

Consumers' Decision-Making and Satisfaction in the Center of
Mass Customization Systems in the Automotive Industry

DISSERTATION
of the University of St.Gallen,
School of Management,
Economics, Law, Social Sciences,
International Affairs and Computer Science,
to obtain the title of
Doctor of Philosophy in Management

submitted by

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Dissertation no. 5176

Difo-Druck GmbH, Untersiemaun 2022

The University of St.Gallen, School of Management, Economics, Law, Social Sciences, International Affairs and Computer Science, hereby consents to the printing of the present dissertation, without hereby expressing any opinion on the views herein expressed.

St.Gallen, October 29, 2021

The President:

Prof. Dr. Bernhard Ehrenzeller

To my beloved parents
Helga and Bernd

Acknowledgements

I would have been unable to complete this dissertation without the support of a great many people. First, I wish to thank my supervisor Prof. Dr. Andreas Herrmann and my co-supervisor Prof. Dr. Dr. h.c. Torsten Tomczak for their guidance over the last couple of years. I am particularly grateful for their trust and confidence in my work, and for the freedom they granted me in developing my own ideas. Moreover, I want to express my gratitude to Prof. Dr. Emanuel de Bellis and Dr. Philipp Scharfenberger for advising me in my research. Thank you for your support and for allowing me to learn so much from you.

Further, my thanks go to my colleagues at the Institute for Customer Insight for the great time during my academic journey. You have all played a key role in the successful completion of my dissertation. Thank you for your support and for making this period of my life unforgettable. Specifically, I thank Dr. Annette Mönninghoff, Dr. Lydia Ottelewski, Dr. Pia Burghartz, and Hannah Leimert for being the greatest colleagues and meanwhile also the kind of friends I could only have hoped for. Many thanks especially to my “runrunrun” ladies for the hundreds of kilometres we ran together— I already miss this so much. I also thank Dr. Matthias Fuchs, Dr. Daniel Dietrich, and Helmut Stadler for their valuable advice for my research.

Finally, and most importantly, I feel extremely fortunate to have been able to count on my dear family and friends. In particular, I thank my parents, Helga Leute-Hasenmaile and Bernd Hasenmaile, for your unconditional love and belief, for always being there for me, and for your guidance in helping me get to where I am today. You mean everything to me.

Last but not least, I would like to thank my husband Kenneth Aspin from the bottom of my heart. Thank you for your love, your trust, and your tireless support. Thank you for being the best husband and father one could imagine. I look forward to our future as a little family with our daughter Zoé.

St.Gallen, October, 2021

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Summary

Mass customization is becoming omnipresent. Today, consumers can customize their cars, computers, cereals, or sneakers online based on their individual preferences. However, depending on the product category, such configuration processes may become quite complex, confusing, and frustrating—especially in the automotive industry, where consumers often have hundreds of options with various, not always self-explanatory, feature names to choose from.

This dissertation explores how choice architecture, feature names, and social product configurators influence consumers' decision-making and satisfaction in mass customization systems of the automotive industry. This dissertation formulates recommendations on how firms can optimize their product configurators by placing consumers and their needs (back) at the center of customization. It consists of three stand-alone articles, following qualitative and quantitative research designs.

Article I examines so-called needs-based configurators, a new type of product configurator that analyzes consumers' product-related needs and creates analysis-based automated product suggestions. The article investigates how needs-based configurators may be designed to refocus attention on consumers' experience and their needs.

Article II explores the names of product features (e.g., for packages or lights), which are becoming more sophisticated (e.g., Plaid), more acronymic (e.g., PDLS), and less descriptive in the automotive industry. It categorizes current feature names and analyzes their impact on consumers' decision-making. Further, it outlines specific qualities that feature names should comprise to be perceived as beneficial by consumers.

Article III investigates electronic word of mouth and narcissism in a new form of mass customization systems: social product configurators. These allow consumers to receive peer feedback on their customized product (e.g., a car) in a social network. This article focuses on how narcissistic communication influences other consumers' decision-making and satisfaction in social product configurators.

Zusammenfassung

Mass-Customization ist allgegenwärtig. Konsumenten können ihre Autos, Computer, Müsli, oder Sneaker heutzutage online nach ihren individuellen Vorlieben konfigurieren. Je nach Produktkategorie können solche Konfigurationsprozesse jedoch sehr komplex, verwirrend oder auch frustrierend sein. Das gilt vor allem in der Automobilindustrie, wo Konsumenten oft Hunderte von Optionen mit verschiedenen, nicht immer selbsterklärenden Namen zur Auswahl stehen.

In der vorliegenden Dissertation wird untersucht, wie die Auswahlarchitektur, die Benennung von Optionen und soziale Produktkonfiguratoren die Entscheidungsfindung und Zufriedenheit von Konsumenten in Mass-Customization-Systemen der Automobilindustrie beeinflussen. Die Dissertation formuliert Empfehlungen, wie Unternehmen ihre Konfiguratoren optimieren können, indem sie den Konsumenten und seine Bedürfnisse (wieder) in den Mittelpunkt stellen. Die Arbeit besteht aus drei eigenständigen Artikeln, die qualitativen und quantitativen Forschungsdesigns folgen.

Artikel I untersucht sogenannte bedürfnisbasierte Konfiguratoren, welche produktbezogene Bedürfnisse der Konsumenten analysieren und darauf basierend automatisierte Produktvorschläge erstellen. Der Artikel untersucht, wie solche Konfiguratoren gestaltet werden sollten, um das Erlebnis der Kunden und deren Bedürfnisse wieder in den Mittelpunkt zu stellen.

Artikel II untersucht die Namen von Optionen (z.B. für Pakete oder Lichter), welche in der Automobilindustrie immer komplizierter (z.B. Plaid), akronymischer (z.B. PDLs) und weniger beschreibend werden. Aktuelle Optionsnamen werden kategorisiert und deren Einfluss auf die Entscheidungsfindung der Konsumenten analysiert. Darüber hinaus werden spezifische Eigenschaften aufgezeigt, die Optionsnamen umfassen sollten, um von den Konsumenten als vorteilhaft wahrgenommen zu werden.

Artikel III untersucht elektronische Mundpropaganda und Narzissmus in einer neuen Form von Mass-Customization-Systemen: soziale Produktkonfiguratoren. Diese ermöglichen es Konsumenten, in einem sozialen Netzwerk Feedback von anderen Personen zu ihrem konfigurierten Produkt (z.B. einem Auto) zu erhalten. In diesem Artikel wird untersucht, wie narzisstische Kommunikation die Entscheidungsfindung und Zufriedenheit anderer Konsumenten in sozialen Produktkonfiguratoren beeinflusst.

Introduction

Customizing products and services based on individual preferences has become a global trend. Today, consumers can easily configure cars, bikes, computers, insurances, sneakers, sunglasses, or even cereals online. Such mass customization systems benefit consumers and firms in various ways, including higher product satisfaction and higher purchase likelihood (Kaiser, Schreier, & Janiszewski, 2017; Schreier, 2006). However, with complex products such as cars the customization effort can be very time intense and overwhelming. Consumers often need to choose from several hundred options to configure their car, and often do not know what options they need or which purpose these serve. They struggle to understand feature names, do not feel addressed by option selection processes, are confused by the increasing system complexity, or are influenced by peers in social networks. This dissertation shows how firms can put consumers (back) at the center of customization in the automotive industry by simplifying the decision-making process and by increasing consumers' satisfaction.

Three Articles Focusing on Consumers in Mass Customization

Mass customization, a hybrid term composed of mass production and customization (Fiore, Seung-Eun, & Kunz, 2004), describes “a process in which consumers can choose levels from a set of predefined product modules to compose their own most preferred alternative” (Dellaert & Dabholkar, 2009, p. 44). Mass customization systems have attracted much research, with previous studies focusing largely on attribute-based configurators (Dellaert & Stremersch, 2005; Fogliatto, da Silveira, & Borenstein, 2012; Franke & Schreier, 2010; Hildebrand, Häubl, Herrmann, & Landwehr, 2013). Such configurators are based on sequential attribute choices (Hildebrand, Häubl, & Herrmann, 2014). To configure a car, consumers typically start with their preferred model and can then choose from an immense range of different options for engines, wheels, upholstery, colors, interiors, or accessories consisting of several dozen subcategories with several hundred choices. With complex products such as cars this process can be extensive, onerous, and may lead to feature fatigue (Hildebrand et al., 2014; Huffman & Kahn, 1998; Thompson, Hamilton, & Rust, 2005; Zipkin, 2001). Furthermore, it potentially involves higher risks and costs, as choosing the wrong option for a car has more significant consequences than choosing a wrong ingredient for cereals. Therefore, research has suggested finding ways to minimize

complexity in order to increase consumers' enjoyment in mass customization systems and to keep effort as low as possible (Dellaert & Stremersch, 2005; Franke, Schreier, & Kaiser, 2010). Thus, recent research has presented two alternatives to attribute-based customization: customization based on needs (Randall, Terwiesch, & Ulrich, 2007) and customization based on pre-configured products (starting solutions; Hildebrand et al., 2014).

Article I of this dissertation investigates needs-based configurators in the automotive industry. Such configurators analyze customers' product-related needs and create analysis-based product suggestions (Randall et al., 2007). This article embeds this kind of choice architecture theoretically and shows how it helps to optimize consumers' choice processes in mass customization systems. Further, it develops specific recommendations for the utilization of needs-based configurators based on qualitative consumer interviews and a best-practice analysis.

Article II builds partly on the findings of the first article and investigates the role of product feature names in mass customization systems based on consumer preference for simple and intuitive configurators. Thus far, little is known about how product features are named in automotive configurators; however, feature names seem to be becoming more acronymic (e.g., PDK), more creative (e.g., Tesla's Insane Mode to accelerate), and less descriptive. Based on qualitative consumer interviews and two online studies, Article II presents a categorization of current product features, analyzes the impact of different feature naming categories on consumers' decision-making, and outlines specific qualities that feature names in mass customization systems should comprise.

Article III focuses on electronic word of mouth and narcissism in social product configurators, which allow consumers to easily share, discuss, and improve their customized products online on social networks (Franke, Keinz, & Schreier, 2008; Schlager, Hildebrand, Häubl, Franke, & Herrmann, 2018). Integrating social elements into mass customization systems is attracting increasing attention across industries and markets. Car manufacturers now provide consumers with web-based tools to easily share, discuss, and improve their configured product on social networks. Whereas the first two articles of this dissertation focus on the impact of choice architecture and feature naming on consumers' decision-making in mass customization systems, Article III focuses on how narcissistic communication (i.e., I-centered communication) affects

other consumers in social product configurators when customizing their own products. Based on three quantitative studies, Article III places consumers center stage and demonstrates how shared configurations impact other consumers' decision-making and satisfaction in social product configurators.

All three articles focus on how to put consumers back at the center of customization in the automotive industry. This refocusing is necessary because today automotive manufacturers seem to be concentrating more on internal company requirements than on consumers' needs when designing mass customization systems (Fanderl, Matthey, Pratsch, & Stöber, 2019; Jacobson, 2019). As such, the automotive sector is a relevant application of such systems due to its complexity and lacking customer focus.

Articles I and II follow a qualitative research design and stem from a marketing perspective, whereas Article III follows a quantitative research design and stems more from a consumer psychology perspective. The tables below provide an overview (i.e., title, authors, abstract, keywords, status, and publication reference) of the three articles included in this dissertation. For more details, please refer to the respective articles.

Table 1: Overview of Article I

Title	Automated Product Suggestions with Needs-based Configurators
Authors	Johanna Hasenmaile-Aspin and Philipp Scharfenberger
Abstract	Increasingly complex product portfolios make it more relevant than ever to match the right product to the right consumer. One important tool for meeting this challenge is product configurators. Traditionally, most configurators are based on attribute-based choice architectures. With complex products (e.g., cars), these choice architectures often entail extensive configuration processes involving several hundred choices. Traditional configurators are thus increasingly perceived as overwhelming, confusing, and frustrating by consumers. So how might future systems be designed to refocus attention on the customer's experience and needs? This article investigates a new type of product configurator, one that analyzes customers' product-related needs and creates analysis-based automated product suggestions. We examine the potentials and challenges of so-called needs-based configurators. We conducted (1) 39 qualitative interviews with consumers who tested this new type of configurator and (2) a best-practice analysis of needs-based configurators in the automotive industry. We found that such configurators have strong potential to simplify product choices — especially for consumers with little previous knowledge of the customized product. Our study shows how needs-based configurators help to optimize consumers' choice processes by providing automated individualized product suggestions. The findings are particularly valuable for professionals interested in optimizing product configurators.
Keywords	Mass customization, needs-based product configurators, attribute-based product configurators, automotive industry, consumer needs
Status	Published
Publication Reference	Hasenmaile-Aspin, J., & Scharfenberger, P. (2020). Automated Product Suggestions with Needs-based Configurators, <i>Marketing Review St. Gallen</i> , 37(5), 34–41.

Table 2: Overview of Article II

Title	Plaid, Airscarf, or PDK? Naming Product Features in Online Configurators
Author	Johanna Hasenmaile-Aspin
Abstract	Mass customization is becoming omnipresent and enables consumers to easily customize products online. Thus far, little is known about how product features are named in such product configurators. In the automotive industry, feature names are becoming ever more acronymic (e.g., Porsche's PCCB for Porsche Ceramic Composite Break), creative (e.g., Tesla's Insane or Ludicrous Mode to accelerate), and comparative (e.g., business package plus). They increasingly include brand names (e.g., Audi smartphone integration) and are less descriptive. What, however, are the impacts on consumers' decision-making? Do they understand feature names? Or are they confused? And how might the customization experience be improved? This paper presents a comprehensive classification of current feature naming methods based on a systematic analysis of 1091 feature names from eight automotive configurators. Along with insights from 26 qualitative consumer interviews and two online studies, this paper outlines specific qualities that feature names in mass customization systems should comprise to be perceived as beneficial by consumers. The findings are particularly valuable for marketing managers and professionals seeking to optimize product configurators and to enhance the customer experience.
Keywords	Mass customization, consumption vocabulary, feature naming, consumer decision-making, automotive industry, product naming
Status	Published Presented at 2021 European Marketing Academy Regional Conference
Publication Reference	Hasenmaile-Aspin, J. (2022). Plaid, Airscarf, or PDK? Naming Product Features in Online Configurators, <i>Marketing Review St.Gallen</i> , 39(1), 58–67.

Table 3: Overview of Article III

Title	The Social Power of Narcissists in Mass Customization
Authors	Johanna Hasenmaile-Aspin, Emanuel de Bellis, and Andreas Herrmann
Abstract	It has become standard practice for consumers to customize products instead of choosing off-the-shelf solutions. A new practice is that consumers can directly share and discuss their customized products with their peers via social product configurators. We examine how the type of communication affects peer decision-making and satisfaction in such configurators. Drawing on research on mass customization, electronic word of mouth, and narcissism, we propose that narcissistic communication is crucial to understanding the effect of a shared configuration. A series of three studies demonstrates that consumers scoring high (vs. low) on narcissism are more likely to share their customized product online as a sample configuration and to use I-centered communication to describe that configuration. Such narcissistic communication makes peers adjust their own customized product to the sample configuration and to evaluate their own product less favorably. These findings suggest that narcissistic communication influences consumers' decision-making by increasing the likelihood to conform, potentially negatively impacting consumer satisfaction. The social power of narcissists has implications for both marketing research and practice.
Keywords	Communication style, electronic word of mouth, mass customization, narcissism, online social networks, social product configurator
Status	Published and presented at 2020 Association for Consumer Research (ACR)
Publication Reference	Hasenmaile-Aspin, J., de Bellis, E., & Herrmann, A. (2020). The Social Power of Narcissists in Mass Customization. <i>Proceedings of the Association for Consumer Research</i> , 48, 393–394. https://www.acrwebsite.org/volumes/2661530/volumes/v48/NA-48 Hasenmaile-Aspin, J., de Bellis, E., & Herrmann, A. (2021). The Social Power of Narcissists in Mass Customization. https://doi.org/10.31234/osf.io/4z9rq

Conclusion and Implications

The three articles of this dissertation advance our understanding of mass customization systems and examine how choice architecture, product feature names, and social product configurators influence consumers' decision-making and satisfaction. This dissertation shows that current mass customization systems in the automotive industry have partly forgotten to focus attention on consumer needs and therefore call for improvement. The findings address a broad audience and are particularly valuable for firms seeking to optimize product configurators and enhance customer experience.

