RESEARCH PAPER

Empowering users to control ads and its effects on website stickiness

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Abstract

Website providers find it increasingly difficult to convince users to accept advertisements (ads) on their websites. In this study, we investigate ad quantity customization (AQC) as a practice to counter these challenges. AQC refers to the technological means through which website providers enable users to determine the amount of ads displayed on their websites. Drawing on psychological empowerment theory, we demonstrate in an online experiment with 395 participants that AQC can pay off: A website with AQC elicits significantly higher website stickiness than a website without AQC, even if the website without AQC contains no ads at all. We furthermore find that perceived empowerment, informational fit-to-task and perceived enjoyment mediate the effect of AQC on website stickiness. Our study thus contributes to Information Systems research on web customization and offers website providers actionable recommendations to keep their users involved, interested and retained.

Introduction

Online advertisements (ads) have become an integral part of users' browsing experience on many websites (Hong et al., 2021). As of 2018, 50% of Europe's 500 most popular websites feature banner ads to finance their business activities, with 94% of news websites displaying ads on average more than 16 times per page (Libert & Nielsen, 2018). From a user perspective, ads are often seen as an unsolicited distraction that can induce information overload and a perceived loss of control (Aguirre et al., 2015; Liu, 2003; Rejón-Guardia & Martínez-López, 2014), which causes users to engage in avoidance behaviors, such as abandoning websites (Seyedghorban et al., 2016). This poses a serious threat to

the business models of many website providers whose main objective is to convince users to stick to their websites and keep returning to them (Benlian, 2015; Köster et al., 2020). Additionally, a large share of users deploys ad blockers to "push back against the perverse design logic that has cannibalized the soul of the Web" (Wicker & Karlsson, 2017, p. 76). With close to half of all online users resorting to ad blocking (Globalwebindex, 2018), the proliferation of technologies that forcefully cancel out ads is an alarming signal of users' urge for more control (Aseri et al., 2020).

Some website providers have started to acknowledge that users demand to be in control over their web experience (Alt et al., 2019; Hartemo, 2016). At the same time, recent advances in user interface technologies (e.g., overlays to collect user input) are paving the way for website providers to offer web customization (i.e., the psychological empowerment of users to control the form or content of a website) (Benlian, 2015; Jiang et al., 2010). Accordingly, first website providers devolve control over ads by offering their users ad customization options. For example, users on *YouTube* can oftentimes choose how long they want to watch an ad, up to skipping the ad altogether (Belanche et al., 2020; Dukes et al., 2020). This type of customization to control specifically the *quantity* of ads (e.g., the length of a video ad or the number of banner ads) is intriguing because it targets

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ad clutter as one of the primary drivers of users' frustration with ads (Seyedghorban et al., 2016). Therefore, website providers face a new and exciting opportunity to approach the ever contentious handling of ads on their websites by providing ad quantity customization (AQC) to their users. Essentially, such website provider-enabled AQC may critically influence users' intention to stick to a website (i.e., their intention to return) as an indicator of users' long-term commitment to a website (Benlian, 2015).

In addition to its critical relevance for practice, understanding the intricacies of AQC provides a rich opportunity for Information Systems (IS) research focusing on web customization (e.g., Ariely, 2000; Benlian, 2015; Jiang et al., 2010). Thus far, IS researchers investigating web customization have narrowed their attention toward websites' primary editorial content (i.e., content related to the main purpose of the website), including customizing the content of news aggregators (Benlian, 2015), choosing the order in which product information is displayed (Ariely, 2000) and specifying how to interact with virtual mock-ups of real-world products (Jiang & Benbasat, 2007a). Nevertheless, customizing advertising content differs fundamentally from customizing editorial content, because users never asked to see any ads in the first place. In fact, as users are oftentimes irritated and annoyed by unsolicited ads, they try to avoid such advertising content as good as they can, up to abandoning the entire website (e.g., Belanche et al., 2020; Kumar et al., 2020; Seyedghorban et al., 2016). If users seek to avoid ads, will they see the possibility to customize ad quantity through AQC as an attractive asset or an unwelcome reminder of the ads they are trying to disregard? Moreover, if users want to avoid ads, would they much rather prefer not to customize ad quantity and instead view a website that is entirely free of ads by default? This idiosyncrasy of customizing advertising content engenders the relevance to understand whether and how offering AQC can affect users' intention to stick to a website. Moreover, understanding the explanatory mechanism that drives the effects of AQC is instrumental to improve the effectiveness of web customization designs – particularly in the unique context of ads and AQC. The objective of this study is to address these opportunities for research by investigating the following research question:

RQ: How and why does website provider-enabled AQC influence users' intention to stick to a website?

To address this research question, we drew on psychological empowerment theory (Human et al., 2020; Kim & Gupta, 2014; Spreitzer, 1995) and conducted an online experiment with 395 participants who experienced a website with different ad customization options. Our findings demonstrate that a website with AQC, where participants are invited to customize the amount of ads, elicits greater website stickiness than a website without AQC, where participants cannot influence ad quantity. Surprisingly, a website with AQC evokes even greater website stickiness than a website that is free of any ads by default. That is, participants generally stick more to a website when they are in control of the ad quantity, even if the alternative would be a website that never features any ads in the first place. Additionally, we show that the effect of AQC on website stickiness is carried over by the mediators perceived empowerment, informational fit-to-task and perceived enjoyment.

Our research provides two important theoretical contributions: First, our study sheds light on a thus far largely disregarded prospect of web customization by allowing users to customize ads. We thereby depart from previous research that has predominantly looked at the customization of websites' editorial content (e.g., Ariely, 2000; Benlian, 2015; Jiang et al., 2010). In contrast to editorial content, users typically seek to avoid ads. For this reason, insights on how users respond to being asked to customize ads they did not ask for are particularly valuable for our understanding of web customization. More specifically, we examine AQC as a web customization feature that is capable of exploiting ads as website elements that users typically dislike seeing, but enjoy to customize. As such, we bring forward the customization of ads as a hitherto largely neglected, yet significant piece of web customization to capture and retain users on websites. This is important for IS research because it showcases diverse pathways to satisfy users' need for individualized experiences. Second, we shed light on the mechanism through which AQC bolsters website stickiness. Previous research on web customization focused on the consequences of individualized content as the outcome of the customization process (e.g., Jiang & Benbasat, 2007b; Xue et al., 2020), but did not account for the significance of feeling empowered as the hallmark of web customization. We demonstrate that perceived empowerment is a critical mediator that carries over the observed effects of AQC via informational fit-to-task and perceived enjoyment. As such, we not only provide a nuanced picture of the mechanisms that are unique to web customization, but also underline the importance of perceived empowerment as a hitherto under-investigated construct in IS web customization literature. This is important as it enables IS research to identify moderating factors that help to improve the design and effectiveness of web customization. Beyond our theoretical contributions to research, our study provides extensive and counterintuitive insights for practitioners by revealing how websites can leverage AQC to convert ads from a possible deterrent into a valuable resource that boosts website stickiness.

Table 1 Review of IS literature on web customization

Study	Customization feature	Observed outcome	Mediators	
			Unspecific to web customization	Specific to web customization
Ariely (2000)	Users customized in what sequence and with which level of detail product information should be presented to them	Decision quality	–	–
Jiang and Benbasat (2007b)	Users customized which product features to be presented with by interacting with a digital twin	Intention to return	Perceived diagnosticity, shopping enjoyment	–
Jiang et al. (2010)	Users customized in which order and by which category to have products shown to them	Purchase intention	Cognitive and affective involvement	–
Benlian (2015)	Users customized which topics to receive news articles about and which color the website should presents itself in	Website stickiness	Preference fit, perceived enjoyment	–
Xue et al. (2020)	Users customized which live product presentation and which corresponding information should be displayed	Participation and sharing	Perceived usefulness, psychological distance	–
Mousavi et al. (2020)	Users customized how their browsing data is collected, stored, and distributed	Self-disclosure behavior	–	–
This study	Users customize the **quantity of ads** displayed on the website	Website stickiness	Informational fit-to-task, perceived enjoyment	**Perceived empowerment**

Theoretical background

Web customization

To successfully capture and retain users, websites individualize their content (e.g., editorial content and advertising content) using web personalization and web customization (Garett et al., 2016; Tam & Ho, 2006). Web personalization is based on a system that collects user information alongside behavioral patterns to adjust the website's content according to the system's best guess of the user's interest (e.g., YouTube drawing on users' viewing history to suggest and recommend new videos) (Tam & Ho, 2005). In this case, users are merely being observed and therefore are only passively involved in how the website is individualized. Conversely, web customization grants users power to exercise active control over the website's content using some sort of modification interface (e.g., selecting a website's language) (Ariely, 2000; Benlian, 2015). In this way, users play an active role in how the website is shaped. Compared to web personalization, web customization is growing in relevance: Previous research increasingly emphasizes that users long for empowerment and demand to control website content

themselves instead of being scrutinized by a system that – at best – is capable of making an informed guess (Matt et al., 2019; Sundar & Marathe, 2010; Sutanto et al., 2013). For this reason, studying web customization is a current and relevant opportunity that complements and expands insights from previous web personalization literature (e.g., Ho & Bodoff, 2014; Ho & Lim, 2018; Johar et al., 2014).

