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Website: www.mnmk.ro
Contact person: Cosmin Ionut Băloi
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IMPLEMENTATION STRATEGIES OF A MODERN SHOWROOM CONCEPT FOR RETAILERS WITH A WIDE RANGE OF PRODUCTS

Fabian SCHMIDTKE
Baden-Wuerttemberg Cooperative State University (DHBW), Mannheim, Germany
ORCID: https://orcid.org/0000-0002-2787-4547
Email: fabian_schmidtke@rocketmail.com
Patrick SIEGFRIED
International School of Management GmbH, Frankfurt/Main, Germany
ORCID: https://orcid.org/0000-0001-6783-4518
Email: patrick.siegfried@ism.de

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Abstract:
This paper suggests a new business model based on modern technology for retail. In the age of digitalization, stationary retail is losing market shares to online retail. Therefore, there is an obvious need for change in businesses. The concept developed in this paper combines the strengths of online and stationary retail to benefit stationary retail. In the approach taken in this paper, the basis for change is modern technology. Finding innovative ways to use technologies like NFC, AI, and robotics is regarded as the key factor to sustainable success. As the implementation of modern technologies entails a particular investment, the customers' opinion on structural changes like these has been included in the consideration. Therefore, a survey has been conducted to find out which level of innovation current customers are willing to accept thus emphasizing the need for certain changes and dissuading specific others. The result of this paper is the modern showroom concept which takes the customers' opinion into account while implementing the right amount of technology that should pave the way to a sustainable future for stationary retail.

Keywords: AI, digitalization, NFC, retail, technology.

1. Introduction

Online retail has been taking a plethora of market shares in the past and is still growing more dominant over stationary retail. The growth is predicted to range between 9 to 11 percent per year until 2025 (Rabe, 2021), amplifying the need for stationary retailers to find innovative ways to sustain competitiveness in the long term. To remain relevant on the market, it is important to challenge the strengths of online retail, which are fast delivery, low prices, and a wide range of products. As they are the most comparable to online retailers due to their large assortment, this paper focuses on enterprises already offering a variety of products in a specific market segment, like hardware stores, furniture stores, and department stores. (Siegfried et al., 2022)

As stationary retail has not been able to maintain its market shares using conventional marketing, distribution, and logistics methods, in this paper innovative technological ways to conquer a unique concept will be emphasized. Due to the transformation of the existing structures being expensive, cost savings will be considered in the presentation of the proposed new ones. Correspondingly, there will be an assessment of how much of an effect the innovations would have on customers. Therefore, a survey is conducted to examine which technological new features customers would appreciate the most thus setting a course to which ones to implement.

Furthermore, the optimization of warehousing processes by technology is reflected upon as besides personnel costs, warehousing is considered one of the largest cost-bearing units in enterprises. (Siegfried, 2021a) For this, the innovative strategies of Amazon will be taken into consideration as well as the advantage for customers. A look into the further development of current technology will also be taken.

Thus, the objective of this paper is to design a new business model based on modern technology to combine the possibilities of automatization grants, to make the model as cost-efficient as possible, and to design the model only as technological as customers would be willing to accept. This business model shall improve the competitiveness of stationary retail against online retail by combining the strengths of both online and stationary retail, creating a powerful omnichannel instrument. By the usage of this concept, stationary retailers shall be enabled to ensure their persistence during the age of digitalization. (Siegfried, 2021b)

2. Technological Innovations and their potential Usage in Retail

The progress in technology is rapidly advancing, especially regarding the Internet of Things (IoT). The IoT can be described as a system allowing different objects to interact by exchanging information. (Mukhopadhyay, 2014) This interaction is mostly based on Radio-Frequency Identification (RFID), the communication of a transponder connected to an object sending information like its location, and a device processing the information. RFID has been used since the Second World War and since been further developed. (Weber & Weber, 2010)

2.1. Near Field Communication Technology

The currently widely used development originating from RFID is the Near Field Communication (NFC). Its most prominent innovation here is the possibility to use the information emitting device as an information processing device, too, while also allowing communication with other devices of the same kind. Unlike the RFID technology, however, NFC enables the purposeful emission of data as it can be initiated and terminated by a switch. For the usage in smartphones and similar mobile digital devices, the switch can be virtualized. As the range of NFC is, as its name indicates, limited to about 10 centimeters, it also qualifies to be used for the transmission of sensitive data, hence NFC is the most popular technology used for payments with the smartphone. (Kern, 2007)

Any random object can be equipped to communicate with others by adding a so-called tag to it which operates as the data emitting device, thus facilitating the communication between objects and computer programs using the NFC technology. This communication allows a plethora of different uses such as cars warning each other against traffic accidents, components in production sending status updates about their current phase of the production process, and the

transfer of money. For a retailer, NFC presents some interesting purposes. As currently already used, it allows smartphones to act like bank cards thus offering another payment method. A more innovative way to utilize NFC would be the communication between products offered on display in stores and customers' smartphones. Information on the product could be easily provided on demand if customers need additional details such as application, suitable accessories, and care instructions not described on the packaging or there is no salesperson available. In a rather radical approach, this way the provided information accessible via NFC could even as much as replace all the salespeople saving a retailer the personnel cost, usually one of the highest expenses for businesses.

