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# How employees of Korean franchise restaurants perceive kiosk accessibility for the elderly

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**Keywords:** Kiosk, Digital accessibility, Digital inclusion for elderly, Restaurant industry in South Korea, Social representation theory

## Abstract

Digital transformation encompasses fundamental changes in strategy, operations, and culture through the adoption of digital technologies. The franchised restaurant industry in South Korea is undergoing such a transformation, prominently using kiosks for ordering and payment processes. While kiosks enhance convenience and efficiency, they pose challenges for the elderly, who face digital exclusion. South Korea's aging society heightens this issue, as digital exclusion can lead to broader social exclusion. Addressing kiosk accessibility in the private sector, where adoption is rising, necessitates understanding the perceptions of those managing these services. This study adopts Social Representation Theory (SRT) to explore restaurant industry employees' understanding of kiosk accessibility for the elderly. Through semi-structured interviews and core-periphery analysis, the findings reveal both business opportunities and organizational challenges in improving kiosk accessibility for the elderly. This study offers implications for integrating digital inclusion into the digital transformation of private industries.

## 1. INTRODUCTION AND RESEARCH BACKGROUND

Digital transformation (DT) is defined as an integrated change that encompasses not only technological advancements but also customer experience and operational modifications (Verina & Titko, 2019). Traditionally, the restaurant industry has been a service-oriented sector that relies heavily on face-to-face interactions, being customer-focused and human-centered rather than facility-centered (Kang et al., 2021). However, in response to evolving consumer lifestyles and needs, the Korean restaurant industry has expanded its non-face-to-face services and embraced digital transformation across its operations. This transformation entails not only the adoption of new technologies but also significant changes in organizational and workforce operations, as well as the overall customer experience, as traditional services are increasingly replaced by digital alternatives.

Kiosks serve as the primary interface between customers and the service point. A kiosk is a touchscreen system designed for information delivery and unattended payments, acting as a commercially available technology-based self-service system that replaces traditional human labor with technology (Dabholkar & Bagozzi, 2002). In South Korea, the adoption rate of kiosks in private industries such as restaurants is growing significantly, driven by trends in contactless consumption and rising labor costs. As of 2021, the deployment of kiosks in the private sector in Korea has increased substantially, surpassing threefold from 2019, with a 4.1-fold rise specifically in the

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food service and convenience sectors (Korea Consumer Agency, 2022).

Kiosks have provided customers with the convenience of unattended ordering, leading to improvements in operational efficiencies and performance within the restaurant industry, particularly in terms of labor costs. However, as kiosk ordering and payment replace traditional face to face service, customers who are less digitally literate are experiencing inconvenience or exclusion from digital technology. According to the OECD's Ministerial report on Inclusive Growth, digital transformation cannot be positive and inclusive unless all individuals are able to participate in and benefit from it (OECD, 2018). Therefore, ensuring digital accessibility for all those who need it is an issue that must be considered alongside technological advancements.

However, elderly people may encounter digital inclusion amidst the accelerated process of digital transformation in their daily lives. Prior research has shown that cognitive losses experienced by the elderly with relatively low levels of digital literacy and pressure in social situations can lead to negative experiences when using kiosks (Nam et al., 2023). According to this study, the digital exclusion experienced when encountering kiosks can result in elderly people being excluded from services that could alleviate their daily economic and social challenges. Consequently, there arises a necessity to deliberate on enhancing kiosk accessibility for the elderly, given the major role these devices play in activities such as ordering and payments.

In response to these issues, South Korea has established guidelines for kiosk accessibility standards in the public sector to bridge the digital divide. However, approaches that emphasize social responsibility or obligation for private firms to make kiosks accessible for the elderly do not go far enough in addressing the problem. Additionally, the inability to use technology meaningfully is not necessarily due to technical or psychological factors, and individuals' participation in ICT is a combination of social, psychological, economic,

and pragmatic reasons (Selwyn, 2004).

In this context, previous research on kiosk accessibility for the elderly has been conducted from a user perspective, with suggestions for improvements at the device or design aspects (Chung et al., 2010). There has also been more research into kiosk accessibility in public services than in the private sector (Maguire, 1999). However, there has been little research on how business practitioners perceive and understand the issue in the private sector, where these solutions need to be applied.

Ensuring kiosk accessibility for elderly individuals entails more than just technological or device-related changes; it requires comprehensive consideration of corporate profitability and organizational and social impact. While kiosk accessibility for the elderly has been emphasized primarily from a public sector or social value perspective, it is crucial to recognize that businesses are the ones introducing and operating kiosks in the industry. Without their active participation, achieving sustainable development is not realistically possible (Scheyvens et al., 2016). Therefore, this research addresses the necessity of understanding how practitioners in the private sector perceive the issue of kiosk accessibility for the elderly.

In particular, employees are key stakeholders in the development and operation of kiosk services, directly encountering user reactions in the field and participating in decisions for service improvement. Therefore, this study aims to explore the perceptions and attitudes of employees of franchised restaurants in South Korea towards kiosk accessibility for the elderly. To this end, the study applied social representation theory, which is well-suited for understanding a social group's shared perceptions of a social object or phenomenon. Content analysis and center-periphery analysis were conducted based on semi-structured interviews. Furthermore, this study aims to contribute to exploring directions for improving digital accessibility for elderly in the private sector.

