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**Author(s):** Holkkola, Matilda; Paananen, Tiina; Frank, Lauri; Kemppainen, Tiina; Makkonen, Markus

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# HOW DO QR CODES ENHANCE CUSTOMER EXPERIENCE? OMNICHANNEL CUSTOMER EXPERIENCES IN A BRICK-AND-MORTAR FASHION STORE

MATILDA HOLKKOLA,<sup>1</sup> TIINA PAANANEN,<sup>1</sup>

LAURI FRANK,<sup>1</sup> TIINA KEMPPAINEN,<sup>2</sup> MARKUS

MAKKONEN<sup>1</sup>

<sup>1</sup> University of Jyväskylä, Faculty of Information Technology, Jyväskylä, Finland  
matilda.i.holkkola@jyu.fi, tiina.e.paananen@jyu.fi, lauri.frank@jyu.fi,  
markus.v.makkonen@jyu.fi

<sup>2</sup> University of Jyväskylä, Jyväskylä University School of Business and Economics,  
Jyväskylä, Finland  
tiina.j.kemppainen@jyu.fi

In this qualitative study, we investigate how customers perceive QR codes enhancing their customer experience (CX) in the brick-and-mortar (B&M) store environment. Introducing QR codes to B&M stores is a part of the larger phenomenon of retailers creating omnichannel CXs by utilizing digital and cyber-physical elements in B&M stores. To collect data from real customers' CXs, we displayed QR codes in a Finnish fashion brand's B&M store and interviewed customers who had authentically visited the store. The QR codes displayed in the store were linked to a product information page on the brand's online store, a brand ambassador's Instagram posts, and an online survey. The data consist of 15 individual semi-structured thematic interviews of customers aged under 50 years. By conducting qualitative content analysis, we found six main advantages (i.e., interestingness, informativeness, usability, attractiveness, interaction, and innovativeness) and 14 subgroups of QR codes' advantages in enhancing the CX.

## Keywords:

QR codes,  
brick-and-mortar,  
omnichannel,  
customer  
experience,  
store  
environment,  
cyber-physical,  
B&M,  
retail



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## 1 Introduction

The advancements in information and communication technologies, such as smartphones and Quick Response (QR) codes, enable today's consumers to gain additional information on products during their brick-and-mortar (B&M) store visits. According to Briedis et al. (2020), customers prefer omnichannel customer experiences, where they can seamlessly utilize physical and digital channels (Rigby, 2011). During their B&M store visits, it is more common for customers to use the competing retailers' online channels than the online channels of that same B&M retailer (Spaid et al., 2019). For B&M retailers, this means losing potential customers due to showrooming (i.e., gathering information offline but comparing options and purchasing online) as well as online shopping. Thus, B&M retailers have begun to include digital and cyber-physical elements in store environments to offer unique customer experiences in B&M stores (Lemon & Verhoef, 2016). For example, QR codes (Yoon & Kim, 2014), robot assistants, and smart mirrors (Sheth, 2021) have been implemented in B&M store environments. Sheth (2021) presents that "B&M retailers can not only survive but also thrive by fusion of physical and digital [worlds]".

QR codes have been shown to enhance customer experience (CX) in online shopping (Hossain et al., 2018) and shopping in general (Albăstroi & Felea, 2015), but there is a research gap in how QR codes can enhance CX in B&M fashion stores. The topic is important from both theoretical and practical perspectives because enhancing the CX in B&M stores with omnichannel elements is recommended (Sheth, 2021), but the research on QR codes' potential in offering additional information, product reviews, and relevant social media content for B&M fashion store customers is still scarce (Albăstroi & Felea, 2015). Also, research on QR codes' technological attributes (Kim & Yoon, 2014), consumer acceptance (Kim & Woo, 2016; Kim et al., 2014), and efficiency in providing product information (Rotsios et al., 2022) has been called for. According to Albăstroi and Felea (2015), QR codes have usually been studied from a technology use perspective, such as the design and functionality of digital technologies in B&M stores (Zimmermann et al., 2022). However, there is also a research gap in studying how also the mere presence of QR codes can enhance the CX as a physical in-store stimulus (Bitner, 1992).

