

<b>Institution:</b> University of Southampton		
<b>Unit of Assessment:</b> 32 Art and Design: History, Practice and Theory		
<b>Title of case study:</b> 32-02 Silver Shoppers: designing a better supermarket experience for the older customer		
<b>Period when the underpinning research was undertaken:</b> January 2010 – November 2017		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b> Yuanyuan Yin	<b>Role(s) (e.g. job title):</b> Associate Professor	<b>Period(s) employed by submitting HEI:</b> September 2009 – present
<b>Period when the claimed impact occurred:</b> August 2013 – July 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> No		
<p><b>1. Summary of the impact</b></p> <p>The Silver Shoppers project has enhanced UK and Chinese retailers' understanding of addressing older customers' unmet needs in the supermarket environment. Through social design research, industry engagement and exhibitions, Silver Shoppers has challenged attitudes to the everyday problems faced by older people in the UK and China when shopping in supermarkets. It has produced new products to improve the shopping experience for the older generation, such as an augmented trolley, and has drawn attention to non-inclusive characteristics of supermarket layout, signage and shelf design. The project brought together researchers, older people, retailers, charities, students, design professionals and consumers in co-design activities. It raised awareness among these participants, and the wider public, of everyday challenges faced by older people, and the opportunities to redesign the shopping experience.</p>		
<p><b>2. Underpinning research</b></p> <p>By 2050, the world's population aged over 60 is expected to reach 2 billion, up from 900 million in 2015, according to the World Health Organisation. Given this demographic shift, older people represent an increasingly valuable target market for retailers, none more so than supermarkets, which have expanded significantly in recent years as smaller local shops, traditionally favoured by older consumers, have closed. Ethnographic research led by Dr Yuanyuan Yin starting in the UK context 2010, has sought to understand the challenges that older people face in the supermarket environment across the different cultural contexts of the UK and China. She has used these findings to co-develop design innovations to improve the shopping experience for older people in both countries.</p> <p>The research began its comparison of the UK and Chinese contexts in 2012 with an initial investigation into the difficulties experienced by older supermarket customers in the UK. Several challenges for older people were identified: understanding where certain products were located; accessing products on high or low shelves; poor signage and labelling; and inappropriate portion sizes. Dr Yin and her team concluded that supermarkets could learn from research into new ways of applying digital support and ergonomic design within the shopping process and environment [3.1].</p> <p>This led into a broader ESRC-funded project, <i>Silver Shoppers</i>, the first systematic study of the shopping experience for older people at a national level in the UK and China. Led by the University of Southampton, collaborators included Tsinghua and Brunel Universities, Sainsbury's – who participated in focus groups and facilitated in-store observations – and Age UK, who supported the recruitment of study participants. In-depth focus groups involving 22 people aged 68-97 were conducted in two UK locations to investigate the factors that influence older customers' shopping experiences. Researchers designed an ethnographic user study that used 'cultural probes', an experimental technique to gather information for design inspiration, to analyse the shopping experiences of 30 British and Chinese older customers for six weeks in Somerset, Shropshire and Berwick-upon-Tweed in the UK, and Shandong, Sichuan and Jiangsu in China. Participants completed shopping evaluations and diary entries, and researchers carried out video-based observations and interviews. Participants felt supermarkets were not designed to meet their needs and were geared more towards families. They often found it</p>		

difficult to locate products, blaming inadequate signage and changeable store layouts. They struggled with heavy baskets, deep trolleys that were hard to manoeuvre, and high and low shelving with stock pushed towards the back. Many were reluctant to ask staff for help and some of those interviewed proposed the idea of 'slow' checkout lanes, highlighting the importance of having opportunities for in-store social interaction to address feelings of loneliness. The findings were shared with store managers in the UK and China [3.2] and published as an open-access dataset on ReShare, the UK Data Service's repository [3.3].