Furthermore, NFC technology could be used to facilitate shelf maintenance. As the emitted information can be anything, an RFID tag could count the number of available products on a shelf which is, too, each equipped with an RFID tag and send out a note to the enterprise resource planning system. (Saadat et al. 2022) Like this, there would be no more out-of-stock situations thus increasing turnover. If the warehouse is also integrated into the enterprise resource planning system, the system could add up the total number of each product in stock and automatically place orders to prevent any product from ever running out of stock. Furthermore, shoplifting could be drastically reduced since all items are permanently sending information to the enterprise resource planning system. Thus, a missing item that has not been bought would immediately be recognized which could set off an alarm. This would, however, only work if the currently used business model of self-service retail was to be abolished as otherwise, the theft would only be recognized once the thief had left the store making the system useless. Another innovative usage of NFC could complement another technological solution, warehouse robots.

2.2. Warehouse Robots

Warehouse robots are automatically moving conveyer vehicles organizing warehouse stock and handling the common tasks that arise in a warehouse. Online retail giants like Amazon and Alibaba (Geörg, 2018) already use them in their logistics centers to transport ordered products to and from their storage location. This decreases the frequency of injured warehouse clerks and grants the advantage of being able to act all day and night without increased salary costs due to night work surcharges. Warehouse robots receive the information on the ordered goods and independently pick them up to carry them towards the shipping department. They navigate by precisely calibrated mapping of the warehouse where each product has a fixed storage location. At Amazon, the robots identify their current location by Quick Response (QR) Codes on the ground spotting the robots in the warehouse thus defining their next destination. (Hofer, 2017) Amazon has been producing these robots with a 300-kilogram load capacity itself, using 80.000 of them in its warehouses in 2017, before looking to externalize the production. (Anzenhofer, 2019)

By implementing these robots into their warehouses, retailers could optimize their shelf care and logistics. Integrating them into the enterprise resource planning system and having them communicate with the shelves counting the stock of products could make the robots restock them automatically. They could also take over the goods receipt department. For this, the delivered goods would need to come equipped with an RFID tag so that the robots could count them and add them into the enterprise resource planning tool. Afterward, the robots could transport the goods to their fixed storage location and place them on the shelves.

Using this method, even warehouse clerks could become dispensable saving a significant sum of personnel cost.

Another possible use of warehouse robots could be the provision of goods. For this idea to work, customers need to be allowed to give the robot instructions. This could be realized with apps. Smartphones are NFC devices, so they could send shopping lists made in the app to the warehouse robots through a stationary user interface with another implemented NFC device. Through a series of transmitters, the signals could be sent to the robots which would be given the task to collect the items on the list and provide them in a collection area within a shopping cart. This process could be helpful especially for older or physically impaired customers as they would not have to pick up heavy items from a shelf themselves. It could also prevent customers who do not find the items they are looking for from leaving the store frustratedly, possibly shopping at a competing retailer.

An additional advantage of this method would be the provided security. To protect the shopping carts and their content to be stolen, they could only be made accessible after the items are paid. In a practical approach, retailers could design the user interfaces where the robots receive the input on which items to pick up would be the cash registers, saving personnel costs for cashiers while, due to their small size, simultaneously allowing a larger number of cash registers to operate parallelly without the need for breaks. As the robots would only then start to collect the items, a waiting area would have to be installed close to the collection area. While this would entail costs, it could also be regarded as a chance to improve the customer relations by designing the waiting area comfortable and relaxing. For extraordinarily large or heavy items, however, there could be another service added by making the robots deliver them to another collection area outside the store accessible by car to facilitate the loading of the items into the customer's car. To save space, this loading area could be designed as the road leading around the building with another user interface where customers can check-in using their smartphone. This way the robots would receive an order in which they need to provide the items. The loading area could be created like a parking lot along with the stores outside the wall. Within the wall, there could be rolling gates opened by one more user interface for the customers to interact with using their smartphones. To prevent the theft of the robots, the gates would only open once the items are placed to be picked up.