Therefore, in this qualitative study, we investigate how customers perceive QR codes enhancing their CX in a B&M store. The data collection was conducted by displaying QR codes within a Finnish B&M fashion store and, after that, interviewing the customers who had visited the store. In the next section, we present the relevant research on CX in omnichannel B&M store environments and on QR codes. In the third section, we introduce our QR code intervention case, research data, and methods used. In the fourth section, we present the findings and discussion of this study. Finally, in the fifth section, we conclude with the conclusion, theoretical and practical implications, limitations of the study, and our suggestions for future research.

## **2 Theoretical Background**

### **2.1 Omnichannel CX in B&M Store Environments**

CX consists of customers' subjective responses, feelings, and interpretations (Gentile et al., 2007). It has been researched from many overlapping dimensions (Holkkola et al., 2022a), such as cognitive and physical dimensions (Verhoef et al., 2009). The cognitive dimension includes customers' curiosity (Schmitt, 1999) and experiences of flow (Novak et al., 2000). The physical dimension is traditionally associated with offline elements, such as temperature, odor, furnishing, and signage (Bitner, 1992). There are plenty of studies on the physical dimension of CX in B&M stores, but as retailers have introduced digital and cyber-physical elements into their B&M stores, a new wave of CX research focuses on these novel elements (Zimmermann et al., 2022). To stand out in this omnichannel era, Parise et al. (2016) advise that new digital and cyber-physical elements should be introduced to B&M stores to create immersive, distinctive (Briedis et al., 2020), and customized CXs (Zimmermann et al., 2022). For instance, virtual mirrors are described as "something the customers will remember" (Parise et al., 2016). These kinds of elements can enhance CX by immersion and flow among customer touchpoints, which will positively affect customer behavior and attitudes (Parise et al., 2016).

For example, an augmented reality (AR) assistive shopping mobile app was found to increase informativeness and usefulness in CX (Zimmermann et al., 2022). Informativeness consists of good and relevant product information (Hausman and Siekpe, 2009), such as product availability and price comparison information in a

store (Parise et al., 2016). Usefulness consists of perceived shopping performance, productivity, and effectiveness (Hausman & Siekpe, 2009). In addition, digital and cyber-physical elements, such as remote experts and digital assistants, can create highly immersive engagement with products as they can build a narrative behind the product simultaneously during the B&M store visit. This will result in a closer connection between the consumer and the brand, such as return visits and loyalty to the brand (Parise et al., 2016). Digital and cyber-physical elements can also enhance CX with personalization and interactivity (Parise et al., 2016). Interactivity gives consumers a sense of control as they can have an active part in engaging with the brand (Klein, 2003).

## 2.2 QR Codes

QR codes are two-dimensional barcodes that can hold more information than one-dimensional Universal Product Codes (UPC) and can be scanned with a device that has a camera, a QR code reader software, and an Internet connection (Crompton et al., 2012). QR codes were first used in the auto industry (Denso Wave, 2022) and have since become common in many areas. QR code usage increased by 98% from 2018 to 2020 and is predicted to cover 80% of check-out services, orders, and payments by 2024 (Scanova Blog, 2022). In prior QR code research, customers have shown positive and negative attitudes toward and experiences with QR codes. Negative experiences include, for example, privacy concerns towards QR codes (Okazaki et al., 2012) and irritation from mobile tools usage in a B&M store (Zimmermann et al., 2022). However, many positive customer perceptions, attitudes, and effects of QR codes have also been found in prior research.

Consumers have perceived QR codes to enhance their CX in multiple contexts (Albăstroi & Felea, 2015) and in an imaginary B&M store scenario (Kjeldsen et al., 2023). In a smart shopping context, Kim and Yoon (2014) studied QR code virtual grocery and fashion stores that could be visited by scanning a QR code on the screen in South Korean subway stations. They identified the technological attributes of QR codes, including ubiquity, instant interactivity, digital signage, and wireless infrastructure, which were valued by fashion shoppers. Also, B&M grocery store customers found food traceability QR codes informative, useful, easy to use, and a positive invention (Kim & Woo, 2016). Yoon and Kim (2014) found QR codes important for B&M retailers' multichannel strategies in integrating online channels

into B&M stores, as QR codes can offer customers additional and abundant information and channel integration. In the advertising context, young consumers were suggested to value the informativeness of QR codes as this perceived benefit strongly predicted their intention to scan them (Jung et al., 2012). In educational work, in turn, teachers perceived QR codes as being fun, interesting, engaging, attractive, enjoyable, and a new way of learning (Ali et al., 2017). Similarly, younger consumers found QR codes attractive and useful (Ertekin & Pelton, 2015). According to Dou and Li (2008), QR codes' advantages for customers include being less intrusive and more engaging communication tools than shortcodes and image codes. QR codes have also proven to be a good tool from a cognitive perspective, and in brands' communication, they have been suggested to arise customers' curiosity (Srinounpan et al., 2020). Curiosity was also reported as one of the main reasons to scan QR codes for Polish consumers (Nogiejć, 2017).

