Service Robots for Fashion Retail Stores: Lessons Learned from a Case Study

Tibert Verhagen, Michelle Straver, David Vergouw, Jacqueline Arnoldy, Chris van Veldhuizen, Koen Hindriks

Abstract - **Service robots provide retailers with new opportunities to innovate their in-store service offerings. Despite advances made in the fields of human-robot interaction, information systems, and marketing, there is relatively little known about how to apply a service robot in retailing. In this paper we aim to shed light on this issue by exploring the added value, roles, and prototyping of a service robot in fashion retailing. Using two Dutch fashion stores as real-life settings, we apply different interaction techniques (observation, interview, survey, structured role play, prototyping) to generate first insights and obtain lessons learned. The results of our study suggest that fashion retailers would benefit most from using service robots for communication of promotions and provision of product information. When applying service robots to these use cases, customers seem to prefer briefly and clearly expressed information that is communicated in a style that matches (in-) store communications. Still, the lack of personal attention and social support associated with a service robot makes retailers and store personnel rather reluctant to use them for their service excellence-oriented stores.**

Keywords— **Case study, Retail, Service encounter, Service robotics**

I. Introduction

In an economy characterized by its dynamism, innovativeness, entrepreneurial culture, use of disruptive technologies and new business models [1], it has become crucial for owners and managers of physical retail stores to continue to distinguish themselves in order to remain competitive. Providing a high-quality service to customers is seen as a valuable asset in this regard because it is assumed to improve customer satisfaction, add to customer loyalty, and contribute to the financial performance of the retail organization [2, 3, 4, 5]. Central to good service is the so-called service encounter, that is, the direct interaction between customer and organization at the time of service [6]. Service encounters in retail stores have been subject to rapid technological developments in recent years [7]. An emerging technology that is expected to radically change the service encounter in the coming years is the service robot. A service

robot is defined here as an autonomous technology with a physical interface that is applied in service encounters to interact, communicate, and provide a service with an organization's customers [8, 9]. Due to developments in artificial intelligence, machine learning, speech and voice technology, motor and sensory technology, and connectivity, service robots such as the Softbank robot Pepper and the Qihan Technology Sanbot Elf are increasingly able to take care of service tasks. This includes welcoming customers, taking orders [10], answering questions, finding products [7] and creating a sense of social presence [11]. The deployment of service robots in service encounters is expected to provide new opportunities for retailers to create new forms of value and innovate their service business model [12, 13, 14].

Despite the assumed relevance of service robots in physical retail stores, there is a lack of knowledge in the academic and business domain how to set up and deploy service robots in in-store service encounter settings [15]. This knowledge gap not only hampers the academic community to get a fuller understanding of the added value of service robots in retailing at large, it also prevents retail practitioners from optimizing the use of service robots. We aim to contribute to the field of service robotics by providing first insights into the needs and requirements associated with setting up and deploying service robots in the field of fashion retailing. In collaboration with a smallsized Dutch fashion store selling progressive and sustainable brands to an elderly segment in the market (Amsterdam, store 1) and a medium-sized Dutch fashion store selling a multitude of brands to multiple customer segments (Varsseveld, store 2), we center our inquiry on exploring the added value, roles, and prototyping of a service robot in these outlets.

In the remainder of this paper, we first elaborate upon related work underlying our study. Then, using interaction design techniques and procedures suggested in previous study (e.g., [15]), we focus on the two Dutch fashion stores as specific use cases and report on the results of empirical exploration. We conclude with a discussion of our findings and look ahead by proposing future research directions.

II. Related work: Robots in retail

Store owners can choose from endless options when deciding to implement new technologies [11, 16]. While the impact of some technologies on retail have been studied before (e.g., mobile apps, automated teller machines, digital signage), the potential of service robots has only been scarcely addressed

[17]. Nonetheless, service robots in particular seem to offer opportunities for retailers when assisting customers during their shopping experience [18]. Service robots are able to attract customers and convert them into buyers [19], provide product information, recommend personalized items, and even affect buying decisions by expressing its own emotional state [20]. Given that robots are known to provide customers with certain impressions of social presence [21], their use might lead to more advanced store images and purchase intentions [22].

