THE SUPERMARKET OF THE FUTURE
A DIGITAL EXHIBITION AND MULTISENSORY SHOPPING EXPERIENCE

Günther Botschen[a]
University of Innsbruck

Mathias Streicher
University of Innsbruck

Paper submitted to the

23rd International Marketing Trends Conference

18-20 January 2024, Venice, Italy

[a] Corresponding author; Department of Strategic Management, Marketing and Tourism University of Innsbruck, Universitätsstraße 15, A-6020 Innsbruck, Austria; Tel. +43 512 507 72511; e-mail: guenther.botschen@uibk.ac.at; www. Retail-lab.at
[b]

ABSTRACT

THE SUPERMARKET OF THE FUTURE A DIGITAL EXHIBITION AND MULTISENSORY SHOPPING EXPERIENCE

Introduction

Digital transformation or the integration of new digital technologies is already having a significant impact on organizations (Kraus et al., 2021). It has also become an important topic for retailers, including those with physical shopping spaces, such as supermarkets. Digitalization can be found at nearly all levels of supermarket operations ranging from exploration of big data to obtain customer insights (Kahn, Inman & Verhoef, 2018), smart shopping carts to enable self-check-outs (Van Ittersum et al. 2013), or smart shelf technologies to optimize in-store marketing (Guha et al., 2021). Additionally, on-line retailers have entered the grocery market leading some researchers to believe that the days of brick-and-mortar supermarkets could be numbered (Ives, Cossick & Adams, 2019).

However, digital-native online retailers such as Amazon just recently opened stationary grocery stores, presumably because grocery products are 'deep' products which are rich in material properties that can only be experienced by direct physical inspection (McCabe & Nowlis, 2003; Zhang, Chang & Neslin, 2022). Lastly, grocery shopping is often described as a multisensory experience (Spence et al., 2014) so sensory experiences can help consumers to fulfill their need for stimulation (Baumgartner & Steenkamp, 1996; Peck & Childers 2003). It is therefore likely that physical spaces will remain the primary format for supermarkets, but integrating digitalization which offers great potential for offline retailers including grocery retailers (Guha et al., 2021).

Purpose

In this paper, the authors present the development of a prototypical design of the supermarket of the future, termed "A Digital Exhibition and Multisensory Shopping Experience", combining the best of both worlds, that is, the multi-sensorial experience of the offline with the access, interactivity and convenience of the digitalized on-line. The converging physical and virtual retail spaces create new and modified touchpoint experiences which attract existing and potential customers and stimulate digital and brick and mortar shopping at the same time.

Conceptual framework

In terms of future supermarket designs, there is a need to improve the physical retail environment by adding digital elements to the store, but in a way that produces positive outcomes. The use of digital devices, such as digital screens, in bricks-and-mortar supermarkets can decrease shoppers' physical interaction with the retail environment by narrowing attention (Streicher, Estes, and Büttner, 2021). Such negative effects from digitalization can only be prevented if researchers adopt a holistic view on the customer journey, in-store experience and various interactions of touchpoints (Lemon & Verhoef, 2016; Krasonikolakis & Vrontis, 2022).