These findings inspired and guided a social design programme 'Design for Ageing' in which staff and students at Southampton, Tsinghua and Brunel co-developed ideas for new products and services, based on inclusive design principles, that could improve the supermarket environment for older people. Twenty-four concepts and prototypes were developed, including: an iTrolley which is smaller, easier to manoeuvre than the standard trolley and which guides customers around the store, allowing them to scan items via a shopping app on the attached iPad (Fig. 1); a 'follow me' robot basket; and an in-store 'shopping café'(Fig.2), where people can choose items via a touchscreen pad while socialising [3.4]. The prototypes were exhibited at the 2017 London Design Festival [3.5]. From these products, Yin pursued a commercialisation plan to improve the original iTrolley design and develop a new product named Smart Trolley (Fig.3), which is more stable, cheaper, allows customers to carry their shopping bags in it, and has a more developed version of the app to support in-store navigation [3.6]. The ESRC study led onto a joint paper with Brunel and the University of Liverpool that introduced the concept of psychosocially inclusive design, within the context of supermarket shopping for older people. It looks beyond issues around physical access to consider four necessary psychosocial constructs – cognitive, emotional, social and value, which encourages designers to balance older peoples physical and psychosocial needs in inclusive product design [3.7].



Figure 1. iTrolley



Figure 2. Shopping Café

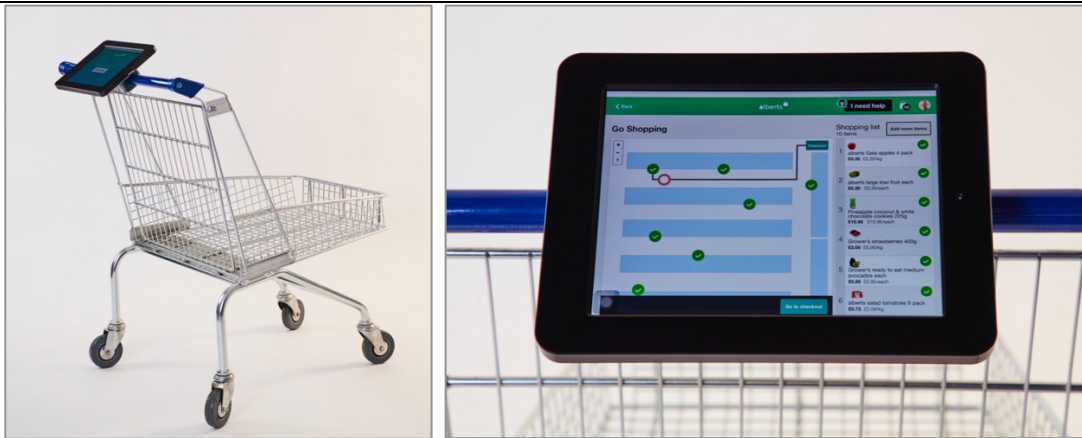


Figure 3. Smart Trolley

### 3. References to the research

**3.1** Yin, Y., Pei, E. and Ranchhod, A. (2013). The Shopping Experience of Older Supermarket Consumers. *Journal of Enterprise Information Management*, Vol. 26, Iss. 4, pp. 444-471.

<https://doi.org/10.1108/JEIM-05-2013-0025>

**3.2** Yin, Y, Qiu, S. (2018). "Social responsibility of cultural industry: holistic supermarket experience design for older customers in China". *Cultural Industry Research Journal*, Vol. 17, pp. 65-75 (in Chinese). Available on request.

**3.3** Dataset (2020), including focus group and ethnographic study reports, and two ESRC project reports for *Silver Shoppers* <http://reshare.ukdataservice.ac.uk/853083/>

**3.4** iTrolley Product Design (2018). Registered with UK Intellectual Property Office.

<https://www.registered-design.service.gov.uk/find/6031336>

**3.5** Yin, Y., Qiu, S., and Ranchhod, A. (2017). An exploratory study of older customers' holistic supermarket shopping experience in China. In E. Bohemia, C. de Bont, and L.S. Holm (Eds.), *Conference Proceedings of the Design Management Academy* (vol.4): 1475-1486. Listed in REF2.

**3.6** Smart Trolley Product Design (2020). Registered with UK Intellectual Property Office.

<https://www.registered-design.service.gov.uk/find/6084204>

**3.7** Lim, Y., Giacomini, J., Yin, Y. and Nickpour, F. (2020). "A First-Time Investigation of Inclusivity in Design; Inclusive Supermarket Design for Older Individuals". *Journal of Design Research*, Vol 17, No 2/3/4, pp.93-124 <https://doi.org/10.1504/JDR.2019.10025040>

**G1** Yin, Y (PI): *Silver Shoppers: designing a better supermarket experience for the older consumer*, ESRC Future Research Leader Scheme, ES/K009648/1, 2013-2017, £293,337.

