations, mobile payments, and self-order kiosks. Customer experience theory highlights that while digital tools can provide convenience, speed, and interactivity, the hospitality industry continues to rely heavily on human contact, emotional intelligence, and authentic service encounters. Generational behavior theory, particularly in relation to Generation Z, underscores the significance of digital nativeness, constant connectivity, and demand for innovation, while also recognizing the challenges related to privacy, overreliance on technology, and social interaction.

By combining these perspectives, the framework provides a multidimensional approach to understanding how Generation Z perceives, evaluates, and interacts with digital technologies in restaurants. It emphasizes the duality of opportunities and risks: the potential for improved efficiency and personalization on one side, and concerns about loss of human touch, data privacy, and social exclusion on the other. This framework therefore guides the analysis of student insights collected through qualitative research and serves as the basis for answering the following research questions:

1. How does Generation Z perceive the use of digital technologies in restaurants, and which aspects do they value the most?
2. What expectations and concerns does Generation Z express regarding the further digitalization of restaurant experiences?
3. How do members of Generation Z balance the advantages of digital tools with their need for human interaction in restaurants?

2. METHODOLOGY

As the research questions focus on how Generation Z perceives the use of digital technologies in restaurants, what expectations and concerns they express, and how they balance digital tools with the need for human interaction, the authors have opted for a qualitative research approach, as recommended by Yadav (2022). Following Saunders et al. (2009), this study adopts an exploratory framework with an interpretive strategy. The main objective is to gain a deeper understanding of how young consumers, particularly Generation Z, experience and reflect on the ongoing digitalization of the restaurant sector. This approach allows the identification of both opportunities and risks that digital transformation brings to hospitality businesses in the post-pandemic context.

In this study, data collection was conducted by means of a brainstorming session using the specialised online platform Mural. Mural is a collaborative digital workspace specifically designed to promote brainstorming and creative problem-solving processes (He et al., 2024; Rašan et al., 2024). The platform includes features such as sticky notes, connection tools, chat functions, timers, and voting capabilities, all of which foster an interactive environment that maximises engagement and encourages the generation of innovative ideas.

Figure 1 shows that the chosen Swot analysis template was a visual representation of four categories — I Like, I Wish, I Dislike, and I'm Worried — used to capture Generation Z students' perceptions, expectations, and concerns regarding the use of digital technologies in restaurants. This structure enabled a clear organisation of ideas and facilitated the identification of recurring themes across different dimensions of the restaurant experience.

Figure 1: **Swot analysis template**

Source: Created by authors

The brainstorming session was conducted in March 2025 with a group of 27 third-year students enrolled in the Food and Beverage Management course as part of the Hospitality Management programme at the Faculty of Tourism and Hospitality Management in Opatija. These students were selected as participants due to their academic background and direct engagement with hospitality topics, particularly food and beverage operations and management. As future professionals in the sector, they represent an informed cohort capable of providing relevant insights into how digital technologies shape restaurant experiences.

The participants took part in a structured brainstorming process designed to capture their likes, wishes, dislikes, and worries concerning digitalization in restaurants. This structure enabled the systematic categorisation of ideas and reflections while minimising the potential influence of dominant voices, ensuring that all perspectives were equally represented.

The use of the Mural platform facilitated efficient data collection, allowing students to contribute ideas synchronously in a visually structured environment. Their inputs were later grouped into thematic categories such as ordering and reservations, payments, customer experience, operations, innovation, privacy, and sustainability. This resulted in a comprehensive dataset that provides valuable insights into Generation Z's attitudes towards restaurant digitalization and serves as the foundation for subsequent analysis.

3. RESULTS

For the purpose of this study, the findings collected from 27 hospitality students were structured and presented according to the proposed research questions. The participants' perceptions, expectations, and concerns regarding the use of digital technologies in restaurants were organised using four situational matrices: I Like, I Wish, I Dislike, and I'm Worried. The analysis identified key themes that are fundamental for understanding how Generation Z experiences digital tools in the hospitality sector. These main themes are illustrated in Figure 2, which presents the findings from the collaborative brainwriting process.