The rise and use of robots in retailing exemplifies that service encounters in retail environments have become more and more a mix of social contact and technology ("high touch, high tech", [23]). As a consequence, the roles of customers and employees are fundamentally changing. For instance, by using a service robot, customers are able to complete part of the service process independently which makes their role in establishing the service encounter more proactive (cf. [24, 25]) At the same time, employees are asked to act as 'enablers' of the robots, by understanding it, helping the customer with robot usage where necessary, and interacting with the robot to optimally serve the customer (cf. [7, 26]). Obviously, studying customer usage of robots in service encounters in retailing does demand for a rather comprehensive approach in a sense that, next to the processes to be performed and physical shopping environment, also the customers, in-store personnel, retailer (i.e. managing director), and robot itself should be taken into account [7, 8].

When implementing in-store service robots, customer acceptance and adoption is crucial for success [27]. Some robot characteristics have been recognized as important drivers of customer acceptance. For example, anthropomorphism and animacy may add to trust, enjoyment, and intentions to use robots [28, 29]. Comparably, the functionality and perceived usefulness of robots may increase the willingness to interact with it [30]. Next to robot characteristics also the service task plays a role in robot acceptance. During a physical shopping experience, customers can be serviced in a functional way (e.g., information provision, checking product stocks), emotional way (e.g., giving personal attention), or a mixture of both (e.g., personalizing advice). Huang and Rust describe these tasks as mechanical service, feeling service, and thinking service [31]. They suggest that, following Waytz and Norton [32], mechanical service can be performed best by service robots, a feeling service by humans, while a thinking service would benefit most from a combination of human and artificial intelligence. More important, depending on the kind of service task corresponding robot-customer interaction strategies should be designed and tested. Encouraged by observations in the academic field that interaction strategies for service robots demand for more development [31], and given that selecting feasible use cases for retailing practice still is a challenge [33], we decided to select and set up use cases to arrive at first insights.

III. Use Case Design for a Fashion Retail Store

In order to be able to make strategic choices about the deployment of technology in the design of customer service encounters, we need to learn more about which roles are suitable for service robots in retail, how they can add value, and how deploying such robots impact employee/customer outcomes [7, 8]. The case study we present here has been designed using several different interaction design techniques [34, 35] and, unlike previous study centering on social robots in shopping malls [36], shopping markets [37] and home improvement stores [38], has an explicit focus on fashion stores. Two fashion retail stores participated in our case study and the design, development, and evaluation of several use cases. Techniques were selected to initially broadly explore potentially interesting use cases for the application context, and then to collect data for further refinement and design of actual robot-customer interaction. These techniques include in-store observations, interviews with all stakeholders (customers, personnel, and retailers), customer surveys, a structured role play study, and robot prototype and pilot evaluation in one of the stores. Our aim here was to explore the feasibility and acceptability for specific use cases of a service robot in a fashion retail store. That is, our aim has been to improve our understanding of the added value of service robots in fashion retailing and obtain lessons learned from customer data, input from personnel and retailers, and prototype evaluation.

A. Observations and interviews

To gain first insights into the service encounters between in-store personnel and customers, and identify relevant processes therein, a series of in-store observations for both participating stores was conducted. To structure the observations and make them useful from a retailer's point of view, we made use of an observation form that contained the seven steps of the in-store sales process [39] as foundation. The retailers and in-store personnel confirmed the relevance of the steps, as these reflected a multitude of service-related activities they applied on a daily basis (e.g., inviting passers-by, informing, giving advice). For each of the steps, service interactions were noted during the period of observation, together with relevant customer characteristics (e.g., gender, age). Observations took place between October 12 and October 24, 2020, resulting in thirty in-store observations, which were equally distributed across the fashion retailers. To collect additional information about the service processes, and get input regarding the preferred position of a service robot in the physical shopping environment, structured interviews were conducted among customers (store 1: n = 15, store 2: n = 15), store personnel (store 1: n = 5, store 2: n = 5), and the two retailers. All participants were asked for their opinions and preferences regarding service encounters in the store, including their attitudes towards using robots for these encounters. The results were analyzed by coding and counting.

