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Increasing the consumer-perceived benefits of a mass-customization experience through sales-configurator capabilities

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ABSTRACT

The consumer's experience of self-customizing a product with a sales configurator can be a source of experience-related benefits for the consumer, above and beyond the traditionally considered utility of possessing a product that better fits his/her idiosyncratic needs. Although such experience-related benefits have been found by previous studies as increasing consumers' willingness to pay for mass-customized products, research on what characteristics sales configurators should have to increase such benefits is still in its infancy. In this paper, we argue that two such benefits (i.e., hedonic and creative-achievement benefits) increase as a sales configurator deploys, to a greater extent, the following capabilities: focused navigation, flexible navigation, user-friendly product space description, easy comparison and benefit-cost communication. Subsequently, by analyzing 675 self-customization experiences made by 75 engineering students on 30 real Web-based configurators of consumer goods, we find empirical support for all the hypothesized relationships. We conclude discussing the contribution of the study to relevant debates, its managerial implications as well as its limitations and the related opportunities for further research.

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1. Introduction

Due to increasingly sophisticated customers and, at the same time, intensifying competition, companies are paying a growing attention to mass customization [1,2], with many successful implementation cases reported in literature [3]. While more "visionary" definitions of mass customization have appeared in literature since the term was coined in the late 1980s [3,4], the concept is commonly defined as the dual ability (i) to provide products and services with enough variety and customization that nearly every customer finds exactly what he/she wants and, at the same time, (ii) to avoid substantial trade-offs in cost, delivery and quality [1,5–7]. In this more "practical" view of mass customization [3,4], some compromise, limitations and constraints are inevitable if product customization is to be combined with the operational-performance advantages of mass production [8].

Rather than by the use of a particular technology or product mix, mass customization "is characterized by focus on customer needs" ([3], p. 16). First, a manufacturer pursuing mass customization needs to understand the product attributes along which its target customers' needs diverge, as well as the different levels required by its target market for each of those attributes and the corresponding market potentials [3,4,9]. Subsequently, the manufacturer needs to define the attribute levels it is willing to offer and needs to present them to its potential customers [3,4,9]. Finally, it needs to collect each customer's choices and translate them into manufacturing instructions [3,4,9]. All these activities necessitate intense customer–manufacturer interaction [3] and, in this interaction, an increasingly important role is played by sales configurators [3]. Sales configurators are software applications that support customers, or salespeople interacting with customers, in completely and correctly specifying a product solution within a company's product offer [9,10]. In particular, with the advent of the Internet, many companies pursuing mass customization have started to use Web-based sales configurators that enable customers to self-customize their own product solutions online [3,11]. The tight linkage existing between mass customization and sales configurators is further evidenced by the fact that the customer's experience of self-customizing a product with a sales configurator has been referred to by Merle et al. [12] as mass-customization experience.

From the manufacturer's perspective, the value of mass customization depends on various factors, including the maximum price that potential customers are willing to pay for mass-customized products [3,13,14]. In turn, willingness to pay [15] for

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mass-customized products depends on the value implications of mass customization to individual customers [14]. While the earlier literature emphasized the utilitarian benefit of possessing a product that better fits one's idiosyncratic needs, the recent literature has developed more sophisticated knowledge of the value implications of mass customization to individual customers [3]. In particular, it has recently been acknowledged that, in addition to the benefits deriving from the possession of a mass-customized product, a consumer can also enjoy benefits resulting from the experience of self-customizing such a product with a sales configurator [12,16]. Increasing the benefits deriving from a mass-customization experience is, therefore, one key in augmenting the consumer's willingness to pay and, ultimately, the value of mass customization on the manufacturer's side. Limited research, however, has been devoted to the question of how sales configurators should be designed to increase the consumer-perceived benefits of mass-customization experiences [11,14,17].

The present paper aims to narrow this research gap by considering two mass-customization experience-related benefits that are grounded in consumer research: namely, hedonic and creative-achievement benefits. Consistent with the theoretical grounding of these constructs, we pursue the objective of the paper with a focus on consumer goods. First, we develop hypotheses concerning how hedonic and creative-achievement benefits are influenced by five sales-configurator capabilities that have recently been defined in literature: namely, focused navigation, flexible navigation, user-friendly product space description, easy comparison and benefit-cost communication. Subsequently, we test the hypothesized positive relationships and find empirical support for all of them by analyzing 675 mass-customization experiences made by 75 engineering students on 30 real Web-based configurators of consumer goods.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 develops the research hypotheses. Sections 4 and 5, respectively, present the method and results of the hypothesis-testing portion of the study. Section 6, finally, discusses the theoretical and managerial implications of the present work as well as its limitations and associated directions for future research.