We present a review of the IS literature investigating customization features on websites in Table 1. Notably, previous studies examined web customization features that focus on editorial content, which is content that relates to the primary purpose of the website. For example, extant literature investigated users' ability to customize the handling of personal data on websites (Mousavi et al., 2020), the design and content covered on aggregator websites (Benlian, 2015), and the selection, order and level of detail of online product information (Ariely, 2000; Jiang & Benbasat, 2007a, b; Xue et al., 2020). While insights on these customization features have made an important contribution to our understanding of web customization, their validity is restricted to the customization of sought-after editorial content. Contrary to editorial content that users expect and welcome when opening a website, advertising

content is often perceived as an unsolicited impediment to users' goals. As a result, users engage in purposeful ad avoidance behaviors (e.g., scrolling away, closing the website) (e.g., Kumar et al., 2020; Seyedghorban et al., 2016). Notably, the more ads appear, the stronger users try to avoid them (Cho & Cheon, 2004). For this reason, ads present a unique opportunity to study quantity as a distinct customization mechanism, thereby complementing previous research investigating content, format and order of information. Moreover, given that ads are often perceived as unsolicited distractions, the intuitive ideal for users may be a website that does not bother its users to customize the number of ads, but instead eliminates ads altogether. However, it is far from clear whether users' irritation with unsolicited ads is due to the mere existence of ads in general or rather results from being stripped of any control over these ads. Put differently, may users even welcome ads as part of a website if users have the power to customize them? Therefore, it is important to investigate not only how the presence versus absence of AQC influences website stickiness, but also how AQC compares to eliminating ads entirely.

In reviewing previous IS literature on web customization, we additionally found that first mediators (e.g., involvement, preference fit, perceived enjoyment and perceived risk) were investigated to understand *why* web customization affects outcomes such as website stickiness. In doing so, extant literature emphasizes the importance of uncovering both cognitive and affective pathways through which web customization affects user behaviors. Nevertheless, our understanding of the underlying mechanism is still limited in that previously analyzed mediators (e.g., perceived usefulness of the website) focus merely on the outcome of the customization process – that is, individualized content that matches users' preferences better. While insights from extant literature are therefore just as well applicable to web personalization, they are unspecific to web customization and do not account for web customization's unique effects. Specifically, as web customization features have been characterized as a means to empower users (e.g., Füller et al., 2009; Kim & Gupta, 2014), we need to understand whether and how users' perception of being empowered influences their assessment of the website – in addition to the consequences of individualized content. Uncovering this mechanism unique and thus specific to web customization is important to inform the design and implementation of effective web customization features. As such, to contextualize and complement existing conceptualizations of the mechanisms of web customization, this study particularly includes perceived empowerment as a mediator specific to the context of web customization, while additionally taking into account informational fit-to-task and perceived enjoyment as cognitive and affective aspects critical to the individualization of websites.

Psychological empowerment theory

Psychological empowerment theory conceptualizes psychological empowerment (hereafter perceived empowerment) as an individual's experience of motivation that occurs when the necessary authority is given to utilize the potential of a work system (Spreitzer, 1995; Thomas & Velthouse, 1990). While intimately related to perceived control and sense of agency, perceived empowerment focuses particularly on the experience of being granted the ability to meaningfully influence activities in ways that were previously inaccessible (Alt et al., 2019; Amichai-Hamburger et al., 2008; Zimmerman, 1995). According to psychological empowerment theory, four cognitions are relevant to the perception of empowerment when performing a task: meaning, self-determination, impact and competence (Spreitzer, 1995). Meaning refers to the value an individual places on the task at hand. Self-determination describes an individual's sense of autonomy in conducting the task. Impact is an individual's belief that their choices make a difference in the process of performing the task. Lastly, competence captures an individual's belief of being able to effectively perform the task. In practical terms, the process of empowerment is understood as "any means strengthening a person's perception of self-determination and self-efficacy and reducing conditions contributing to feelings of powerlessness" (Füller et al., 2009, p. 74).

In the field of IS, the Internet has attracted researchers' attention as an empowering technology that enables users to do or accomplish things they have found challenging to do or accomplish before (Amichai-Hamburger et al., 2008; Füller et al., 2009). In this context, websites can empower their users not only to receive information, but to actively participate in shaping its composition (Benlian, 2015). One key aspect of psychological empowerment theory warrants attention by IS research: Empowered users are more active and productive than users who are not (Thomas & Tymon, 1994). This notion is confirmed by several IS studies. For instance, in the work context, empowered users are more willing to contribute to knowledge management systems (Kang et al., 2017) and exhibit a greater propensity to utilize customer relationship management systems to the full potential (Kim & Gupta, 2014). Beyond the context of work, users express a stronger intention to reuse websites that empower them (e.g., Benlian, 2015; Jiang & Benbasat, 2007b; Kamis et al., 2008). In addition to stimulating user action, extant literature has found that empowerment leads to enhanced user satisfaction (Liang et al., 2006), greater user loyalty (Pierrakos et al., 2003), improved personal identification of users with the brand of the empowering website (Johnson et al., 2006) and overall more positive user attitudes toward the empowering website (Kalyanaraman & Sundar, 2006). On the flip side, making use of the empowerment

Fig. 1 Research model
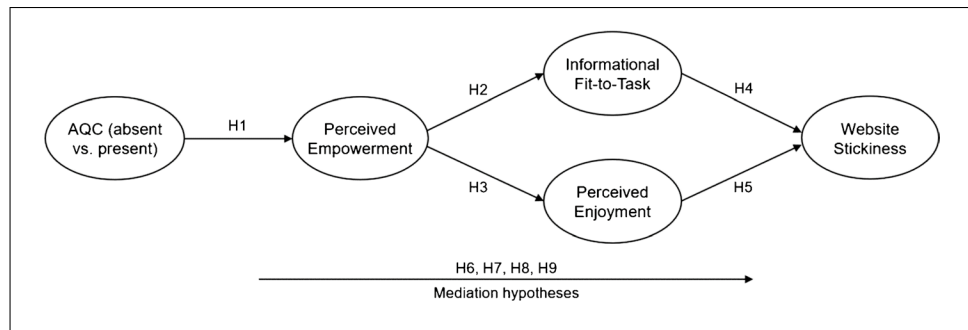
by actively controlling information may be a task in itself and therefore requires users' willingness and capability to invest processing resources (Ariely, 2000).

Given that web customization is a form of devolving control to users, psychological empowerment theory is well suited to understand how AQC on websites can empower users and how this empowerment affects users' intention to stick to a website.

Website stickiness

Providing AQC may arguably impact users' assessment of the website in various ways, including users' initial impression and attitude toward the website, their intention to keep exploring the website, their intention to switch to another website, their intention to recommend the website, their willingness to pay for the website's offerings and their intention to return to the website. We choose to specifically investigate website stickiness (i.e., users' intention to return) as the key user response to AQC for three reasons. First, research on the perception of online ads indicates that the largely negative user reactions toward ads can spill over to the hosting website and specifically reduce its stickiness. In contrast to editorial content, ads make a website less attractive to users: download times increase, pages clutter up, usability is reduced and the overall content loses value (Dewan et al., 2002). Consequently, users often perceive the presence of ads to reduce the quality of their experience as well as the website as a whole (Brajnik & Gabrielli, 2010; McCoy et al., 2007) and thus show lower intentions to return to the website (Li et al., 2002). Second, website stickiness reflects users' long-term commitment to a website and their willingness to accept the website's offerings. As such, website stickiness is a key contributor to the longevity of a website's business model. Third, website stickiness is a commonly investigated outcome variable in IS research to study the effectiveness of web customization (e.g., Benlian, 2015; Kamis et al., 2008; Komiak & Benbasat, 2006) and appeals to the importance to investigate user onboarding and interactions (e.g., Adam et al., 2021; Röthke et al., 2020; Schneider et al., 2020).