Theoretical Implications

The three articles primarily contribute to research on mass customization (e.g., de Bellis, Hildebrand, Ito, Herrmann, & Schmitt, 2019; Dellaert & Stremersch, 2005; Franke et al., 2008; Hildebrand et al., 2014; Hildebrand et al., 2013) by focusing on the different aspects influencing consumers' decision-making and satisfaction in mass customization systems.

Article I contributes to research on choice architectures, especially needs-based configurators (Hildebrand et al., 2014; Randall et al., 2007). It confirms previous research by showing that complex customization processes frustrate consumers who have little product knowledge. Further, it suggests offering different choice architectures for different target groups: needs-based customization for novices, and attribute-based customization for experts, so as to decrease perceived complexity and increase task enjoyment and satisfaction.

The findings of Article II advance understanding of the importance of hitherto underresearched naming features (beyond brands or products). It contributes (like Article I) to creating the least complex, yet most enjoyable mass customization systems (Dellaert & Stremersch, 2005). This article is one of the first in-depth studies on feature names and thus extends prior work on naming (e.g., Gunasti & Devezer, 2016; Klink & Wu, 2014; Stoner, Loken, & Stadler Blank, 2018; Wu, Sun, Grewal, & Li, 2019).

Article III analyzes the power of narcissists in social product configurators and shows that communication type determines message impact. It contributes to research on social product configurators (Arora et al., 2008; Hildebrand et al., 2013; Schlager et al., 2018), narcissism (Buffardi & Campbell, 2008; DeWall, Buffardi, Bonser, & Campbell, 2011; Holtzman et al., 2019; Vazire, Naumann, Rentfrow, & Gosling, 2008),

and electronic word of mouth (Berger, 2014; Packard & Berger, 2017; Rosario, Sotgiu, Valck, & Bijmolt, 2016) by demonstrating that narcissistic communication in social product configurators is more influential but decreases consumers' satisfaction with their customized products.

Practical Implications

Overall, the three articles propose that firms need to be aware of how their mass customization system impacts consumers, be it the form of the choice architecture, product feature names, or narcissistic communication in social product configurators. This dissertation provides specific recommendations on how future mass customization systems should be designed to be perceived as beneficial by consumers.

Article I discusses the qualities of needs-based configurators and shows why automated product suggestion systems potentially simplify product choices (especially for consumers with little product knowledge). The article proposes recommendations for action to help firms optimize their mass customization system. It suggests that firms offer choice architectures based on consumers' level of expertise. Needs-based (attribute-based) configurators have the greatest potential when perceived choice complexity and choice insecurity are high (low) and perform best for novices (experts). Firms need to provide clear instructions on which configuration type provides the right starting point for every consumer. Further, firms should consider designing guidelines when creating a needs-based configurator (e.g., ask only a limited number of questions, communicate pricing transparently, program and test algorithms very carefully, be transparent and show which needs are or are not considered in the recommendations).

The findings of Article II illustrate that consumers consider current product feature names as too acronymic, too diverse, and too vague and that they become confused or misled by non-descriptive feature names. This article highlights areas of concern regarding naming and derives recommendations on how to name product features in mass customization systems. In order to improve consumer satisfaction, automotive manufacturers should review their current feature naming practices. They need to ensure that consumers correctly understand feature functions. They should use simple, descriptive, and precise names for basic and non-differentiating features, and, if available, industry terms. For a few signature features (e.g., brand-characteristic or innovative features), special names can be used as these will strengthen exclusivity and

brand image. Vague add-ons (e.g., plus) and unspecific feature names (i.e., for packages) should be avoided.

Article III is relevant for practitioners, as many industries have embraced the link between mass customization systems and social networks and only little is known about the consequences of integrating elements of social interaction into mass customization systems. This article illustrates the potential downsides of such integration. The sharing of configurations with narcissistic communication (I-centered communication) decreases other consumers' satisfaction with their customized product and enhances the desire to reconfigure the product. Thus, firms should carefully integrate social sharing functions into product configurators and take into account individual differences in narcissism when creating them.

Please refer to the respective article for detailed discussions of the theoretical and practical contributions, as well as for the future research areas opened by each article.

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Article I

Automated Product Suggestions with Needs-based Configurators

Published in:

Marketing Review St. Gallen

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Abstract

Increasingly complex product portfolios make it more relevant than ever to match the right product to the right consumer. We show how needs-based configurators help to optimize consumers' choice processes by providing automated individualized product suggestions.

Keywords: mass customization, needs-based product configurators, attribute-based product configurators, automotive industry, consumer needs

Introduction

Imagine buying a new car, yet feeling you lack product knowledge. You visit your preferred manufacturer's website, select your choice vehicle from a vast range, and navigate key features (e.g., drive variants, the vehicle's exterior and interior), each comprising dozens of subcategories with several hundred choices. How do you feel?

Increasingly complex product portfolios are requiring many companies to find new ways of efficiently suggesting the right product to consumers. One key tool for meeting this challenge is product configurators. Mass customization toolkits enable consumers to customize products (e.g., sneakers, cars) online. Customization, however, can be extensive, particularly for complex products. Even rather simple products (e.g., cereals) offer consumers up to 566 quadrillion configuration possibilities (mymuesli, 2020).

Most traditional configurators rest on attribute-based choice architectures. These enable choosing from diverse product attributes, based on which the customized product is developed (Huffman & Kahn, 1998). Consumers are increasingly perceiving such customization as overwhelming and frustrating. This poses a major challenge for companies with complex product portfolios: How might future systems be designed to refocus attention on the buying experience and to make sales more fun and efficient? How can companies optimize the complex matching process between highly diverse customers and manifold product offerings?

In cooperation with Audi AG, we investigated a new type of product configurator: needs-based configurators (NBCs). Such configurators analyze product-related needs and then create automated product suggestions. In this article, we embed NBCs theoretically and develop specific recommendations for their utilization based on a qualitative study and a best-practice analysis.

Theoretical Background

Predominant Types of Mass Customization Systems

Mass customization systems (MCSs) have attracted much research (e.g., Dellaert & Stremersch, 2005; Franke & Schreier, 2010; Hildebrand, Häubl, Herrmann, & Landwehr, 2013). This hybrid term, composed of mass production and customization (Fiore, Seung-Eun, & Kunz, 2004), has been defined “as a process in which consumers

can choose levels from a set of predefined product modules to compose their own most preferred alternative” (Dellaert & Dabholkar, 2009, p. 44). Previous studies have focused largely on attribute-based configurators (ABCs). These are defined as product configurators based on individual attribute choices (Hildebrand, Häubl, & Herrmann, 2014).

Past research has discussed the advantages (Schreier, 2006) and limits of MCSs (Zipkin, 2001). Customizing each and every attribute can be onerous (Hildebrand et al., 2014), may entail feature fatigue (Thompson, Hamilton, & Rust, 2005), and probably fails to satisfy every consumer. To keep customization effort as low as possible, and to increase enjoyment in MCSs, companies need to minimize complexity (Dellaert & Stremersch, 2005; Franke, Schreier, & Kaiser, 2010).

Thus, more recent research focusing on optimizing customization systems has presented two alternatives: customization via starting solutions (CvSS; Hildebrand et al., 2014) and needs-based configurators (NBCs; Randall, Terwiesch, & Ulrich, 2007). CvSS means consumers select a starting solution from a set of preconfigured products, which is modified to create the final product (Hildebrand et al., 2014). This reduces complexity and increases choice satisfaction (Hildebrand et al., 2014). The notion of NBCs goes back to Randall et al. (2007). In an NBC, “users specify the relative importance of their needs, and an optimization algorithm recommends the combination of design parameters that is likely to maximize the user’s utility” (Randall et al., 2007, p. 278). NBCs consider consumers’ needs instead of attributes, reduce complexity, and perform especially well for product novices (Randall et al., 2007).

Instead of consumers navigating endless features and options, NBCs automatically select a suitable product. Innovative NBCs additionally learn through previous selection processes. As such, they advance classic ABCs or CvSS by offering personalized starting solutions for configurations that closely match individual needs. Potentially, NBCs will become the next big thing in sales automation. New developments in algorithmic product recommendation systems also support such new solutions (Linden, Smith, & York, 2003; Wei et al., 2017). Table 1 outlines the predominant customization types.

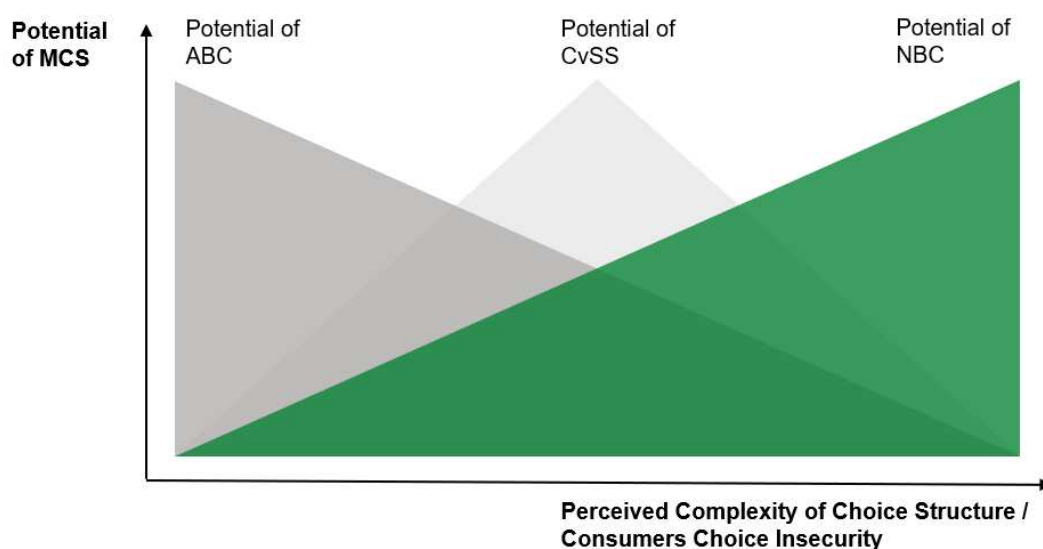
Table 1: Different Customization Types with Examples

Customization type based on	Definition	Examples	Typical questions / tasks during customization (selection)
Attributes (ABC)	Consumers can choose each product attribute from different levels, after which a customized product is developed (Huffman & Kahn, 1998).	e.g., Nike, Mymuesli, Audi, BMW, Porsche, Ray-Ban	Choose your - model and model variation - motorization and fuel type - wheels and accessories - exterior, interior color, and materials - equipment packages (light, vision, comfort, and assistance packages)
Starting solutions (CvSS)	Consumers select a starting solution from a set of preconfigured products that is then modified to create the final product (Hildebrand et al., 2014).	e.g., Stripped Pizza, Nike	Choose from different preconfigured products, which can in a second step be modified along the dimensions of the ABC
Needs (NBC)	Consumers specify the relative importance of their needs, and an algorithm recommends a matching product (Randall et al., 2007).	e.g., Cannondale (USA), Audi (GER), Fiat (GER), Mercedes Benz (GER), Toyota (USA), Vauxhall (UK), Volkswagen (UK)	- How many people will ride in the car? - How large does the trunk need to be? - What do you value most? - Where do you drive the most? - What is your budget? The product can subsequently be further modified.

Consumer Expertise and Perceived Complexity in MCSs

Generally, MCSs best suit consumers with well-defined, stable preferences (Simonson, 2005). Yet consumers often lack such preferences (Bettman, Luce, & Payne, 1998). Instead, their preferences are volatile and sensitive to how choice options are framed (Slovic, 1995). Less expertise might involve less preference clarity and greater choice insecurity. Consumers might not know which product options exist nor which ones they need. Thus, the perceived complexity of a customization system depends on its actual complexity, as well as on consumers' knowledge and preference clarity. NBCs are most effective when consumers perceive choice complexity as high and when they experience choice insecurity. This applies above all to novices (see Figure 1). ABCs have the highest potential when perceived choice complexity and choice insecurity are low. This holds true especially for experts, who know what they want and have a good overall understanding of the available product options. CvSS can be located between ABCs and NBCs and are suited to choice structures with medium perceived complexity and choice insecurity.

Figure 1: The Increasing Relevance of Automated Choice Assistance for Increasingly Complex Buying Decisions



Context and Methods

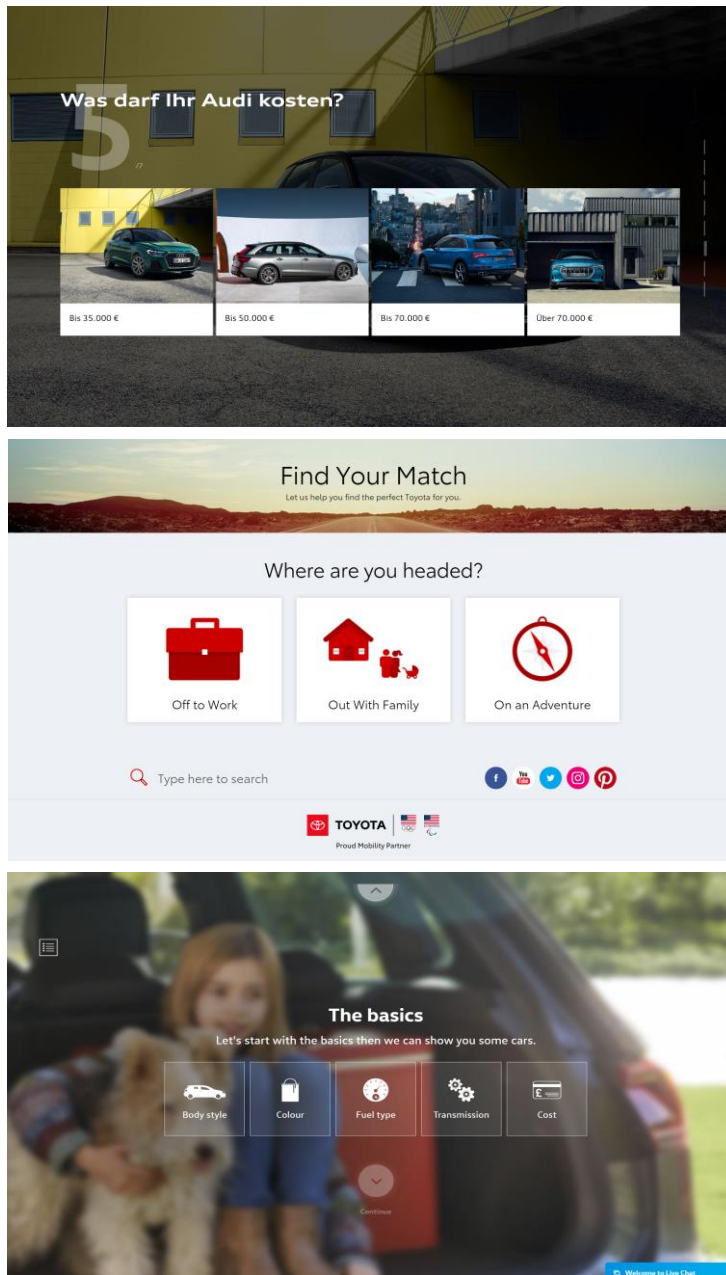
Previous research on MCSs has investigated ABCs and CvSS, mainly using quantitative methods. To our knowledge, no study has investigated the specific qualities of NBCs, especially in the context of complex products. We close this gap by exploring NBCs in the automotive sector—a highly relevant and increasingly complex application field of mass customization (Statista 2019, 2020a).