## 2. LITERATURE REVIEW AND RESEARCH QUESTION

### 2.1. Digital transformation in the restaurant industry

Digital transformation (DT) is high on the agenda for many organizations as they seek to innovate in a changing industry landscape. Digital transformation refers to a set of strategic innovations and transformations that adopt digital technologies to reinvent value in different organizations and at different levels (Gong & Ribiere, 2021). As such, digital transformation is a fundamental change that entails not only reimagining products and services as digitally enabled assets but also creating an ecosystem that enables them (Govindarajan & Immelt, 2021). While similar terms include digitization, which is the conversion of analog information to digital, and digitalization, which is defined as the use of digitized information to create and harvest value in new ways (Gobble, 2018), digital transformation is defined more integrally than technological change. Accordingly, digital transformation is not limited to the implementation of IT solutions, but must be considered in a broader context of organizational change, cultural transformation, and a shift to a customer-centric approach (Verina & Titko, 2019).

In this context, COVID-19 has accelerated the digital transformation of many industries. While digital transformation presents both potential opportunities and challenges, COVID-19 has accelerated digital transformation in many industries, giving them the imperative to innovate through digitalization or be left behind (Hai et al., 2021). In particular, the restaurant industry has had to experience significant revenue losses, and in response to this crisis, low-contact services have become commonplace. Investments have been made in the digital resources of companies to devise new processes for low-contact interactions with customers, from ordering to pick-up or delivery (Alt, 2021). As part of this, kiosks have been adopted by the restaurant industry as an

alternative to the ordering process, as they can reduce interpersonal contact, lower labor costs, and streamline the ordering process. In the process, kiosks have not only been an effective tool for dealing with customers but have also played an important role in customer return visits and retention (Kim et al., 2023). This has led restaurant companies to consider developing and implementing kiosks to enhance the customer experience with the technology.

With this digital transformation, interactions with customers are also becoming digitalized, and there is much discussion about how digital technologies can be leveraged to enhance service delivery. Digital services are not only undergoing a physical transformation but are also evolving with the customer experience, which is increasingly personalized, interactive, and human-centric (Kim, 2021). This stems from the idea that the digital transformation of organizations can fundamentally change society as a whole. High on the agenda in these discussions is the question of whether digital technologies can actually replace humans and make human efforts can be unnecessary across society (Alavi & Habel, 2021).

Prior research has shown that the impact of digital transformation is primarily assessed at the organizational level. While organizations expect to improve operational efficiency or reduce costs through digital transformation, the process increases operating costs due to fixed investments in digital resources such as infrastructure (Guo & Xu, 2021). Therefore, digital transformation is not only about technology but also about organizational and strategic transformation, and the complexity of its benefits and costs can lead to uncertain organizational performance. In addition, the changes brought about by digital transformation can be met with resistance from multiple stakeholders, and addressing these challenges must be considered during the digital transformation process (Matt et al., 2015). This also relates to the challenges inherent in digital inclusion efforts, where companies are making digital accessibility more available to more members of society during

digital transformation.

## **2.2. Kiosk accessibility and digital inclusion for elderly people**

A enterprise is not only an independent and autonomous entity, but also evolves in an ecosystem of multiple relative stakeholder groups and ecosystems, forming communities and collaborating with them (Zhang & Zhang, 2005). According to Jung et al. (2018), empirical research shows that corporate sustainability activities contribute to a firm's financial performance, so considering sustainability is not just a cost, but a core business strategy that can increase profits and a firm's competitiveness. In particular, the role of private companies as development actors is becoming more important, and sustainability activities of private companies can be actively considered as a business activity of the company rather than an obligation. In a digital society, exclusion from digital technologies can lead to exclusion from social participation and opportunities. Therefore, from a corporate sustainability perspective, efforts to ensure that the digital technologies adopted by a company do not exclude certain groups and ensure equal access to as many customers as possible need to be considered in the society and ecosystem of which it is a part.

From a business perspective, self-service technology (SST) in the restaurant industry is not only aimed at improving business performance by reducing labor costs and increasing service efficiency, but also at facilitating customer interaction by enabling managers to deliver personalized SST experiences that better meet consumer needs (Wei et al., 2017). Optimizing business performance and delivering a better customer experience through the effective operation of SSTs presents a significant challenge for companies (Kim et al., 2023).

However, the kiosk transformation of face-to-face ordering services is part of a broader digital transformation. Since digital transformation impacts society as a whole and not just specific

organizations, it is crucial to ensure that digital technologies are inclusive and do not exclude certain social groups, such as the elderly. In theory, digital accessibility primarily focuses on designing systems to optimize access, while inclusion involves reducing and overcoming barriers to provide equal access and opportunities for everyone (Taylor & Mote, 2021). Therefore, digital accessibility can be seen as a transitional step toward achieving digital inclusion (Ha et al., 2024).

It is one thing to choose not to use digital technologies, but it is another to be excluded from digital services due to a lack of access to technology (Helsper, 2009). The elderly are a particularly vulnerable group to digital exclusion. As the world is aging rapidly and the elderly constitute the largest group of uninformed people, there are concerns about their social exclusion during digital transformation (Gil, 2019). While the rapid proliferation of kiosks in the private industry is a relatively recent trend, studies have explored their use in public organizations, banks, healthcare institutions, and various other sectors.