Research model and hypothesis development

Drawing on psychological empowerment theory (Human et al., 2020; Kim & Gupta, 2014; Spreitzer, 1995) and web customization literature, we hypothesize that a website offering AQC to its users will elicit perceived empowerment (H1). Subsequently, we posit that users' perceived empowerment enhances users' cognitive evaluation of the website in the form of (perceived) informational fit-to-task (H2) as well as users' affective evaluation of the website in the form of perceived enjoyment (H3). We argue that both pathways affect users' intention to stick to the website (H4, H5). As a result, we hypothesize perceived empowerment, informational fit-to-task and perceived enjoyment to mediate the effect of providing AQC on website stickiness (H6, H7, H8, H9). We present our research framework in Fig. 1.

The effect of AQC on perceived empowerment

Following psychological empowerment theory, we argue that AQC elicits perceived empowerment by giving users the impression they (1) are more self-determined and (2) accomplish a greater impact when they can customize the amount of ads compared to when they cannot. First, AQC makes users believe they are more self-determined by bestowing users the freedom to control their web experience. Specifically, users are given the ability to select and thus control the number of ads displayed on the website. As such, they are in the driving seat to shape their web experience. This sense of choice – as the essence of customization – is well known to make users feel self-determined, with video games being the most prominent example (Kim et al., 2015; Przybylski et al., 2010). Further supporting this reasoning, IS research has demonstrated that users generally feel empowered when they have the opportunity to make technological choices (e.g., Füller et al., 2009; Junglas et al., 2019; Marathe & Sundar, 2011). Second, we expect users with access to AQC to feel empowered because they believe they have an impact on their web experience. Selecting an ad quantity of the user's likening has immediate and tangible consequences that users

experience when exploring the website. As such, users perceive that their choice makes an actual difference for how they get to experience the website. Realizing this impact leads users to feel empowered (Spreitzer, 1995).

In conclusion, we expect AQC to enhance users' perceived empowerment. When AQC makes users feel self-determined and when AQC gives users the impression they have some impact on how their web experience unfolds, they feel empowered (Conger & Kanungo, 1988; Füller et al., 2009).

> H1: A website offering AQC elicits higher perceptions of empowerment than a website without AQC.

The effect of perceived empowerment on informational fit-to-task

An important measure to assess the quality of a website is (perceived) informational fit-to-task, which describes the extent to which information provided by the website meets users' needs to gather information and carry out transactions (Liu & Goodhue, 2012; Loiacono et al., 2007; Parboteeah et al., 2009). While informational fit-to-task is closely related to the well-established construct of usefulness (of a website), we deliberately chose to investigate informational fit-to-task as it goes one step deeper and focuses specifically on the information a website provides. It is important to note that a website's information does not just refer to its editorial content. Rather, all of the website's elements contribute to users' evaluation of how the provided information meets users' needs – including potential advertising content.

We expect the feeling of empowerment induced by AQC to increase informational fit-to-task by amplifying users' attentional effort to process the website's content. The ability to influence the website by determining the quantity of virtually ubiquitous and typically immutable ads gives users the feeling to affect not just one element of the website, but rather to shape the formation of the website and its information as a whole. When users feel they are empowered to profoundly influence the website, they see themselves as a relevant part of the source that generates the composition of the website (Kalyanaraman & Sundar, 2006; Sundar et al., 2003). In that sense, users perceive the website with the customized ad quantity to relate to an aspect of themselves, which focuses greater attentional effort on all of the website's information and amplifies users' experience of the overall content and its effects (Sundar, 2012). In other words, providing AQC as a form of web customization that empowers users to shape the composition of ads as a fundamental component of websites can "invite deliberate and careful scrutiny of the website, rather than just casual browsing" (Kalyanaraman & Sundar, 2006, p. 115). We expect this increase in attention to occur even

if users' needs for information do not include advertising content whatsoever (e.g., because the task they are pursuing requires only the website's editorial content). This is because, as long as users do not take the trouble to install an ad blocker, advertising content is an inherent part of users' web experience that involuntarily affects users' perceptions of the website's information (e.g., Hong et al., 2021; Sun et al., 2013). In fact, even when users can merely customize a website's coloring scheme (without affecting any of the content), users' already infer greater informational value of the website (Benlian, 2015). As such, we expect the perception of empowerment to customize ad quantity to focus users' attention toward the website as a whole, including its editorial and potentially advertising content.

Greater attentional effort, in turn, enhances users' motivation to process the website's contents (Cacioppo, 1986; Kim & Gupta, 2014). When users who feel empowered by the provision of AQC are more willing and interested to explore a website, they tend to take a closer look at the available information and process it more deeply, compared to when they lack such empowerment and only skim the website's contents superficially. By examining the website's content more closely, users are more likely to discover insights that are useful to them. Therefore, the mere feeling of empowerment – largely independent of how users customize the level of ad quantity – facilitates the extraction of value of the provided content (i.e., editorial and potentially advertising content). Consequently, we expect perceived empowerment to increase informational fit-to-task.

> H2: Perceived empowerment increases informational fit-to-task of the website.

The effect of perceived empowerment on perceived enjoyment

Whereas informational fit-to-task captures users' cognitive evaluation of the website offering AQC, we propose that perceived empowerment also influences the affective evaluation of the website in the form of perceived enjoyment. Ingrained in the domain of technology acceptance research (Van der Heijden, 2004), enjoyment describes the intrinsic reward derived through the use of the website (Zhang, 2013).

Extant IS literature indicates that the feeling of empowerment induced by the provision of AQC likely enhances users' perceived enjoyment with the website. Feeling in charge over the website's ad quantity strikes a nerve for a majority of users eagerly seeking to gain control over conventionally immutable ads – as evident in the proliferation of third party ad-blockers (Gritckevich et al., 2021). Despite AQC confronting users with ads they did not ask for, the perception of being empowered to regulate ad quantity likely is of substantial significance to users' perceived enjoyment.

This is because the perception of empowerment reflects the awareness of a sense of control (Spreitzer, 1995). Feeling in control is believed to directly enhance the enjoyability of interacting with IS, both in utilitarian contexts, such as organizational tasks (Klesel et al., 2019), as well as in hedonic contexts, such as video games (Kim et al., 2015; Przybylski et al., 2010). In fact, the perception of being empowered and able to exert control has been indicated to be one of the main reasons why users describe customizable systems as enjoyable (Bright & Daugherty, 2012; Füller et al., 2009). This link between perceptions of empowerment and enjoyment is likely of particular importance in the context of ads, where users experience severe dissatisfaction with websites overwhelming them with ads (Cho & Cheon, 2004; Seyedghorban et al., 2016). Therefore, we expect the belief of being empowered to control ad quantity to foment a sense of enjoyment in users. This line of reasoning is further supported by previous IS literature examining implications of empowering users: Providing task autonomy, bestowing informational control and enabling freedom of technology choice consistently fosters users' perceived enjoyment with the empowering system (e.g., Kamis et al., 2008; Kim et al., 2015; Klesel et al., 2019). Accordingly, we expect perceived empowerment – enabled by the provision of AQC – to enhance users' perceived enjoyment of the website.

H3: Perceived empowerment increases perceived enjoyment of the website.

The effect of informational fit-to-task on website stickiness

Informational fit-to-task likely contributes to the stickiness of a website. When the website's editorial and advertising contents meet users' information needs (e.g., because the perception of AQC-enabled empowerment amplified users' attentional effort), the website "promote[s] lingering and capture[s] user attention" (Little, 2001, p. 53). The subsequent intensification of users' engagement with the website increases their satisfaction and thus attitude toward the website (Kalyanaraman & Sundar, 2006; Liang et al., 2006). When users are more satisfied with the website, they are more likely to return. Therefore, we argue that informational fit-to-task increases users' intention to stick to the website.

