

NEC's Vision of Retail and Smart Retail CX

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Abstract

The novel coronavirus (COVID-19) pandemic has had a devastating impact on the struggling retail industry, precipitating massive changes in consumer purchase behavior and accelerating existing pre-pandemic trends which were already posing unprecedented challenges to the industry, including the relentless push towards economic globalization and the rapid progress of ICT. In the December 2015 issue¹⁾ of this journal, NEC proposed a new concept of consumer-led retail, or "Consumer-Centric Retailing" as a solution to many of the problems faced by retailers. We are now developing this concept under the brand communication tagline, "Smart Retail CX," a platform we will use to deploy solutions to retailers. This paper introduces the concept of Smart Retail CX and how we plan to implement and develop this idea.

Keywords



OMO, Consumer-Centric Retailing, Smart Retail CX, operation/labor saving, enhanced customer experience, no fraud, no cash

1. Introduction

Over the past several years, consumer purchase behavior has been increasingly moving online. Online shopping activity includes purchases, cashless payments, and product delivery from e-commerce sites such as Amazon.

The arrival of COVID-19 in early 2020 has profoundly impacted the real economy worldwide, and the effect has also been felt in the retail sector.

For consumers, a growing proportion of whom are teleworking and staying at home, online shopping is rapidly becoming more prevalent.

Meanwhile, retailers are embracing the concept of Online Merges with Offline (OMO), which is a more sophisticated version of conventional Online-to-Offline (O2O) and omnichannel commerce. To support this shift, new applications are being rolled out that exploit various new technologies such as IoT, AI, and 5G.

Based on these changes in the external environment of the retail industry, NEC is advocating the concept of Smart Retail CX. This paper elaborates on this concept.

2. NEC's Vision of the Retail Industry

Many of the issues now confronted by the retail industry—such as labor shortage and the need to flexibly provide products to meet changing demands—are not new. Retailers have been struggling to adapt to changing circumstances for years, but now, capturing and retaining customers has become ever more difficult as tech-savvy consumers use their PCs and smartphones to search for the best deals. Add to that the impact of COVID-19 on consumer purchase behavior and retailers have no choice but to ramp up efforts to transform their businesses to better provide the services needed to effectively manage OMO.

As a consequence, retailers must appropriately assess the needs of their customers, adapting operations to the purchase behavior of each customer which can vary with every purchase. This transformation can be best described as Consumer-Centric Retailing. Building on this concept, NEC is proposing a system that promotes labor saving, enhances the customer experience (CX), and prevents fraud associated with contactless technology (**Fig. 1**).

The first element of Smart Retail CX is labor saving.

In Japan, the retail industry has been struggling to deal with an increasingly severe shortage of workers. One of the ways to deal with this issue is to create a pleasant and hospitable working environment which makes both employees and customers feel comfortable, enabling store associates to greet customers cheerfully and carry out their tasks enthusiastically. Labor saving is an integral part of this approach. By automating as many tasks as possible and providing IT support for those tasks where humans remain indispensable, Smart Retail CX can make work more enjoyable for employees.

The second element, which is at the core of Smart Retail CX, is customer experience. In today's hyper-competitive environment where consumers have a plethora of options to choose from, retailers have to stand out. Providing a unique and memorable shopping experience that, for instance, includes trying on clothes, is one way to do that. This entails mapping out an individual journey optimized for each consumer. To accomplish this, it is necessary to develop and offer services that increase the degree of customer satisfaction not only in terms of purchasing a product, but also from the perspective

of the entire consumption process. In other words, it is important for those who want to shop quickly to be free from the stress of searching for products and lining up at the service counter, while it is essential for those who want to shop carefully to have a place where they can make unexpected discoveries, encounter new products, and interact with customers and staff. Creating a shopping environment that is comfortable and enticing is key to incentivize customers to shop there again.

Finally, the last element is to prevent fraud associated with contactless technology. Digitalization of consumer purchase behavior increases the risk of fraudulent acquisition of personal and payment information at the time of purchase. We think that it is necessary for retailers to actively implement security measures to effectively manage this risk and ensure that customers feel safe and secure in their shopping environment.

NEC's Smart Retail CX combines these three elements into a comprehensive system that will help transform retail businesses into fresh, innovative providers of goods and services that consumers will be eager to choose (**Fig. 2**).

3. The Smart Retail CX Vision and Product Concept

As conceived, NEC's Smart Retail CX will enable retailers to achieve the following: 1) Half the workload, 2) Twice the charm, and 3) No fraud, No cash. These benefits are described in detail below.