2. Literature review

2.1. Sales configurators

Since the 1980s, an increasing number of studies have dealt with sales configurators, also known in literature by other terms [11,18], such as choice boards/menus [19,20], user toolkits for innovation and design [21,22] and mass customization toolkits [11], to name but a few. Based on previous research [9,10,23], we define sales configurators as knowledge-based software applications that support a potential customer, or a sales-person interacting with the customer, in completely and correctly specifying a product solution within a company's product offer. A fundamental function of a sales configurator is to present the options that are available within a company's product offer [18,19], also known as product space [24] or solution space [25]. Usually, the product space modeled within a sales configurator is fully predefined, but sales configurators can also be adopted for products that still involve some custom design [10]. In addition to presenting a company's product space, a sales configurator lets the user browse that space and specify, within it, the solution that is most appropriate to the customer's needs [9,19]. At the same time, the sales configurator ensures that the solution specified by the user is complete (i.e., all the necessary product features have been specified) and valid (i.e., no unfeasible or inconsistent product features have been specified) [9,10,18]. To help identify the solution that best fits the customer's needs, the sales configurator can also provide the user with real-time feedback about the specified solution [18], such as drawings, photos, animation or other simulations of the real product on a computer, price information, and delivery terms [18,26,27]. Sales configurators are not necessarily stand-alone software applications, but may be modules of other applications, usually called product configurators, which are increasingly offered nowadays as an add-on to enterprise resource planning systems [28]. Product configurators support not only the creation of sales specifications, but also the creation of technical specifications, such as bills of materials, production sequences or technical drawings, which are necessary to build the product solution requested by a customer [10,29]. Indeed, the integration of all configuration activities, from sales specification up to production and outbound logistics, has recently been advocated as one key in achieving mass customization, and enabling approaches, models and tools have accordingly been proposed [30–32].

Many available studies in literature provide insight into relevant technical or application development issues for sales configurators (e.g., [30,33–42]). At the same time, numerous studies also shed light on the benefits and challenges of implementing and using sales configurators (e.g., [23,43–51]). A review of the results of these studies is beyond the scope of the present paper and we refer the interested reader to Heiskala et al. [10] and Falkner et al. [52] for further information.

More relevant to the present paper is the review of another, relatively less-developed research stream [10,14,53,54], which addresses the question of how sales configurators should be designed to increase their benefits and overcome or alleviate the related challenges. A number of empirically tested recommendations come from experimental studies focusing on one or a limited number of sales-configurator characteristics. Huffman and Kahn [55], Kamis et al. [17] and Valenzuela et al. [54] recommend an attribute-based, rather than alternative-based, presentation of a company's product space. This means that customers should be asked what level they prefer within each attribute of the product, rather than having to choose among fully specified product alternatives. This recommendation particularly applies to the cases in which the number of product alternatives is high [17], provided that trade-offs among attractive attributes are not made explicitly known [54,55]. Randall et al. [56] suggest that the product attributes presented to a potential customer should be product functions and product performance characteristics if the customer is inexperienced with the product, whereas they should be design parameters, such as specifications of product components, if the customer is an expert. Dellaert and Stremersch [57] recommend pricing at full-configuration level, rather than at the level of individual options. Chang and Chen [58] suggest that, depending on the type of product (search products vs. experience products), potential customers should be given different types of pre-purchase information (intrinsic cues reflecting objective characteristics of the product vs. extrinsic cues such as expert reviews and word of mouth). Chang et al. [59], finally, recommend that potential customers should be provided with examples of configured products, in order to offer guidance about what to do. At the same time, such examples should be realistically achievable and not exceed the customers' abilities of performing the self-customization task [59].

A broader set of recommendations comes from a few conceptual papers [21,26,60–63], including tailoring the mass-customization experience according to the customer's expertise with the product, providing an initial configuration that the customer can subsequently alter, and communicating the benefits and costs of the configuration choices made by the customer. To advance theory testing on the effectiveness of these recommendations, Trentin et al.

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