Extant IS research on the content customization of news aggregator websites confirms this reasoning: The improved match between users' informational needs and the website's content – resulting from users actively customizing the website – leads to increased website stickiness (Benlian, 2015). Moreover, similar to informational fit-to-task, the perceived usefulness of a customizable website enhances users' intentions to stick to the website (Kamis et al., 2008). This notion is in line with research

on technology acceptance that emphasizes perceived usefulness as a major influence to users' reuse intentions (Adams et al., 1992).

H4: Informational fit-to-task of the website increases website stickiness.

The effect of perceived enjoyment on website stickiness

Parallel to informational fit-to-task, we also expect perceived enjoyment of interacting with the website to influence website stickiness. Previous research found that perceived enjoyment positively affects users' attitudes and satisfaction with a technology's interface (Jiang & Benbasat, 2007b). More interestingly, as users derive pleasure from enjoyable activities, enjoyment is an important predictor of users' tendency to repeat the activity (Füller et al., 2009). Accordingly, prior studies could demonstrate that perceived enjoyment fosters online customer loyalty (Bandura, 1977) and leads to greater behavioral intention to keep using a system (Füller et al., 2009; Jiang & Benbasat, 2007a). Decisively, perceived enjoyment is known to increase users' propensity to return to a website (Dahan & Hauser, 2002; Dholakia et al., 2004). When users enjoy interacting with a website, they are more likely to return to it. Consequently, we expect perceived enjoyment to increase website stickiness. This reasoning is supported by IS research attesting that the enjoyment resulting from web customization promotes the attractiveness of the empowering website (Benlian, 2015).

H5: Perceived enjoyment of the website increases website stickiness.

The mediating effects of perceived empowerment, informational fit-to-task and perceived enjoyment

The links between perceived empowerment, informational fit-to-task and perceived enjoyment (delineated in H1 to H5) indicate a particularly relevant role of these constructs. When an independent variable causes an intervening variable and when this intervening variable in turn causes the dependent variable, then the intervening variable can be understood as a mediator (MacKinnon et al., 2002). Applied to our research model, we suggest that AQC affects perceived empowerment (H1) and that perceived empowerment, in turn, increases informational fit-to-task (H2) and perceived enjoyment (H3), indicating perceived empowerment as a mediator. More precisely, we argue that the hypothesized increase in informational fit-to-task is not a direct consequence of providing AQC. Rather, empowering users with AQC

instills users with a sense of empowerment that in itself is instrumental in encouraging users to carefully process the website's content, making them more likely to find information relevant to them and therefore perceiving a greater informational fit-to-task. Similarly, we argue that the same sense of empowerment – triggered by the provision of AQC – is the true reason users believe they have the upper hand over ads as website elements they typically have no say in, sparking a perception of enjoyment in users. Therefore, the effects of providing AQC on both informational fit-to-task and perceived enjoyment hinge on users' perception of empowerment as a crucial *mediator*.

> H6: Perceived empowerment mediates the effect of AQC on informational fit-to-task and perceived enjoyment.

Apart from perceived empowerment governing the effect on informational fit-to-task and perceived enjoyment, we furthermore hypothesize that informational fit-to-task and perceived enjoyment each affect website stickiness (H4, H5), thereby indicating both constructs as mediators (MacKinnon et al., 2002). Specifically, we argue that users who feel empowered are more intent to return to the empowering website not simply due to the perception of empowerment itself, but rather because this sense of empowerment incites informational fit-to-task, which satisfies users' cognitive needs, and perceived empowerment, which satisfies users' affective needs. With both cognitive and affective needs met, users are more willing to stick to the website. Thus, to what extent perceived empowerment leads users to stick to the website is highly dependent on the occurrence of both informational fit-to-task and perceived enjoyment as decisive *mediators*.

> H7: Informational fit-to-task mediates the effect of perceived empowerment on website stickiness.
> H8: Perceived enjoyment mediates the effect of perceived empowerment on website stickiness.

If perceived empowerment mediates the effect of providing AQC on informational fit-to-task and perceived enjoyment (H6), and if informational fit-to-task and perceived enjoyment mediate the effect of perceived empowerment on website stickiness (H7, H8), then all three constructs of perceived empowerment, informational fit-to-task and perceived enjoyment are instrumental mediators that carry over the overall effect of AQC on website stickiness.

> H9: Perceived empowerment, informational fit-to-task and perceived enjoyment mediate the effect of AQC on website stickiness.

Research methodology

Experimental website and manipulation of AQC

We chose the context of online news websites to test the effects of AQC, thereby following previous scholars studying web customization (e.g., Benlian, 2015; Bright & Daugherty, 2012; Sundar & Marathe, 2010). As for the type of ads, we chose banner ads as the most popular ad form on webpages (i.e., dedicated space displaying advertising content in the form of images and text) (Interactive Advertising Bureau, 2019). To minimize confounding effects through ad content, we used the banner ad database of *Oracle Data Cloud* (Oracle, 2019) and its function to randomly select banners to collect a set of ads for our experiment. For the purpose of the experiment, we created our own news website which we based on a real online news outlet to maximize realism. To determine an appropriate reference website to emulate, we set two criteria: (1) Ad quantity needed to be representative of popular news websites and (2) participants should be largely unfamiliar with the website to minimize confounding effects due to previous experience with the website. We conducted a pre-test with 60 participants from *Amazon Mechanical Turk* who rated their familiarity with and their perception of ad quantity (using the construct of ad clutter by Cho and Cheon (2004)) of five news websites randomly selected from the *Alexa* list of top 50 news websites (Alexa Internet, 2019). For our benchmark of a popular news website, we included the website of *The Washington Post* as the top ten news outlet with the highest daily pageviews per visitor (Alexa Internet, 2019). Comparing the participants' assessment of the five randomly selected websites, we eventually chose *The Epoch Times* as our reference website, which exhibited the lowest levels of familiarity and no significant difference in perceived ad quantity (based on ad clutter) to the website of *The Washington Post* (independent samples t-test, $t = 0.108$, $p > 0.05$).

To test our hypotheses, we conducted a between-subject online experiment with three conditions of our experimental website. The website featured a news article and varied in ad quantity and customization options: (1) The control condition website (hereafter *default website*) comprised a set of non-customizable ads. Quantity and placement of the ads was aligned with the layout of the reference website we emulated. (2) In addition to the default website, we introduced a second control condition with no ads at all (hereafter *ad-free website*). (3) Lastly, our treatment condition website offering AQC (hereafter *AQC website*) provided an explanation of the website's offer to choose how many of the ads on the website will be shown, alongside a continuous scale to select the preferred ad quantity setting (see Fig. 2). The display of ads drew on the same pool of banners as the default website.