### **3 Methodology**

To collect data from real customers in an authentic QR code setting, we displayed QR codes inside a B&M factory store of a well-known Finnish fashion brand. The QR codes were printed with suitable texts and pictures in A4 and smaller papers, laminated, and displayed inside the store from May 2022 to September 2022. Three different sets of QR codes were used and placed in the store. The first set of QR codes (cf. Appendix 2) was placed with a product, anorak jackets, and their landing page was the product information page on the brand's online store. The second set of QR codes directed to a brand ambassador's Instagram posts, where she promoted the brand's selected clothes, also displayed on a separate clothes rack in the B&M store. Thus, both the online and social media channels of the brand were utilized in providing additional information and inspiration for customers. The third set of QR codes directed customers to our online survey where one could also volunteer for individual interviews and be rewarded with a prize (a canvas bag). This set of QR codes was also printed and handed with one's purchases by store personnel.

During the time the QR codes were on display, we recruited participants for individual interviews with the third set of QR codes as well as pen-and-paper surveys in the B&M store. Due to our target group, B&M store customers under 50 years of age were eligible to participate in the interviews. This was because using mobile devices for searching information in B&M stores is common for consumers aged

under 50 years and significantly less common for older consumers (Holkkola et al., 2022b) who are suggested to have lower self-efficacy in mobile and omnichannel shopping (Makkonen et al., 2022). Similarly, Ertekin and Pelton (2015) excluded consumers born in the 1960s or earlier from their QR code study. For a data collection method, semi-structured individual thematic interviews were chosen since we wanted a profound understanding of CXs. We used semi-structured interviews as they allow more free discussion and enable additional questions (Myers & Newman, 2007). Before the interviews, we conducted a test interview to try out our interview framework. The interviews were conducted in September 2022. Due to our recruiting technique, the participants were the brand's real customers who had visited the B&M store while the QR codes were on display. The number of interviews was determined by saturation (Fusch & Ness, 2015). The participants (referred to as Participants 1–15: P1–P15) consisted of twelve females and three males who were 23–42 years old (for details, see Appendix 1). Instead of statistically representative results, the qualitative approach of this study aims to gain an in-depth understanding of the customers' perceptions and was chosen because it is suitable for studying experiences and phenomena with little prior research.

The interviews were held remotely via Microsoft Teams. The average duration of the interviews was 58 minutes. The interview themes covered omnichannel behavior, previous experiences with QR codes, the QR codes in the case B&M store, and customer engagement with the case brand. During the theme of QR codes in the case B&M store, we showed the participants pictures of the B&M store with QR codes (Appendix 2) to make it easier for them to share their experiences. The interviews were recorded and transcribed. In the analysis, we used qualitative content analysis in a data-driven manner because of the experimental nature of this study. As tools, the ATLAS.ti software and Microsoft Word were utilized for coding the data inductively with two coding cycles (Gioia et al., 2013). This resulted in 14 codes which were used as 14 subgroups of the findings, respectively. These 14 subgroups could ultimately be classified under six broader themes that form the main findings and are presented in the next section. The six themes and the 14 subgroups are also displayed in Figure 1 in the fifth section.

## 4 Findings and Discussion

In the participants' CXs in the B&M environment, we found six main advantages of QR codes: interestingness, informativeness, usability, attractiveness, interaction, and innovativeness. Next, we present these in relation to earlier research. The citations have been translated from Finnish to English.

**Interestingness.** Firstly, the displayed QR codes were found interesting and aroused the participants' curiosity for multiple reasons. Some perceived them as new technology, and others found them curious in the B&M environment. The participants were interested in "where the QR code leads and what it brings me" (P14). This is consistent with the findings of Srinounpan et al. (2020) and Nogieć (2017) and supports Ali et al.'s (2017) school context findings of QR codes being perceived as interesting and engaging. P12 described how QR codes are like "mysteries" because one cannot see their contents from the outside. All in all, QR codes attracted attention and got some participants to scan them for fun.