We conducted two rounds of semi-structured interviews with product experts and novices, to learn more about their different configuration approaches and to identify the specific qualities of NBCs perceived as beneficial by consumers. Round one involved 24 in-person interviews at an international motor show in Germany, round two, 15 additional interviews in Germany and Switzerland. We deliberately chose two data collection contexts to find differently knowledgeable participants. Interviewees were aged between 20 and 70 years. Interviews (lasting 9 to 36 mins) were conducted in German, audio-recorded, transcribed, coded, and analyzed using summarizing qualitative content analysis (Mayring, 2014).

Interviewees were first asked to describe their previous experience with car configurators or configurators in general. Second, they customized a car with an Audi NBC app. The configuration process included eight needs-oriented questions (e.g., where do you drive most? What are your trunk requirements? What is your budget?). Third, interviewees answered questions about their customizing experience (e.g., first impression, strengths and weaknesses, suggestions for improvement, fit of recommendations), car expertise, car ownership, and demographics.

We supplemented the interview data by examining existing automotive NBCs. This approach illuminated current NBC implementation standards. Also, we used this information to compare interviewee feedback with the features of other NBC implementations. Our sample of examined NBCs included solutions by Audi (GER), Fiat (GER), Mercedes Benz (GER), Toyota (USA), Vauxhall (UK), and Volkswagen (UK). Figure 2 provides examples.

Figure 2: Examples of NBCs



Source: Audi (2020), Toyota (2020), Volkswagen (2020)

Findings and Recommendations

Analyzing the interviews and the examined automotive NBCs led to 10 key findings and recommendations for action.

NBC design and ease of use are rated positively

Many interviewees described ABCs as complex, confusing, and complicated. They felt that this “traditional” approach was too lengthy, decision-heavy, frustrating, and nontransparent. As one interviewee said: “Having to make so many decisions overwhelmed me.” In contrast, they enjoyed the tested Audi NBC, highlighting its straightforwardness, speed, appealing design, pictorial world, and simplicity.

“There are no technical terms. I think that’s great, especially if you don’t know anything about engines. It went superfast ... and didn’t go too much into detail.”
(Jana)

Participants found using the NBC helpful, intuitive, easy, self-explanatory, and output-driven. It facilitated identifying the right model with only a few questions, step-by-step, without excessive technical jargon, and requiring little product knowledge.

Around half of the aforementioned manufacturers positioned their NBC on the model overview page, yet not very visibly. The other half placed it on subpages. Only one manufacturer highlighted its NBC’s advantages.

Recommendation 1: Position NBCs prominently and as a new, entertaining, fast, intuitive, and uncomplicated means of configuration beside traditional ABCs.

NBCs target consumers with little product knowledge

Interviewees with large product knowledge (experts) stated that an NBC would not greatly benefit them. However, those with little product knowledge (novices) found the NBC both very helpful and convenient for gaining an initial overview and for receiving a fitting product recommendation.

“The app is handy. Even if you don’t really know much about cars, you can quickly find a car that suits you.” (Holger)

Interview results also suggest that gender differences might exist depending on product category (e.g., many women had lower automotive expertise and therefore preferred NBCs). Only one manufacturer clearly guided consumers with low expertise to the NBC and those with high expertise to the ABC.

Recommendation 2: Provide clear instructions on which configuration type provides the best starting point. Guide consumers with high expertise to the ABC, those with low expertise to the NBC.

Limit the number of questions to identify needs

The tested NBC used eight questions to identify needs. Interviewees found this amount adequate. They expressed no clear preference whether additional questions (e.g., about optional equipment) should be integrated into the NBC or into subsequent configuration steps. We identified a crucial tradeoff: the more questions, the better the recommendations. However, more questions lead to increased usage time and task complexity.

Our analysis found varying numbers of questions, from one to eight (5.3 on average), in the existing NBCs. One NBC enabled first answering mandatory questions, then additional ones optionally; two NBCs offered prioritizing by importance (this was also suggested as an attractive solution by study participants).

Recommendation 3: Limit the number of questions and offer additional topics that enable optional customization.

Novices and experts consider different features important

“So, about color ... I wasn’t asked about my favorite exterior color. Well, I didn’t really feel understood. I don’t think that I was asked questions that actually mattered to me.” (Desirée)

We found that novices and experts consider different feature categories important. When beginning their configuration, novices focus more on design aspects (e.g., exterior color and interior look), whereas experts pay particular attention to technical features. As the tested NBC included no questions about exterior color, some participants could not identify with the recommendations and disliked the whole process. We identified only one NBC with color options, whereas technical questions (e.g., fuel type) were more frequent, yet not overly important for novices.

Recommendation 4: Include questions in your NBC that ensure novices receive a high perceived recommendation fit. Make sure all questions are actually needs-based (e.g., ask about travel habits instead of fuel type).

Further technical information and a chat function are beneficial

Participants would like additional information for technical terms (e.g., via an info button); they also requested a chat feature. Our best-practice analysis showed that no NBC provided additional technical information, while 50% had a chat function. The latter seems especially important, as novices (vs. experts) have lower product knowledge and often a weaker brand relationship. Thus, a chat function could support relationship building.

Recommendation 5: Integrate info buttons and a chat function for further information.

The right format is important

A mobile-optimized website reduces entry barriers, as participants are increasingly using mobile devices for surfing the web (Statista, 2020b), and would rather not download an app for just one product configuration. A log-in or account creation function should not be mandatory, as participants are very wary of providing personal details. If necessary, such a function should be integrated at the end. Visuals help to communicate technical features (e.g., showing a trunk with a small bag or bicycle instead of indicating holding capacity in liters). Participants also requested an “I do not care” option.

Our analysis showed that no NBC required creating an account. Only two enabled skipping irrelevant questions.

Recommendation 6: A mobile-optimized website is best suited to an NBC. Visualize technical details and enable users to skip steps.

Clear price communication is crucial

Participants demand transparent pricing: Is the price shown for a basic or for a fully equipped model? Are additional features already included? Participants liked being able to indicate their budget but missed a leasing option.

While two NBCs included budget details (leasing vs. purchasing), it usually remained unclear what the indicated price included.

Recommendation 7: Communicate pricing transparently and clearly establish what is included in the price. Include a budget question and different financing options (lease or purchase). This can also help convert leads to sales.

A small number of comprehensible recommendations works best

“Having three suggestions is great, but five to eight might get confusing.” (Jana)

Participants appreciated the number of recommendations (three) at the end of the process. However, they did not always understand the recommendation logic in the “black box” nor which needs were (or were not) considered.

While the six investigated NBCs provided between one and 18 recommendations, three recommendations are most common. One NBC enabled seeing more recommendations and indicated which needs were considered, and which were not.

Recommendation 8: Show three different model recommendations that match the stated needs. Be transparent and highlight which needs are (or are not) considered and explain how the answers to previous questions lead to these recommendations.

Unmatching recommendations lead to frustration

Recommendations failing to match participants’ model notions (e.g., a neglected budget) are confusing and frustrating. As interviewee Helga put it: “No way, that’s a no go.” Participants usually tried to find the error and sometimes even questioned their own entries.

Recommendation 9: Program and test all algorithms very carefully.

The next steps in the customer journey need to be obvious

“I don’t know how the program will continue; I will now be able to select the model I suppose, but the special features will probably come up later?” (Petra)

Most participants did not know how to proceed after receiving the recommendations. They were unsure of the next steps (e.g., whether they needed to add special packages or should just buy the recommended product).

Some NBCs routed consumers to model overview pages after displaying the recommendations, which might make consumers feel lost again. Only one NBC defined a clear customer journey.

Recommendation 10: Clearly highlight the next steps (e.g., continue your configuration or contact your dealer) to reduce configuration terminations and integrate a call to action to convert leads into sales.

General Discussion

New developments in the field of algorithmic recommendation systems enable new automated solutions for complex product configurators. In cooperation with Audi AG, we examined NBCs, a novel choice architecture, in a real-life setting. Interviews and a best practice analysis highlighted the potentials and specific qualities of NBCs. Our data indicated that NBCs are particularly suitable for consumers with low expertise and in cases of high perceived choice complexity. Simple design, transparent and correct matching of needs and recommendations, as well as easy and clear integration into the customer journey were identified as essential qualities of NBCs. Participants' overall positive responses underline our notion that NBCs have the potential to become an important tool in sales automation—especially as they become more intelligent and as product offerings including customization possibilities become more complex.

Theoretical and Practical Implications

Previous research has outlined that complex customization processes may frustrate consumers with little product expertise. Our results support this notion and show that NBCs may be a solution well suited to novices. Novices are more satisfied, less frustrated, and less overwhelmed in an NBC versus ABC situation. Hence, NBCs have the potential to ease product choices particularly for this target group and for complex product offerings.

Further, we claim that NBCs will not replace existing MCSs but complement existing approaches in helping consumers enter the best-suited configuration process. Currently, customization is moving from a more general approach (“one approach for everyone”) to a more individualized approach (“the right approach for everyone”). Thus, combining different choice architectures (NBC, ABC, and CvSS) might be a promising solution for practitioners offering complex products.

NBCs and underlying sales automation algorithms make the sales process much more efficient for both consumers and manufacturers. Consumers are relieved from choice overload and can simply start buying. NBCs, being based on consumer needs

instead of production processes, once again place consumers center stage and enhance the product choice experience. NBCs should provide “entertainment” rather than merely asking questions. Above all, they should meet users in their world and guide them to choose the right product via an easy and smooth customer journey.

Further digitalizing and automating the product choice process is also moving various industries (e.g., automotive) closer to selling directly to consumers (D2C), without including dealers as intermediaries in this process. NBCs are a step in this direction, as they replace traditional salesmanship with virtual consultancy. Furthermore, they ensure that knowledge about consumers reaches producers and is not retained by intermediaries. As a next step, many companies might combine NBCs with online sales applications. Against this background, NBCs have a strong potential to radically innovate sales automation.

Finally, NBCs might also be utilized by brand-independent retailers or overarching recommendation systems (e.g., the large number of election recommendation systems). Their simplicity and playfulness make NBCs potentially able to become highly influential components in important decision processes throughout various crucial fields of life.

Future Research

So far, there has been little research on NBCs. Our recommendations could be tested in a larger study and in other contexts (e.g., other industries as well as other application fields such as politics or health). Also, quantitative study designs comparing various types of MCSs could more specifically examine the differences between various configuration approaches, particularly regarding dropout rates, conversion funnel, satisfaction, and willingness to pay. As we have focused mainly on the advantages of NBCs, future studies could more carefully examine the disadvantages and risks (e.g., product configurators nudging consumers toward specific features or political NBCs nudging voters toward specific parties).

Management Summary

This article introduces a consumer-oriented approach to the future of automated product suggestions. It investigates a new type of product configurator: so-called needs-based configurators (NBCs). These analyze consumers' product-related needs and create analysis-based automated product suggestions. We discuss the specific qualities of NBCs and show why automated product suggestion systems potentially simplify product choices (especially for consumers with little product knowledge). Our ten recommendations for action are relevant for practitioners and future research alike.

Main Propositions

1. Traditional configurators are largely based on attribute-based choice architectures, which consumers often perceive as overwhelming and frustrating.
2. Needs-based configurators have the potential to become the next big thing in sales automation as configurators become more intelligent and are programmed in terms of consumer needs instead of product attributes.
3. Needs-based (attribute-based) configurators have the greatest potential when perceived choice complexity and choice insecurity are high (low) and perform best for novices (experts).

Lessons Learned

1. Offer choice architectures based on needs, attributes, and starting solutions to reflect the fact that consumers have different levels of expertise and hence different expectations of configuration processes.
2. Provide clear instructions on which configuration type provides the right starting point for consumers.
3. Follow the design guidelines for needs-based configurators (NBCs):
 - position NBCs as a new, entertaining, fast, intuitive, and uncomplicated way of configuration; be sure to communicate the benefits;
 - ask a limited number of questions and ensure they are need-based (e.g., ask about travel habits instead of fuel type);
 - communicate pricing transparently;

- program and test algorithms very carefully;
- be transparent and show which needs are (or are not) considered in the recommendations;
- clearly highlight the next steps to reduce configuration terminations and integrate a call to action.

Acknowledgments

This research was conducted in cooperation with Dieter Kopitzki, Head of Development/Rollout Digital Retail Modules and Configurator at AUDI AG, Ingolstadt. The authors wish to thank AUDI AG for granting permission to publish the results and insights of this study.

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Article II

Plaid, Airscarf, or PDK?

Naming Product Features in Online Configurators

Published in:

Marketing Review St. Gallen

Abstract

Product feature names in the automotive industry are becoming more sophisticated, more acronymic, and less descriptive. Along with a categorization of feature names, insights from 26 qualitative consumer interviews, and two online studies, this paper outlines the qualities that feature names should comprise (regardless of industry) to be perceived as beneficial by consumers.

Keywords: mass customization, consumption vocabulary, feature naming, consumer decision-making, automotive industry, product naming

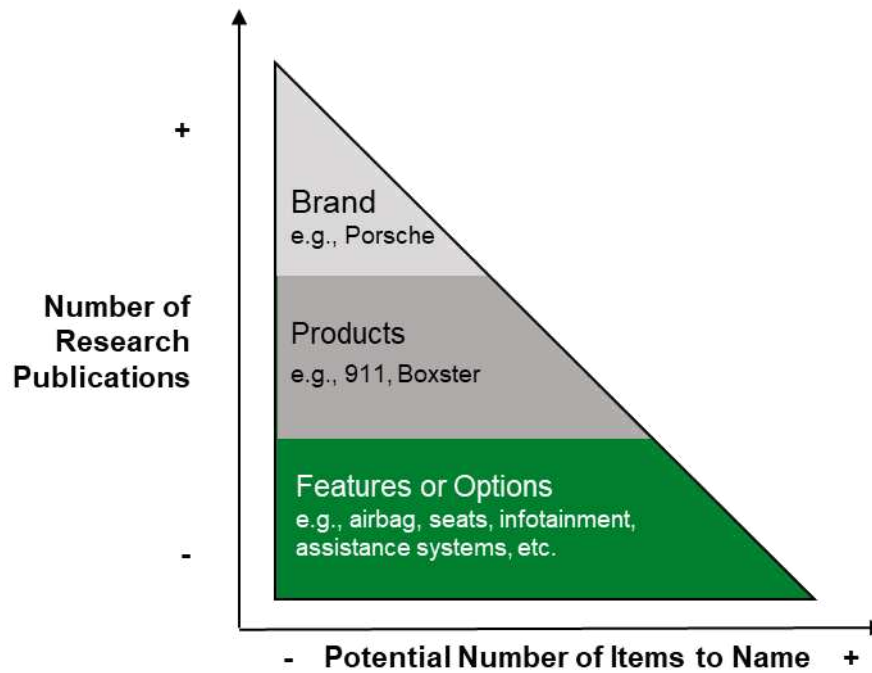
Introduction

Imagine buying a new car. You visit different manufacturer websites and, while customizing product features, you read words like “Plaid,” “Insane,” or “PDLS Plus.” How do you feel? Confident or maybe lost?