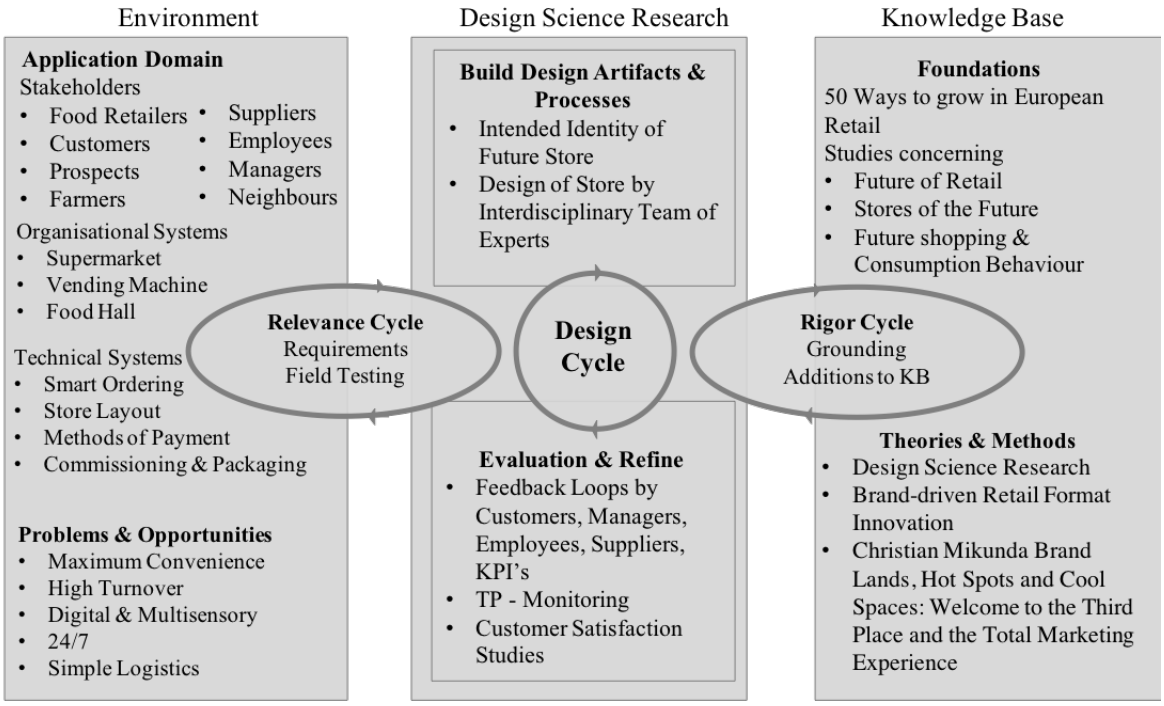
We therefore suggest that the introduction of digital elements into bricks-and-mortar supermarkets requires a holistic approach in order to complement physical shopping experiences rather than reducing them. As senses are the primary vehicles to link marketing activities to consumer responses (Achrol and Kotler, 2012), digital touchpoints in supermarkets should support physical shopping experiences such as convenience, rather than imposing technological learning costs for shoppers. In the remainder of the article, we first describe how such a holistic digital-multisensory approach can be based on

identifying future expectations of consumers, shopping trends, managerial problems and requirements. Then we consider how our approach can be implemented to transform a supermarket of the future by a team of interdisciplinary experts.

Design/methodology/approach

Following the design science research approach suggested by Hevner et al., (2004) innovative processes to resolve real-world problems can be developed by combining three interrelated cycles; the relevance cycle, the design cycle and the rigor cycle (see Figure 1). In this model the design cycle represents the generation of alternatives that are evaluated by field testing against the requirements of the management until a satisfactory design is achieved. The relevance cycle assures a close fit between managerial problems and the new design. The rigor cycle firmly bases all steps of development on knowledge, methods, and empirical evidence available at the time (Hevner & Chatterjee, 2010).

Figure 1. Design Science Research Cycles for the Supermarket of the Future



Source: Adapted from Hevner et al. 2004

Hence, the development of a supermarket of the future starts with a detailed description of the organisational problems at hand. The 'Environment Box' in Figure 1 highlights the requirements of the relevance cycle in terms of the application domain and perceived problems and opportunities. The application domain consists of various stakeholders, organisational and technical systems. The problems and opportunities section lists the managerial requirements to achive maximum convenience, while balancing the integration of digitalisation and multisensory brick and mortar experiences to simplify supportive logistics.

In rigor cycle we searched for suggestions, already existing in the literature, to resolve problems. Here, we focus on studies concerning the future of retail, such as the fifty poorly met shopper needs (Coca-Cola Retailing Research Council Europe and Roland Berger Strategy Consultants Ltd., 2012), and prior work on stores of the future (Alexander & Blazquez, 2020; Jenkins et al., 2020). Additionally, we integrate prior research on the

future of retailing from a customer perspective (Grewal et al., 2017, 2020; Alexander & Cano, 2020; Alexander & Alvarado, 2017) and theories (Hevner et al., 2004) and methods (Botschen & Wegerer, 2017) which support and facilitate innovations in retail.