According to Holgersson and Sã (2019), to reduce digital exclusion and increase digital inclusion of the elderly in the digital transformation of public services, it is essential to consider the physical limitations of the elderly, reduce their fears of using digital technologies, and demonstrate the benefits of these technologies to them. Also, Maguire (1999) aimed to identify user reactions to kiosks by analyzing prototype versions at different developmental stages. Notably, older users have been categorized as having less universal access to new kiosk technology, prompting studies to explore this characteristic. Gao and Sun (2015) investigated the usability issues of touch screens for both older and younger individuals, emphasizing the significance of implementing kiosk interfaces tailored to the characteristics of older users. This approach ensures their access to services, a crucial factor for enhancing the quality of life for elderly people.

In addition, studies have delved into the factors influencing users' intention to adopt kiosk

technology and their usage behavior. (Na et al., 2021) identified that higher perceived value, social influence, performance expectancy, and hedonic motivation increase the intention to use kiosks among fast-food customers. In a recent investigation, (Nam et al., 2023) highlighted the exclusion of elderly people with relatively low levels of digital literacy from self-service technologies (SSTs) designed to replace human labor. The study revealed that perceived time pressure significantly predicted social anxiety and helplessness among older adults in kiosk interactions. Elderly people encounter challenges in utilizing kiosks, which can lead to psychological distress.

Research on digital accessibility and inclusion during digital transformation has been more prevalent in the public sector, focusing on the characteristics and reactions of users. However, everyday technologies such as kiosks are being more actively adopted by private industry. Ensuring digital accessibility often requires only minor modifications rather than the implementation of more sophisticated new technologies (Curran et al., 2007). Despite this, previous studies have shown that older adults still face a digital divide when it comes to kiosk accessibility. However, there is little research on digital accessibility and inclusion for the elderly at the level of employees in the industry, creating a need for studies to fill this gap. This calls for a study of the potential opportunities and challenges that digital transformation brings to companies, not only in terms of profitability, but also in terms of providing equal access to technology for customers facing digital transformation.

### **2.3. Social representation theory**

Social representation theory (SRT) can be applied to examine shared ideas and beliefs about social objects (Moscovici, 1961). Social representation theory explains that members of societies and groups form common knowledge about social objects by reconstructing shared knowledge (Moscovici, 1988). As such, individuals

are social beings based in communities, and social representation theory seeks to understand the collective knowledge of these members. Specifically, social representational structures consist of core and peripheral concepts that stem from a set of information or opinions about an object. When people think about an object, the different ideas that are presented are not all equal and are divided into a core and a periphery that are shared with others. It is through the central core that the other elements acquire concrete meaning, and the core functions to integrate and express the relationships that they hold with each other (Abric, 2001).

SRT suggests that different social groups may perceive the same object differently based on their different collective values and objectives, and thus SRT theory can also contribute to understanding the perspectives of work communities (Howarth et al., 2004). In this study, SRT was applied to understand what collective and shared understandings, perceptions and attitudes members have about the phenomenon of digital accessibility, which is emerging as an important new phenomenon in the context of digital transformation.

SRT has been applied in many recent studies from an industry perspective to understand stakeholders' shared knowledge about a social object, such as a new technology or phenomenon, or their perceptions and attitudes towards it. Na et al. (2023) presented the differences in the perceptions and attitudes of two groups of people, care service managers and care workers, towards care robots, a technology that has relatively low adoption rates. The study presented its findings in terms of enablers for technology adoption and inhibitors in terms of resistance to new technologies. SRT has also been used in emerging technology fields to reveal the perceptions of key stakeholders about the industrial and societal changes that technology will bring, as well as the inherent opportunities and challenges. Jang et al. (2021) applied SRT to understand the perceptions of managers in the financial industry to provide

successful services through a new technology called chatbots. In terms of the music industry, Park and Kim (2024) used SRT to explore artists' perceptions of the opportunities and challenges that a new technology called blockchain could bring to the music industry. Also, Park and Kim (2022) studied the shared perceptions of how people with disabilities want to represent their disabilities based on avatars in virtual world platforms to provide direction for barrier-free virtual world services.

Efforts to achieve digital inclusion through improved digital accessibility, such as the accessibility of kiosks for older adults addressed in this study, have been emphasized primarily in the public sector. However, as previous research has shown, private companies are actors of change across industries and social ecosystems. Therefore, exploring how employees who operate and manage kiosk development and services perceive accessibility for the elderly is important for addressing accessibility issues in the digital transformation process that will occur in more sectors in the future.

Franchise restaurant firms in South Korea, especially those targeting individuals in their 20s and 30s, are increasingly using kiosk devices to replace traditional in-person orders. However, there is a scarcity of studies that have delved into the perceptions of employees of Korean franchise restaurant firms regarding kiosk accessibility, despite the widespread commercialization and universality of this technology. Consequently, this study directs its attention to the digital alienation experienced by the elderly as a digitally disadvantaged group in the franchise restaurant industry. It aims to explore the perceptions of kiosk accessibility among employees, who play a pivotal role as the primary actors capable of directly enhancing it. Therefore, this study proposes the following research questions.

RQ. How employees of Korean franchised restaurants perceive kiosk accessibility for the elderly?

### **3. METHODOLOGICAL FRAMEWORK**

To understand the accessibility of elderly kiosks to employees in the franchise restaurant industry, core-periphery analysis of social representation theory was applied. First, we conducted face-to-face interviews with employees in the franchised restaurant industry who are stakeholders in the decision-making process of operating and managing kiosks and improving accessibility. The interviews were transcribed and a content analysis was conducted based on the interview data. The extracted topics were structured based on core-periphery analysis (Borgatti & Everett, 2000), reflecting employees' understanding and perceptions of kiosk accessibility and digital inclusion for elderly. Furthermore, the perceptual map of the core-periphery structure was represented as a maximum tree to identify the relationships and similarities between the topics (Flament, 1989).