Fig. 2 Configuration of ad quantity for the AQC website (exemplary setting of 50% ad quantity displayed)
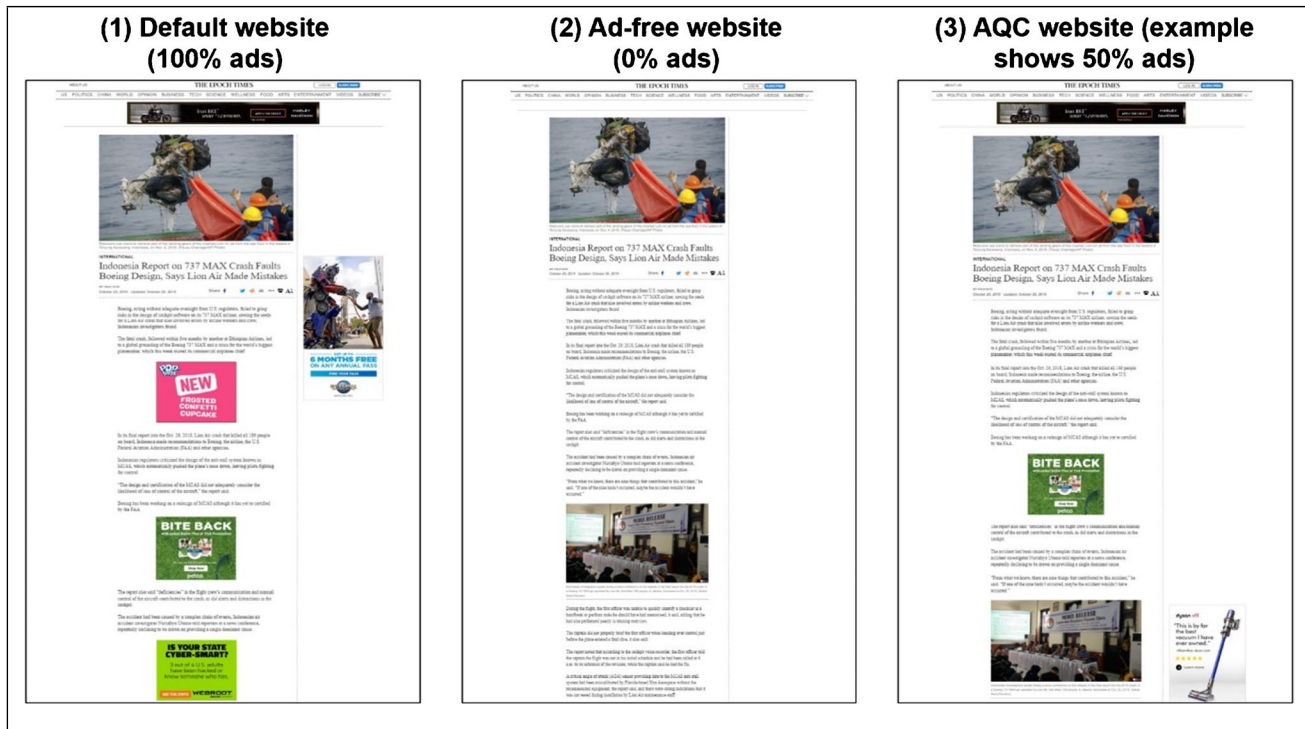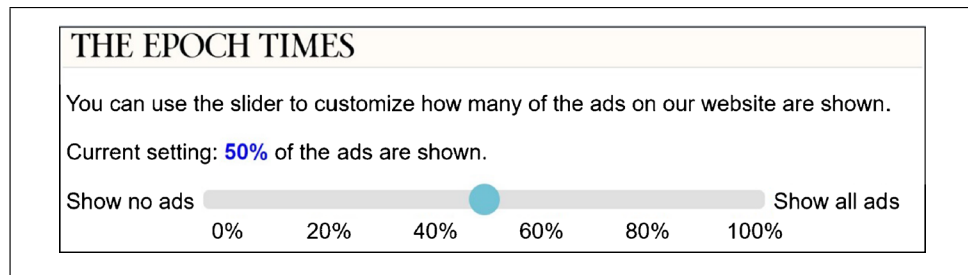
Fig. 3 Excerpt of the experimental website for the two control conditions (default website, ad-free website) and the treatment condition (AQC website). Note: The AQC website shows an exemplary 50% ad quantity, but could range in its appearance between the two extremes of the default and the ad-free website

The AQC functionality allowed participants to choose any ad quantity setting between 0% (i.e., equivalent to the ad-free website) and 100% (i.e., equivalent to the default website). The starting point for the adjustment of ad quantity was the layout of the default website. If a participant specified an ad quantity less than 100%, individual ads were randomly selected to be prevented from loading, such that the overall number of ads matched the participant's requested specification. For example, if the participant opted to have 50% of the website's ads shown, the website randomly selected half of the ads of the default website not to display. The random selection ensured to minimize confounding influences of ad content and placement. Hence, by selecting their preferred ad quantity, participants influenced their subsequent web experience.

The resulting three variations of the experimental website are depicted in Fig. 3.

Experimental procedure

The experimental procedure guiding the subjects through one of the three variations of our experimental website is presented in Fig. 4: (1) First, participants were given instructions to the experiment in which they were asked to access our experimental website and read a news article about the background of aviation accidents involving Boeing 737 MAX – an impartial and objective topic we chose to minimize preconceived opinions. Participants were given the ostensible task to learn about what might have caused the accidents (see Appendix
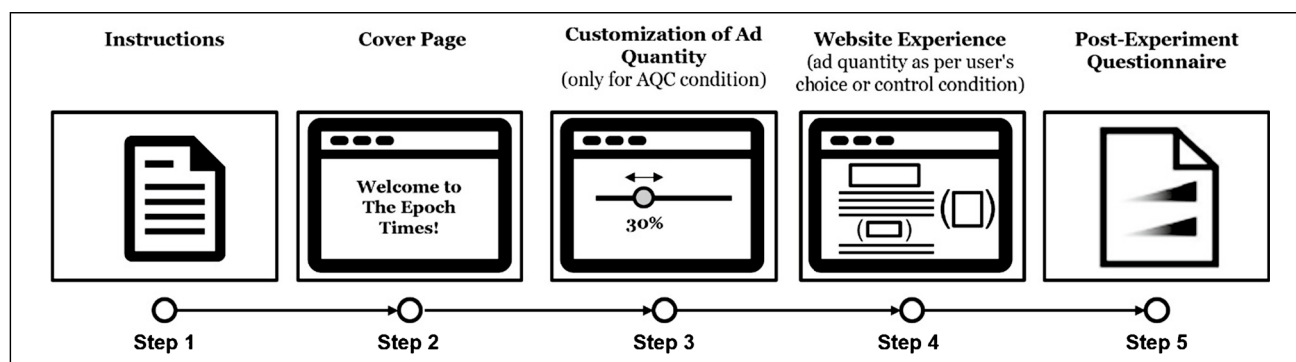
Fig. 4 Experimental procedure

section "Participant Instructions"). (2) Thereafter, a cover page welcomed the participants to the website and introduced the website as a news outlet (see Appendix section "Cover Page"). (3) Next, we randomly assigned participants to one of the three conditions. Participants who were part of the two control conditions were directly sent to the next step. Participants in the treatment condition were given instructions on the AQC feature and were asked to select their preferred setting (see Fig. 2). (4) Subsequently, all participants experienced the main part of the website for a duration of 90 s by reading an article with varying ad quantity, subject to either each user's previously chosen ad quantity or to the control condition they were part of. Incidentally, we did not allow participants in the treatment condition to interrupt their reading of the article to go back and readjust their AQC setting for two reasons. First, we wanted to ensure that, on the one hand, participants would be aware of the AQC feature, but on the other hand, still focus on the article. Put differently, it was important to us to measure how providing AQC affects participants' experiences with the website's contents instead of observing the effects of repeatedly "playing around" with the AQC feature. Second, we wanted to avoid that some participants would access the AQC feature much more often than others (e.g., driven by a general uncertainty in making decisions). Varying exposures to our treatment would have undermined the comparability of the results across our participants in the treatment group. (5) The final part covered a questionnaire about the participants' perception of the website, alongside controls and demographics. Lastly, participants were debriefed that the AQC feature offered to them on the website was only available for the purpose of this experiment and was not publicly accessible on the reference website we emulated.

Measurement

We used validated scales from literature, reported in Table 2. We focused on *Website Stickiness* as our dependent variable measured with three items adapted from Benlian (2015). We

measured our mediators *Perceived Empowerment* with two items adapted from Füller et al. (2009), *Informational Fit-to-Task* with three items adapted from Parboteeah et al. (2009) and *Perceived Enjoyment* with three items adapted from Benlian (2015). While we measured *Perceived Enjoyment* using a semantic differential with the extremes at (1) and (7), all other items were measured using 7-point Likert-type scales ranging from strongly disagree (1) to strongly agree (7). Importantly, we informed participants that the term "website" in each of our scales referred to the article page from *The Epoch Times* with all its elements including article content and ads.

With regard to controls, we measured demographics (i.e., participants' *Age* and *Gender*) as factors identified to influence individuals' perception of control (Slagsvold & Sørensen, 2008). Furthermore, to account for participants' potential preexisting attitudes toward the website of *The Epoch Times* resulting from previous visits, we asked whether participants had ever accessed the website prior to our survey (i.e., *Website Familiarity*) (Michailidou et al., 2008). Moreover, the usage of an ad blocker suppressing ads may affect how participants react to ads they are not used to anymore. As such, we asked participants if they were currently using an ad blocker on a regular basis (i.e., *Previous Ad Blocker Use*) (Wills & Zeljkovic, 2011). Both *Website Familiarity* and *Previous Ad Blocker Use* were implemented as binary variables (i.e., 0 = no, 1 = yes). Lastly, to take into account effects resulting from participants' irritation with the quantity of ads displayed, we measured *Perceived Ad Clutter* with three items adapted from Cho and Cheon (2004).