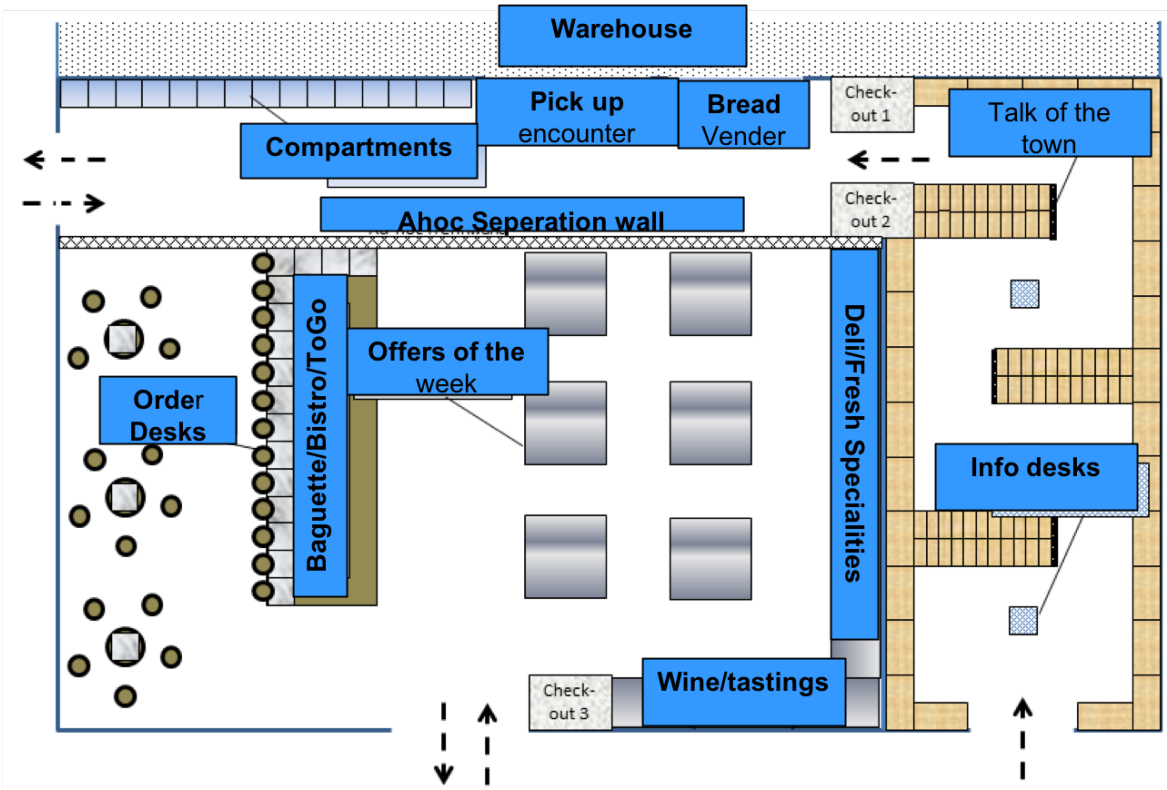
Based on the identified requirements of the application domain and the knowledge foundations an interdisciplinary team of experts[1] developed the first version of a prototypical supermarket of the future.

Then, the designed prototypicamodel is rigorously evaluated by testing its usefulness and becomes refined based on empirical evidence and learning. The newly acquired knowledge allows further improvement of the store followed by new rounds of application, evaluation, learning, and improvement. Finally, a newly designed store is in place that reaches the intended goal of integrating digital elements within a supermarket (March & Storey, 2008).

Findings

Figure 2 shows a drawing of the first prototypical version of a supermarket of the future.The latter combines a 24/7 hours Hi-Tech Digital Exhibition Store, a huge type of easily accessible digital vending machine, with a modern version of a multisensory market place.