Results. From the conducted observations and interviews, it became paramount that the most commonly occurring service encounter processes in the stores focused on 1) welcoming the customer upon entering the store, 2) providing product information, and 3) providing styling advice and personal support. Welcoming the customer upon entry is identified by

personnel and retailers as a trivial moment in the customer experience in which a customer should feel 'being noticed by the employee'. Prior to offering product information and styling advice, the two stores seemed to apply a slightly different approach. Whereas store 1 first creates a personal atmosphere by offering customers that enter the store a hot beverage (coffee or tea), store 2 gives customers the opportunity to first browse the store independently before approaching them. When providing product information of style advice, the in-store personnel of the stores are frequently asked for product availability. Given the size and variety of the assortment, giving this information mostly requires consulting an inventory system which was a rather time consuming activity given that the system was positioned in the back office of both stores. During the interviews, personnel and retailers described this situation as 'being unable to meet customers' needs. They assume customers expect the same instant availability of information as provided during online shopping experiences. Personnel and retailers are ambiguous about employing a service robot. Where they see benefits themselves, they expect that some customers might be hesitant towards using an in-store service robot as it might not lead to the personal and social assistance they need. In terms of instore location, they mention that a service robot could be best placed in such a way that customers are able to see and use it, without interfering with the procedures and tasks to be performed by the in-store personnel.

B. Survey

To develop more understanding of the needs and expectations of customers regarding using a service robot in the stores, a survey was conducted. In the last week of January and the first week of February 2021, the retailers invited customers via a newsletter to fill in an online survey. The survey consisted of questions about customer demographics (gender, age), shopping behavior (store visit frequency, shopping motivations), in-store service (frequency of using in-store personnel; appreciation of service level), and the service robots (attitude towards service robots, preferred service robot tasks). In total 432 customers completely filled in the online surveys (store 1: n = 67, store 2: n = 366). The results were analyzed using SPSS Statistics for Windows, version 27.0 (SPSS Inc., Chicago, Ill., USA).

Results. The analyses of the survey data lead to a number of observations. First, in terms of demographics, 79.6% (n=344) of the customers were female and 20.4% (88) were male. The vast majority of the customers were between 46 and 75 years old (78.7%, n=340) and reported to visit the store between a few times per month and few times per year (77.8%, n = 336). This implies our sample mainly consisted of middle aged and older female shoppers, who visit the stores a few times per year or more. Second, in terms of shopping motivations, the customers most often mentioned a wide range of products (77.3%, n=344), a pleasant store atmosphere (67.8%, n=293), a good accessibility (53.2%, n=230), and personal service (49.5%, n=214) as reasons to visit the store. Third, regarding their use of the in-store personnel, 49.3% (n=213) indicated to

make use of store personnel, whereas 35.4% (n=153) reported to use the store personnel occasionally. The services the customers appreciated most from the store personnel included sizing advice (85.9%, n=371), styling advice (72.5%, n=313), and a welcome on arrival (72.0%, n=311). Fourth and finally, when focusing on the use of service robots in the store, the general opinion of the customers was rather skeptical as only 14.1% (n=344) had a somewhat positive to positive attitude towards these robots. The robot services that the customers assumed to be of the highest added value included provision of product and stock information (34.0%, n=147), highlighting products on offer (25.0%, n=108), showing corona prevention information (23.6%, n=102), and helping with wayfinding (19.9%, n=86).

C. Structured Role Play

We then focused more on the possible interactions between a service robot and customer by making use of a structured role play technique [40]. Drawing upon the insights gained from the observations, interviews and surveys, the following two services were selected for the structured role play: communication of promotions and provision of product information. Other services, such as the provision of personalized advice and stock information, were also considered but in consultation with the retailers not selected as these would have required substantial additional efforts in terms of integration with their stock and/or transaction systems, making these fall outside the scope of the current exploratory study. For each of the two services basic robot-customer interaction scripts were made. Given that Softbank Robotics' robot Pepper would be used by the research team in a next stage for prototyping; this robot uses voice, movement, gesture and an interactive screen on its chest for communication, the two scripts were developed to have a researcher in combination with a tablet computer (i.e. iPad) simulate a situation as if a customer would interact with Pepper. The scripts were evaluated and approved in advance by the retailers and store personnel. The role play was performed in the two stores in May 2021. In total, 42 customers participated (store 1: n=23, store 2: n=19). A second researcher observed and noted customer reactions and comments. The customer experience was evaluated using a semistructured interview focusing on script design, means of communication, tone of voice, time of use and robot placement.