#### **3.1. Semi-structured interviews**

The study conducted semi-structured face-to-face interviews with 12 employees in the franchise restaurant industry. For the interviews, researchers first contacted the ESG management team of a franchise restaurant headquartered in South Korea. Although there are several franchised restaurants in Korea, many of them are global chains headquartered overseas. However, for this study, it was deemed appropriate to interview stakeholders who are directly involved in identifying and reflecting on the issues that arise in the industry and making decisions to improve it. In addition, it was important that the interviews were representative of the Korean industry, so franchises based in Korea were prioritized.

These franchised restaurant brands were ideal interviewees for this study because of their high adoption rates of kiosks, making ordering through kiosks commonplace, and their work with governments and municipalities to provide digital literacy training and device development to improve kiosk accessibility for the elderly. In order for the researcher to conduct on-site interviews,

permission was required at the manager and headquarters level. During the data collection process, the purpose of the study and research ethics were explained, and anonymity of the study participants and their companies was guaranteed. Following these procedures, the researchers personally visited the stores where the kiosks were installed and the franchise headquarters that managed them to conduct the interviews.

Interviews were conducted between March and April 2024, and interviewees were at both managerial and supervisory levels with a minimum of 7 years and a maximum of 19 years of experience. This included headquarters staff running franchised restaurants and managers of franchised brands such as burger and coffee shops, as well as owners of headquarters-owned stores. Table 1 reports detailed information about the interviews. They are the stakeholders who are involved in decision-making in the operational management of kiosks and in the process of improving kiosk accessibility. They are on the front-end, facing customers in the field and experiencing first-hand their reactions to the convenience and inconvenience of using the kiosk, as well as the profit and loss of the company.

However, the number of people involved in improving kiosk accessibility at the business unit level is very limited. Furthermore, despite the proliferation of ordering through kiosks, the issue of accessibility for the elderly has yet to be addressed in the industry. Therefore, this study sought to understand practitioners' perceptions of the current state of kiosk accessibility for the elderly and future challenges through face-to-face interviews.

The interview questions were organized around what digital accessibility and digital inclusion for older adults is perceived to be from the perspective of practitioners in the franchised restaurant industry, how they perceive the current state and need for kiosk accessibility for older adults, what are the practical challenges that need to be addressed in the process of improving kiosk accessibility, how they define the scope of their customer base, and whether they perceive

improving kiosk accessibility and digital inclusion for older adults as a positive possibility for their company or as a burden and concern.

Responses were recorded using a voice recording app on a smartphone with participants' consent. The average interview lasted between 30 minutes and an hour, with additional questions and answers based on the interviewee's responses.

**Table 1.** Descriptive information of interviewees

Inter-viewee	Business	Profession	Years of profession
1	Burger	Sales/ Engage in kiosk development	16
2			11
3	Coffee	Promotions	8
4	Concession	Strategic Planning/Sales Support	7
5	Donuts	Sales/ Engage in kiosk development	13
6	Smart Store	Digital transformation/ Engage in kiosk development	16
7	ESG Management	ESG Management	19
8			13
9	Design	UI/UX design	10
10	Burger (Franchise Direct Management store)	Store management	13
11			13
12			7

### 3. 2. Content analysis

The data from the interviews were recorded and transcribed, and detailed coding was conducted to identify topics. The primary coding was conducted as an open coding process, with the authors defining and categorizing each code after several rounds of discussion. On the initial round of coding, 80 codes were identified through the content analysis. After identifying codes that could categorize them based on the interviews, the authors had several discussions to combine or



eliminate codes if they were not mutually exclusive or could be incorporated into higher-level concepts. This process ultimately resulted in 15 codes (components).

**Table 2.** Topics in the social representation of the elderly in kiosk accessibility

	Topic
T01	Improving customer convenience
T02	Bridging technology
T03	Interim digital transformation
T04	Difficulty in meeting diverse demands
T05	It doesn't fit most customers
T06	Consideration of the elderly
T07	Balance between profits and social values
T08	Improving franchise owners' convenience
T09	Labor cost reduction
T10	Reduction of some choices
T11	Lacking face-to-face Service
T12	Necessary investment
T13	Business opportunity
T14	Organizational and social challenges
T15	Emergency or extraordinary reactions

The final identified codes were then applied to code the interview data, and another coder coded the 50 samples in the same way to measure inter-coder reliability. The Cohen's Kapa value for measuring inter-coder reliability was 0.787, which implies a high level of agreement between the coders (Altman, 1990). Once inter-coder reliability was established, the authors coded independently, and a sample to measure inter-coder reliability was also included in the overall data. Table 2 contains the finalized 15 topics and empirical examples from the interviews.

### 3.3. Core-periphery analysis

A core-periphery analysis was conducted and topics were divided into core and peripheral components. The core-periphery model was suggested by (Borgatti & Everett, 2000) to identify the structure of network data.