As our manipulation check, we measured *Perceived Customizability* using a self-developed 7-point Likert-type scale inspired by previous web customization research (Bright & Daugherty, 2012). Additionally, we integrated two attention checks to notice whether participants read each item carefully. Lastly, we asked participants about their *Perceived*

Table 2 Constructs

Construct	Item	Loading
Website Stickiness (Benlian, 2015) ($\alpha = 0.941$, CR $= 0.962$, AVE $= 0.895$)	If I needed to use a news website in the future, …	
	… I would intend to use this website	0.958
	… it would be highly likely that I return to this website	0.930
	… I would predict to use this website	0.949
Perceived Empowerment (Füller et al., 2009) ($\alpha = 0.851$, CR $= 0.930$, AVE $= 0.870$)	I had the feeling of active participation in the website layout	0.923
	The website gave me the feeling that I am taken seriously	0.942
Informational Fit-to-Task (Parboteeah et al., 2009) ($\alpha = 0.942$, CR $= 0.934$, AVE $= 0.824$)	The information on the website was effective for my task	0.946
	The website adequately met my information needs for my task	0.948
	The information on the website was pretty much what I needed for my objective	0.944
Perceived Enjoyment (Benlian, 2015) ($\alpha = 0.919$, CR $= 0.875$, AVE $= 0.699$)	Interacting with the website was …	
	unexciting … exciting	0.927
	unappealing … appealing	0.934
	not fun … fun	0.923
Perceived Ad Clutter (Cho & Cheon, 2004) ($\alpha = 0.929$, CR $= 0.954$, AVE $= 0.874$)	I thought the number of ads on this website was excessive	0.970
	I thought the number of ads on this website was irritating	0.967
	I thought this website was exclusively an ad medium	0.864
Perceived Customizability (self-developed) ($\alpha = 0.943$, CR $= 0.960$, AVE $= 0.856$)	The website asked me whether it should show ads or not	0.953
	The website did not present any feature to regulate the number of ads displayed. (reversed)	0.843
	I could communicate to the website whether I prefer to have ads displayed or not	0.957
	The website offered me to control the presence of its ads	0.942

Realism of the experiment, also measured with a 7-point Likert-type scale.

Results

Sample description and controls

We recruited 545[1] participants from *Amazon Mechanical Turk*, a crowdsourcing platform that has established itself as a viable platform for behavioral research and experiments (Behrend et al., 2011). Research has demonstrated that the survey results of *Amazon Mechanical Turk* respondents exhibit high reliability and provide higher-quality data than student or online convenience samples (e.g., Behrend et al., 2011; Buhrmester et al., 2016; Steelman et al., 2014). In addition, *Amazon Mechanical Turk* is a suitable platform to reach internet-savvy users, who are highly appropriate for our experiment setting because they are frequent users of websites. We restricted participation to users with a high

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[1] To reliably detect significant results and to account for our two control groups, we sought to safely exceed the minimum sample size of 102, which we estimated by conducting a power analysis using G*Power 3.1 (Faul et al., 2009) with the following parameter specifications: two groups, a moderate effect size (f $= 0.50$), an α-level of 0.05, and a desired power level of 0.80 (Cohen, 1992).

approval rating (at least 95%), which is considered an appropriate measure to ensure high data quality (Goodman & Paolacci, 2017). Out of those 545 participants, we excluded 122 participants who failed one or both of our attention checks as well as 28 participants who left the questionnaire prematurely, resulting in a final data set of 395 responses.

Table 3 summarizes the descriptive statistics of our conditions. Furthermore, of all participants in the AQC condition, 46% selected to have 0% ad quantity shown, 8% opted for 100% ad quantity and 46% chose an intermediate level of ad quantity. Overall, participants did not utilize AQC to shed ads altogether, but instead opted to have on average 25% of the website's ads displayed.

We verified the comparability of our participants across our experimental conditions by conducting several one-way analyses of variance. We did not find significant differences in terms of participants' *Gender*, *Age*, *Website Familiarity*, *Previous Ad Blocker Use* and *Perceived Realism* between the groups (all $p > 0.05$). Thus, the results confirm a successful randomization in the assignment of our participants to our different experimental conditions. To examine the effectiveness of our experimental conditions, we conducted several independent samples t-tests: *Perceived Ad Clutter* was significantly lower in the control condition of the ad-free website than in the control condition of the default website ($t = -14.36$, $p < 0.001$), *Perceived Customizability* was significantly higher in the treatment condition of the AQC

Table 3 Descriptive statistics

Variable	Group 1: AQC absent in default website	Group 2: AQC absent in ad-free website	Group 3: AQC present
N	122	134	139
Website Stickiness	3.19 (1.72)	4.47 (1.64)	4.87 (1.75)
Perceived Empowerment	3.20 (1.81)	4.14 (1.62)	5.04 (1.71)
Informational Fit-to-Task	4.92 (1.45)	5.51 (1.28)	5.71 (1.34)
Perceived Enjoyment	3.54 (1.52)	4.25 (1.55)	4.67 (1.63)
Perceived Ad Clutter	4.92 (1.64)	2.09 (1.51)	2.40 (1.80)
Perceived Customizability	2.08 (1.31)	2.05 (1.30)	6.10 (1.49)
Average Age	38.78 (12.34)	36.87 (11.22)	39.68 (12.51)
Gender: female share	38.53%	39.56%	48.30%
Website Familiarity: share who knew the website before	9.84%	11.94%	10.79%
Previous Ad Blocker Use: share who are regularly using an ad blocker	29.51%	42.54%	46.76%

Standard deviation in parentheses

website than for both control conditions of the ad-free website and the default website ($t = 23.06$, $p < 0.001$) and there was no significant difference in *Perceived Customizability* between the two control conditions ($t = 0.18$, $p > 0.05$). Therefore, we are confident that our experimental conditions worked as intended. Lastly, our respondents indicated that they found the experiment highly realistic (mean = 6.46; std. dev. = 0.98).

Reliability and validity

We conducted a confirmatory factor analysis (CFA) to test the instrument's convergent and discriminant validity (Levine, 2005). Table 2 reports the employed items together with the CFA results. Our constructs exceed the recommended level of 0.70 (Nunnally, 1994) for both measures of internal consistency (i.e., Cronbach's alpha and composite reliability). The average variance extracted (AVE) of each construct ranged from 0.699 to 0.895 and is thereby higher than the relevant threshold of 0.50 (Hair et al., 2016). All items fulfilled the minimum loading requirement of 0.70 between the item and the corresponding factor. Thus, all constructs met the specifications for convergent validity. Additionally, for satisfactory discriminant validity, the square root of AVE from the constructs was greater than the variance shared between the construct and other constructs in the model (see Appendix Table 6) (Fornell & Larcker, 1981). Furthermore, the heterotrait-monotrait ratio of correlations (Henseler et al., 2015; Voorhees et al., 2016) exhibited values less than the threshold of 0.85 for all constructs, indicating support of discriminant validity (see Appendix Table 7). Lastly, the Harman one-factor extraction test resulted in 43% explained variance through a single factor, which is lower than the recommended maximum threshold of 50% (Podsakoff et al., 2003) and therefore indicates no issues

of common method bias. Hence, the constructs in our study are both theoretically and empirically distinguishable and are not significantly affected by common method bias.

Hypothesis testing

To test the direct and indirect effects of our research model, we analyzed our research model with structural equation modeling (SEM), following recommended practice (Urbach & Ahlemann, 2010). We used Smart PLS 3.3.7 and analyzed our model with the consistent partial least squares (PLS) algorithm, which is specifically designed for hypothesis testing. While consistent PLS is largely comparable to covariance-based SEM, we chose consistent PLS primarily for its strength to identify mediating effects through the iterative introduction of new constructs and relations (Richter et al., 2016) – as is recommended, for example, for research investigating the mechanisms of technology acceptance, such as website stickiness (Dijkstra & Henseler, 2015). This strength to uncover mediation mechanisms is particularly important for our study's focus on a serial mediation with three mediators (i.e., perceived empowerment, informational fit-to-task and perceived enjoyment). Moreover, the consistent PLS algorithm can offer advantages over covariance-based SEM when it is unclear whether the response data is normally distributed and when researchers seek to minimize the risk of potential misspecification of the model (Dijkstra & Henseler, 2015; Richter et al., 2016).