Results. The role play led to a couple of interesting outcomes. First, half (50.0%, n=21) of the participants showed hesitance to make use of the presented two services. Customers younger than 60 years old (42.9%, n=18) seemed to be rather open to the interactions, whereas customers older than 60 years (57.1%, n=24) appeared to be more conservative and preferred interaction with store personnel. During the role play it also became evident that customers were uncomfortable when directly confronted upon arrival with the service robot simulation. A better approach seemed to be to approach customers for the simulation when they were already browsing the store. Regarding the use of information, both contents and communication style seemed to matter. The customers

indicated to favor succinct information provision and as such demanded for a maximum of ten best-selling or sale items and four types of product information (type of material, sizing information, available color options and store placement of the item). To communicate the information, the tone of voice needed to match the one customers recognize from (in-)store communications.

D. Robot Prototype

As a successive step, the learnings from the structured role play were implemented in the social humanoid robot 'Pepper' (Softbank Robotics). From the data collected a script was derived to automate the interaction for offering product- and promotional information. On two separate occasions (June 16 and 23, 2021) the robot was deployed as a standalone to interact with customers at fashion store 1. Customer-robot interactions and customer characteristics (age and gender) were observed and noted by a researcher and log data was collected. After each interaction session with customers with the robot, short structured interviews were conducted to verify consumer characteristics, to inquire about the customer experience and the possible effects of service robot deployment on making a purchase and customer loyalty. Results were analyzed by coding and counting.

Pepper in the store

Results. A total of 94 customers were observed, more female (>65%) than male, and mostly older people (estimated >60 years old). Only 29 (30.8%) of these 94 customers interacted with the robot. Both touch via the robot's tablet as well as speech were offered as interaction modalities and also used by customers. During interaction, 15 participants dropped out because of loss of interest (n=13), intervention by an in-store employee (n=1) or because the offered service did not apply to them since they had just purchased an item and were leaving the store (n=1). Interviews showed that most customers that interacted with the robot did so out of curiosity. They indicated that the robot did not directly provide an incentive to purchase, to revisit the store or to extend their visit. Most customers saw the robot as merely an interesting new in-store feature, and some indicated they were concerned that interaction with robots in a store would lack warmth and a personal touch. This, we believe, highlights that it should be immediately clear what a service robot can do for a customer.

IV. DISCUSSION AND CONCLUSION

This exploratory case study aims to provide first insights into the needs and requirements associated with setting up and deploying service robots in the field of fashion retailing. Following previous literature [7, 8], we intended to learn about the suitability and added value of service robot roles by adopting a service encounter perspective in which robot, customers, personnel, retailers, service processes and shopping environment were taken into account to select and evaluate use cases. The results of our inquiry yield a number of key findings. First, one of our main findings is that the communication of promotions and provision of product information seem use cases most suitable for service robots in fashion retail stores. These use cases were amongst those mentioned most often by customers and deemed relevant by the in-store personnel and retailers. Although the provision of stock information and personal styling advice could have been valuable use cases too, these seemed too complex in practice to incorporate on the short term given foreseen integration difficulties with the information systems of the two fashion retailers. Second, personnel and retailers see the advantages but also have concerns regarding the adoption by customers due to a lack of personal attention and social assistance. Regarding the in-store application of a service robot they favor positioning the robot on a spot it grabs customer attention but where it does not hamper/distract the personnel from performing their usual tasks. Third, when considering the user experience, we found that customers preferred succinct information provision (no overload), and a tone of voice that aligns with (in-)store communications. However, many customers did not reciprocate the invitation to interact from the Pepper robot and appeared to be uncomfortable when directly confronted.

This research is subject to a couple of limitations that lead to interesting options for further research. Regarding the used prototypes, we acknowledge these need further development to offer more value to customers. Although the selected use cases seem to provide useful information services to customers, in our prototype evaluation we found that initiating and maintaining user engagement remains perhaps an even bigger challenge in fashion retail stores compared to other retail settings. We believe that one of the main issues here is to make transparent to customers what services the robot can offer that they may find useful. We have planned incorporating and examining such transparency in our prototyping in future research. Another limitation concerns the bias in age in the customer base of both fashion retailers. Most customers were middle aged or older, which could have had an effect on the evaluation of the value of service robots in general and the perception of the prototyped use cases in particular. Cross-validation with other customer samples seems required and is worth further study. Finally, we mention the business models of the fashion stores under examination. At the heart of the business model of store 1 is service excellence, that is, it services customers in a very personal, social way (warm welcome, social talk, personal advice). This business model, which is rather common to small-sized fashion retailers in The Netherlands, might have made customers, in-store personnel

and retailers to evaluate a service robot of less added value as robots today are assumed to be best in fulfilling more instrumental tasks (see [8]). This could make service robots more applicable for larger fashion retailers using business models such as, for instance, the fast fashion model as applied by companies such as Zara (lower price, less assortment, fast turning inventory) [41]. We think it would be of particular interest to explore the alignment of service robot application and retail business models with new research.