**Table 3.** Core and periphery structure of each topic

Code	Topics	Coreness	Membership
T11	Lacking face-to-face service	0.773	CORE
T15	Emergency or extraordinary reactions	0.621	
T14	Organizational and social challenges	0.083	
T10	Reduction of some choices	0.042	
T07	Balance between profits and social values	0.039	
T09	Labor cost reduction	0.038	PERIPHERY
T01	Improving customer convenience	0.036	
T08	Improving franchise owners' convenience	0.03	
T05	It doesn't fit most customers	0.028	
T13	Business opportunity	0.026	
T06	Consideration of the elderly	0.025	
T03	Interim digital transformation	0.023	
T02	Bridging technology	0.017	
T04	Difficulty in meeting diverse demands	0.017	
T12	Necessary investment	0.008	

Note: Core components are shaded on the map.

The frequency with which two topics mentioned together was counted, and a co-occurrence matrix was constructed using Excel. According to core-periphery analysis, the relative centrality of elements in a core-periphery structure within a data network and the associations between them can be analyzed. In this study, a co-occurrence matrix was used as the data matrix in UCINET, a statistical software developed by Borgatti & Everett (2000), to generate the coreness value and

membership of the core and periphery components. As a result, two topics were classified as core, and the remaining 13 topics were classified as periphery in the representation of franchise restaurant employees' perceptions of kiosk accessibility for the elderly (Table 3).

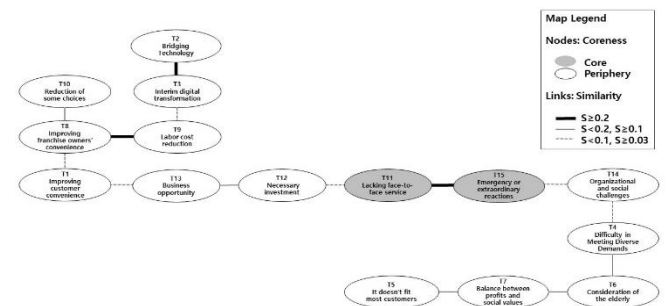
### 3. 4. Mapping social representation

To identify the relationships and connections between topics, this study mapped the associations between the 15 topics and visualized the network between the core and periphery elements as a maximum tree. This analysis is based on the computation of co-occurrence of textual data which means relationships between topics with similar semantics (Degenne & Vergès, 1973). In similarity analysis, the higher the sum of similarities between topics, the more closely they are related to other elements (Jung et al., 2009). Maximum trees can visualize a social representation of the perceptions held by a social group and can be useful for presenting results to practitioners, including frequency and relationship information in a more intuitive way (Jung et al., 2009). Jaccard's similarity coefficient was used to measure the strength of similarity or connection between topics (Hammond, 1993). Based on the connections between these topics, the perceptions of kiosk accessibility for elderly people by practitioners in the franchised restaurant industry were visualized as a maximal tree (Flament, 1981). The maximum tree is formed by a nearest neighbor algorithm connecting two components. The map of perceptions was mapped by finding the topic with the highest core and connecting it to other topics with the highest similarity among the remaining topics. This process was then repeated until all the codes were connected to present the social representation map.

## 4. RESULT

The result of the content analysis indicates 15 components of kiosk accessibility for the elderly as perceived by employees in the Korean franchise restaurant industry. The core-periphery analysis

shows that two of the 15 topics were core (concentration=0.990), and the remaining 13 topics were periphery (Table 3). The core components are Lacking face-to-face service (T11) and Emergency or extraordinary reactions (T15). The social representation map in Figure 1 provide a perceptual map consisting of topics and links of the overall structure of social representation by employees. The dark-shaded components are core topics, and thicker lines indicate greater similarity between topics.



**Fig. 1.** Social representation map of employee perceptions regarding kiosk accessibility for the elderly

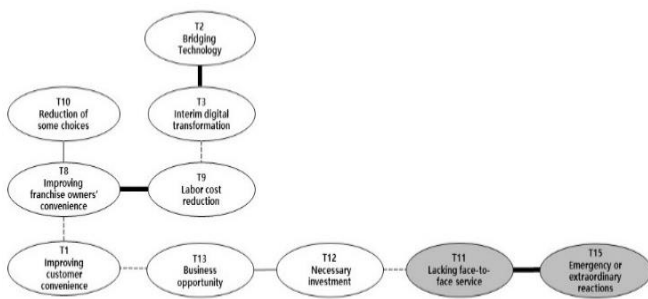
## 5. DISCUSSION

The results of the social representation approach provided a comprehensive view of employee's perception and attitude toward kiosk accessibility and digital inclusion for the elderly in the Korean franchise restaurant industry. The social representation map shows the perceptions of employees in the franchised restaurant industry (Figure 1). This section provides a comprehensive discussion of the two ambivalent perceptions that employees in the franchised restaurant industry have about making kiosks more accessible to the elderly.

### 5. 1. Business opportunities

The first relationship demonstrates the business opportunity's aspect concerning employees' awareness of the accessibility of kiosks for the elderly. Lack of face-to-face service (T11) and emergencies or extraordinary reactions (T15), which are main attributes, were strongly linked,

with employees recognizing that these are issues that cannot be fully addressed by current kiosks. A key challenge of digital transformation is aligning product-centric value propositions with digitized services and interaction with customers, and while manufacturing companies initially focused on delivering economic value, they are increasingly turning their attention to human-centric design and customization issues during the DT process (Y. S. Kim, 2021). In the franchised restaurant industry, this issue is ambivalently perceived as both an opportunity to provide more innovative services and a challenge that needs to be addressed.