Mass customization is becoming omnipresent, and manufacturers from different industries are enabling consumers to customize products or services online (e.g., cars, computers, insurances, t-shirts, or sneakers; Freudmann, 2020; Vinoski, 2020). Over 1400 configurators exist in 17 industries (cyLEDGE, 2021). However, little is known about how product features should be named in such mass customization systems (MCSs). This is surprising because MCSs are a crucial tool for manufacturers. Feature names in the automotive industry are becoming ever more acronymic (e.g., PDLS), more sophisticated (e.g., Tesla’s Insane mode), and creative (e.g., airscarf for neck-level heating). This applies to the automotive and other industries, including insurance (e.g., CDW) and household appliances, as the example of washing machines shows (e.g., CapDosing or WCS).

This paper analyzes how product feature names can be categorized in MCSs, and how they impact consumers’ decision-making and satisfaction. Further, it aims to formulate specific recommendations on how to name product features. The findings are particularly valuable for practitioners seeking to enhance the customer experience in online configurators.

Product features (hereafter features) are defined as specific attributes or product options. Features (e.g., colors, driving assistance systems; see Figure 1) are situated two levels beneath brands (e.g., Porsche) and one level beneath products (e.g., 911). Typically, consumers can customize features in a configurator after selecting their preferred model.

Figure 1: Naming Pyramid

Theoretical Background

Complexity in Mass Customization Systems

Mass customization is composed of mass production and customization (Fiore et al., 2004). It has been defined “as a process in which consumers can choose levels from a set of predefined product modules to compose their own most preferred alternative” (Dellaert & Dabholkar, 2009, p. 44). MCSs have attracted much research in the field of consumer behavior (D’Angelo, Diehl, & Cavanaugh, 2019; de Bellis et al., 2019; Franke & Schreier, 2010; Kaiser et al., 2017; Schlager et al., 2018). They are predominantly based on attribute-based choice architectures, where consumers customize their product sequentially based on different attributes. For complex products like cars, this process can be onerous as it involves several hundred attribute choices (Huffman & Kahn, 1998). Research has therefore suggested minimizing customization effort and increasing enjoyment in MCSs (Dellaert & Stremersch, 2005; Franke et al., 2010). New choice architectures (e.g., customization based on starting solutions or needs) have been presented (Hasenmaile-Aspin & Scharfenberger, 2020; Hildebrand et al., 2014; Randall et al., 2007). Feature naming in MCSs might also play an important

role in reducing complexity and improving customer experience. This aspect has yet to be investigated.

Naming Brands, Products, and Features

Language is used to name objects, transmit information, or influence others (Vaas, n.d.). It also helps humans to “understand the world without becoming entirely overwhelmed by it” (Sagan, 1985, p. 130). Consumers, however, seem increasingly overpowered or confused by language, especially by feature names in online configurators.

Previous research on naming has mainly focused on analyzing brand names and has indicated that effective names enhance awareness and create favorable product images (Aaker, 1991; Grewal et al., 1998; Keller et al., 1998). Further research has analyzed the role of numbers (Gunasti & Ross, 2010) and sound (Klink & Wu, 2014; Pogacar et al., 2015) in brand names. Research has shown, for example, that unusual spellings can increase brand-name memory (Lowrey et al., 2003) and that suggestive and descriptive names are preferred to coined and arbitrary ones (Kohli & Suri, 2000).

Research has also studied product names (Gunasti & Devezer, 2016; Scharfenberger et al., 2020; Stoner et al., 2018; Wu et al., 2019). Research on consumer confusion, a well-known marketing problem, has found that product names can mislead consumers to believe that products deliver benefits they cannot (Mitchell & Papavassiliou, 1999).

However, no studies have yet investigated feature names. This is surprising because the number of features is high, particularly in the automotive industry (see Figure 1).

Context and Methods

This paper explores feature naming in the automotive industry, a highly relevant and increasingly complex application field of mass customization (Statista, 2021a). Especially in the age of digitalization, where 46% of new car buyers use online car configurators as a source of information (DAT, 2020).

First, given the lack of research, an exploratory study categorized 1091 feature names of eight premium automotive manufacturers to gain initial insights into naming practices. Names were collected from car manufacturer websites (in German), and

brands chosen based on sales figures (Statista, 2021b). Categories (Table 1) were deduced from the literature (Arora et al., 2015; Chen et al., 2017; Lischer, 2015) and adjusted during the analysis.

Table 1: Categories of Feature Names

Acronyms	Names formed from initial letter(s) of successive parts; differentiation between universal (e.g., LED) and brand specific acronyms (e.g., PHC for Porsche Hill Control), which are used only by a specific brand.
Associative	Names taken from other areas (e.g., movies, wildlife, chemistry) to highlight special characteristics (e.g., Birch Light Metallic, wade sensing).
Comparative	Names conveying a sense of newer, better equipped, or further developed features (e.g., plus, premium, or high-end).
Descriptive	Informational; names describing or conveying feature benefit or function (e.g., backup camera, airbag).
Vague descriptive	Names somewhat informational, but whose precise function remains vague; mostly used for packages (e.g., light package, business package).
Geographical	Names with a geographical designation (e.g., Eiger Grey or Firenze Red).
Invented	Names that are etymological fabrications, company-owned trademarks (e.g., Pivi for an infotainment system or PARKTRONIC for a parking assistance system).
Lexical	Names relying on wordplays such as capital letters, foreign words, or intentional misspellings (e.g., KEYLESS GO, designo, or SportDesign).
Own Brand Name	Names containing the brand name (e.g., Lexus Intelligent Park Assist, or BMW Head-Up Display).
Unusual	Names that are surprising and unexpected (e.g., Plaid or Thors Hammer high beams).

Second, 16 semi-structured interviews were conducted to find out more about how feature names impact customer experience. Interviewees were postgraduate students from a European business school. The interviews were conducted in German via ZOOM and lasted 31 minutes on average. They were video-recorded, partly transcribed, coded, and analyzed using summarizing qualitative content analysis

(Mayring & Fenzl, 2014). Interviewees were first asked to customize a car online (choosing from either BMW, Mercedes, Porsche, Tesla, or Volvo). Next, they answered questions about feature names and naming categories. Finally, they were shown other manufacturers' feature names.

Third, an online study (with 150 students from the same business school as above) surveyed agreement rates for different statements from the previous interview findings. The focus was on attitudes toward acronyms and on own brand names.

Fourth, an online study with 100 Porsche owners and fans and 10 telephone interviews with the same target group provided further insights into acronyms, a Porsche typical naming category.

Results

The feature name analysis (Table 2) showed that the category descriptive (e.g., seat heating or lane change assist) was used most often (78%). However, only 61% of these names were purely descriptive, since 17% featured multiple categories (e.g., LED high performance headlights was assigned to the categories descriptive, acronymic, and comparative). The share of non-descriptive feature names (22%) seemed high, as the main reason for naming a feature is to capture and convey its benefit or function. Vague descriptive feature names, the second most common naming strategy (9%), were mainly used for equipment packages (e.g., business package). Associative names (8%) were mostly used for exterior colors (e.g., pine grey) or for technical functions (e.g., wade sensing). Acronyms (7%) were either universal (e.g., LED) or brand-specific (e.g., PSM for Porsche Stability Management). Own brand names (6%) were added to feature names (e.g., Audi sound system). Comparative names (6%) were mainly used for different levels of packages (e.g., advanced, high-end), or to highlight progress and superiority (e.g., plus). Lexical names (6%) were mainly capitalized (e.g., DYNAMIC SELECT). While the remaining categories (geographical 2%, invented 2%, unusual 2%) were not as frequent, they seemed important for some manufacturers. For example, invented names were typical of Mercedes (e.g., TEMPOMAT), unusual ones of Tesla (e.g., Plaid).

Table 2: Analysis of Feature Names

Manufacturer Model	Mercedes <i>C-Class</i>	Tesla <i>Model S</i>	Porsche <i>Macan</i>	Land Rover <i>Evoque***</i>	Volvo <i>V90</i>	Lexus <i>ES</i>	Audi <i>A4</i>	BMW <i>520i</i>	All
Analyzed Features*	149	59	265	168	71	126	157	96	1091
Naming Categories									
Brand-specific acronyms	2% ^{ab**}	0% ^b	5% ^a	2% ^{ab}	1% ^{ab}	1% ^b	0% ^b	1% ^b	1%
Universal acronyms	4% ^b	2% ^b	4% ^b	13% ^a	1% ^b	9% ^{ab}	3% ^b	5% ^b	5%
Associative	8% ^{ab}	7% ^{ab}	6% ^b	2% ^b	16% ^a	5% ^b	10% ^b	6% ^{ab}	8%
Comparative	9% ^{ab}	15% ^a	4% ^b	3% ^b	4% ^{ab}	2% ^b	6% ^{ab}	4% ^{ab}	6%
Descriptive	60% ^b	88% ^a	86% ^a	81% ^a	69% ^{ab}	91% ^{ab}	69% ^{ab}	78% ^{ab}	78%
Vague descriptive	19% ^a	0% ^c	7% ^{bc}	7% ^{bc}	8% ^{abc}	3% ^c	17% ^{abc}	10% ^{ab}	9%
Geographical	1% ^a	0% ^a	3% ^a	6% ^a	0% ^a	2% ^a	2% ^a	6% ^a	2%
Invented	8% ^a	2% ^{bc}	0% ^c	2% ^{bc}	5% ^{ab}	0% ^c	1% ^c	0% ^{bc}	2%
Lexical	16% ^a	2% ^b	5% ^b	1% ^b	0% ^b	23% ^a	0% ^b	0% ^b	6%
Own Brand Name	0% ^b	2% ^b	6% ^b	0% ^b	0% ^b	6% ^b	22% ^a	14% ^a	6%
Unusual	1% ^b	17% ^a	0% ^b	0% ^b	1% ^b	0% ^b	0% ^b	0% ^b	2%
Languages									
German	56% ^c	72% ^{abc}	85% ^a	66% ^{bc}	62% ^{bc}	77% ^{ab}	87% ^a	66% ^{bc}	71%
English	8% ^a	15% ^{ab}	3% ^c	15% ^{ab}	19% ^a	2% ^c	1% ^c	14% ^{ab}	10%
German & English	28% ^a	12% ^b	12% ^b	14% ^b	12% ^b	20% ^{ab}	11% ^b	21% ^{ab}	16%
Others	8% ^a	2% ^b	0% ^b	5% ^b	7% ^{ab}	1% ^b	0% ^b	0% ^b	3%

* The number of analyzed features varies by brand due to manufacturers' different product management strategies (e.g., in terms of standard equipment). Engines, wheels, and upholstery were not considered in the analysis. Feature names were assigned to up to three categories.

**Same letters (e.g., a, b, c) were not significantly different from each other (P<0.05 ANOVA followed by post hoc Tukey test). Porsche, for example, uses more brand-specific acronyms than Tesla, Lexus, Audi, and BMW.

***Range Rover Evoque

Analyzing the interviews and the two online studies yielded 8 key findings:

Some names were misunderstood

“There were relatively many features that you check in detail to make a purchase decision. I have a lot to do with cars [...] but still, I couldn't intuitively say, I rather need this feature or not.” (Nils)

Most feature names in the tested configurators were described as descriptive, self-explanatory, and intuitive. Nevertheless, a notable amount of feature names was more difficult to understand than others. Even experienced participants struggled to understand some names. They found the function of some features baffling (e.g., What is a Xenium package? Or what is COMAND Online good for?). In some cases, they confused or misunderstood the benefit of features (e.g., PRE-SAFE System). They also pointed out the risk of not choosing potentially important options because they did not understand them.

Acronyms are unknown and only beneficial for manufacturers

“I don't like abbreviations at all, they only help those who work in the company. I don't understand why this is communicated to the outside world. It's of no use to the customer.” (Hannah)

Most of the universal, above all brand-specific, acronyms were unknown to interviewees. Even Porsche owners and fans struggled to understand Porsche's acronyms: They knew only for 14% of 13 tested brand-specific acronyms (e.g., PDLs, or PDK) what the feature is about. Interviewees called acronyms difficult, techy, masculine, nerdy, and only for real insiders while Porsche's acronyms were also considered too similar. Participants felt overwhelmed and saw no benefit of acronyms, as these mainly facilitated manufacturers' internal communications or helped shorten user manuals. Interviewees assumed that engineers devised acronyms, and that manufacturers might try to anchor acronyms in consumer minds to build new brands (even if this approach rarely succeeded in the past). Interviewees were skeptical about brand-specific acronyms while well-known acronyms were considered okay. Awareness rates were 87% for ABS, 71% for LED, 25% for HUD, 7% for PDC, 6% for HDC, 4% for BLIS, and 4% for EDW.

The online study confirmed interviewees' slightly negative attitude toward acronyms. Acronyms were described as complicated, as confusing unless they were ordinary, as evoking uncertainty, and as elusive for laypersons. Besides severely complicating the decision process, they were time-consuming and unnecessarily technical. On the positive side, interviewees said that acronyms can increase readability and simplify communication among those who understand them. They were found to be logical, easily memorizable (if learned), and speeded up communication. Porsche acronyms were considered typical of and integral to corporate identity. Commonly known acronyms (e.g., LED) were said to add value if used wisely. Exaggerated use, however, was found annoying and frustrating.

Analyzing the agreement rates for acronym-related statements (7-point Likert scale; 1-totally disagree, 7-totally agree) revealed that consumers do not consider acronyms helpful ($M=2.81$, $SD=1.41$). Participants found acronyms suitable for consumers strongly interested in cars ($M=5.37$, $SD=1.45$), yet unsuitable for the average consumer ($M=2.39$, $SD=1.17$). They were considered confusing and difficult to remember ($M=4.89$, $SD=1.55$), with no benefit ($M=2.48$, $SD=1.38$; all five items are significantly different to the scale midpoint of 4.00, $p<.001$). The Porsche study showed similar results.

Own brand names communicate exclusivity

According to interviewees, adding the brand name to a feature can communicate exclusivity and quality, besides creating the impression that a manufacturer had developed the feature itself. However, add-ons to standard features (e.g., smartphone integration) seemed weird, as other manufacturers also offer such features and might even have the same suppliers. Participants recommended companies to use add-ons sparsely (i.e., only with innovative or in-house features). Moreover, this naming strategy should be used solely for brand-character-building features. Tesla, for example, could name a specific charging feature with their brand name.

The online study confirmed that feature-brand combinations appear exclusive ($M=4.68$, $SD=1.71$), but also superfluous ($M=4.60$, $SD=1.60$; both significantly different to the scale midpoint of 4.00, $p<.001$).

“Plus,” “professional,” and packages were perceived as vague

Interviewees struggled to grasp feature names involving comparatives. For instance, a “business package” and a “business package plus” seemed hard to easily distinguish. Some participants would prefer the additional function to be described instead of the word “plus” simply being appended.

Participants found certain package names difficult to understand or could not picture the package contents (e.g., night package). They felt overwhelmed by Mercedes’ variant packages (e.g., advanced, high-end). Some interviewees mentioned feeling dissatisfied unless they chose the best version, therefore disliked such packages. Not choosing the best package, they anticipated regretting their decision, thinking that they might miss a relevant function. They instead preferred precise and easily understandable package names (e.g., winter or park assistance package). Names should focus on benefits or needs rather than be too creative as this might prove overwhelming. Most participants preferred Volvo’s and BMW’s package names to those of Mercedes, as the former used simpler names.