2.3. Artificial Intelligence

In the future, Artificial Intelligence (AI) could be the successor technology in regards to navigating warehouse robots. While the NFC technology requires a lot of components, RFID tags, to function properly, AI could independently navigate the robots and monitor the items in the store. This could save the company a considerable amount of maintenance and material costs. Another advantage of AI in the modern wave of AI is mainly the analyzing ability based on deep learning from big data. Deep learning can be described as the artificial reconstruction of a neuronal network, so the simulation of a brain. Big data is an umbrella term for the gigantic mass of information that enterprises are flooded with every day. For retailers, this represents the possibility to install a system that optimizes itself and gets more efficient the longer it is active. This advantage can be used to speed up the collection process and the processes in the shipping department by optimizing routes of the robots, recognizing fast- and slow-moving products, and creating their

orders more efficiently thus saving money on committed capital, and reacting to trends rapidly by ordering the specific items early and stopping ordering them once the trend recedes. However, present prices for the development of a suitable AI are particularly high which would suggest another restructuring from NFC to AI technology once prices drop. (Teng xun yan jiu yuan et al., 2021)

All the technologies described above can be used individually or combined to create an innovative retail business model, but innovation does not necessarily equal success. Customers need to embrace those innovations and be willing to engage in the use of them. Therefore, a survey should be conducted to identify the likes and dislikes of different demographic groups regarding modern technology. This way, companies with varying target groups would be enabled to specify which technologies to invest in. As the innovations are also quite expensive, this determination is necessary so that businesses do not lose money not only by the investment itself but also by customer churn because they are dissatisfied with the restructuring of the business model.

3. Survey

As the transformation of business units to the latest technological standard requires a large cost expenditure, the investments should be aimed towards automatization that the customers would appreciate. This way a positive cost-value ratio could be achieved and cause the investment to be positively impactful.

To identify which of the presented technologies would truly be beneficial and which would not, a survey could allow insight into consumers' thoughts. Accordingly, a questionnaire to determine the customer's opinion on technology in retail in general, thoughts on digitality replacing salespeople, their appreciation of personal contact while shopping, and how much they would appreciate modern technology is to be developed.

3.1. Survey Structure

To be able to categorize the participants of the survey into relevant groups, the first questions asked the interviewees their age and their gender. The age groups to be chosen ranged from 18 to 30 years old, 30 to 50 years old, and older than 50 years. The choice of answers provided for the question for the gender the participants could select was male, female, diverse, and prefer not to answer.

Subsequently, the interviewees are asked to specify whether they shop online or in a store more often. This question enables the contextualization of the answers to the following questions and the regularity of the participant's shop in stores. The third choice of answers was offered for interviewees who did not have a preferred way of shopping.

The next survey item presented different possible applications for technological innovations. Participants were to choose which they would like to encounter the most in stores. Possible choices were the possibility to pay in an app instead of at a cash register, the availability of additional information on the products such as related parts, proper application, alternative products, and the like, the option to arrange a same or next day delivery in-store or in an app, recommended products based on formerly bought items, and digital user interfaces to select items and get them delivered to home or made available for collection after payment, and an app feature to interact with offered items via NFC to add them to the apps shopping cart and have them made available for collection after

payment. The information gained from this question can be used to identify technologies that customers desire and would attract to, likely causing a customer inflow from less modernized competitors with those same desires.

Afterward, the participants were asked whether they would shop in stores without any salespeople. Due to the analysis of the given answers, there can be deducted the level of automatization customers would feel comfortable with and thus potentially limit the amount of technology used in the restructuring of the business processes.

Next, the interviewees were to state how long of a delivery period they would be willing to accept. The choice of answers provided was one day at most, one to three days, three to seven days, and more than seven days. This question grants insight into the expectations of customers regarding logistical modernization. As customers do not have detailed knowledge about logistics and delivery processes, they cannot be asked how they would think about technologies affecting those business units. However, the delivery period represents the customer's sole touchpoint to a business's logistics. Therefore, the shorter the customers accepted delivery period is, the bigger is the need to improve the warehousing and logistical processes, for example by automizing them, to meet the customers' aspirations.

The next question was supposed to determine the importance of salespeople to customers by asking for relevant personal contact while shopping. The choice of answers provided was important, rather important, neutral, rather unimportant, and unimportant. Deducible from this question is the feasibility of a store concept without salespeople.

The following survey item serves the same purpose, to identify the customers' level of acceptance regarding a fully automated store. Here the approach is rather radical, asking the participants whether they feel disturbed by salespeople or not when they are shopping. The choice of answers provided is yes, no, and occasionally.

In the second to last survey item, the interviewees were asked to state how their customer experience would be changed by modern technology. They could choose from the options' great improvement, improvement, no influence, deterioration, and strong deterioration. The point of this survey item is to find out about customers' general willingness to expose themselves to new, modern technology and how much they trust those.

The survey concludes with the question of whether the participants would rather maintain the status quo or embrace a technological restructuring by asking if the interviewees would prefer to shop at stores with salespeople or with the latest technology. There is also a third choice for customers without a clear preference labeled as no preference.