ACKNOWLEDGMENT

REFERENCES

[1] K. Schwab, "The Global Competitiveness Report 2019," *World Economic Forum*, 2019.

[2] V.A. Zeithaml, M.J. Bitner, D.D. Gremier, "Service Marketing: Integrating Customer Focus Across The Firm", 3rd edn. McGraw-Hill, New York, 2016

[3] M.J. Bitner, and H.S. Wang, "Service encounters in service marketing research" In: R.T. Rust, and M.H. Huang (eds.), *Handbook of Service Marketing Research*, pp. 221-243, Edward Elgar Publishing, Cheltenham, UK, 2014
https://doi.org/10.4337/9780857938855.00019

[4] P. Sok, and A. O'Cass, "Achieving service quality through service innovation exploration– exploitation: The critical role of employee empowerment and slack resources," *Journal of Services Marketing,* vol. 29, no. 5, pp, 137-149, 2015.
https://doi.org/10.1108/JSM-03-2014-0085

[5] J. Wirtz, and V. Zeithaml, "Cost-effective service excellence, " *Journal of the Academy of Marketing Science,* vol. 46, no. 1, pp. 59-80, 2018.
https://doi.org/10.1007/978-3-319-98512-1_5

[6] A. L. Ostrom, D. Fotheringham, and M.J. Bitner, "Customer acceptance of AI in service encounters: understanding antecedents and consequences," In: P. Maglio, C. Kieliszewski, J. Spohrer, K. Lyons, L. Patrício, and Y. Sawatani (eds), *Handbook of Service Science II*, Springer, Cham , pp. 77-102, 2019.
https://doi.org/10.1007/978-3-319-98512-1_5

[7] B. Larivière, D. Bowen, T. W. Andreassen, W. Kunz, N.J. Sirianni, C. Voss, A. De Keyser, "Service Encounter 2.0: An investigation into the roles of technology, employees and customers," *Journal of Business Research*, vol. 79, pp. 238-246, 2017.
https://doi.org/10.1016/j.jbusres.2017.03.008

[8] J. Wirtz, P.G. Patterson, W.H. Kunz, T. Gruber, V.N. Lu, S. Paluch, and A. Martins, "Brave new world: Service robots in the frontline," *Journal of Service Management,* vol. 29, no. 5, pp. 907-931, 2018.
https://doi.org/10.1108/JOSM-04-2018-0119

[9] D. Belanche, L.V. Casaló, C. Flavián, and J. Schepers, "Service robot implementation: A theoretical framework and research agenda," *The Service Industries Journal*, vol. 40, no. 3, pp. 203-225, 2020.
https://doi.org/10.1080/02642069.2019.1672666

[10] M. Mende, M.L. Scott, J. Van Doorn, D. Grewal, and I. Shanks, "Service robots rising: How humanoid robots influence service experiences and elicit compensatory consumer responses," *Journal of Marketing Research* vol. 56, no. 4, 535-556, 2019.
https://doi.org/10.1177/0022243718822827

[11] D. Grewal, S.M. Noble, A.L. Roggeveen, and J. Nordfalt, "The future of in-store technology," *Journal of the Academy of Marketing Science,* vol. 48, pp. 96-113, 2020.
https://doi.org/10.1007/s11747-019-00697-z

[12] E. Oborn, M. Barrett, and A. Darzi, "Robots and service innovation in health care," *Journal of Health Services Research & Policy*, vol. 16, no. 1, pp. 46-50, 2011.
https://doi.org/10.1258/jhsrp.2010.010001

[13] C.M. Kuo, L.C. Chen, and C.Y. Tseng, "Investigating an innovative service with hospitality robots," *International Journal of Contemporary Hospitality Management*, vol. 29, no. 5, 2017.
https://doi.org/10.1108/IJCHM-08-2015-0414