Same names for same features

“I would prefer a uniform standard across brands. Otherwise, it’s very confusing when brands name their own things as fancily as possible.” (Joel)

Participants suggested naming the same features the same way, as Porsche’s lane assist presumably does the same as that of Mercedes. This would enable easily comparing the features of different brands. Interviewees mentioned that manufacturers might use feature names to set themselves apart from other manufacturers or to justify price differences. The online study confirmed that the same features should be named the same way ($M=6.05$, $SD=1.16$; significantly different to the scale midpoint of 4.00, $p<.001$).

Simple and functional names for basics and special names for signature features

“Especially industry standards should be named without brand specific terminology.” (Matthias)

Participants preferred short, simple, intuitive, and pragmatic names. Naming should be consistent throughout the brand and fit the brand image. Participants liked Tesla’s simple naming, entirely intuitive, and self-explanatory (e.g., auto park) as this

made unique feature names stand out. Participants proposed naming basic features after industry standards. Only a few features should be given a fancy name, and those features need to be unique and brand-characteristic. Names should still be somewhat intuitive. Volvo, for example, could highlight a safety feature with a special name and advertise accordingly.

The online study confirmed that signature features ought to be given special names ($M=4.52$, $SD=1.62$). Names should be intuitive ($M=5.62$, $SD=1.29$), and feature function should be immediately evident ($M=5.99$, $SD=1.10$; all three significantly different to the scale midpoint of 4.00, $p<.001$).

Associative names exude exclusivity and enhance imagination

Participants stated that associative color names sound beautiful, amplifying, and exude a certain exclusivity. However, some struggled to understand associations with gemstones or minerals (what does obsidian black look like?). Participants liked imaginable names (e.g., arctic blue) or where associations created special feelings (e.g., mediterranean blue conjured up holiday feelings).

Interviews revealed no clear tendency in consumer preference of associative feature names. Feature function should be clear. If this could not be guaranteed, a potentially more boring (i.e., descriptive) name should be used. Thors Hammer, the associative name of Volvo headlights, was discussed controversially. Some interviewees found it funny and mystic (a good metaphor and related to Volvo's Scandinavian origin). Others, however, associated nothing with the term or considered it too far-fetched.

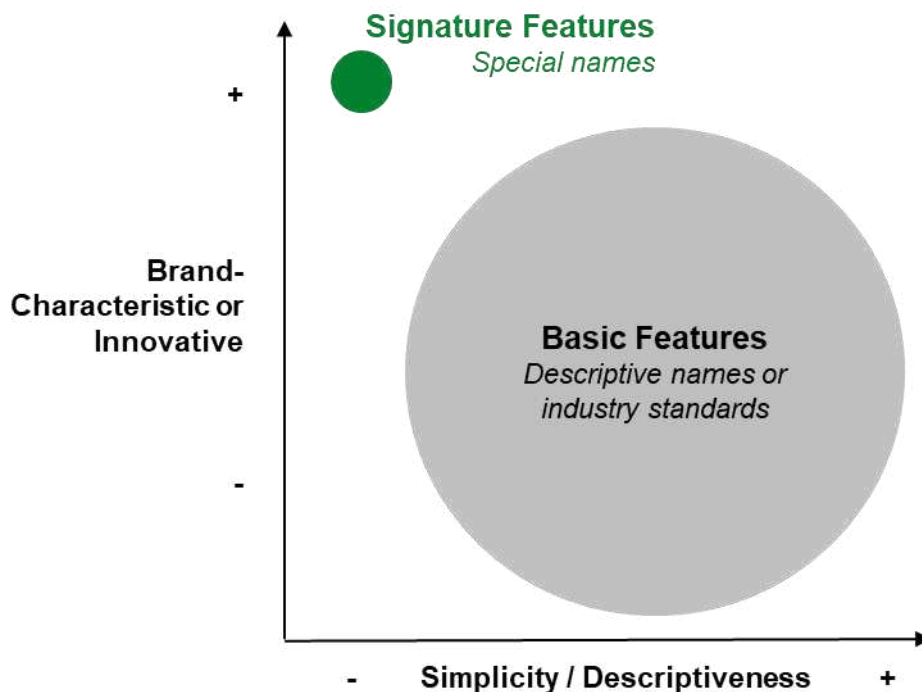
No real benefit of English names

Participants agreed that language-wise feature names should be named consistently. Mixing languages was not considered user-friendly. One interviewee mentioned seeing no reason for mixing languages, except that this might sound cooler. Interviewees expected German manufacturers to use fewer English features than non-German ones. This was confirmed by the online study, where 48% of respondents expected a German manufacturer to use German names (versus 19% for non-German manufacturers). Tesla using more German than some German manufacturers prompted one interviewee to shake his head. Further, feature naming should also consider elderly consumers, who might struggle to understand English names.

General Discussion

This paper has shown that current feature names in online configurators do not match consumer needs as they are too acronymic, too diverse, and too vague. Consumers become confused or are misled by non-descriptive feature names. Not even owners are aware of the brand-specific acronyms for features that they probably have in their products, implying that potential new customers might struggle even more. Consumers prefer simple and descriptive names for basic features and would like names to directly convey feature benefit or function. Therefore, basic features, which are not especially brand-characteristic or innovative should be given simple and descriptive names, or, if available, industry standards (Figure 2). Signature features, which are innovative or build brand character, could be assigned special names (e.g., associative or unusual names). This paper has also revealed that such feature names need to be carefully selected and used rarely. Acronyms, comparative, and vague names should be reduced to the most necessary.

Figure 2: Feature Naming Model



Theoretical and Practical Implications

This research contributes to the literature on mass customization and advances the understanding of the importance of naming features (beyond products and brands). Previous research has suggested minimizing customization effort and increasing enjoyment in MCSs and has presented various approaches. Crucially, however, it has not yet addressed an essential factor: feature naming. The research presented here shows that feature names play an important role in customer experience and can be simplified. It is one of the first in-depth studies on feature names—a highly relevant level of the naming pyramid given the large number of features and low number of research.

This research also has practical implications. First, it illustrates that companies have partly lost sight of consumer needs regarding feature naming. Product managers seem keen to fulfill themselves through fancy names. However, they pursue this aspiration unsupported by market research on whether consumers understand the chosen names. Second, this research highlights areas of concern regarding naming and derives five recommendations for naming features (see Lessons Learned). Companies can improve customer experience by (once again) focusing on naming needs. This will increase consumers' satisfaction and reduce their confusion and uncertainty. It will also reduce the need for explanation (e.g., in stores) and might increase revenues.

Future Research

Future research could generalize the present findings and recommendations for feature names beyond cars and further populations. It might analyze specific naming categories in more detail (e.g., which categories should be used for which features and which target groups). Experimental study designs could more specifically examine how specific naming categories impact satisfaction, brand attitudes, or revenues, and whether complex names make products look more sophisticated, for example. Further, the company-internal perspective should be considered to obtain a holistic perspective.

Are you still wondering what Plaid, PDK, and PDLS stand for? Plaid is Tesla's drivetrain and goes back to Spaceballs, a Star Wars parody. PDK stands for Porsche Doppelkupplungsgetriebe, and PDLS is the Porsche Dynamic Light System.

Management Summary

Mass customization is becoming omnipresent and enables consumers to easily customize products online. Thus far, little is known about how product features are named in such environments. This paper presents a categorization of feature names in the automotive industry. Along with insights from interviews and online studies, it presents specific qualities that feature names in mass customization systems should comprise to be perceived as beneficial by consumers. The results are relevant for practitioners and academics alike.

Main Propositions

1. Feature names have great potential to influence the customer experience in online configurators.
2. Non-descriptive names can lead to features that are not or misunderstood.
3. Acronyms are largely unknown. They are considered complicated, difficult to remember, unnecessary, and only for insiders.
4. If rarely used, combining a brand name with a feature name communicates exclusivity.
5. Basic features should be given simple and descriptive names, while selected signature features can be assigned special names (e.g., associative, invented, or unusual names).

Lessons Learned

Feature names in mass customization systems must be based on consumer needs to ease the customization process and increase satisfaction:

1. Ensure consumers correctly understand feature function to avoid confusion. The function of language is to transmit information.
2. Use simple, descriptive, and precise names. Use industry terms for basic, non-differentiating features and avoid company specific names.
3. Only naming very few signature features (e.g., brand-characteristic or innovative features) with special names will strengthen exclusivity and brand image and might create new sub-brands.

4. Signature features can be combined with the brand name, or with associative or unusual names, to create special names (which should still be somewhat intuitive).
5. Whenever possible, avoid vague add-ons (e.g., “plus”) and unspecific feature names (i.e., for packages).

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Article III

The Social Power of Narcissists in Mass Customization

Published in:

Advances in Consumer Research Volume 48

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Abstract

It has become standard practice for consumers to customize products instead of choosing off-the-shelf solutions. A new practice is that consumers can directly share and discuss their customized products with their peers via social product configurators. We examine how the type of communication affects peer decision-making and satisfaction in such configurators. Drawing on research on mass customization, electronic word of mouth, and narcissism, we propose that narcissistic communication is crucial to understanding the effect of a shared configuration. A series of three studies demonstrates that consumers scoring high (vs. low) on narcissism are more likely to share their customized product online as a sample configuration and to use I-centered communication to describe that configuration. Such narcissistic communication makes peers adjust their own customized product to the sample configuration and to evaluate their own product less favorably. These findings suggest that narcissistic communication influences consumers' decision-making by increasing the likelihood to conform, potentially negatively impacting consumer satisfaction. The social power of narcissists has implications for both marketing research and practice.

Keywords: communication style, electronic word of mouth, mass customization, narcissism, online social networks, social product configurator

Introduction

Customizing products and services based on individual preferences has become common practice. Manufacturers have begun implementing social product configurators that allow consumers to easily share, discuss, and improve their customized products online on social networks (SNs). For example, consumers can configure a car and directly share and discuss the configuration with peers on Facebook. Thus far, however, little is known about the consequences of integrating elements of social interaction into mass customization systems (Franke, Keinz, & Schreier, 2008; Schlager, Hildebrand, Häubl, Franke, & Herrmann, 2018). Which shared configurations are most influential? What are the behavioral consequences for peers when processing such information?

Consumers are spending ever more time online. As a result, they are increasingly flooded with information and appraisal, not only from firms but also from peers. Widely accessible online social networks (SNs) such as Instagram or Twitter have made electronic word of mouth (eWOM) proliferate in recent years (Berger, 2014). Providing information online through eWOM enables consumers to communicate about products, services, and brands (Rosario, Sotgiu, De Valck, & Bijmolt, 2016). A 2015 global consumer survey found that over 80% of consumers trusted recommendations from friends and family while two-thirds relied on opinions from unknown consumers posted online (Nielsen, 2015). The latter share is expected to grow even further due to the increasing use and integration of SNs. Whereas much is known about the consequences of eWOM and its underlying processes (Berger, 2014; Chevalier & Mayzlin, 2006; Eisingerich, Chun, Liu, Jia, & Bell, 2015; Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004), less attention has been paid to which communication types by which consumers are more influential (Luangrath, Peck, & Barger, 2017; Packard & Berger, 2017). Exploring this issue, we propose that narcissism is key to understanding the effectiveness of eWOM.

Narcissism is a relatively prevalent personality dimension (Emmons, 1984; Raskin & Terry, 1988). It denotes unjustified conceit and implies excessive motivation to self-enhance (Lee, Gregg, & Park, 2013). Narcissism entered the field of consumer psychology through the seminal work of Sedikides, Gregg, Cisek, and Hart (2007), who famously argued that it is “the I that buys.” While explored in depth in psychology, narcissism as a relatively prevalent consumer trait is receiving increasing attention in marketing (de Bellis, Sprott, Hermann, Bierhoff, & Rohmann, 2016; Kashmiri et al.,

2017). Although narcissists supposedly use more first-person singular (“I” and “me”) than first-person plural pronouns (“we” and “us”) to draw attention to themselves (Raskin & Shaw, 1988), this has not been corroborated by more recent research (e.g., Carey et al., 2015; Holtzman et al., 2019).

Our research integrates insights from eWOM and narcissistic communication into the mass customization domain. A pilot study and two experimental studies examine how narcissistic communication impacts peer decision-making and satisfaction in social product configurators. We draw on and contribute to three literature streams—eWOM, mass customization, and narcissism—by demonstrating that narcissistic (vs. non-narcissistic) communication in social product configurators is more influential while decreasing consumers’ satisfaction with their customized products.

Theoretical Background and Hypotheses

Electronic Word of Mouth (EWOM) and Social Product Configurators

EWOM is not only one of the most significant developments in contemporary consumer behavior (Rosario et al., 2018) but also one of the most important sources of consumer decision-making (Litvin, Goldsmith, & Pan, 2008). EWOM, or more specifically online reviews, can greatly impact sales (Chevalier & Mayzlin, 2006; Chintagunta, Gopinath, & Venkataraman, 2010; Dellorcas, Zhang, & Awad, 2007; Liu, 2006; Moore, 2015; Zhu & Zhang, 2010). The effectiveness of eWOM differs across products, metrics, and platforms (e.g., the effectiveness of eWOM in SNs is stronger if eWOM receivers can assess their own similarity with eWOM senders; Rosario et al., 2016). Consumers exchange information with other consumers online for different reasons, including the desire for social interaction and the opportunity to enhance their own self-worth (Hennig-Thurau et al., 2004). Research has analyzed the linguistic aspects of eWOM. It has examined the influence of implicit versus explicit endorsements on purchase intention (Packard & Berger, 2017) and has investigated whether expressing subjectivity in online reviews enhances persuasion (Liu, Ozanne, & Mattila, 2018). Research has also examined how textual paralinguage affects SNs (e.g., emojis and vocalizations like “haha”; Luangrath et al., 2017), as well as the effects of linguistic mimicry (Moore & McFerran, 2017). Nevertheless, the impact of different communication styles remains unclear.

Our research combines eWOM with mass customization (i.e., social product configurators). Doing so is worthwhile as integrating social sharing into mass customization systems is a novel trend across industries and markets (Gandhi, Magar, & Roberts, 2014). For example, car manufacturers (e.g., Porsche and Land Rover) or sportswear manufacturers (e.g., Nike and Oakley) now provide consumers with web-based tools to easily share, discuss, and improve their configured products on SNs like Facebook, LinkedIn, or Twitter (see Appendix A). Typically, consumers configure products and can then share a commented link on their customization via their SN profile. So far, research has focused primarily on the effects of customization formats on consumer satisfaction (Huffman & Kahn, 1998). Little, however, is known about the consequences of integrating elements of social interaction into mass customization systems. The few existing studies on social product configurators have examined how feedback impacts the uniqueness and creativity of product designs, the role of social distance in product modifications, and the satisfaction with self-designed products (D'Angelo, Diehl, & Cavanaugh, 2019; Hildebrand, Häubl, Herrmann, & Landwehr, 2013; Schlager et al., 2018). However, none of these studies have investigated whether and how different communication styles in consumer feedback messages affect peer customization.

Narcissists and Their Communication Style

Raskin and Terry (1988) derived the concept of narcissism as a subclinical personality construct and subsequently developed a validated measure: the Narcissistic Personality Inventory (NPI). Narcissists pay more attention to self-esteem than their less narcissistic peers, strive for admiration, and are characterized by agency, extraversion, and self-confidence (Baumeister & Vohs, 2001; Bradlee & Emmons, 1992; Morf & Rhodewalt, 2001). They purchase exclusive products to elevate their self-image and consider themselves special and entitled (Cisek et al., 2014; Sedikides et al., 2007).

