

# Digital Technologies in Wholesaling and Retailing

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## INTRODUCTION

The ever increasing intra/inter-competition, increased costs and a lower differentiation margin, have led to intense competitive pressures within the domains of the wholesale and retail industries. At the same time, the increasing digitization, due to technological innovation, will radically change the economical and procedural fundamentals. In addition, from an entrepreneurial point of view, it must also be considered that the complexity of decision-relevant framework conditions has increased. Therefore, digitalization should be viewed as an essential driver for optimizing business processes (Brynjolfsson et al., 2018), as well as the basis for a new understanding of products and services. The permanently emerging new technologies, all labeled as having huge impact on any industry, increasing the complexity even further. Many technologies have great impact, but only on limited industries and use cases. Adopting these technologies too early will certainly lead to frustration; just as the adopting of a technology too late can have a lasting impact which may put one out of business. A clear structure and assessment of upcoming technologies and trends is provided by the “Gartner Hype Cycle” (Walker, 2017), however, it is missing the retail industry specifics. Currently many studies about the application of technologies in retail and wholesale exist but are only limited to single technologies and their potential. Lot of scientific work exists regarding the role of big data and analytics (Bradlow et al., 2017), artificial intelligence (Krüger et al., 2011) or single task areas like pricing or marketing (Abels et al., 2018; Yeoman et al., 2017). But none of this work gathers all available technologies for all possible use-cases within the domain of retailing and wholesaling. This chapter will further elaborate the underlying technological trends, empowering the transformation processes within the domain of wholesaling and retailing. Starting with: the major technologies, the impact of technological advancements and opportunities, and the risks and constraints which are connected with it, are scrutinized. The results are finally summarized following the structure of a framework of the generic processes of trade companies.

A detailed overview of future technological trends that are relevant for retailing and wholesaling are provided. The structure allows scientist and practitioners to evaluate the impact and the potential areas of use, existing use-cases, and the overall potential for their processes of interest.

## BACKGROUND

### Value-adding Core Processes of a Trade Company

In order to reasonably structure the analysis of the purpose and potential relevance for the trade industry, this article orientates the main processes of a trade company. This structure will help practitioners, as well as researchers, to quickly find the relevant technologies for their area of interest.

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Trade comprises the activities of purchasing goods from manufacturers or suppliers; transporting, stocking, and combining the goods to form an assortment; and selling them to commercial (wholesaling) or non-commercial (retailing) customers without the goods being modified or processed. The “Handels-H” (or Retail-H) is a reference model for modeling business information systems in trade (Becker & Schütte, 2004). As a framework, it structures all of the main processes of a retailing or wholesaling company and offers both; the process view and the data view of the functional areas within a retailing company. In the following the terms retail and wholesaling are used as synonyms as the core processes and also the implication of technologies on both are quite similar as just the counterpart of the transaction (natural vs. legal person) differ.

The “H”-part of the framework lists the value-adding core processes of a retail company. The functional area of procurement, which is usually directed to the vendor, is located on the left-hand side of Retail-H, with the main processes of: Purchasing, Materials Planning, Goods Receipt, Invoice Verification and Accounts Payable. The main processes: Marketing, Sales, Goods Issue, Invoicing and Accounts Receivable Accounting, are located on the right-hand side of Retail-H, as the processes to be assigned to the functional area of sales. The linking and merchandise management bridging element, between the functional areas of procurement and sales, is the warehouse process. Thus, the warehouse is an essential part of the logistics process, from: receipt of goods, warehouse and issuing goods.

The management processes of a retail company, after structuring the Retail-H reference model, are reflected in the roof section. The decision makers of the retail company use the processes of: controlling business intelligence and corporate planning, in order to prepare the data from the operational systems to serve as a basis for decision making and planning.

The business administration tasks, and thus, the support processes of the reference model, are visualized as the H and the roof supporting base. The indispensable main processes of: general and asset accounting, cost accounting and human resources management, support the core and management processes of Retail-H, without offering direct customer benefit.

## **From Technologies to Digital Technologies**

On the one hand, “digitization” is the transfer of previous, non-digital data, for example, in the case of music. On the other hand, digitization expresses the process of reinventing or adapting business models, products and processes, through the possibilities of (information) technology.

The concept of “technology” is well proposed by Abele (2006), amongst others, according to which technology is composed of skills, knowledge and resources for solving technical problems and for resources (facilities or equipment) which serve to put scientific findings into practice.

To define “digital technology”, we elaborate this definition further, as, “digital technology is composed of skills, knowledge and resources related to the domains of information and computer engineering, which serve to put scientific findings into practice”.

The never-ending stream of new and evolving technologies, is catalyzed by different frameworks. These frameworks are mainly proposed by research companies trying to offer guidance to their customers. The “Hype Cycle” by Gartner, is one of the most popular and well-known examples. It is a derivation of the technology life-cycle approach by Krubasik (1982), which describes the generic evolution of new technology and its usage during a fictional timeline. The term “hype cycle” was coined by Gartner Consultants (Fenn, 1995), and is used today to evaluate the introduction of new technologies.

This is represented in a diagram (see Figure 2): on the Y-axis, the attention (expectations) for the new technology is plotted; on the X-axis, represents the time since announcement. The curve rises explosively

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