Figure 2: **Brainwriting results**
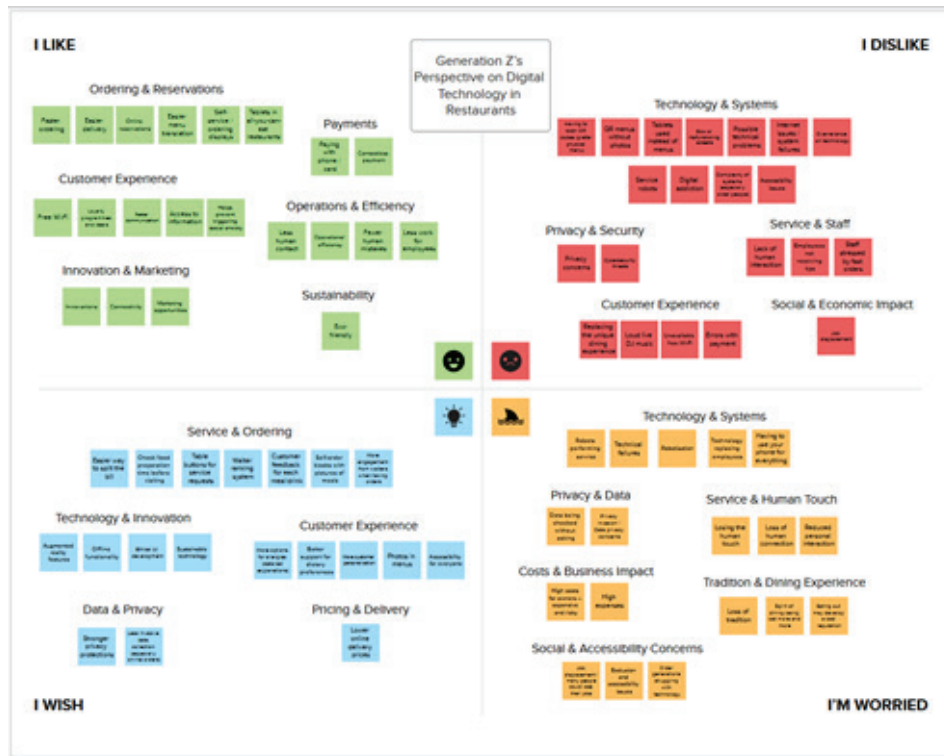
Source: Created by authors using online template: www.mural.co/templates/

The main themes, perceptions, expectations, and concerns of Generation Z regarding digital technologies in restaurants are summarised in the table below, where the frequency of notes for each category has been analysed to highlight the most prominent insights.

Table 1: **Brainwriting results frequency**

Quadrant	Theme	Key Points	Frequency / Notes
🟩 I LIKE	Ordering & Reservations	Faster ordering, easier delivery, online reservations, menu translation, self-service displays, tablets in all-you-can-eat restaurants	6
	Payments	Mobile / card payments, contactless payment	2
	Customer Experience	Free Wi-Fi, loyalty programmes, faster communication, access to information, reduces social anxiety	5
	Operations & Efficiency	Less human contact, operational efficiency, fewer mistakes, less work for employees	4
	Innovation & Marketing	Innovations, connectivity, marketing opportunities	3
	Sustainability	Eco-friendly	1
🟦 I WISH	Service & Ordering	Easier bill splitting, check food prep time, table buttons, waiter ranking, customer feedback, self-order kiosks with pictures, more engagement from waiters	7
	Technology & Innovation	Augmented reality, offline functionality, ethical AI, sustainable technology	4
	Customer Experience	More options for allergies, dietary support, personalization, photos in menus, accessibility	5
	Data & Privacy	Stronger privacy protection, less invasive data collection	2
	Pricing & Delivery	Lower online delivery prices	1

Quadrant	Theme	Key Points	Frequency / Notes
🟥 I DISLIKE	Technology & Systems	QR codes without photos, tablets replacing menus, slow / malfunctioning screens, technical issues, system complexity	6
	Privacy & Security	Privacy concerns, cybersecurity threats	2
	Service & Staff	Lack of human interaction, no tips for employees, staff stressed by fast orders	3
	Customer Experience	Replacing unique dining experience, loud DJ music, unavailable Wi-Fi, payment errors	4
	Social & Economic Impact	Job displacement	1
🟧 I'M WORRIED	Technology & Systems	Robots performing service, technical failures, robotisation, replacing employees, everything via phone	5
	Privacy & Data	Data checked without asking, privacy invasion	2
	Service & Human Touch	Losing human touch, reduced personal interaction	3
	Costs & Business Impact	High costs for owners, expensive and risky	2
	Tradition & Dining Experience	Loss of tradition, spirit of dining being lost, negative restaurant reputation	3
	Social & Accessibility Concerns	Job loss, exclusion, older generations struggling with technology	3

Source: Created by authors

As shown in Figure 2 and Table 1, participants highlighted several critical areas regarding digital technologies in restaurants. Each of these key findings is explained below.