**Figure 2.** Business opportunities

For some franchisees, the consensus was that the service they provide to customers determines whether or not they will return. Nevertheless, employees perceived that kiosks had already been deployed in most stores, which represented an investment by the company, and that it was therefore a Necessary investment (T12) to make the already installed kiosks more accessible and utilized by as many customers as possible. This radical change was driven by the proliferation of contactless ordering in the wake of covid-19 (Alkasasbeh, 2020). Covid-19 has also had a major impact on the food and beverage restaurant industry, and the reduction of physical contact between people and the shift to contactless purchases and services has been transformative.

However, while kiosks cannot completely replace face –to-face service or extraordinary service, they perceived that making ordering more accessible to customers before other brands could

lead to business opportunities (T13). Many companies expect digital transformation to drive value creation and business opportunities beyond organizational operations (Guo & Xu, 2021). Employees perceived that efforts to include the digitally disadvantaged were somewhat mandated by social values, as society was demanding digital inclusion and competitors were doing the same. In addition, Kiosks have already been commercialized in the franchise restaurant industry, and significant investments have been made in the process. In this situation, there was a positive perception that if companies were proactive by making the Necessary investments (T12), it could also connect to business opportunities (T13), such as expanding customer reach or enhancing brand image.

Business opportunities (T13) perceived by employees involved in the field were largely from two perspectives in terms of Improving Customer Convenience (T1) and Improving franchise owners' convenience (T8). In terms of Improving Customer Convenience (T1), franchise headquarters employees and field managers expected that simplifying or standardizing kiosks to make them more accessible would make it easier for more customers to access what they want. Kiosk-mediated customer-technology interactions are increasing in industries, and the quality of kiosk service can influence customer behavior by increasing customer satisfaction and loyalty (Warraich, 2020).

However, in terms of Business opportunities, it was the franchise owner's perspective rather than the general customer's that showed more connections to the themes. The employees interviewed for this study were either headquarters-based or franchisees managing headquarters-owned stores. From the perspective of headquarters-based employees, customers are not only those who consume the company's products, but franchise owners are also important customers. Improving franchise owners' convenience (T8) is very strongly linked to Labor cost reduction (T9), which can be interpreted as a positive perception of operational efficiency

through labor replacement and labor cost savings through kiosks. Previous studies have shown that digital transformation can increase the efficiency of a company's labor investment by significantly curbing overinvestment in labor and over-hiring (Wang et al., 2024). Employees expected that the increased accessibility of the kiosks to seniors would allow more customers to use the kiosks to place their own orders, which would reduce labor costs and contribute to the profits.

In addition, Labor cost reduction (T9) is the bridge between Improving franchise owners' convenience (T8) and Interim digital transformation (T3). Kiosks are part of digital transformation, replacing the ordering process. Employees expect to increase operational efficiency through digital transformation, where kiosks replace the work of traditional workers in this process. "I think the elderly are getting over the barrier of kiosks being everywhere they go, but there are still a lot of people who are angry that they just want an employee to order for them. In order to utilize manpower more, we have part-time workers who clean outside the kitchen and also help the elderly use the kiosks, but it's difficult to do that in stores with low sales, so we need to increase the utilization of the kiosks (Interviewee 10)." Therefore, employees believe that the increased accessibility of kiosks can lead to better business opportunities by improving the convenience of franchisees, who play an important role in the franchise business.

However, in order for improved accessibility of kiosks to lead to improved convenience for franchise owners, it must be considered with Reduction of some choices (T10). "Although improving accessibility for the elderly can simplify ordering at the kiosk, the major problem is that if a customer complains that they did not receive a discount or credit after paying through the kiosk, it is a process that can only be handled face-to-face by a manager who responds entirely on-site (Interviewee 5). " In other words, there is a concern that increasing accessibility for the elderly may lead to a Reduction of some choices

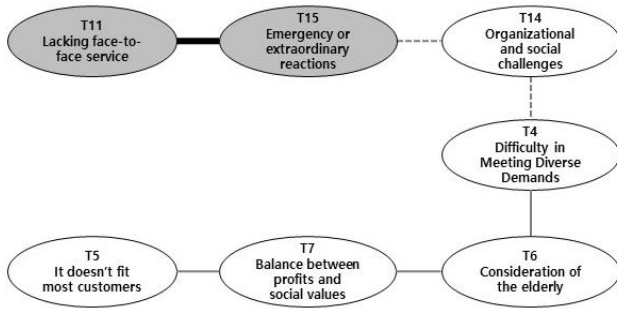
(T10), and increasing the accessibility of kiosks can lead to improving convenience for customers (T1) and franchise owners (T8) when done in a way that does not generate such complaints.

Another strongly connected topic is Bridging Technology (T2) and Interim digital transformation (T3). Digital transformation is not just the application of digital technologies, it is a transformation that affects a set of business operations, organizational structures, changes in stakeholder relationships, and customer value creation processes (Verhoef et al., 2021). Kiosks were perceived as part of a step towards digitizing the ordering process, from the production of the product to the order to the customer's receipt and reordering of the product. Therefore, including the elderly in the digital realm by making kiosks more accessible to them at the ordering stage is an important step toward retaining them as customers for the rest of the digital transformation journey, from product pickup to return visits. At the same time, however, employees recognized that kiosks were not the final solution, but rather an interim bridging technology, and that in the future they would need to prepare for a move to personalized devices like mobile or new technologies like AI. Responding to and addressing these changes well could lead to future business opportunities.