3.1 Half the workload

NEC's Smart Retail CX is designed to support the creation of a store where all necessary operations can be managed efficiently even when assurance of labor is difficult, while at the same time always providing customers with a pleasant and enjoyable experience. This means offering a system that minimizes labor and automates tasks behind the scenes to streamline sales floor and product management, cashier operations, and employee management. The time saved by eliminating these tasks can be instead devoted to providing more attention to customers. For example, replacing human cashiers with self-service checkouts or even, in some cases, a completely checkout-free system can lead to significant labor saving. Other ways to reduce the burden on employees include using cameras and sensors for real time, remote monitoring of displays and automatic detection of low stock or out-of-stock.

To achieve such a system, NEC is pushing forward with the development of services that combine technologies such as our face recognition technology—ranked number one in the world²⁾, image analysis and sensing, AI, cloud

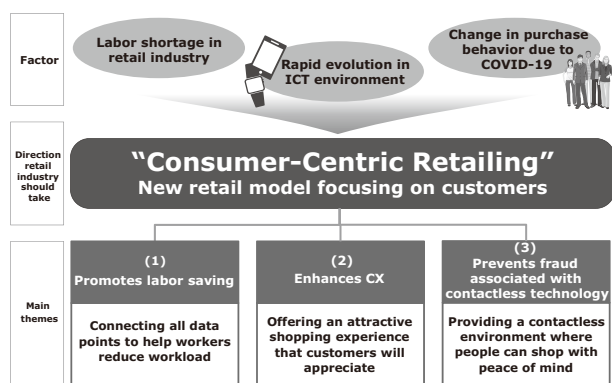


Fig. 1 Getting the customer to choose you.



Fig. 2 A New Kind of Shopping Experience with NEC's Smart Retail CX.

computing, and more (Fig. 3).

3.2 Twice the charm

To make customers want to choose a retailer, it is important to be able to make timely suggestions that meet the needs and interest of each shopper. To achieve this, a system must be built that not only integrates and analyzes customer data stored in various locations, but also enables management to gain a deeper understanding of a customer's background, as well as their needs. For example, if a customer visits a store looking for rare wine, the store would customize its approach to the customer based on an understanding of the reasons why the customer wants rare wine and in what situations they drink that wine, rather than just recommending a brand with

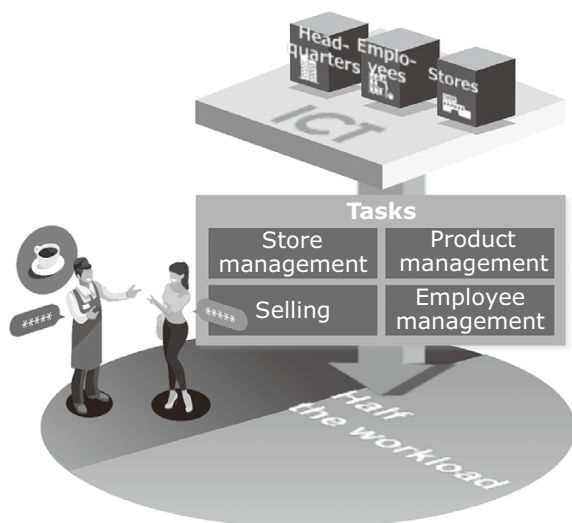


Fig. 3 Half the workload.



Fig. 4 Twice the charm.

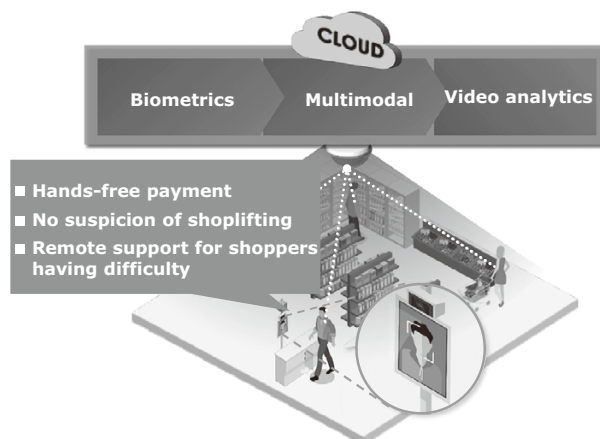


Fig. 5 No fraud, No cash.

limited availability.

To make it possible to attend to shoppers in a manner tailored to their individual wants and needs, we are also developing a system that can capture the in-store behavior of shoppers and combine it with their membership information and order history by leveraging not only POS and e-commerce systems, but also video analytics and sensing technologies. Additionally, we are developing a platform for integrated management of customer data obtained both online and offline (Fig. 4).