Figure 2. Prototyp of a Supermarket of the Future



1

[1] Guenther Botschen - Professor of Retail Management, University of Innsbruck; Heike Brandt - Studio Brandt Berlin; Johann Fueller - Professor of Innovation Management, University of Innsbruck; Andreas Hagn - Expert in Process Management; Felix Piazolo - Professor of Business Administration & DSR Expert; Kurt Promberger - Professor Public Management & SAP Expert; Patrik Schmied - Assistant Gestaltstudio 2, Faculty of Architecture, Innsbruck; Eric Sidoroff, Professor Gestaltstudio 2, Mathias Streicher Mathias Streicher- Professor and Scientific Director Retail Lab, University Innsbruck

The ‘Vending Machine’ at the right side of the drawing can be entered via a membership card. Membership can be achieved any time anywhere via smartphone. In this area, which works like an exhibition, up to 1000 top selling products, typically the leader of a particular product category (Sorensen, 2016), are displayed behind glass. Shoppers select their products through touching, via smart phone or tablet. Before sending their final order, shoppers are asked to check their order list for completeness. The order list is then automatically packed by robots in the warehouse behind or underneath the store. The newest packaging robots can select and pack up to 50 stock keeping units in a store room of a thousand products in 2 minutes. The packed products are ready for pick-up in appropriate box sizes in numbered compartments after the invoiced amount of money is automatically taken from the shopper’s bank account. The shopper can then take the packed products immediately or leave them in the compartment, typically against a small fee depending on the duration, and pick them up later. Ideally the shopper enters the multisensory market place before shopping in the digitalized exhibition zone, but can browse without shopping.

This area works like a fresh farmers market with culinary delicacies, like a bakery, coffee house, wine tasting, butcher, fresh fish and seafood, stands with new food products, regional and local snacks, guest beer of the month etc. People can stroll around, taste or join other guests at big tables. In this area customers can pay cash or by credit card directly at the chosen counter. The multisensory market opens from 6.00 am to 10 pm.

Original/value

To our knowledge this paper is the first which tries to design a future store in a holistic manner, based on identified customer expectations, future shopping trends and managerial requirements.

Practical implications

The Hevner et al., (2004) design science approach is driven by requirements and problem identifications of executives and managers. Hence the designed first version of a supermarket of the future presents huge potential to fulfill the identified expectations of retail managers, customers and acadmic research at the same time.

The relevance cycle consists of several rounds of everyday application, evaluation, learning, and improvement in an implemented test market, until a store is in place that reaches the intended goals in a satisfactory manner.

Social implications

The multisensory world represents an importamt element to remain in personal contact and interaction with other customers, friends, farmers and regional and local manufacturers.

Research limitations and outlook

This study is still work in progress. The developed first version will be reflected by the leading managers of two food retailing chains. Their feedback and critics will lead to further modifications of the described prototypical verrsion. Then, ideally it becomes implemented at a suitable site and tested in everyday application.

This study focused on the development of a store in food retailing. From the authors point of view the applied design science approach (Hevner et al., 2004) can be transferred into other areas of retailing although food retailing seems to be explicitly suited to combine a digitalized automated world with a multisensory experience. As this paper is conceptual rather than empirical, case-study data is necessary in order to validate the applicability of the proposed framework.

Key words - touch-point experiences, store of the future, design science research, brick and mortar digitalization, future shopping behaviour

References

Achrol, R. S., & Kotler, P. (2012). Frontiers of the marketing paradigm in the third millennium. *Journal of the Academy of Marketing Science*, *40*, 35-52.

Alexander, B. & Blazquez Cano, M. (2020). Store of the future: Towards a (re)invention and (re)imagination of physical store space in an omnichannel context. *Journal of Retailing and Consumer Services*, 55, 1-12.

Alexander, B., Olivares Alvarado, D., (2017). *Convergence of physical and virtual retail spaces: the influence of technology on consumer in-store experience*. In: Vecchi, A. (Ed.), The Book of Advanced Fashion Technology and Operations Management. IGI Global, Hershey, PA, pp. 191–219.

Baumgartner, H., & Steenkamp, J. B. E. (1996). Exploratory consumer buying behavior: Conceptualization and measurement. *International Journal of Research in Marketing*, *13*(2), 121-137.