"I think QR codes in the store bring something new and interesting to you, like 'hey, what's this about'. Probably because they are still quite a new thing for me that I haven't quite got utilizing yet." – Female, 29 (P5)

"Even though the anoraks were not relevant to me, I did notice the QR codes when I passed by and checked what the trick here is." – Female, 32 (P14)

For some, specifically the B&M environment enabled scanning QR codes out of pure curiosity since it was perceived as a safe environment for digital experimentation. This was because information security of a B&M store's QR codes was perceived as more reliable compared to, for example, renting electric scooters P14 mentioned as an example. This finding is in line with Okazaki et al.'s (2012) QR code privacy concern findings in urban outdoor spaces. Thus, the participants felt safe scanning the QR codes in the B&M environment and perceived this as fun and entertaining, consistent with Zimmermann et al.'s (2022) findings on digital elements creating more entertaining CXs. P14 describes her experience as follows: "I thought it was fun to be able to search on their pages how the product looks on a model. That was quite a nice idea".



**Informativeness.** In addition to their interestingness, QR codes were scanned because the participants valued information. The participants found QR codes with additional information useful and thought that they contribute positively to their CX in B&M, which is consistent with Zimmermann et al.'s (2022) digital B&M store element findings. The participants wanted to get information before the purchase decision, for example, on the materials, caretaking instructions, available colors and sizes, and sustainability. This finding is also consistent with studies on other product groups, such as food traceability QR codes that customers also found informative (Kim & Woo, 2016). For example, P14 describes her wishes for more information as follows: "While shopping, I thought that these QR codes could be on all the products, so that you could search available colors of those shorts, for example, as they all weren't on display."

Additional information was valued, and it also mattered where this information was obtained from. It was remarkable that the participants valued that the QR codes led to the brand's online store and the integration of the online and offline channels. The participants perceived linking the brand's online store to the B&M store as "smart" (P2) and "fun" (P14), and for some, it was a nice surprise.

"I thought that the QR code would just lead to some additional information page, I somehow didn't expect it to go on the brand's website. I expected maybe some kind of an additional page with a menu, but it was very nice that it led to the website." – Female, 32 (P14)

Like P14, the participants described their positive thoughts about this online store linkage. Indeed, improving the flow among customer touchpoints is suggested to be important in the omnichannel era (Parise et al., 2016). The participants perceived connecting the online store to the B&M store with QR codes as a good idea to advertise and remind customers of this channel's existence.

"I don't think the [brand's] webpage has otherwise been very advertised. There could be something or someone near the cash desk mentioning the webpage, but I'd say they don't advertise it in the stores." – Female, 42 (P9)

**Usability.** QR codes were found usable and useful since they were perceived as easy to use and quick and enabled independent shopping. Perceived ease of use is consistent with the findings of Kim and Woo (2016) and was explained by many reasons. Using a smartphone in the B&M environment "felt easy because you're so used to fiddling with your phone" (P2) and using the phone's QR code reader felt

easier than going to the online store by typing the web address to the web browser. The ease of use of QR codes is identified also by Kim and Woo (2016). QR codes in the B&M environment were considered “a simplified way to find somewhere” (P8). Even though the participants did not primarily associate QR codes with B&M stores, many were already familiar with QR codes.

“It’s very easy because via your camera, the QR code leads you directly to the page, and you don’t need to type any addresses. So, it’s handy in that sense.” – Female, 24 (P13)

QR codes were also perceived as quick. Similarly, in Hausman and Siekpe’s (2009) model, shopping effectiveness is one aspect of digital shopping elements’ usability. Many participants emphasized the quickness of the direct linkage that QR codes enabled. The participants felt that the brand is striving to make information search quick and easy, contributing positively to their CX.

“If the QR code leads me directly to the product page to get more information, it’s no doubt faster than if I started googling that additional information on the Internet.” – Female, 30 (P2)

The usability of QR codes was also praised because of the enabled independence. Some participants preferred to not socialize with salespersons or send messages to their friends when shopping. Instead, their smartphone was their shopping assistant, which they even used to “signal the salesperson that you want to be in peace” (P2). In contrast to 50-year-old and older consumers who are unlikely to utilize mobile phones while in a B&M store (Holkkola et al., 2022b), using a mobile phone in B&M stores felt natural for these independent shoppers.