3.2. Implementation of the Survey

After finalizing the questions of the survey, it was inserted to Google Documents, where an explanatory introductory text was added to allow the participants a grasp of the topic of the survey. Google Documents also allows the creation of a design to make the survey easier to read. To ensure every participant could understand every question and choice of answers, the survey was set out in German, too, as the interviewees are all native German speakers. The survey has been available from February 2nd, 2022, to February 13th, 2022, via a link sent to selected people of various ages, social backgrounds, and levels of education with

the permission to forward the link to more people to represent as many social classes as possible.

3.3. Analysis of the Survey

A total of 31 people took the time to participate in the survey which should be regarded as a sample. This group can be subdivided by age as the first survey item asked the respondents for their age group. 16 participants, or 51.6%, belong to the age group of 18- to 30-year-olds, six interviewees, or 19.4%, stated to be between 31 and 50 years, and the remaining 29%, in total nine participants, indicated to be 51 years old or older.

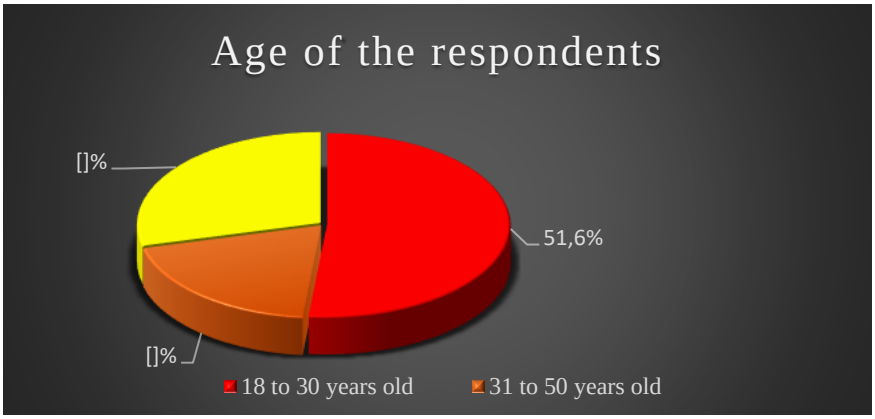

Figure 1. Age of the respondents

Out of all the participants, none identify their gender as diverse, and no one rejected to specify their gender. With 17 female and 14 male respondents, the ratio is 54.8% female to 45.2% male interviewees.

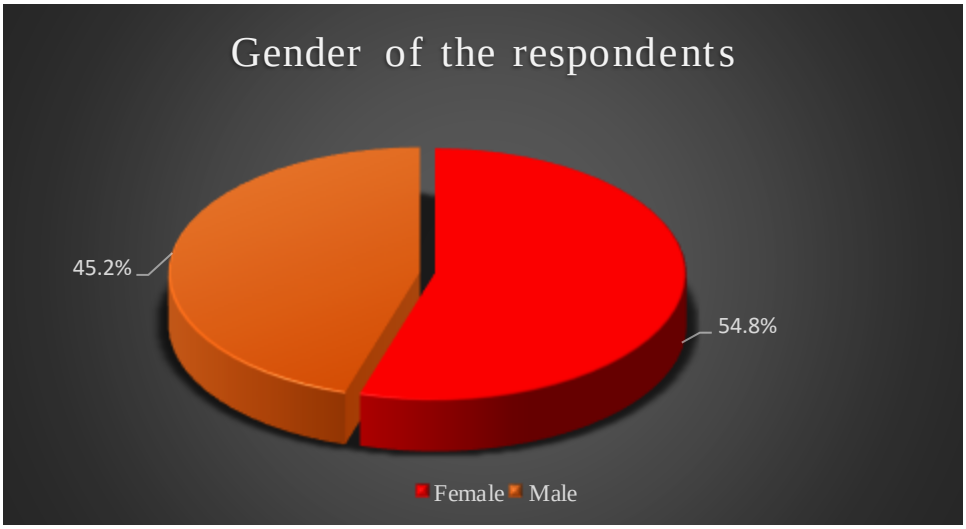

Figure 2. Gender of the respondents

For a company with a specific target group, these survey items should be put together to find out the context of age group and gender regarding the following questions in the survey. As this paper does not serve the purpose to conceptualize a business model for a specific branch but for retailers with a wide range of products, a type of retailer which can be found in most branches, this step is not target-oriented and therefore not conducted.

The first research-related survey item asked the participants for their preferred way of shopping. Here, 13 or 41.9% of the interviewees stated they do not have a preferred way of shopping. 32.3%, in total ten, of the respondents would rather shop in a store than online, the opposite is true for 25.8%, in total eight, of the participants.

Figure 3. Preferred way to shop

The following survey suggested some of the presented technologies that would impact the customers. Participants of the survey could choose which of the suggested innovations they would like to encounter in retail.