### **5. 1. Organizational and social challenges**

The second relationship reflects the challenges concerning organizational and social aspects of employees' awareness of the accessibility of kiosks for the elderly. While improving kiosk accessibility for the elderly could lead to business opportunities, challenges were identified as barriers to implementation in industry. With the digital shift to kiosks already underway, it is perceived as a major concern that one device cannot replace all face-to-face services (T11) and, in particular, that kiosks cannot be a complete solution for emergencies or extraordinary reactions. While this central attribute could lead to opportunities depending on how digital transformation is achieved, the limitations of

current kiosks were also perceived as challenges.



**Figure 3.** Organizational and social challenges

In this context, employees in the franchised restaurant industry perceive themselves as facing organizational and social challenges (T14). "The franchise restaurant industry is not a digital-based industry, it's a food-based company, so it's not an organization that can change as fast as IT, so making kiosks accessible for the elderly is an organizational challenge (Interviewee 7)." For restaurant companies, ESG management has been considered in terms of food safety and environmental issues and the ethical governance operations of managers (Moon et al., 2022). The way restaurant companies have fulfilled their social responsibility has been by providing quality food, with a focus on improving product quality for customers and business value for owners (Lee et al., 2024). However, as much of the restaurant industry has gone digital, digital accessibility for elderly customers has been perceived as another important organizational and social challenge for companies.

Employees believe that improving kiosk accessibility for the elderly is realized by streamlining and making kiosk steps easier. However, employees face the challenge of meeting diverse needs (T4). These diverse needs include those of the general customers, who are not included in the digital disadvantaged, and the demands on the headquarters of franchise owners who must respond on-site to complaints caused by the kiosks. Considering only the general customer can exclude the elderly, but conversely, considering accessibility for the elderly can inconvenience other customers or franchise owners, and bridging

this gap is recognized as a key challenge for employees.

There is a perception among employees that making kiosks more accessible is a consideration for the elderly (T6). The elderly is one of the most vulnerable groups when it comes to technology use, and older adults can have negative emotional reactions to using kiosks due to physical, cognitive, and psychological factors (Nam et al., 2023). On the other hand, there is a perception that kiosks with consideration of the elderly are not fit for most customers (T5). These two opposing topics are connected by the perception of balancing profits and social value (T7).

While the target customers that directly contribute to the franchise restaurant's revenue are younger generations, making kiosks more accessible to employees is perceived as something that primarily contributes to revenue and is not beneficial to most customers. "We should try to make our kiosks more accessible to the elderly, who are the most digitally disadvantaged in society, but we are a private company, not a public one. It costs money, and I don't think it will have a direct impact on sales in the short term (Interviewee 6)". "However, we are seeing fewer births and an older population. I don't think digital inclusion is a short-term benefit for the company, but it's a long-term challenge (Interviewee 7)." Companies undergoing digital transformation are challenged to achieve the dual goals of reducing costs through automation and increasing revenue through improved customer experience (Verhoef et al., 2021). For employees who have to think about the company's bottom line, the fact that improving the accessibility of kiosks is driven by social value rather than company revenue is a challenge in implementing change.

## 6. CONCLUSION AND IMPLICATIONS

This study contributes to a better understanding of the perceptions of kiosk accessibility for the elderly from the perspective of these employees in the private sector. This study adopts the core-periphery analysis of social representation theory (Ahn & Jung, 2016), which

provides an appropriate theoretical background and methodological framework to understand the common perceptions of the work group toward the issue of kiosk accessibility for the elderly. This study contributes to the advancement of research applying SRT by exploring the shared perceptions of employees in a franchised restaurant company toward kiosk accessibility for the older adult population through social representation theory.

Existing studies applying SRT theory have primarily examined social group perceptions of new technologies that have not yet been commercialized. However, efforts to improve the accessibility of kiosks, which are already commercialized technologies, to include more users among the elderly are difficult to be explained by existing studies such as new technology adoption factors and resistance. In addition, previous studies on the accessibility of kiosks have been conducted mainly from the user's perspective or device aspects such as design and functionality, and recommendations for improvement have been made in terms of social value. However, the role of the private sector is increasingly emphasized for sustainable development to be practiced (Scheyvens et al., 2016). Therefore, this study investigated the perceptions of practitioners in the field who operate and manage services through kiosks in the franchise restaurant industry, which is closely related to their daily lives, to reveal the realistic reasons why the accessibility of kiosks for the elderly is not sufficiently considered in the private industry, and to reveal the inherent opportunities and challenges.

Content analysis and core-periphery analysis revealed that employees in the franchised restaurant industry perceived both business opportunities and organizational and social challenges in considering kiosk accessibility for the elderly as part of their digital transformation. Employees believed that while current kiosks could not replace all face-to-face services or cater to on-site emergencies or extraordinary needs, they could see more business opportunities with kiosks if they could provide a more detailed customer experience

based on customer data during digital transformation. They also expected improved customer convenience, greater convenience for franchisees, and lower labor costs by making kiosks more accessible to the elderly. Furthermore, as part of their planned service-wide digital transformation, attracting and retaining an increasingly large share of the elderly demographic as customers was seen as a business opportunity.

In contrast, whereas the opportunities presented by making kiosks more accessible to older adults were considered primarily from a business perspective, the main concerns were seen as organizational and social challenges: current kiosks are not sufficient to fully replace face-to-face services or respond to on-site needs, which can lead to increased workloads for managers. Employees recognized that improving kiosk accessibility for the elderly is a social need in the context of digital inclusion. However, companies face an organizational challenge of reconciling the needs of multiple stakeholders, including the profit-driven objectives of the business and the average customer who has already become accustomed to current kiosks. In this situation, the consideration of kiosk accessibility is for the elderly, and there is a concern that designing and simplifying kiosks to make them easier to use for the elderly will not work for the majority of customers.