[14] S. Robinson, C. Orsinger, L. Alkire, A. De Keyser, M. Giebelhausen, K.N. Papamichail, P. Shams, and M.S. Temerak, "Frontline encounters of the AI kind: An evolved service encounter framework," *Journal of Business Research,* vol. 116, pp. 366-376, 2020.
https://doi.org/10.1016/j.jbusres.2019.08.038

[15] P. Sequeira, P. Alves-Oliveira, T. Ribeiro, E. Di Tullio, S. Petisca, F.S. Melo, and A. Paiva, "Discovering social interaction strategies for robots from restricted-perception Wizard-of-Oz studies," *In 2016 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI),* pp. 197-204, 2016.
https://doi.org/10.1109/HRI.2016.7451752

[16] K.N. Lemon, and P.C. Verhoef, "Understanding customer experience throughout the customer journey," *Journal of Marketing*, vol. 80, no. 6, pp. 69-96, 2016.
https://doi.org/10.1509/jm.15.0420

[17] V. Shankar, K. Kalyanam, P. Setia, A. Golmohammadi, S. Tirunillai,, T. Douglass, J. Hennessey, and R. Waddoups, "How technology is changing retail," *Journal of Retailing*, vol. 97, no. 1, pp. 13-27, 2021.
https://doi.org/10.1016/j.jretai.2020.10.006

[18] W. Barnett, A. Foos, T. Gruber, D. Keeling, K. Keeling, and L. Nasr, "Consumer perceptions of interactive Service Robots: A value-dominant logic perspective, *The 23rd IEEE International Symposium on Robot and Human Interactive Communication*, pp. 1134-113, 2014.
https://doi.org/10.1109/ROMAN.2014.6926404

[19] M. Brengman, L. De Gauquier, K. Willems, and B. Vanderborght, "From stopping to shopping: An observational study comparing a humanoid service robot with a tablet service kiosk to attract and convert shoppers," *Journal of Business Research*, vol. 134, 2021.
https://doi.org/10.1016/j.jbusres.2021.05.025

[20] F. Bertacchini, E. Bilotta, and P. Pantano, "Shopping with a robotic companion," *Computers in Human Behavior,* vol. 77, 382-395, 2017.
https://doi.org/10.1016/j.chb.2017.02.064

[21] J. Van Doorn, M. Mende, S. M. Noble, J. Hulland, A.L. Ostrom, D. Grewal, and J.A. Petersen, Domo arigato mr. roboto: "Emergence of automated social presence in organizational frontlines and customers' service experiences," *Journal of Service Research,* vol. 20, no. 1, 2017.
https://doi.org/10.1177/1094670516679272

[22] X. Fan, F. Liu, F., and J. Zhang, "To be familiar or to be there? The roles of brand familiarity and social presence on web store image and online purchase intention," *International Journal of Electronic Marketing and Retailing*, vol. 5, no. 3, pp. 199-221, 2013.
https://doi.org/10.1504/IJEMR.2013.052886

[23] M. Giebelhausen, S.G. Robinson, N.J. Sirianni, and M.K. Brady, "Touch versus tech: When technology functions as a barrier or a benefit to service encounters," *Journal of Marketing*, vol. 78, pp. 113-124, 2014.
https://doi.org/10.1509/jm.13.0056

[24] M.L. Meuter, M.J. Bitner, A.L. Ostrom, and S.W. Brown, "Choosing among alternative service delivery modes: an investigation of customer trials of self-service technologies," *Journal of Marketing,* vol. 69, pp. 61–83, 2005.
https://doi.org/10.1509/jmkg.69.2.61.60759

[25] A. Beatson, N. Lee, and L.V. Coote, "Self-service technology and the service encounter," *The Service Industries Journal*, vol. 27, no. 1, pp. 75-89, 2007.
https://doi.org/10.1080/02642060601038700

[26] D.E. Bowen, "The changing role of employees in service theory and practice: An interdisciplinary view," *Human Resource Management Review*, vol. 26, pp. 4-13, 2016.
https://doi.org/10.1016/j.hrmr.2015.09.002