The social interactions of narcissists involve their need to boast about their achievements (Buss & Chiodo, 1991) and their need for superiority, such that their agentic bias is acted out to validate these self-beliefs (Sedikides et al., 2007). Unsurprisingly, narcissism predicts a higher level of social activity in SNs and more self-promoting content (Buffardi & Campbell, 2008; Leung, 2013; McCain & Campbell, 2018; Ong et al., 2011; Poon & Leung, 2011). Narcissists are highly self-

focused, persistently seek attention, and often consider themselves the epicenter of their social world (Sedikides, Campbell, Reeder, Elliot, & Gregg, 2002). They communicate to convey “heroic I” messages; this self-centered “configuration of selfhood” means that individuals strive to be the heroes of their own stories (Goodman, Dueck, & Langdal, 2010, p. 667).

The prevailing opinion is that narcissistic communication is I-centered as narcissists tend to use more first-person singular (vs. plural) pronouns compared to non-narcissists (Chatterjee & Hambrick, 2007; Raskin & Shaw, 1988). However, this relationship has been examined with contradictory results. Some studies have not found a significant correlation between I-centered communication and narcissism (Carey et al., 2015; DeWall, Buffardi, Bonser, & Campbell, 2011; Fast & Funder, 2010). More recently, a positive relationship has only been demonstrated between narcissism and the use of words related to second-person pronouns, sports, and swearing (Holtzman et al., 2019). It remains unclear how narcissists communicate with respect to perspective-taking, especially in specific settings such as social product configurators, where uniqueness perceptions are likely more important (Franke & Schreier, 2008).

We propose that narcissistic consumers employ self-promoting interaction patterns within social communities associated with mass customization systems. When narcissistic consumers share their customized products with SN peers, their underlying motivation is to highlight their greatness (Goodman et al., 2010). They are hence likely to use more first-person singular pronouns rather than neutral, product-focused communication (Raskin & Shaw, 1988).

H1: The greater consumers’ narcissistic tendencies, the greater their use of I-centered (vs. product-centered) communication in social product configurators.

The Influence of Narcissistic Communication on Peers

How does narcissistic (i.e., I-centered) communication affect others in a mass customization context? Narcissists are often opinion leaders within their communities and motivated to share information about their own decision-making (Baumgarten, 1975). Hence, we predict that when product information is communicated narcissistically, it affects peer product customization. We expect this type of message to

inform peers that the product designer identifies with the customized product. Its use of “I” makes such communication seem more authentic and competent, and thus more influential (Brunell et al., 2008). Prior research has suggested that combining first-person pronouns and personal information evokes authenticity and enhances confidence (Schindler & Bickart, 2012). Further, consumers might believe narcissistic leaders are more competent and effective, based on their exhibited confidence (Brunell et al., 2008). Therefore, when consumers have the opportunity to repeat their configuration, we suspect that they are more heavily influenced by a narcissist’s sample configuration (relative to a non-narcissist’s), resulting in an adjusted original configuration.

H2: Consumers adjust their own customized product to their peers’ sample configuration if its presentation is I-centered (vs. product-centered).

Peer input on evaluating preliminary design solutions can have positive effects (Franke, Keinz, & Schreier, 2008). However, evidence also exists that social comparisons and deviating from initial preferences due to social feedback can have negative effects by devaluing self-designed products (Dahl, Argo, & Morales, 2011; Hildebrand et al., 2013; Moreau & Herd, 2010). Consumers evaluate their self-designed product lower if the sample is presented by a close (vs. distant) social other (D’Angelo et al., 2019). Thus, while consumers likely adjust their customized product more to a narcissist’s sample configuration (per H2), we expect them to be less satisfied with their own customized product because they perceive narcissists’ sample configurations as more competently customized (Brunell et al., 2008). This might raise more doubts about one’s own customized product and lead to less favorable evaluations. Negative reactions may also occur if someone’s customized product is imitated (White & Argo, 2011).

H3: Consumers perceive their own customized products less favorably after seeing an I-centered (vs. product-centered) sample configuration.

Below, we report a set of three studies that were conducted to test H1–H3. As narcissism is linked to pride and self-enhancement, we accounted for the level of appraisal of the sample configuration by manipulating it. We conducted the studies in the automotive industry due to its advanced integration of social elements into mass

customization systems (see configurator-database.com; Schlager et al., 2018). All studies were carried out in accordance with ethical standards for psychological research (e.g., voluntary participation, informed consent, and confidential treatment of information). To improve the external validity of our results, we studied varying and market-relevant populations (i.e., recent car buyers, potential car buyers, and MBA students). Table 1 summarizes the methods and results.

Table 1: Summary of Methods and Results

Study	Main Focus	Participants	Design	Hypothesis	Dependent Variable	Results
Pilot	Role of social networks on car purchases & influence of narcissism on communication style	64 actual car buyers	Online study	H1	- Usage of social networks prior to car purchase - Usage of first-person singular pronouns in posts	Narcissists heavily use first-person singular pronouns when communicating via social networks
Pretest	Narcissistic communication in social networks	164 MBA students from a European business school	Paper-and-pencil study	H1	- Willingness to show the configured product in the social network - Select corresponding message, which varied in terms of perspective & appraisal	Narcissism is a significant predictor of choosing I-centered (vs. product-centered) messages
1	Influence of narcissistic communication on alteration of product customization	146 panel members from a commercial research company intending to buy a car in 2–3 years	Online study, between-subjects 2×2 design (perspective × appraisal)	H2	- Adjustment of options in product customization 2 versus product customization 1	Consumers adjust their own customized product to peers' sample configuration if it is presented I-centered (vs. product-centered)
2	Influence of narcissistic communication on evaluating product customization	169 MBA students from a European business school	Lab study, between-subjects 2×2 design (perspective × appraisal)	H3	- Choice satisfaction - Pride of authorship - Fit of configured options - Willingness to reconfigure	Consumers reading the I-centered (vs. product-centered) message showed decreased product valuation and increased willingness to reconfigure their car

Pilot Study

Our pilot study (see Appendix B1 for details) explored how SNs impact a recent car purchase and how consumer communication depends on narcissistic tendencies. We recruited 64 car buyers via a commercial market research company and measured their narcissistic tendencies using an abbreviated NPI-15 scale (see Appendix B2; Schütz, Marcus, & Sellin, 2004). We investigated how buyers used SNs prior to purchase. Results showed that narcissists more frequently use SNs, as indicated by a positive and significant relationship between narcissism and daily SN use ($b = .51$, $SE = .18$, $t = 2.78$, $p < .01$). Requesting car buyers to state their SN use in the past 30 days revealed that narcissism was positively and significantly related to the number of replies to their own posts ($b = 3.08$, $SE = 1.02$, $t = 3.00$, $p < .01$), indicating their role as influencers and opinion leaders. Further, narcissism was associated with a subjective measure of being an opinion leader ($b = .18$, $SE = .05$, $t = 3.86$, $p < .001$). Requesting car buyers to write an SN post for their friends about a recent restaurant visit (which enabled examining distinct SN communication styles), their narcissistic tendencies predicted the use of first-person singular pronouns ($b = .06$, $SE = .03$, $t = 2.07$, $p = .04$). This result was confirmed when using a relative measure designed to put into perspective the use of the first-person singular and first-person plural ($b = .08$, $SE = .03$, $t = 2.38$, $p = .02$). The findings of our pilot study suggest that narcissists can be described as opinion leaders who heavily use first-person singular pronouns when communicating via SNs (Raskin & Shaw, 1988), providing initial support for H1.

Study 1

Study 1 examined how narcissists' messages impact peer product customization. As predicted in H2, we expect consumers (irrespective of their narcissism scores) to adjust their customized product to a sample configuration if this is communicated narcissistically (I-centered) vs. non-narcissistically (product-centered). Using a mass customization context allowed us to precisely measure deviations from initial consumption choices.

Pretest

We conducted an extensive pretest to operationalize narcissistic (I-centered) communication (see Appendix C). The pretest further served to replicate and extend the correlational results of the pilot study in a more controlled setting. The results showed that narcissists (vs. non-narcissists) are more likely to share information about products configured within a mass customization system. Importantly, narcissists tended to differentially structure their interactional patterns regarding a customized product by using more I-centered (vs. product-centered) messages. The pretest thus provides more direct support for H1. Interestingly, we found that narcissism does not predict choosing appraising versus non-appraising messages, suggesting that the effect of I-centered versus product-centered messages is considerably stronger.

Method

We employed a 2 (perspective: I-centered vs. product-centered) $\times$ 2 (appraisal: appraising vs. non-appraising) between-subjects design. The sample included 146 panel members from a commercial research company (45% female; $M_{\text{age}} = 42$; $M_{\text{narcissism}} = 5.52$) who were prescreened for their intention to purchase or lease a car.

Having completed the NPI-15, participants configured a car with a mock-up configurator (see Appendix D1). Next, they were randomly assigned to a sample configuration along with an experimentally manipulated SN message ($N_{\text{I, appraising}} = 39$, $N_{\text{I, non-appraising}} = 34$, $N_{\text{product, appraising}} = 35$, $N_{\text{product, non-appraising}} = 38$). We created four variant messages. These differed in terms of perspective (I-centered vs. product-centered), appraisal, and whether the chosen attribute options were made explicit (to keep message length constant; see Table 2). We also created four sample configurations, to be used with one of the four messages. Each configuration randomly combined six product options to minimize confounding factors resulting from preferring certain options (see Appendix D2). Finally, participants configured their car a second time, before completing a four-item car expertise scale (adapted from Hildebrand et al., 2014) and demographics.

The dependent variable was whether participants selected the same product options during the second product customization as selected in the sample configuration. As the same option was more likely to be chosen if few options were available (e.g.,

only three options for the sound system), each adjustment was weighted by the number of options for a particular attribute. Thus, we calculated an adjustment index:

$$AI = \sum_{i=1}^6 SC_i O_i \quad (1),$$

where i represents the six product attributes, where SC represents whether participants choose the same (1) or not the same product option (0) as the sample configuration, and where O refers to the number of product options for the i^{th} attribute.

Table 2: Message Versions to Accompany Customized Products

	appraising	non-appraising
I-centered	“Let me show you an Audi A6 that I just configured. As I’m very good with cars, I’ve chosen the best options for the six attributes while I took care that they fit well together.”	“Let me show you an Audi A6 that I just configured. I’ve chosen specific options for the six attributes exterior color, rims, seat upholstery, interior décor, steering wheel, and sound system.”
Product-centered	“This Audi A6 has just been configured. The best options were chosen for the six attributes while care was taken that they fit well together.”	“This Audi A6 has just been configured. Specific options have been chosen for the six attributes exterior color, rims, seat upholstery, interior décor, steering wheel, and sound system.”

Results and Discussion

Consumers receiving an I-centered message were significantly more likely to adjust their customized product to a sample configuration. A two-way ANOVA with perspective and appraisal as factors and the adjustment index as dependent variable showed a significant effect for perspective ($F(1, 142) = 4.25, p = .04$), yet none for appraisal ($F(1, 142) = 1.66, p = .20$) nor for factor interaction ($F(1, 142) = .09, p = .77$; $M_{I, \text{appraising}} = 4.44, M_{I, \text{non-appraising}} = 3.18, M_{\text{product}, \text{appraising}} = 2.29, M_{\text{product}, \text{non-appraising}} = .29$). As expected, no significant effect was found between the adjustment index and customization 1 (index range: 0 to 27), as the sample configuration was shown after customization 1. Overall, H2 was supported.

We conducted two additional analyses. First, instead of analyzing consumers' adjustment toward the sample configuration using the adjustment index, we examined whether consumers changed their second customization compared to their first one. A two-way ANOVA (using the above factors) showed a marginally significant effect for perspective ($F(1, 142) = 3.48, p = .06$), yet no significant effects for appraisal ($F(1, 142) = 0.51, p = .48$) nor for their interaction ($F(1, 142) = 0.97, p = .33$), thus further supporting H2. Second, we considered narcissism scores. A two-way ANOVA with perspective and narcissism as factors and the adjustment index as dependent variable showed a significant effect of perspective ($F(1, 142) = 4.22, p = .04$), yet none for narcissism ($F(1, 142) = 0.32, p = .57$) nor for their interaction ($F(1, 142) = 0.11, p = .74$), demonstrating that narcissists were also influenced by I-centered messages.

Study 1 demonstrated that narcissists' social interaction patterns lead peers to adjust a configured product to that of narcissists. In light of research showing that narcissistic consumers configure more unique products (de Bellis et al., 2016; Lee et al., 2013), they may also sway others to configure such products.

Study 2

Study 2 explored whether consumers are satisfied with their customized product after being presented with a narcissistic (vs. non-narcissistic) sample configuration. We focused on how consumers respond to a narcissistic versus non-narcissistic message and did not collect narcissism from this study.

Method

We employed a 2 (perspective: I-centered vs. product-centered) $\times$ 2 (appraisal: appraising vs. non-appraising) between-subjects design. The sample included 169 MBA students who participated in a paper-and-pencil study. We excluded ten participants who had not read the manipulation message, resulting in a final sample size of 159 participants (23% female; mode age within age bracket 30–39).

Participants used a car configurator to configure their car of choice and subsequently evaluated their customized product. Similar to Study 1, they were shown one of four fully configured cars. Along with this sample configuration, participants were randomly assigned to one of four experimentally manipulated messages ($N_{I, \text{appraising}} = 46$, $N_{I, \text{non-appraising}} = 41$, $N_{\text{product}, \text{appraising}} = 34$, $N_{\text{product}, \text{non-appraising}} = 38$) supposedly posted

on Facebook. Before providing demographics, participants reevaluated their customized product by responding to several variables (see Table 3).

Results and Discussion

As expected, the two conditions did not differ in terms of initial choice satisfaction (see Table 3).

Table 3: Results of Study 2: Means Before (1) and After (2) the Presentation of a Sample Configuration by Communication Style

	I-centered		Product-centered	
	Appraisal	Non-appraisal	Appraisal	Non-appraisal
Choice satisfaction (1)	3.93	3.68	3.64	3.95
Choice satisfaction (2)	3.07	3.18	3.20	3.47
Pride of authorship	4.46	4.91	4.88	5.13
Fit of the configured items	4.28	4.17	5.26	4.61
Willingness to reconfigure	3.96	4.54	2.68	3.03

Note. Choice satisfaction was measured with five items (Homburg et al., 2005) both before (1) and after (2) participants read the message. Pride of authorship (three items; Franke et al., 2010), fit of configured options (one item; Till & Busler, 2000), and the willingness to reconfigure one's car (one item) were measured after participants had read the message. All variables were measured on a 7-point Likert scales.

However, both this and further variables systematically varied by treatment after participants read the experimental message. A two-way ANOVA with perspective and appraisal as factors and choice satisfaction as dependent variable exhibited a significant effect for both perspective ($F(1, 155) = 6.05, p = .02$) and appraisal ($F(1, 155) = 4.16, p = .04$), yet no significant interaction ($F(1, 155) = .83, p = .36$). Regarding pride of authorship, we found a significant effect for perspective ($F(1, 155) = 6.90, p < .01$) and appraisal ($F(1, 155) = 7.69, p < .01$), yet no significant interaction ($F(1, 155) = .58, p = .45$). Regarding willingness to reconfigure, we found a significant effect for perspective ($F(1, 155) = 24.21, p < .001$), a marginally significant effect for appraisal ($F(1, 155) = 2.94, p = .09$), and no significant interaction ($F(1, 155) = .17, p = .68$). Regarding fit of configured items, we found a significant effect for perspective ($F(1, 155) = 8.50, p < .01$), yet none for appraisal ($F(1, 155) = 2.35, p = .13$) nor their interaction ($F(1, 155) =$

1.35, $p = .25$). Thus, consumers reading the I-centered (vs. product-centered) message exhibited decreased choice satisfaction, decreased pride of authorship, decreased fit of the configured options, and increased willingness to reconfigure their car (see Table 3). These findings support H3.