Direct effects

We conducted independent analyses for each of the two control conditions: We first compared the website offering AQC with the default website, and then compared the website offering AQC with the ad-free website. We hereby coded *AQC* as a binary variable (i.e., 0 = absent, 1 = present). We tested our

Fig. 5 Final model results of the effects of AQC on Website Stickiness. Note: *p < 0.05, **p < 0.01, ***p < 0.001
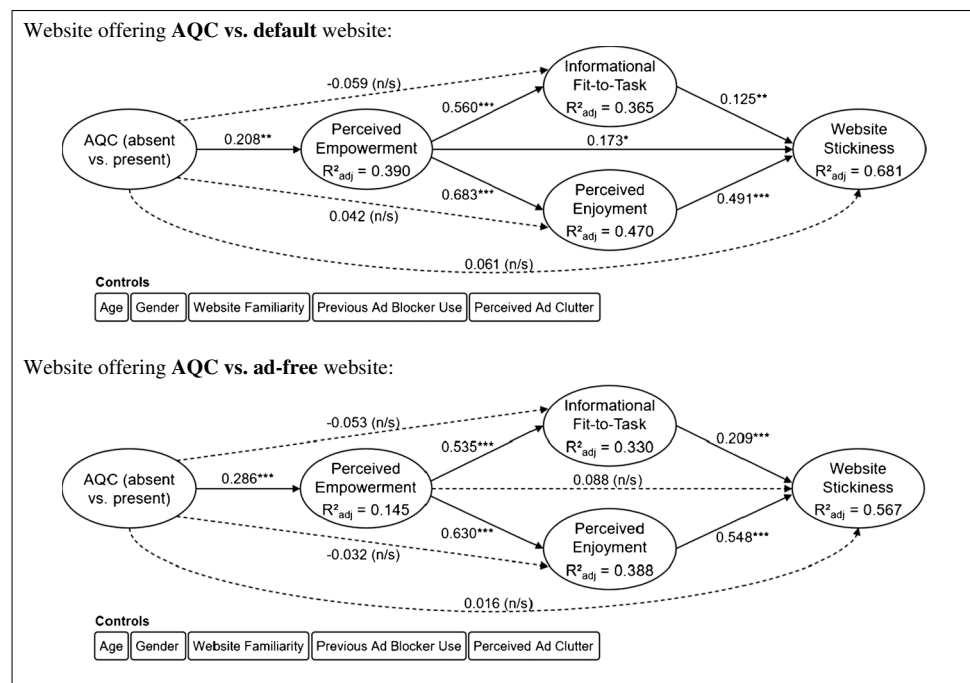
Table 4 Bootstrapping of all direct effects linking AQC to Website Stickiness

Direct effect	Website offering **AQC vs. default** website			Website offering **AQC vs. ad-free** website		
	Mean (std. dev.)	T statistic		Mean (std. dev.)	T statistic	
AQC → EMP	0.208 (0.067)	3.122	**	0.286 (0.054)	5.274	***
AQC → IFTT	-0.059 (0.067)	0.870		-0.053 (0.052)	1.013	
AQC → ENJ	0.042 (0.06)	0.696		-0.032 (0.052)	0.623	
AQC → STICK	0.061 (0.044)	1.395		0.016 (0.044)	0.356	
EMP → IFTT	0.560 (0.066)	8.545	***	0.535 (0.055)	9.785	***
EMP → ENJ	0.683 (0.052)	13.021	***	0.630 (0.046)	13.770	***
EMP → STICK	0.173 (0.072)	2.404	*	0.088 (0.069)	1.278	
IFTT → STICK	0.125 (0.049)	2.537	**	0.209 (0.055)	3.801	***
ENJ → STICK	0.491 (0.068)	7.257	***	0.548 (0.074)	7.453	***

*p < 0.05, **p < 0.01, ***p < 0.001; Bootstrapping with 5,000 samples and a 95% confidence interval; EMP = Perceived Empowerment, IFTT = Informational Fit-to-Task, ENJ = Perceived Enjoyment, STICK = Website Stickiness

hypotheses linking *AQC*, *Perceived Empowerment* (EMP), *Informational Fit-to-Task* (IFTT) and *Perceived Enjoyment* (ENJ) to *Website Stickiness* (STICK) in three ways: First, we verified whether all three mediators contribute to the overall model validity. To that end, we established a baseline model including only our independent variable *AQC* and our dependent variable *Website Stickiness*. We then iteratively augmented this model by including one mediator after the other (see Appendix Figs. 7 and 8). As our final model comprising all mediators yielded the greatest model validity (i.e., highest R^2_{adj} for our dependent variable *Website Stickiness*) for both control groups, we find first indication for the relevance of each mediator in explaining why *AQC* affects *Website Stickiness*.

Second, we analyzed each of the individual paths in our final model, in line with our proposed hypotheses (see Fig. 5). The results of the bootstrapped PLS analyses outlined in Table 4 **support** our hypothesis **H1** that the provision of *AQC* positively affects users' *Perceived Empowerment* (default website as baseline: $\beta = 0.208$, $t = 3.122$, $p < 0.01$; ad-free website as baseline: $\beta = 0.286$, $t = 5.274$, $p < 0.001$). In line with H2 and H3, *Perceived Empowerment* positively affects *Informational Fit-to-Task* (default website as baseline: $\beta = 0.560$, $t = 8.545$, $p < 0.001$; ad-free website as baseline: $\beta = 0.535$, $t = 9.785$, $p < 0.001$) and *Perceived Enjoyment* (default website as baseline: $\beta = 0.683$, $t = 13.021$, $p < 0.001$; ad-free website as baseline: $\beta = 0.630$, $t = 13.770$, $p < 0.001$). As such, we find

Table 5 Bootstrapping of all indirect effects linking AQC to Website Stickiness

Indirect effect	Website offering **AQC vs. default** website			Website offering **AQC vs. ad-free** website		
	Mean (std. dev.)	T statistic		Mean (std. dev.)	T statistic	
AQC → EMP → IFTT	0.116 (0.039)	2.981	**	0.153 (0.034)	4.523	***
AQC → EMP → ENJ	0.142 (0.044)	3.223	**	0.180 (0.036)	5.020	***
EMP → IFTT → STICK	0.070 (0.030)	2.341	*	0.113 (0.033)	3.370	**
EMP → ENJ → STICK	0.336 (0.056)	6.000	***	0.345 (0.052)	6.664	***
AQC → EMP → IFTT → STICK	0.014 (0.007)	2.014	*	0.032 (0.012)	2.782	**
AQC → EMP → ENJ → STICK	0.070 (0.023)	2.993	**	0.099 (0.023)	4.285	***
AQC → EMP → STICK	0.036 (0.020)	1.766		0.025 (0.021)	1.193	
AQC → IFTT → STICK	-0.007 (0.010)	0.731		-0.011 (0.012)	0.894	
AQC → ENJ → STICK	0.020 (0.029)	0.702		-0.018 (0.029)	0.621	

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$; Bootstrapping with 5,000 samples and a 95% confidence interval

EMP = Perceived Empowerment, IFTT = Informational Fit-to-Task, ENJ = Perceived Enjoyment, STICK = Website Stickiness

support for both **H2** and **H3**. Moreover, *Website Stickiness* is enhanced by both *Informational Fit-to-Task* (default website as baseline: $\beta = 0.125$, $t = 2.537$, $p < 0.01$; ad-free website as baseline: $\beta = 0.209$, $t = 3.801$, $p < 0.001$) and *Perceived Enjoyment* (default website as baseline: $\beta = 0.491$, $t = 7.257$, $p < 0.001$; ad-free website as baseline: $\beta = 0.548$, $t = 7.453$, $p < 0.001$). Therefore, our results **support H4** and **H5**. In addition, when comparing the AQC website against the default website, we find a remaining direct effect of *Perceived Empowerment* on *Website Stickiness* ($\beta = 0.173$, $t = 2.404$, $p < 0.05$). This indicates that, while *Informational Fit-to-Task* and *Perceived Enjoyment* qualify as complementary mediations, a third mediation path beyond our research model may exist (Zhao et al., 2010). Lastly, we performed a multigroup analysis with one group comprising those participants that experienced *Customizable Ads* and those who experienced *Default Ads* as well as a second group comprising those who experienced *Customizable Ads* and those who experienced *No Ads*. We found that none of our hypothesized paths exhibited any significant difference between the two groups with the two different control conditions. As such, we find support that the effects between *AQC*, *Perceived Empowerment*, *Informational Fit-to-Task*, *Perceived Enjoyment* and *Website Stickiness* are highly comparable for both cases of contrasting an AQC website to a default website and contrasting an AQC website to an ad-free website.