[27] M. Čaić, D. Mahr, and G. Oderkerken-Schröder, "Value of social robots in services: Social cognition perspective," *Journal of Services Marketing,* vol. 33, no. 4, pp. 463-478, 2019.
https://doi.org/10.1108/JSM-02-2018-0080

[28] C. Bartneck, T. Kanda, O. Mubin, and A. Al Mahmud, "Does the design of a robot influence its animacy and perceived intelligence?," *International Journal of Social Robotics*, vol. 1 no. 2, pp. 195- 204, 2009.
https://doi.org/10.1007/s12369-009-0013-7

[29] M. M. Van Pinxteren, R. W. Wetzels, J. Rüger, M. Pluymaekers, and M. Wetzels, "Trust in humanoid robots: Implications for services marketing", *Journal of Services Marketing*, vol. 33, no. 4, pp. 507-518, 2019.

https://doi.org/10.1108/JSM-01-2018-0045

[30] H. Kamide, K. Kawabe, S. Shigemi, and T. Arai, "Relationship between familiarity and humanness of robots–quantification of psychological impressions toward humanoid robots," *Advanced Robotics*, vol. 28, no. 12, pp. 821-832, 2014.
https://doi.org/10.1080/01691864.2014.893837

[31] M. H. Huang, & R.T. Rust, "Engaged to a robot? The role of AI in service," *Journal of Service Research*, vol. 24, no. 1, pp. 30-41, 2021.
https://doi.org/10.1177/1094670520902266

[32] A. Waytz, & M. I. Norton, "Botsourcing and outsourcing: Robot, British, Chinese, and German workers are for thinking—not feeling—jobs," *Emotion*, vol. 14, no. 2, pp. 434-444, 2014.
https://doi.org/10.1037/a0036054

[33] D. Grewal, M. Kroschke, M. Mende, A.L. Roggeveen, & M.L. Scott, Frontline cyborgs at your service: "How human enhancement technologies affect customer experiences in retail, sales, and service settings," *Journal of Interactive Marketing*, vol. 51, pp. 9-25, 2020.
https://doi.org/10.1016/j.intmar.2020.03.001

[34] H. Sharp, Y. Rogers, & J. Preece, "Interaction Design: Beyond Human-Computer Interaction," 5th edn. John Wiley & Sons, Indianapolis, 2019

[35] A.R. Dopp, K.E. Parisi, S.A. Munson, & A.R. Lyon, "A glossary of user-centered design strategies for implementation experts," *Translational Behavioral Medicine*, vol. 9, no. 6, 2019.
https://doi.org/10.1093/tbm/iby119

[36] M. Niemela, A. Arvola, & L. Aaltonen, "Monitoring the acceptance of a social service robot in a shopping mall: First results," *2017 ACM/IEEE International Conference on Human-Robot Interaction*, pp. 225–226, 2017
https://doi.org/10.1145/3029798.3038333

[37] Y. Iwamura, M. Shiomi, T. Kanda, H. Ishiguro, & N. Hagita, "Do elderly people prefer a conversational humanoid as a shopping assistant partner in supermarkets?," *6th International Conference on Human-robot interaction*, pp. 449–456, 2011.
https://doi.org/10.1145/1957656.1957816

[38] N. Doering, S. Poeschl, H.M. Gross, A. Bley, C. Martin, & H.J. Boehme, "User-centered design and evaluation of a mobile shopping robot," *International Journal of Social Robotics*, vol. 7, pp. 203–225, 2015.
https://doi.org/10.1007/s12369-014-0257-8

[39] T. Verhagen, & J. Weltevreden, J, "How Innovative Technology Serves the Retailer: A Store Sales Cycle Model," in: *Pantano. (Ed.), Retail Futures*, Emerald Publishing Limited, 2020.
https://doi.org/10.1108/978-1-83867-663-620201006

[40] Y. Vogiazou, J. Freeman, & J. Lessiter, "The use of improvisational role-play in user centered design processes," *International Conference on Human-Computer Interaction*, pp. 262-272, Springer, Berlin, Heidelberg, 2007.
https://doi.org/10.1007/978-3-540-73105-4_29

[41] A. Sorescu, R.T. Frambach, J. Singh, A. Rangaswamy, & C. Bridges, "Innovations in retail business models," *Journal of Retailing,* vol. 87 (supplement 1), S3-S16, 2011.
https://doi.org/10.1016/j.jretai.2011.04.005