“I know that the salespersons are happy to help, but if you’re like me, who wants to look for information yourself before asking, then QR codes are an easy way to do that.” – Female, 32 (P14)

**Attractiveness.** The participants perceived that QR codes contribute to the B&M environment by making it look attractive. This was due to QR codes being visually compact solutions as digital signage (Kim & Yoon, 2014). Similarly, under-50-year-old consumers (Ertekin & Pelton, 2015) and teachers (Ali et al., 2017) found QR codes attractive. In addition to their compactness, the participants perceived QR codes as a natural addition to a B&M store and, similarly to Dou and Li’s (2008) findings, seeing them around was not found intrusive for most of the participants.

The participants perceived QR codes as compact tools for tastefully sharing additional information. They did not want the store environment to be visually crammed with product information, nor did they want the QR codes to be “the main point” (P10) in the store environment. Instead, the participants valued “a clear overall appearance” (P14). For example, P7 found QR codes “pleasant”, “restrained”, “simple”, and “straightforward”. QR codes as a space solution were seen to also respect those who did not need additional information.

“Compared to, say, big posters with a lot of information, using QR codes is a simpler and more tasteful way, so that the information is available for those who want it.” – Female, 33 (P12)

“QR codes make my store experience more comfortable because the store is not flooded from every corner with information, but it’s offered in a restrained way.” – Male, 24 (P7)

In addition to compactness and respectfulness, the participants considered QR codes to be a natural element in the B&M environment. Many said that QR codes fit well into the store environment and are displayed nicely. P12 describes how “it somehow seemed natural that ‘ah, there are QR codes here’, so if someone needs, they can use them”. Although many had not seen QR codes in B&M stores before, the participants mostly accepted this technology in the B&M environment.

“The whole store had been renovated since my last visit, it was overall much fresher than before. So, I just thought that those [QR] codes are now part of it.” – Female, 30 (P2)

**Interaction.** QR codes, especially the ones that led to our online survey, were associated with the brand actively wanting to interact with its customers. P2 describes how she seized the opportunity to interact with the brand in the B&M store: “I thought that since I like the brand, I want to give feedback and then try to influence it.” Similarly, Klein (2003) found that interactivity gives consumers a sense of control as they can have an active part in engaging with the brand. According to Parise et al. (2016), digital and cyber-physical elements can also enhance CX in B&M stores with their interactivity. Indeed, QR codes were considered a good tool to interact with customers, since “many certainly have a phone with them” (P14) when visiting a B&M store. QR codes are found as engaging communication tools also in Dou and Li’s (2008) study. “Even though not being a super customer from [the brand’s] perspective”, P8 described the positive atmosphere the QR codes created for her during the B&M store visit:

“The store environment looks a little different when those QR codes are there. It arises the thought that the place is not only for buying but that the brand also wants to know something about the customers’ thoughts ... The atmosphere of being interested in the customers’ thoughts is created there.” – Female, 33 (P8)

**Innovativeness.** QR codes were perceived to enrich the CX in a B&M store and talk about the brand’s development. The participants valued that, besides traditional B&M shopping behaviors, they could get to know the products in new and enriched ways. Similarly, Ali et al. (2017) found that teachers perceived QR codes as a new way of learning, and Parise et al. (2016) found that memorable digital elements improve CX. As P6 put it, “the brand bringing new ways of presenting information” was appreciated. For example, the participants found it creative that they could see how the products look on a model by scanning the QR code. These additional cyber-physical elements were perceived as “quite a good addition” (P2) and to have a positive influence on the whole brand.

“Just by moving your thumb, you could get the same thing done as by flipping through big clothes racks and going around the store, so [with the QR codes] you got a quick overview of what they have here.” – Male, 24 (P7)

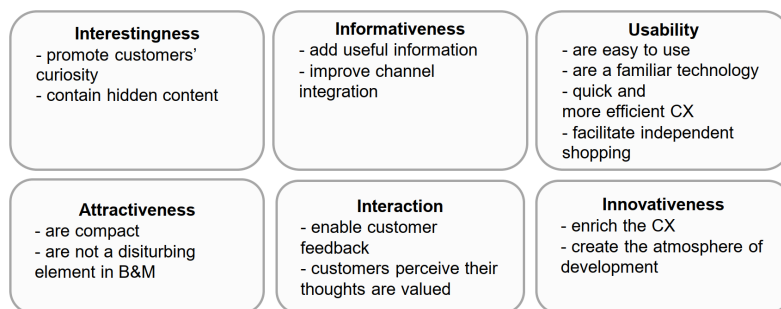
This kind of digital enrichment was perceived as a sign of the brand’s development. For the participants, QR codes symbolized modernity, development, pioneering, and alternativeness. Similarly, QR codes are found to be perceived as a positive invention (Kim & Woo, 2016). Bringing QR codes to the B&M environment was associated with the B&M store and the whole brand being developed, in order “to keep up with the times” (P2). QR codes positively affected the store environment, which, in turn, affected the image of the whole brand.