### 4. Details of the impact

This research has produced two main benefits a) collaborative activities with the public and key stakeholders that address the everyday challenges that older people face, and b) changing UK and Chinese retailers' understanding of older customers' unmet needs in the supermarket environment through inclusive design. Through the co-design of innovative products and services aimed at improving older people's shopping experience, the Silver Shoppers research project has engaged the retail industry, design professionals, age-related charities and consumers across generational divides to address inclusive design for everyday challenges. Having registered the iTrolley design (Fig.1) with the UK Intellectual Property Office in 2018, Yin partnered with design consultancy Burrell Innovation to further research and develop a new product prototype named Smart Trolley (Fig. 3) and an updated shopping assistant app that incorporates 'smart' features into the trolley, such as in-store navigation via an on-board tablet. This process involved usability tests with older people, which were conducted in situ at a Sainsbury's store, working alongside the store's manager.

**Public debates and collaborative activities**

The Silver Shoppers initiative has increased public awareness of the often-unseen challenges facing older people in supermarkets while allowing groups of older people to develop a shared appreciation of the difficulties they face. The first public exhibition *Design for Ageing*, at Winchester School of Art on August 20-23, 2013, was covered by ITV News Meridian, with an audience of 310,000 [5.1]. It screened the videoed shopping observations and allowed younger people to experience an older person's perspective on the shopping process, by wearing glasses to simulate impaired vision and weights and elastic bands on their hands to mimic stiff joints. Speaking to ITV about the exhibition, a representative of charity Age Concern said: *"Anything that simulates getting old, and what it's like to be older, how it restricts your movement, maybe your eyesight, vision, how to pick things up, has to be a good thing. It raises awareness of what older people have to go through every day in their normal lives."*

The *Retail Futures* exhibition in 2017 attracted an international audience, including representatives from big retail companies such as Tesco and Sainsbury's, design companies, design and branding strategists, ageing related organisations, design students, and families with young children. It was part of the London Design Festival, a globally significant annual event that reported an audience of nearly 420,000 in 2017, and was covered by China's Xinhua News Agency, reaching an audience of up to 272,544 [5.2]. Presenting the ESRC-funded study findings, the exhibition featured video documentaries of older shoppers in the UK and China, 24 product design and service ideas developed by academics and students from Southampton, Brunel and Tsinghua, shopping simulations and a giant post-it note board, where people wrote thoughts and ideas. As an indication of the exhibition's impact on visitors' awareness and understanding of what older people experience, sample comments included: *"Using the ageing equipment helps (you) understand how you feel as (an) older person"; "Really detailed and thorough research – particularly enjoyed simulating an old person dealing with the grocery shopping at (the) supermarket"; "Well done on this great piece of research. As a brand strategist, I often talk about age being a mindset, but your interactive experience has made me realise the very real physical realities brands have to care for".* [5.3]

This feedback also showed recognition of the value of addressing older people's unmet needs through such projects. Comments included: *"As a frequent customer of supermarkets and as a senior citizen, I am happy to see that research is being done to improve the supermarket experience for seniors"; "Very inspiring to see a study that focus(es) on the elderly generation. One generation that is usually excluded"; "Excellent!! I'd like to apply this methodology to (the) Japanese market!"*. [5.3]

Through the user studies, focus groups and questionnaires, the research team engaged 303 people aged 65-plus in the UK and 366 in China. The collective process of reflecting on shared challenges and the act of bringing older people together in community settings was viewed as a positive and constructive experience by many participants. For example, one participant (female, from Alnwick, UK): *"taking part in the user study has raised awareness for me. It has been an experience from a new point of view, looking differently at the shopping I have been doing. I think the design findings of this project are particularly useful."* [5.4]