Theme 1: Positive Perceptions of Digital Technologies
Participants noted that Generation Z appreciates digital solutions for the convenience, speed, and personalization they offer. Features such as online ordering, digital menus, mobile payments, free Wi-Fi, and booking platforms improve the overall dining experience and provide more flexibility. Students emphasised the benefits of digital tools:
> *"Digital menus and app-based ordering allow faster service and more personalized choices."*
> *"Free Wi-Fi and mobile payments enhance convenience and make the restaurant experience smoother."*

Digital technologies were also recognised for supporting sustainability through reduced paper usage and efficient operational processes. Overall, the use of technology was associated with improved efficiency, modernity, and a more engaging dining experience.

Theme 2: Expectations and Wishes
Participants expressed that Generation Z expects restaurants to further integrate digital technologies in ways that enhance the guest experience while maintaining usability and accessibility. Students suggested:
> *"Restaurants should implement more interactive features and personalized recommendations through apps."*
> *"Digital tools should provide seamless information before, during, and after the visit."*

In addition, students highlighted the importance of combining digital solutions with human interaction to avoid losing the personal touch and hospitality that remain crucial for satisfaction.

Theme 3: Concerns and Dislikes
Despite the many advantages, participants raised concerns about over-reliance on technology, technical failures, and the loss of personal contact with staff. Examples include:
> *"Too much automation can make the experience feel impersonal and robotic."*
> *"Technical issues with apps or digital menus may disrupt the dining experience."*

Participants also noted potential economic implications, such as the high cost of implementing advanced digital systems and their effect on pricing or small businesses.

Theme 4: Balancing Digital Tools and Human Interaction

Finally, students highlighted the importance of finding a balance between technological efficiency and human engagement. Generation Z values speed and personalization but also expects genuine hospitality and cultural connection. Participants commented:

"Digital tools should complement, not replace, human interaction."
"Staff should be available to provide guidance, recommendations, and a personal touch where needed."

This balance was identified as a key factor in shaping positive experiences and ensuring that digitalization enhances rather than diminishes the quality of restaurant services.

The results indicate that Generation Z appreciates the use of digital tools in restaurants for their speed, convenience, personalization, and eco-friendly aspects, while simultaneously emphasizing the importance of maintaining human interaction. Participants expressed a desire for enhanced personalization, improved integration, and greater functionality of digital systems, alongside the preservation of privacy and accessibility. They also observed technical issues, diminished human contact, and potential negative economic consequences. Key concerns highlighted by the participants include robotization, privacy risks, the loss of human touch, and the high costs associated with implementing new technologies.

CONSLUSION

This study provides a comprehensive analysis of how Generation Z perceives and interacts with digital technologies in restaurants. The findings indicate that digital tools are valued for their speed, convenience, personalization, and eco-friendly aspects, yet Generation Z emphasizes the importance of balancing technology with human interaction. While students express a desire for greater personalization, better integration, and functionality of digital systems, they also raise concerns about privacy, technical issues, reduced human contact, and potential economic impacts. Key concerns include robotization, loss of human touch, and high implementation costs.

From a practical perspective, these insights suggest that restaurant operators and hospitality stakeholders should carefully integrate digital solutions to enhance guest experience without compromising personal interaction and human hospitality. Implementing technologies in a way that aligns with Generation Z's preferences can improve operational efficiency, customer satisfaction, and loyalty, while addressing concerns related to privacy, accessibility, and cost.

This study contributes to the literature on hospitality management and digitalization by offering a structured understanding of the expectations, concerns, and preferences of Generation Z. The use of brainwriting among hospitality students proved effective for gathering nuanced insights and demonstrates the potential of engaging emerging professionals in research on digital hospitality solutions.

Future research could expand the participant pool to include other age groups, restaurant staff, and industry stakeholders, as well as explore longitudinal effects of digitalization on guest experience, loyalty, and operational performance. Additionally, investigating emerging technologies, such as AI-driven personalization or augmented reality experiences, could further enhance understanding of how digital solutions shape the restaurant experience for Generation Z.

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