“Those QR codes as a final touch to the new look of the renovated store, it seems that the whole store has generally moved into a new era with a more modern touch. It certainly is a good thing.” – Female, 24 (P13)

“The QR codes affect the brand image. They tell of the desire to develop something. Like [the brand] is not stuck in place but is constantly trying to reform their business model.” – Female, 25 (P10)

## 5 Conclusion, Limitations, and Future Research

In this qualitative study, we investigated how QR codes can enhance CX in B&M stores and we found six main advantages: interestingness, informativeness, usability, attractiveness, interaction, and innovativeness. The findings are summarized in detail in Figure 1 below.



**Figure 1: Summary of the findings on how QR codes enhance CX in B&M stores**

In conclusion, this study addresses the research gap of the multiple ways how QR codes can enhance CX in fashion B&M environments. As a novel finding, we suggest that independent engagement with the products enabled by QR codes enhances some B&M customers' CX. This study also shows that channel integration provided by QR codes enhances CX because, in line with Jung et al. (2012) and Kjeldsen et al. (2023), customers value additional information. In line with Kim and Woo (2016), engaging with the products and the brand is perceived as easy and quick with QR codes, making them usable tools that enable customer-company interaction (Klein, 2003). This results in enriched and yet effortless CX in B&M. QR codes also enhance the cognitive dimension of CX, as they arise curiosity among B&M store customers, which is in line with Srinounpan et al. (2020). Consistent with Nogieć (2017), it seems that the interestingness of QR codes stems partly from their novelty in B&M store environments. Additionally, the curiosity about QR codes is not likely to disappear soon due to their appearance which contains hidden information. In addition, bringing QR codes to the B&M environment resulted in positive associations with the whole brand, such as perceived development and perceived openness towards customer feedback enabled by QR codes as easy interaction possibilities (Kim & Yoon, 2014). These brand-related positive associations during

the B&M store visit contribute to CX (Parise et al., 2016) and, ultimately, may deepen the brand relationship (Paananen et al., 2022a; 2022b). In sum, we suggest that the presence of QR codes expands the physical B&M store environment practically into an omnichannel environment preferred by customers (Briedis et al., 2020). As a practical implication, we recommend B&M retailers to offer additional information with QR codes because of the identified six advantages. Integrating online channels with QR codes into B&M stores (Yoon & Kim, 2014) may also reduce the loss of today's and tomorrow's customers to competing retailers' online channels (Spaid et al., 2019).

Finally, this study does not come without limitations. Firstly, studying experiences is always situational, so the generalizability of the findings to other B&M stores and other cultural contexts needs future research with different product groups and in different countries. Secondly, this study focuses on how QR codes enhance CX, so research on QR codes' possible negative contributions to CX is also needed. In addition, regardless of whether QR codes are used, it seems that their mere presence in the B&M store environment affects CX, which needs more research. For quantitative research on QR codes, interestingness, informativeness, usability, attractiveness, interaction, and innovativeness could be operationalized as empirically measurable constructs. We also call for more holistic omnichannel research on CX that recognizes digital and cyber-physical elements' tangible and intangible interfaces and consequences in B&M environments.

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### Appendix 1: Information on the participants

	Gender	Age	Status	Interview duration (min)
P1	Female	37	Employee	43
P2	Female	30	Student, employee	53
P3	Female	23	Student	64
P4	Female	40	Employee	84
P5	Female	29	Employee	47
P6	Male	29	Student, employee	65
P7	Male	24	Student, employee	52
P8	Female	33	Employee	58
P9	Female	42	Employee	49
P10	Female	25	Student	40
P11	Male	38	Employee	69
P12	Female	33	Employee	70
P13	Female	24	Student	51
P14	Female	32	Employee	65
P15	Female	29	Employee	64

### Appendix 2: QR codes on display in the B&M store