The study also found that a major theme bridging these topics is the balance between profits and social value. Private companies are organizations that operate with the goal of maximizing business profits. At the same time, companies are not simply independent businesses, but interdependent continuing enterprises that must survive within social and ecological networks (Zhang and Zhang, 2005). Therefore, when companies conduct sustainable and inclusive business, they can generate social benefits and contribute to the lives of many people (Scheyvens et al., 2016). Given the findings of this study, emphasizing efforts to improve kiosk accessibility for the elderly solely as an operator obligation may increase the burden on businesses. Instead,

recognizing kiosk accessibility enhancement as a long-term benefit to businesses by improving the customer experience and expanding their customer base is more appropriate. Consequently, this approach can contribute to achieving corporate sustainability and enhancing social value through digital inclusion.

The research also has practical implications for practitioners in organizations undergoing digital transformation, as well as policy makers. The study found that the lack of face-to-face service and the difficulty of responding to emergencies or extraordinary situations were core topics for employees. These results suggest that kiosks cannot entirely replace human service, either for customers or employees within current kiosk operations. The strategy that operators can adopt is to consider the balance between technology and human. The design of the kiosk device should reflect the customer's perspective to ensure that it is universally accessible to both major and minor users. At the same time, operators can consider not completely eliminating the role of humans for users who need to adapt to new technologies and improve their literacy during the digital transition. If companies don't completely rule out human assistance for customers who experience barriers to kiosks, it could be an opportunity to embrace a broader range of customers.

Also, In contrast to previous studies focusing on corporate social obligations regarding the digital accessibility of the elderly, this study reveals that employees perceive enhancing accessibility for the elderly as a business opportunity. Improving kiosk accessibility for the elderly not only enhances customer convenience but also increases operational efficiency, leading to benefits such as enhanced owner convenience and reduced labor costs. Consequently, franchise restaurants need to proactively recognize that pursuing sustainable development through digital inclusion aligns with corporate profits. Indeed, sustainable operations can positively impact a company's empirical performance and corporate value (Jung et al., 2018). Ensuring that digital

technology does not exclude certain customers can be considered a strategic approach for companies to expand their market reach and enhance their overall offerings, particularly by catering to the increasingly socially engaged elderly customers.

Furthermore, this research holds implications for policymaking regarding the digital inclusion of the elderly. Policymakers have recommended guidelines for kiosk accessibility in the public sector, or have set policy priorities based primarily on non-discrimination against people with disabilities. The digital divide, which internationally divides the population into those who have access to ICT technologies in the information age and those who do not, has shaped the way public and subsidized services are provided to achieve universal service and universal access to ICT technologies (Selwyn, 2004). However, the study found that industry already recognized the societal need for digital accessibility and also saw it as a business opportunity. If the private sector is to play a more pivotal role, then it should be approached in terms of encouraging sustainable operations and the opportunities they perceive, rather than imposing obligations on operators.

In addition, establishing standards for kiosks is an important issue in accessibility, and whether these standards are created from the user's perspective or reflect corporate interests is an important issue. (Adam & Kreps, 2009). Based on these research findings, policymakers should recognize that the current operation of kiosk services prioritizes the operator's perspective, focusing on factors like franchisee convenience and the primary customer base of the franchised restaurant. However, kiosk standards and guidelines aimed at enhancing kiosk accessibility for the elderly should more effectively incorporate the user perspective. Accordingly, policymakers should formulate guidelines for kiosk development and operation that comprehensively reflect the physical, cognitive, and psychological characteristics of elderly users.

Elderly users also need to make a personal commitment to actively engage in education and

experiences to improve their digital literacy. As this study reveals, employees in the franchised restaurant industry are preparing for a broader digital transformation across services in the future. As employees' perceptions show, kiosks are a bridging technology to newer technologies such as personalization devices and AI in the future. Therefore, elderly users will need to make a personal commitment to learning and adapting to the digital technologies that will continue to be an inevitable part of their daily lives. The private and public sectors should explore ways to collaborate to support these efforts.

This study has several limitations and areas for future research. First, this study was conducted in one country, South Korea, and targeted a specific industry such as franchise restaurants. While Korea is a country with a high rate of kiosk adoption in both the public and private sectors and a growing proportion of the elderly population, this situation may be different in other countries. Future research should be conducted to compare cases from different countries and industry sectors. Another limitation is that this study was based on interviews with a small number of practitioners. The total number of interviewees in this study is 12, which is representative of professionals with sufficient work experience, but is limited by the small number of interviews. If a larger number of interviews were conducted in the future, a richer understanding of employee perceptions could be expected. In addition, kiosks are an example of digital transformation, and companies may have different sectors, rates, and plans for digital transformation.

Future research should consider perceptions of digital accessibility for a wider range of digital transformation sectors, not just kiosks. The fact that this study focused on the employees of an organization among the many stakeholders in the digital transformation process leaves room for future research. Analyzing the perceptions of C-levels, who are also direct decision makers in companies, or the differences between public and private sectors in addressing this issue could also be topics for future research. Such follow-up

research would provide richer implications for ensuring that technology does not exclude certain social groups during the digital transformation process and that the benefits of technology are accessible to more people.

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