

Seeing is believing

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Valorization addendum

Knowledge valorization

Article 22 in the regulation governing the attainment of doctoral degrees at Maastricht University (2018) stipulates that a doctoral candidate shall append an addendum about valorization to their dissertation. According to the 2011 report by the National Valorization Committee, knowledge valorization refers to “process of creating value from knowledge, by making knowledge suitable and/or available for social (and/or economic) use and by making knowledge suitable for translation into competitive products, services, processes and new commercial activities”. In the following section, I discuss how the three manuscripts in this dissertation generate new knowledge and create value for firms, customers, policymakers, and society at large.

Chapter 2: Making omnichannel an augmented reality

This manuscript provides firms with a blueprint for the design and deployment of AR, either as a new product or service in its own right (e.g., AR real-time translation) or as a means to enhance existing product or service offerings (e.g., virtual try-on of L’Oreal makeup or projection of Yelp ratings onto physical restaurant locations). The mapping of AR applications across the entire customer journey provides firms with a ready-to-use tool to assess their customer touch points and decide on which channel to enhance (online with offline or offline with online), how to configure applications (in terms of embodiment, embedding, or extension features), and in which customer journey step to most effectively deploy these applications (e.g., for creating awareness, aiding product search, or promoting brand advocacy after consumption).

In addition to explicating AR as a marketing tool for firms, customers and society at large may also benefit from the findings of this manuscript. Specifically, the manuscript demonstrates how AR may empower customers in their purchase decisions and reverse long-entrenched power dynamics between firms and customers. For instance, AR browsers that add virtual information to the point-of-sale give customers immediate access to product information, ratings, and price comparisons. This should enable customers to make better-informed or more goal-consistent (e.g., more price conscious or healthier) choices. Relatedly, just as AR can add virtual information to the point-of-sale, it can also remove information from the customer’s view of the physical environment (e.g., by de-saturating the color of unhealthy product options in a supermarket setting). AR may thus enable customers to reduce the influence of unwanted products, services, marketing messages, advertisements or promotions, and may help prevent impulse purchases. For policymakers and consumer associations these findings point to a unique opportunity to develop applications that promote customer well-being across a variety of prod-

uct and service categories including finances (e.g., visualizing insurance coverage), food (e.g., virtually blocking out products high in sugar or fat in the supermarket), healthcare (e.g., supporting the correct use of medication), and environmental protection (e.g., suggesting the right form of recycling for a product).

Chapter 3: Augmenting the eye of the beholder

This manuscript provides firms with specific insights into how to deploy AR as a strategic tool for addressing a variety of challenges associated with online business. In particular, rising product return rates are a key economic and societal concern associated with the proliferation of online shopping. To provide high levels of service, many firms offer their customers free product trial at home. As a result, shopping behavior has evolved; many customers now forgo pre-selecting products online and rather order a full assortment of products for examination at home. The resulting returns of unwanted products not only have severe cost implications for firms, but also pose a variety of societal challenges, such as inner city congestion and pollution due to an increased number of last-mile deliveries. The findings of this manuscript reveal that AR offers firms the opportunity to pursue a strategy of service augmentation in online settings. That is, AR enhances customer interaction with the online organizational frontline, resulting in effective, enjoyable online experiences and enhanced decision comfort with online purchases. By letting customers virtually embed offerings from a firm's online assortment into their personal environments and experience a sense of physical control of these offerings, AR provides a low cost alternative to current product trial through delivering physical products to the customer. Firms may thus consider offering benefits (e.g., discounts or vouchers) to customers who order through AR-based product trial. Taken together, AR not only provides firms with an opportunity to strategically enhance their organizational frontline, but it may also enable them to provide a transformative service that contributes to overall societal well-being. It thus may also be in the interest of policymakers to incentivize the deployment of AR-based services, as these may be less resource consuming than traditional service designs.

This manuscript also contributes to understanding and managing the growing societal phenomenon of data privacy. A variety of technologies, ranging from online shops to fitness trackers, location-based apps, and AI assistants, increasingly collect and use large amounts of customers' personal data. Augmented reality technology also heavily relies on personal data collected through facial or spatial recognition functionalities that allow customers to virtually try on sunglasses or project a true-to-scale sofa into their home. Customer concerns about the implications of providing firms with such sensitive data continue to rise. At the same time, policymakers seek to

ensure responsible business practices with regard to customer data, for example through the implementation of a General Data Protection Regulation (GDPR) by the European Union in 2018. As such, firms must carefully consider how to optimally leverage customer data to provide more personalized products, services, and experiences. Many customers may be willing to provide personal data to receive customized offerings; however, they seek a sense of informational and interactional justice related to transparency in how a firm collects and uses their data. The findings of this manuscript suggest that a clear and concise disclosure of how personal data is collected and used may help firms to address customer privacy concerns. The findings also reveal an opportunity for firm consortia or AR industry associations to develop a code of conduct for AR-related privacy practices that guarantee 'augmentation without exploitation' with regard to customer data.

Chapter 4: Seeing eye to eye

The final manuscript of this dissertation demonstrates how firms may leverage AR to facilitate social interactions with and amongst customers. A growing number of social AR applications such as Akzo Nobel's 'Visualizer', Vuforia's 'Chalkboard' or Microsoft's 'Hololens Skype' enable customers to share and enhance their view of reality in the form of augmented photos or videos (or real-time feed in the near future). The findings of the manuscript provide firms with clear guidelines on the optimal configuration of social AR applications in terms of sharing formats and communication modes. Furthermore, the manuscript provides a first proof of concept for social AR; sharing AR content such as product visualizations allows customers to better lean on the support of others in their decision making. The findings of this manuscript may also serve as a starting point for firms to explore the opportunities of using social AR to facilitate the interactions between customers and frontline employees (FLEs). Customers may benefit from using AR to share their view of reality with FLEs and receive relevant information, product and service visualizations, or instructions in a variety of contexts, such as home decoration, healthcare, after-sales service, or maintenance activities.

The manuscript also provides a new perspective to the ongoing societal debate about whether smart technologies may complement or substitute activities traditionally performed by FLEs. It is predicted that in the future sophisticated AI systems may replace call center agents; in healthcare settings robots may take over caregiver activities such as administering and monitoring medication. In contrast to these predications, the findings of the manuscript demonstrate how firms may rely on AR to deliver experiences that are both high-tech and high in personal touch. Rather than substituting or creating wholly synthetic social interaction (with AI, robots, or virtual reality), AR

may enable customers and FLEs to have more meaningful interactions, resulting in a sense of social empowerment rather than social isolation.