Botschen, G., & Wegerer, P. K. (2017). Brand driven retail format innovation: a conceptual framework. *International Journal of Retail & Distribution Management,* 45 (7/8), 874-891.

Coca-Cola Retailing Research Council Europe and Roland Berger Strategy Consultants Ltd. (2012). *Fifty Ways to grow in European Retail*, Consumer Goods & Retail Practice, London, United Kingdom.

Grewal, D., Roggeveen, A. L. & Nordfält, J. (2017), The Future of Retailing. *Journal of Retailing*, Volume 93, Issue 1, March 2017, Pages 1-12.

Grewal, D., Noble, S. M., Roggeveen, A. L. & Nordfalt, J. (2020). The future of in-store technology. *Journal of the Academy of Marketing Science*, 48(1), 96–113.

Guha, A., Grewal, D., Kopalle, P. K., Heinlein, M., Schneider, M. J., Jung, H., Moustafa, R, Hedge, D. R. & Hawkins, G. (2021). How artificial intelligence will affect the future of retailing. *Journal of Retailing*, 97(1), 28-41.

Ives, B., Cossick, K., & Adams, D. (2019). Amazon Go: disrupting retail?. *Journal of Information Technology Teaching Cases*, *9*(1), 2-12.

Jenkins, T., Boer, L., Busboom, J.B., and Ivar Østby Simonsen, I.O. (2020). The Future Supermarket: A Case Study of Ethnographic Experiential Futures. In Proceedings of the 11th Nordic Conference on Human- Computer Interaction: Shaping Experiences, Shaping Society (NordiCHI '20), October 25–29, 2020, Tallinn, Estonia. ACM, New York, NY, USA, 13 pages. https://doi.org/10.1145/3419249.3420130

Hevner, A.R., March, S. T., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS Quarterly*, 28(1), 75 -105.

Hevner, A R., & Chatterjee, S. (2010). *Design Research in Information Systems, Theory and Practice*. Springer Science and Business Media, New York

Kahn, B. E., Inman, J. J., & Verhoef, P. C. (2018). Introduction to special issue: Consumer response to the evolving retailing landscape. *Journal of the Association for Consumer Research*, 3(3), 255-259;

Krasonikolakis, I., & Vrontis, D. (2022). A systematic literature review of store atmosphere in alternative retail commerce channels. *Journal of Business Research*, *153*, 412-427.

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *SAGE Open*, *11*(3). https://doi.org/10.1177/21582440211047576

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, *80*(6), 69-96.

Levy, M. & Grewal, D. (2023). *Retail Management*, 11. Edition, Mc. Graw Hill, New York.

March, S. T., & Storey, V. C. (2008). Design science in the information systems discipline: an introduction to the special issue on design science research. *MIS quarterly*, 725-730.

McCabe, D. B., & Nowlis, S. M. (2003). The effect of examining actual products or product descriptions on consumer preference. *Journal of Consumer Psychology*, *13*(4), 431-439.

Peck, J., & Childers, T. L. (2003). Individual differences in haptic information processing: The "need for touch" scale. *Journal of Consumer Research*, *30*(3), 430-442.

Sorensen, H. (2016). *Inside the mind of the shopper: The science of retailing*. FT Press.

Spence, C., Puccinelli, N. M., Grewal, D., & Roggeveen, A. L. (2014). Store atmospherics: A multisensory perspective. *Psychology & Marketing*, *31*(7), 472-488.

Streicher, M. C., Estes, Z., & Büttner, O. B. (2021). Exploratory shopping: Attention affects in-store exploration and unplanned purchasing. *Journal of Consumer Research*, *48*(1), 51-76.

Van Ittersum, K., Wansink, B., Pennings, J. M., & Sheehan, D. (2013). Smart shopping carts: How real-time feedback influences spending. *Journal of Marketing*, *77*(6), 21-36.

Zhang, J. Z., Chang, C. W., & Neslin, S. A. (2022). How physical stores enhance customer value: The importance of product inspection depth. *Journal of Marketing*, 86(2), 166-185