3.3 No fraud, No cash

One of the responses to the COVID-19 pandemic has been an increasing tendency to avoid human contact as much as possible and to choose stores and ways of shopping that can minimize time required for shopping. As cashless payment becomes more widely used, retailers must redouble their efforts to create an environment where customers can shop more safely and securely. This includes preventing the loss or leakage of personal data regarding payment and the prevention of unauthorized usage. Addressing these issues requires increased use of online services, cashless payment systems, and self-serve checkouts, as well as close surveillance of payment locations and secure leak-proof identity verification.

At NEC, we are now leveraging our biometrics and image analysis technologies to create in-store biometric authentication payment system that uses fraud monitoring and multimodal authentication³⁾ (Fig. 5).

4. NEC's Smart Retail CX offerings

Focusing on the three main elements of Smart Retail CX described in section 3, NEC has developed the fol-

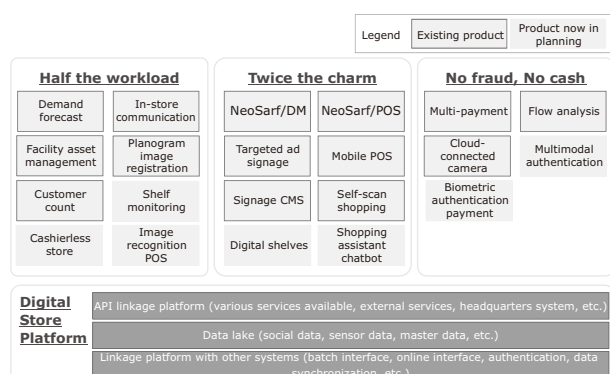


Fig. 6 Services made possible by NEC's Smart Retail CX.

lowing solution offerings (Fig. 6).

4.1 Half the workload

NEC has developed various solutions to predict product demand and enhance in-store communication. These include a cashierless store solution that combines in-store cameras and video analytics technology to facilitate automatic payment when shoppers exit the store, rather than requiring them to take their goods to a checkout or service desk for payment. This allows store employees to focus on helping customers rather than on processing their purchases, and provides customers with the convenience of simply picking out what they want and going without having to wait in line at the cashier.

Moreover, with NEC's shelf monitoring solution which uses in-store cameras, employees can monitor shelves remotely from smartphones and tablets. This makes it possible for the employees to check out-of-stock items without actually going to the store or being in the store, thereby improving the overall operation and management efficiency of multiple stores.

4.2 Twice the charm

NEC offers a targeted ad signage solution that can increase the appeal of various products by implementing sales promotions tailored to each shopper. Together with a self-scanning shopping solution that allows shoppers to avoid lineups and pay for goods with their smartphones, this system makes the overall shopping experience much more attractive. NEC offers a wide array of other solutions to help enhance CX, including the NeoSarf series⁴⁾, which links e-commerce and POS systems to facilitate a consistent shopping experience. With NeoSarf, retailers can integrate management of online and offline membership data, inventory data, and more,

making it possible to offer customers the right products and the right recommendations at the right time, increasing customer satisfaction and improving sales.

4.3 No fraud, No cash

To enable shoppers to feel safe and avoid physical contact, NEC offers an in-store behavior visualization service and multi-payment systems. Most notable is a hands-free payment system which does not require the use of cash or card and can verify identity even when the customer is wearing a mask. This reduces contact between shoppers and saves them from having to take a smartphone or wallet out of their pocket or bag, facilitating a more hygienic shopping experience. Furthermore, eliminating the need to use a credit card on-site helps prevent fraud.

4.4 Platform for provision of offerings

Implementing these solutions requires flexible information architecture that can acquire and integrate situation-specific data in real time and serve it up whenever it is needed even if that data is dispersed on different servers at different sites across the company. Moreover, it is critical that the data be usable on various devices. To handle these tasks, we are developing the NEC Digital Store Platform, which will form the foundation of a new information system infrastructure that will enable users to access and use the data they need when they need without having to know where the data is stored.

5. Conclusion

The retail industry today finds itself in a challenging position due to a shrinking labor force, rapidly evolving ICT environment, and changes in consumer purchase behavior triggered by the spread of COVID-19. To survive under such conditions demands nothing short of a radical transformation. Based on the concept of "Smart Retail CX," NEC will plan and create attractive offerings in collaboration with diverse enterprises through open innovation. These offerings will improve customer experience, enable labor saving, and thereby contribute to the transformation of retailers into the business of choice for customers.

* Amazon is a trademark or registered trademark of Amazon.com, Inc. and/or its affiliates.

* All other company and product names and logos that appear in this paper are trademarks or registered trademarks of their respective companies.

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Related URL:

Smart Retail CX (Japanese)
<https://jpn.nec.com/nvci/retail/index.html>

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