Focus groups and iTrolley usability studies involving older people recruited by Methodist Homes for the Aged (MHA), the largest charity care provider for older people in the UK, revealed this age group's enthusiasm for new technological approaches. Comments from participants in the July 2019 test include: *"Yes, I think it [the iTrolley] is useful ... I am sure people would [use it]"; "I like the design of the trolley which is not too low [or] too high, [it] is a good size"; "I am impressed ... particularly the iPad on it, that is very straightforward to use"*. [5.8]

A feedback visit with participants from Nanjing, China in July 2018 revealed that older shoppers who participated in the study continued to benefit from the experience. Participants explained that participation in the user study has made them think more about shopping and supermarket design for older people: *"after this project, I can easily find issues in a store. Some products were positioned on a high shelf and I could not reach them. So I went to their staff and let them know. The staff apologised and realized that design was not convenient to older people."* Several



expressed appreciation that the project aimed to improve older people's quality of life, and an interest in taking part in future studies. [5.4]

### **Inclusive Design: Changing UK and Chinese retailers' understanding**

Dr Yin shared research findings at different stages of the study at eight meetings with Sainsbury's and held focus groups with supermarket store managers in the UK (April 2014) and community supermarkets in China (March 2015). These discussions strengthened retailers' understanding of the limitations of existing supermarkets in both contexts in meeting older consumers' needs. The meetings with Sainsbury's demonstrated design innovations that could help supermarkets connect with their older customer base. During a meeting to gather feedback on design ideas, one Sainsbury's manager said of the iTrolley: *"Great simple concept, no need to bend down would be a real advantage for many customers. I love this – will be very helpful for customers who struggle to reach the bottom of a normal deep trolley."* [5.9] A Sainsbury's store manager who engaged with the project since 2013 commented: *"When I joined in this store as the store manager, we knew the store is high trading intensity, a terrible place to shop because of its size, old flooring, town centre shop, no investment, there were many problems. So, it was very interesting to be involved in the project back to 2013, to change the store and [explore] how to make it more suitable to the ageing population...I think the project inspired me to improve my store...We look at the average age of the local area and found many older customers. My colleagues also engaged in improving the store, during that time and we trialed the plastic long handle shopping basket."* [5.5]

In China, the manager of a community supermarket, Zhaolan Yuan, in Beijing, who attended a focus group in 2015, later reported in July 2019 that the study findings had prompted him to act. He explained that as a result of participating in the Silver Shoppers project he better understood older Chinese customer's needs *"We improved our store environment based on the suggestions, such as reducing the top shelf height. They were 1.8m but now are 1.6m... after that change, the store space looked much better as well. Customers can have their first glance through the store and make things more visible."* [5.6] Yin has continued to present the study findings to supermarket executives and to policymakers in China. In October 2019 she presented her results to the policymakers on the SciTech Committee of China Silver Industry Association. The Director commented that *"The Silver Shopper Project Report has significant practical value, and meaningful impacts on policymaking to guide silver industry development in China. The research outcomes supported us to better understand older Chinese customers' shopping habit and needs."* [5.10] Following a separate presentation in October 2019 to Suning Commerce Group, one of the largest non-government retailers in China, the general manager for the Beijing area said: *"I think your research outputs do help us a lot... In our next business plan, we will think about how to provide a better service to older customers. The shopping issues identified from your research are the issues we need to deal with in our near future. Based on your research findings, we will select some of your findings that can be applied into our store, such as to change its layout plan and signages in the store"*. [5.7]

### **5. Sources to corroborate the impact**

- 5.1** <https://www.itv.com/news/meridian/update/2013-08-22/shopping-study-help-for-the-elderly/> and email from ITV corroborating 310,000 audience figure for the 22 August 2013 news.
- 5.2** Evidence of media coverage and media monitoring report.
- 5.3** Summary evaluation report from Retail Futures exhibition, London Design Festival, 2017.
- 5.4** Feedback from UK and China study participants.
- 5.5** Statements from Sainsbury's store managers.
- 5.6** Interview with manager of community supermarket, Beijing
- 5.7** Interview with SuNing Commerce Group Manager, October 2019, Beijing, China
- 5.8** Feedback from iTrolley user study workshop, July 2019, Winchester
- 5.9** Sainsbury's feedback on new design ideas 5 January 2015
- 5.10** Testimony from the Director of the General Office SciTech Committee of China Silver Industry Association.