Study 2 showed that consumers consistently evaluated their customized product more negatively after seeing a narcissistically communicated sample configuration while expressing a greater desire to reconfigure their customized product.

General Discussion

Our pilot study and two experiments highlight the social power of narcissists in mass customization systems: Consumers scoring high (vs. low) on narcissism are more likely to share their customized product online as a sample configuration and to use I-centered communication to describe that configuration. Such narcissistic communication makes peers adjust their own customized product to the sample configuration and to evaluate their own product less favorably. Narcissistic communication seems critical to understanding the effectiveness of eWOM and to determining what cuts through the noise and influences consumers in social product configurators. These findings provide four major implications for marketing research and practitioners.

First, we contribute to the growing research stream on mass customization and especially social product configurators (Arora et al., 2008; de Bellis, Hildebrand, Ito, & Herrmann, 2015; Schlager et al., 2018). Our findings are also relevant for practitioners, as many industries have embraced the promising link between mass customization systems and SNs, while only little is known about the consequences of integrating elements of social interaction into mass customization systems. Our research illustrates the potential downsides of such integration. Narcissists can impact the mass customization buying process because they are often opinion leaders within social communities and strive to share information with peers. According to our findings, eWOM from narcissists may decrease consumer satisfaction with the customized product and result in a greater desire to reconfigure the product. The latter need not be a disadvantage for companies, which should, however, carefully integrate social sharing functions into product configurators and account for individual differences in narcissism

when creating the configurators. They should also ask themselves where the benefits outweigh the disadvantages.

Second, we contribute to the growing research on eWOM by showing that communication type determines message impact. We found that eWOM from narcissists is more influential, as consumers adjust their own consumption choice to a sample configuration if presented with narcissistic communication (Study 1). Prior research has shown that negative eWOM is more influential than positive eWOM (Hewett, Rand, Rust, & Van Heerde, 2016). We extend these findings by showing that even positive eWOM may have negative consequences. Future research could more closely examine why narcissistic communication is more influential and what the underlying role of perceived competency is (Brunell et al., 2008). The principle of social proof might also explain the greater influence of I-centered (vs. product-centered) communication. This principle implies that “we view a behavior as correct in a given situation to the degree that we see others performing it” (Cialdini, 2009, p. 99). Consumers may adjust their customized product to the sample configuration to avoid mistakes, to reduce uncertainty, and to accord with social evidence (Cialdini, 2009). Our research also expands existing research on the detrimental effect of community feedback on consumer satisfaction (Moreau & Herd, 2010). Whereas previous research has found that general feedback leads to less unique product designs and reduced satisfaction (Hildebrand et al., 2013), we show that feedback from narcissists negatively impacts consumers’ satisfaction rates with their customized product.

Third, we contribute to the growing stream on narcissism in SNs and provide intriguing avenues for future research. Our research shows that narcissism manifests not only in physical appearance (Vazire, Naumann, Rentfrow, & Gosling, 2008) but also in communication characteristics (i.e., more I-centered communication). Whereas previous findings about narcissists’ use of first-person pronouns (singular vs. plural) have been contradictory, we show that narcissists use more I-centered (vs. product-centered) communication in SNs and are more likely to share their customized product (pilot study and pretest).

As shown, narcissistic (vs. non-narcissistic) communication (operationalized through I-centered communication) negatively influences peer satisfaction while increasing product reconfiguration willingness (Study 2). Interestingly, narcissists and non-narcissists are equally influenced by I-centered communication. Further, narcissism

did not predict the choice of appraising versus non-appraising messages. This might be explained by the fact that narcissists' attention is primarily guided by I-centered pronouns, meaning they little heed other differences in the constructed messages or that narcissism is not a predictor of appraising messages. Future research could verify this assumption using eye tracking technology to show heatmaps of attention in the constructed messages (i.e., if consumers focus on the "I").

Also worth studying is that consumers might not identify I-centered communication as messages from narcissists, and that not all I-centered communication comes from narcissists. It would be intriguing to examine whether consumers also adjust their customized product to a sample configuration if stemming from an obviously narcissistic person. In this case, we expect consumers to configure their product very differently than the narcissistic sample configuration because they do not wish to appear narcissistic. Future research could also examine how narcissists can be identified in an eWOM context other than by I-centered communication. Other factors typical of narcissistic communication in SNs likely exist (e.g., the use of more exclamation marks; Holtzman et al., 2019).

Finally, our research has potential implications for the nascent field of influencer marketing. This has emerged as one of the fastest-growing advertising segments (Linqia, 2019; Lou & Yuan, 2019). Our findings raise two key questions: How narcissistic are influencers? And are influencers largely equal to narcissists? Whereas current research is unable to answer these questions, our findings suggest that marketers should find ways of identifying narcissists and be aware of their power to influence peers. We advise marketers to consider the potential negative effects of narcissism in the field of influencer marketing and to find the sweet spot between providing ideas and feedback via sample configurations and strengthening consumers' opinions of their own customizations. Policy makers should consider the impacts on society through the social power of narcissists, for example, by nudging people toward healthier choices or more environmentally friendly behavior.

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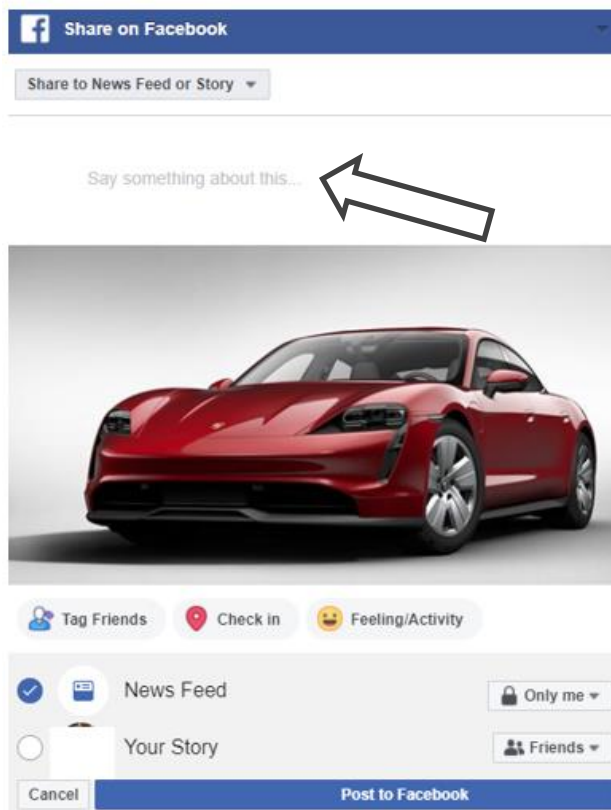
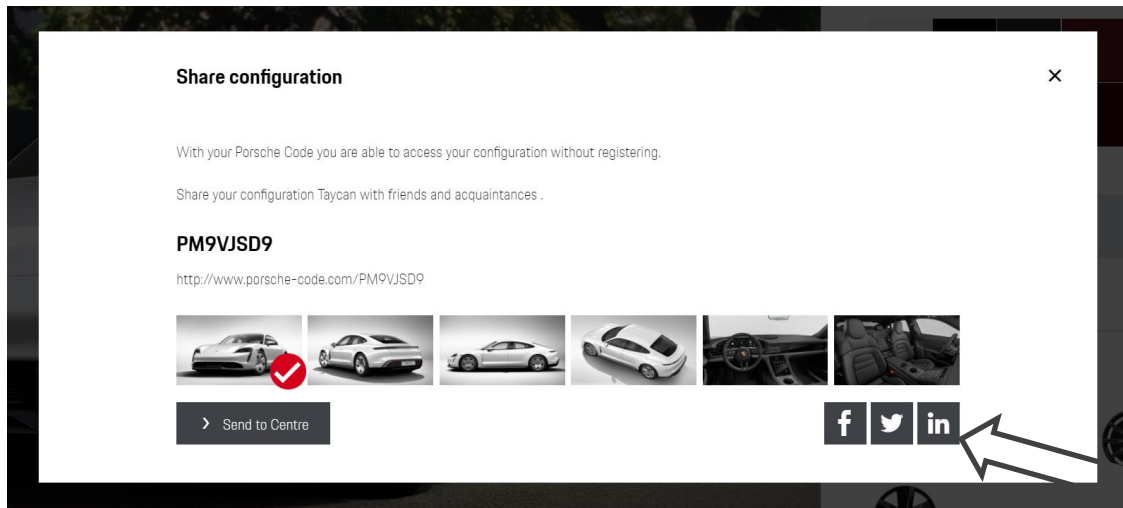
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Appendix

Appendix A: Examples of Social Product Configurators

Example from Porsche

Note: All examples were retrieved on February 23, 2021.



Example from Land Rover



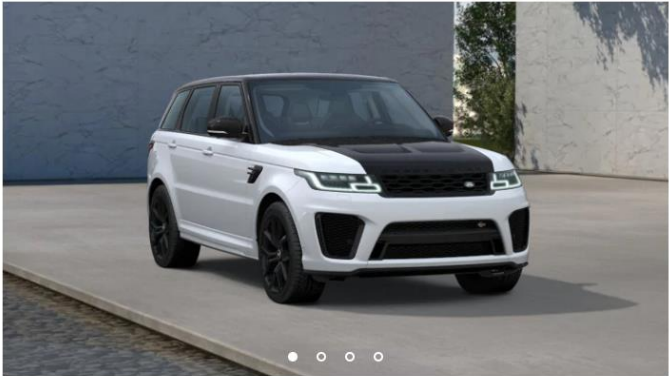
RANGE ROVER SPORT
RANGE ROVER SPORT SVR CARBON EDITION | 5.0 LITRE 575PS V8 SUPERCHARGED PETROL (AUTOMATIC)

[← CHANGE MODEL](#)

EXTERIOR

INTERIOR

OPTIONS



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Sharing my RANGE ROVER SPORT.
https://buildyour.landrover.com/r2/r1/summary/?en_id=494_322/488/en/a=494_a_svr/

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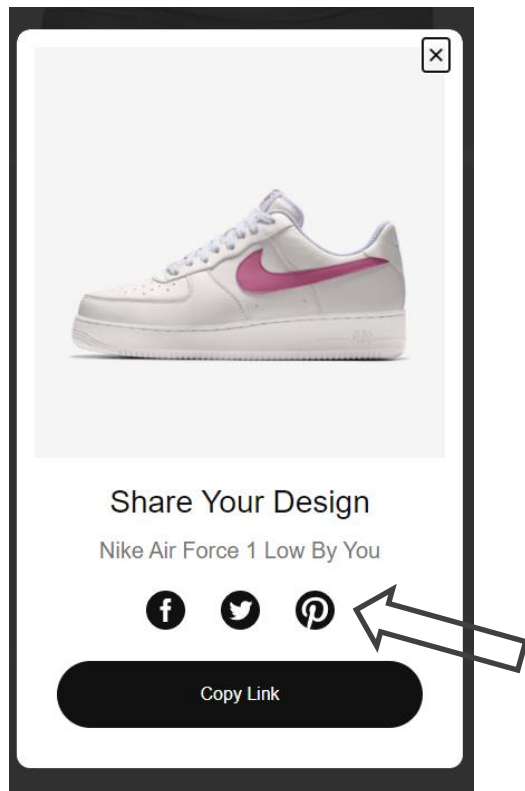
Only me

Friends

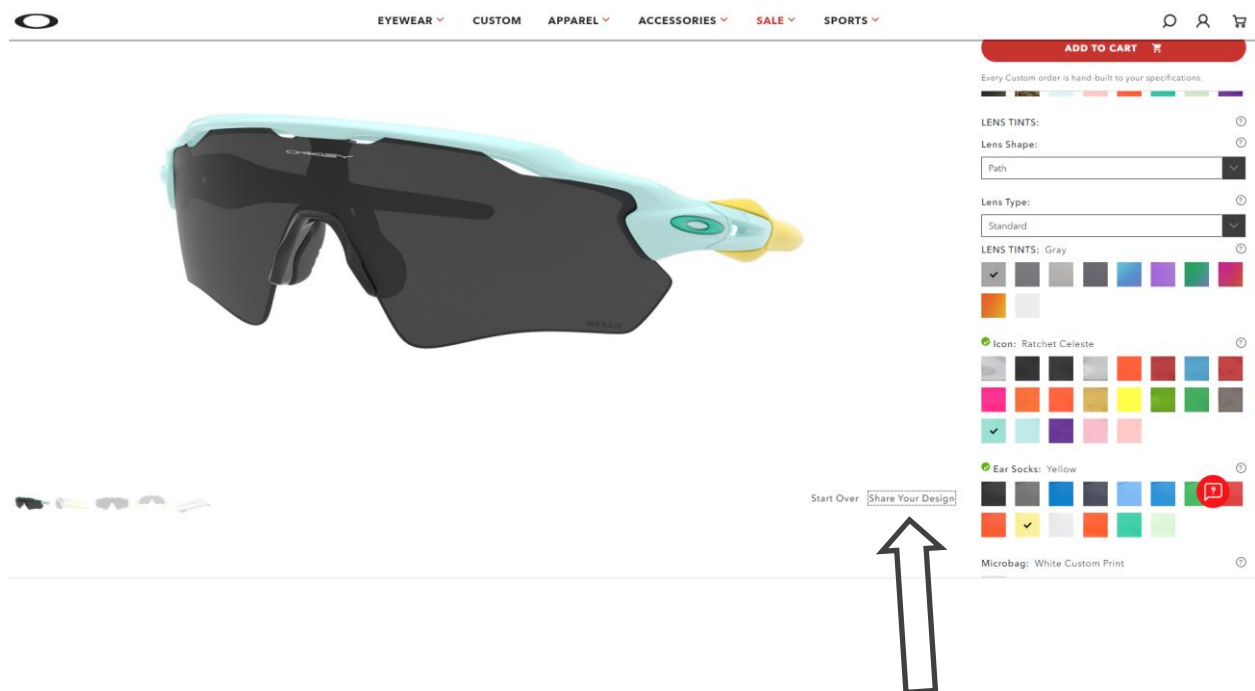
Cancel

Post to Facebook

Example from Nike



Example from Oakley



Appendix B1: Pilot Study Details

The pilot study examined the role of social networks (SN) in a recent car purchase. We recruited actual car buyers, measured their narcissistic tendencies, and investigated how they used SNs prior to purchase. Consumers also completed a task that allowed us to examine their distinct communication styles on SNs.

Method

We recruited 64 car buyers (59% female; $M_{\text{age}} = 41$) via a commercial market research company and compensated for participation. Participants were prescreened for purchasing a car within the previous six months and for belonging to a SN (e.g., Facebook). The average level of narcissism for the sample was 4.63, similar to values reported by other researchers (Schütz et al., 2004). Data were collected via an online survey including various questions (not central to the current research) about the recent purchase and the accessing use of SNs around the purchase. Participants first completed the NPI-15, answered questions about the purchase and their use of SNs, and performed a task designed to evaluate their distinct communication style. The survey concluded by measuring demographics.

The primary independent variable for the pilot study and the experimental studies was a validated measure of narcissism. We assessed narcissism using the NPI-15 (Schütz et al., 2004). For the scale, participants were given 15 pairs of phrases; one phrase represented a narcissistic response (e.g., “I am going to be a great person”), the other a non-narcissistic response (e.g., “I hope I am going to be successful”). For each pair, participants were asked to select the response closest to their beliefs. The number of narcissistic responses was summed to form a narcissism score ranging from 0 (non-narcissistic) to 15 (very narcissistic).

Results and Discussion

All our analyses treated narcissism as a continuous variable (cf. Foster & Campbell, 2007). Narcissists tended to use SNs more frequently, as indicated by a positive and significant relationship between narcissism and daily frequency of SN use ($b = .51$, $SE = .18$, $t = 2.78$, $p < .01$). However, narcissism did not predict the time spent daily on SNs ($b = .97$, $SE = 1.42$, $t = .69$, $p = .50$). Requesting car buyers to state their SN use in the past 30 days revealed that narcissism was positively and significantly

related to the number of replies to their own posts ($b = 3.08$, $SE = 1.02$, $t = 3.00$, $p < .01$), highlighting their (perceived) role as influencers and opinion leaders. At the same time, we found non-significant or marginally significant relationships between narcissism and the number of posts written ($b = .57$, $SE = .34$, $t = 1.67$, $p = .10$), the number of replies to other posts ($b = .69$, $SE = .54$, $t = 1.28$, $p = .20$), and the number of pictures uploaded ($b = .86$, $SE = .47$, $t = 1.84$, $p = .07$).

Regarding their car purchase, narcissism was positively and significantly related to both the number of friends ($b = .22$, $SE = .08$, $t = 2.81$, $p < .01$) and the number of experts consulted before vehicle choice ($b = .06$, $SE = .03$, $t = 2.10$, $p = .04$). However, narcissism was not associated with a self-reported measure of how intensively participants consulted friends ($b = -.04$, $SE = .07$, $t = -.50$, $p = .62$) and experts ($b = .02$, $SE = .08$, $t = .21$, $p = .83$). Importantly, when asked to write a post for their preferred SN, consumers' narcissistic tendencies predicted their use of the first-person singular ($b = .06$, $SE = .03$, $t = 2.07$, $p = .04$). This result was confirmed when using a relative measure that put using the first-person singular and plural into perspective ($b = .08$, $SE = .03$, $t = 2.38$, $p = .02$). Finally, and as expected, we also found that narcissism was associated with a subjective measure of being an opinion leader ($b = .18$, $SE = .05$, $t = 3.86$, $p < 0.001$).

The results of the pilot study showed that narcissists can be described as opinion leaders (Baumgarten, 1975) heavily using the first-personal singular when communicating on SNs (Raskin & Shaw, 1988). This finding provided preliminary evidence for H1.



Social Exchange

Now we would like to ask you to write some sentences yourself.

Imagine you have recently been on holiday and have eaten in one of the three restaurants shown below (see pictures). **You would like to share this experience with the friends of your social network.**



Please take two minutes to **describe your experience** (the next button will appear afterwards).

Appendix B2: NPI-15 Scale

The 15-item short form of the Narcissistic Personality Inventory (NPI-15; Schütz et al., 2004):

A) I have a natural talent for influencing people.

B) I am not good at influencing people.

A) When people compliment me I sometimes get embarrassed.

B) I know that I am good because everybody keeps telling me so.

A) I prefer to blend in with the crowd.

B) I like to be the center of attention.

A) I am no better or worse than most people.

B) I think I am a special person.

A) I am not sure if I would make a good leader.

B) I see myself as a good leader.

A) I like to have authority over other people.

B) I don't mind following orders.

A) I find it easy to manipulate people.

B) I don't like it when I find myself manipulating people.

A) I just want to be reasonably happy.

B) I want to amount to something in the eyes of the world.

A) I have a strong will to power.

B) Power for its own sake doesn't interest me.

A) I really like to be the center of attention.

B) It makes me uncomfortable to be the center of attention.

A) Being an authority doesn't mean that much to me.

B) People always seem to recognize my authority.

A) I would prefer to be a leader.

B) It makes little difference to me whether I am a leader or not.

A) I am going to be a great person.

B) I hope I am going to be successful.

A) I am a born leader.

B) Leadership is a quality that takes a long time to develop.

Appendix C: Pretest

The pretest aimed to replicate the pilot study in a more controlled setting and focused on narcissists' specific communication style (in the form of ready-made messages) when presenting a customized product to peers in a SN.

Method

We recruited 164 MBA students for a paper-and-pencil study. We excluded five participants due to incomplete data, resulting in a final sample size of 159 participants (45% female; mode age within age bracket 30-39; $M_{\text{narcissism}} = 5.56$).

Participants first completed the NPI-15 measure of narcissism. Individual narcissism scores served as a focal independent variable. Next, participants configured a car of choice by using a mock-up car configurator (see Appendix D1). Third, they were asked whether and with whom they would share their customized product (first dependent variable) and, if so, to choose one of four messages accompanying the customized product (second dependent variable; see Table 2 in the main paper). These messages varied not only in terms of perspective (I-centered vs. product-centered) but also in terms of appraisal and whether the chosen attribute options were made explicit (to keep message length constant). This variation allowed us to examine whether the proposed effect of perspective holds for both appraising and non-appraising messages. A one-item car expertise measure and demographic measurements concluded the pretest.

Results and Discussion

About half of the participating consumers (53%) agreed to present their customized product in a SN. Logit regression showed that willingness to present one's customized product depended on narcissism: Narcissistic consumers were more likely to make their customized product public than non-narcissistic ones ($b = .26$, $SE = .06$, $z = 4.33$, $p < 0.001$). Categorizing consumers into narcissists (score ≥ 9) and non-narcissists (score < 9) highlighted the magnitude of this effect: Whereas 84.8% of narcissists agreed to present their customized product, only 45.2% of non-narcissists did so. In terms of messages, across all consumers, the four messages were chosen similarly often (I-centered, appraising: 22.35%; I-centered, non-appraising: 21.18%; product-centered, appraising: 29.41%; product-centered, non-appraising: 27.06%). Analyzing

this choice pattern based on narcissism revealed systematic differences: Narcissism significantly predicts one's choice of I-centered (vs. product-centered) messages ($b = .37$, $SE = .10$, $z = -3.81$, $p < 0.001$), a result that was robust when controlling for consumers' car expertise ($b = .33$, $SE = .14$, $z = -2.45$, $p = .01$). We found converging evidence for the effect of narcissism on perspective when considering only the two appraising messages ($b = .41$, $SE = .14$, $z = -2.87$, $p = .004$) and the two non-appraising messages ($b = .33$, $SE = .13$, $z = -2.51$, $p = .01$). These results indicate that narcissists' communication style differs from that of non-narcissists in terms of perspective, thus confirming H1. Interestingly, we found that narcissism did not predict choosing appraising versus non-appraising messages ($b = .05$, $SE = .07$, $z = .62$, $p = .54$), suggesting that the effect of I-centered versus product-centered messages was considerably stronger.

This study's findings support the basic proposition that narcissism influences how consumers interact in a social environment. As such, this pretest replicates and extends the correlational results of the pilot study in a more controlled setting by showing that narcissists are more likely to share information about products configured with a mass customization system. Moreover, narcissists tend to differentially structure their interactional patterns regarding a configured product by using more I-centered messages.

Appendix D1: Mock-up Car Configurator Study 1



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Vehicle configuration

The next task gives you the opportunity to **configure a vehicle yourself**.

Imagine **you are about to buy a vehicle**. You have already chosen the **Audi A6**. But before you can place your order, you need to make a few more decisions.

On the following pages, you will be asked to choose **one of the options**. Try to put yourself in the position of buying and choose the option that suits you best spontaneously.

Please mark your answer with a **visible cross**.



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First, please choose the **exterior color** of your Audi A6.

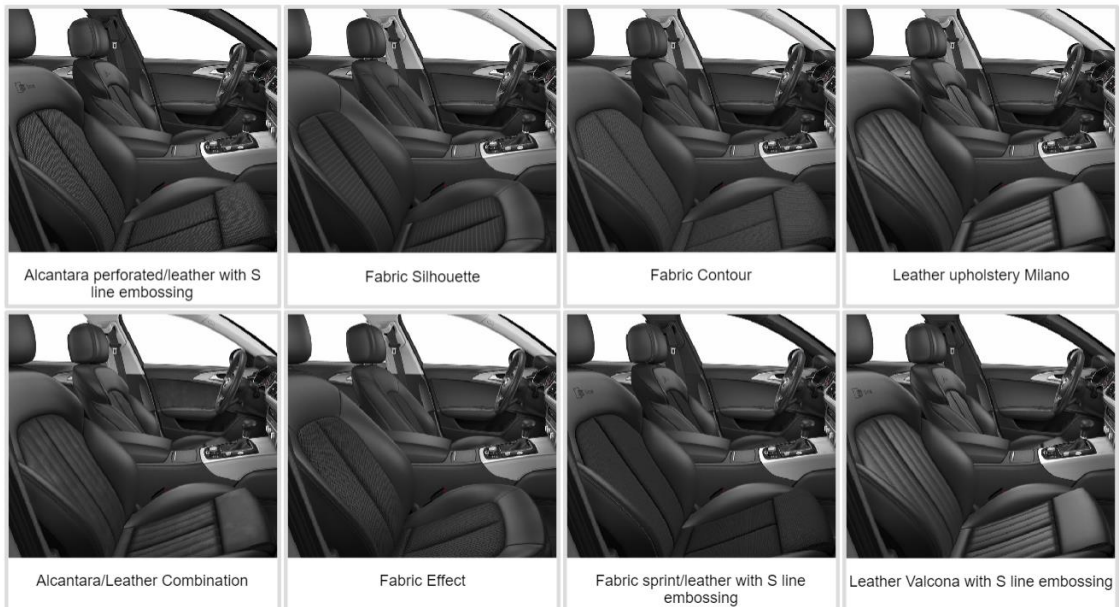




Next, you will be asked to select the **rims** of your Audi A6.



You also have the option of selecting the **seat covers** of your Audi A6.

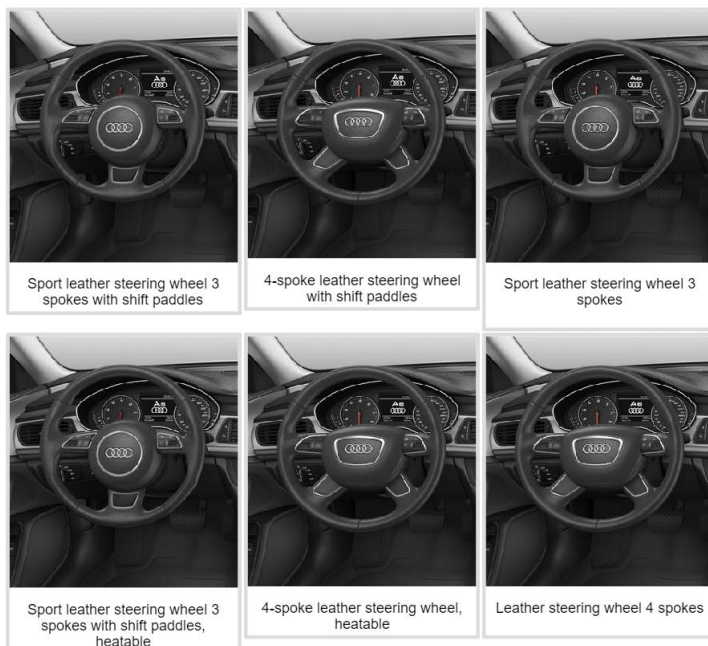




You will also be asked to select the **decorative inlay** for your Audi A6.



Next, you will be asked to select the **steering wheel** of your Audi A6.





Finally, you have the option of selecting the **infotainment system** of your Audi A6.

- **MMI.** The Multi Media Interface (MMI) elegantly combines the operation of all infotainment components in one display and operating system. It enables the simple, fast and intuitive use of a multitude of functions and technologies.
- **MMI Navigation plus with MMI touch.** The latest generation of navigation systems: MMI Navigation plus offers plenty of convenience. The system includes hard disk navigation, a jukebox with 10 gigabytes of memory, a CD/DVD drive and an integrated voice dialog system with full-word input.
- **MMI Navigation.** MMI Navigation is a fully integrated navigation system - the control centre for all infotainment functions. The navigation data supplied contains digital maps. The dynamic destination guidance permanently adjusts the route on the basis of current traffic information.

Appendix D2: Sample Configurations and Messages Study 1



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Audi A6 Community

There is a community around the Audi A6. This Audi A6 Community consists of people who are enthusiastic about the Audi A6 and are very familiar with its various equipment variants. The exchange between the people takes place via their own Audi A6 Internet forum.

Just recently, **a forum user summarized the preferences of the Audi A6 Community and would like to show them to you.** The forum user therefore sends you the following message within this survey:

Dear Audi A6 Configuring User,
I would like to introduce you to an Audi A6 that I just configured. As I'm very good with cars, I've chosen the best options for the six attributes while I took care that they fit well together.



Exterior color: **Ibis White**
Wheels: **Cast wheels in 5-segment spoke design**
Seat covers: **Alcantara perforated/leather with S line embossing**
Decorative inlay: **Aluminum Trigon**
Steering Wheel: **Leather steering wheel, heatable**
Infotainment: **MMI**

Click on the **Next**-Button.



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Dear Audi A6 Configuring User,
I would like to introduce you to an Audi A6 that I just configured. As I'm very good with cars, I've chosen the best options for the six attributes while I took care that they fit well together.



Exterior color: **Ibis White**
Wheels: **Cast wheels in 5-segment spoke design**
Seat covers: **Alcantara perforated/leather with S line embossing**
Decorative inlay: **Aluminum Trigon**
Steering Wheel: **Leather steering wheel, heatable**
Infotainment: **MMI**

Above you can see the feedback of the Audi A6 Community. **Please select the exterior color of your choice again.**



Overview: Four different messages

Dear Audi A6 Configuring User,

I would like to introduce you to an Audi A6 that I just configured. As I'm very good with cars, I've chosen the best options for the six attributes while I took care that they fit well together.

Dear Audi A6 Configuring User,

I would like to introduce you to an Audi A6 that I just configured. I have chosen specific options for the six attributes: exterior color, rims, seat upholstery, interior decor, steering wheel, and sound system.

Dear Audi A6 Configuring User,

The Audi A6 presented below has just been configured. The best options were chosen for the six attributes while care was taken that they fit well together.

Dear Audi A6 Configuring User,

The Audi A6 presented below has just been configured. Specific options have been chosen for the six attributes exterior color, rims, seat upholstery, interior décor, steering wheel, and sound system.

Overview: Four different sample configurations



Exterior color: **Ibis White**
Wheels: **Cast wheels in 5-segment spoke design**
Seat covers: **Alcantara perforated/leather with S line embossing**
Decorative inlay: **Aluminum Trigon**
Steering Wheel: **Leather steering wheel, heatable**
Infotainment: **MMI**



Exterior color: **Garnet Red Pearl**
Wheels: **Cast wheels in 5-twin-spoke design**
Seat covers: **Leather Valcona with S line embossing**
Decorative inlay: **Oak wood Beaufort**
Steering Wheel: **Leather steering wheel**
Infotainment: **MMI Navigation**



Exterior color: **Nogaro Blue Pearl**
Wheels: **Forged wheels in 10-spoke V design**
Seat covers: **Fabric Silhouette**
Decorative inlay: **Walnut root wood dark brown**
Steering Wheel: **Sport leather steering wheel**
Infotainment: **MMI**



Exterior color: **Phantom Black Pearl**
Wheels: **Forged wheels in 6-arm design**
Seat covers: **Leather upholstery Milano**
Decorative inlay: **Ash burl wood brown natural**
Steering Wheel: **Sport leather steering wheel 3 spokes with shift paddles, heatable**
Infotainment: **MMI Navigation plus with MMI touch**

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Curriculum Vitae

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