Indirect effects

In addition to confirming the individual paths between our constructs, we verified whether *Perceived Empowerment*, *Informational Fit-to-Task,* and *Perceived Enjoyment* carry over the effect of *AQC* on *Website Stickiness* by conducting bootstrap analyses of our indirect effects. The results in Table 5 paint a consistent picture for both control groups (i.e., default website and ad-free website): We find a significant indirect effect of

AQC on *Informational Fit-to-Task* via *Perceived Empowerment* (default website as baseline: $\beta = 0.116$, $t = 2.981$, $p < 0.01$; ad-free website as baseline: $\beta = 0.153$, $t = 4.523$, $p < 0.001$) as well as of *AQC* on *Perceived Enjoyment* via *Perceived Empowerment* (default website as baseline: $\beta = 0.142$, $t = 3.223$, $p < 0.01$; ad-free website as baseline: $\beta = 0.180$, $t = 5.020$, $p < 0.001$). As the remaining direct effects of *AQC* on *Informational Fit-To-Task* and on *Perceived Enjoyment* were shown to be non-significant, we find an indirect-only mediation (formerly referred to as full mediation) of *Perceived Empowerment* (Zhao et al., 2010). We therefore find **support** for **H6**. Additionally, we find significant indirect effects of *Perceived Empowerment* on *Website Stickiness* via *Informational Fit-to-Task* (default website as baseline: $\beta = 0.070$, $t = 2.341$, $p < 0.05$; ad-free website as baseline: $\beta = 0.113$, $t = 3.370$, $p < 0.01$) and via *Perceived Enjoyment* (default website as baseline: $\beta = 0.336$, $t = 6.000$, $p < 0.001$; ad-free website as baseline: $\beta = 0.345$, $t = 6.664$, $p < 0.001$). In the case of the default website as the baseline, the remaining direct effect of *Perceived Empowerment* on *Website Stickiness* was still significant, indicating a complementary mediation in which a third, unaccounted mediator may be present – even though in the case of the ad-free website as the baseline we did not find any remaining direct effect. Accordingly, these results **support H7** and **H8**. Most importantly, we find significant indirect effects of our overall mediation paths via *Perceived Empowerment* and *Informational Fit-to-Task* (*AQC → EMP → IFTT → STICK*, default website as baseline: $\beta = 0.014$, $t = 2.014$, $p < 0.05$; ad-free website as baseline: $\beta = 0.032$, $t = 2.782$, $p < 0.01$) and via *Perceived Empowerment* and *Perceived Enjoyment* (*AQC → EMP → ENJ → STICK*, default website as baseline: $\beta = 0.070$, $t = 2.993$, $p < 0.01$; ad-free website as baseline: $\beta = 0.099$, $t = 4.285$, $p < 0.001$). We further validated these paths by conducting a bootstrap mediation analysis based on linear regression with 5,000 samples and a 95% confidence interval using PROCESS by Hayes (2018). The results in Appendix Table 10

demonstrate that the 95% confidence interval of both proposed mediation paths exclude zero, thereby corroborating our findings from our PLS analyses. We thus find coherent **support** for **H9**. Therefore, our results consistently support our proposed hypotheses that *AQC* induces *Perceived Empowerment*, which then fosters *Informational Fit-to-Task* and *Perceived Enjoyment* as critical concepts responsible for *Website Stickiness*. Resulting from this overall mechanism, users stick more to a website offering AQC than to both a website with non-customizable ads and a website that does not feature any ads at all.

Discussion

This study addresses how and why the possibility of AQC provided by a website affects users' intention to stick to this very website. In an online experiment with 395 participants we find that a website with customizable ads (i.e., AQC present) evokes significantly greater website stickiness than a website with default ads (i.e., AQC absent) – despite participants pursuing a task that does not require viewing any ads. This implies that users appreciate to customize ads even if those ads are supposedly irrelevant for users' objective when browsing the website. This insight underscores the powerful influence ads inevitably exert on users. We additionally compare whether participants would prefer a website without any ads (i.e., AQC absent), rather than being asked to customize ad quantity. While a website without ads unsurprisingly elicits greater website stickiness than a website with default ads, we counterintuitively find that a website with customizable ads achieves even greater website stickiness than a website without ads. Put differently, as long as users are empowered to customize ad quantity, they express a greater intention to return to a website that explicitly features ads than to a website that never had any ads in the first place. This finding is intriguing as it demonstrates that users value customization of website elements they typically want to avoid (i.e., ads) higher than the actual avoidance itself. This implies that users exhibit a firm need to exert control over unsolicited website elements that is so powerful that it even exceeds their desire of simply not being confronted with these elements at all. In line with our results, this inclination results from users' perception of empowerment, which plays a critical role in explaining the effects of the provision of AQC on website stickiness. Specifically, providing AQC imbues participants with a sense of empowerment that we find to influence participants in two ways: On the one hand, the perception of empowerment enhances participants' cognitive evaluation of the website in the form of greater informational fit-to-task, while on the other hand, the feeling of empowerment also augments participants' affective evaluation of the website in the form of increased perceived enjoyment. Both enhanced informational fit-to-task and augmented perceived

enjoyment consequently promote participants' intention to stick to the website. As such, the perception of empowerment, triggered by the provision of AQC, invigorates users to engage more intensely with the website – a vital stimulant that users lack in the supposed ideal of simply omitting ads.

Contributions to research

By exploring the intricacies of empowering users to customize ad quantity on websites, we offer two noteworthy contributions to IS literature on web customization. First, our study sheds light on a thus far underexplored prospect of web customization by addressing a website's ads as content users never asked for. Extant research on web customization focused on the outcomes of allowing users to customize the primary editorial content of a website (e.g., which news topics users would receive articles for) (e.g., Ariely, 2000; Benlian, 2015; Jiang et al., 2010). In doing so, insights of previous literature primarily pertain to the customization of content that users are known to expect, welcome and be interested in. However, advertising content is fundamentally distinct in that users typically neither ask to see nor appreciate ads when accessing a website, oftentimes resulting in strong ad avoidance behaviors (e.g., leaving the website) (Seyedghorban et al., 2016). By asking users to customize the quantity of ads, we extend the locus of web customization research to website elements that users typically seek to refrain from. More specifically, we reveal that, despite inevitably directing users' attention toward unsolicited ads, users appreciate AQC by exhibiting a greater intention to stick to the website. This insight provides a new perspective to web customization literature, as it demonstrates that users enjoy customizing website elements that they usually perceive as irritating. Moreover, we find that, as long as users can customize ad quantity, they stick more to a website *with* ads than to the intuitive ideal of a website *without* any ads by default. As such, we demonstrate that web customization (e.g., AQC) is capable of lifting website stickiness by purposefully including and exploiting typically unwelcomed website elements (e.g., ads) as objects users enjoy to customize. This finding is particularly interesting for research on web customization, because it exposes that users value the ability to customize unwanted elements higher than simply avoiding these elements altogether. Taken together, we reveal ad customization as a hitherto underexplored and significant piece of web customization complementing previous research. This is important also for the broader stream of research on individual IS usage because it contributes to the quest of satisfying users' need for individualized experiences.

Second, our study addresses an important gap in web customization research in terms of understanding the underlying causal mechanisms of how and why web customization impacts users' responses to a website. Despite previous studies having

started to unravel the rationale of why web customization affects various user outcomes on websites (e.g., Benlian, 2015; Jiang & Benbasat, 2007b; Jiang et al., 2010), extant explanations focus merely on the significance of individualized content that matches users' preferences better (e.g., improved usefulness of the website). In that sense, previous literature does not account for the idiosyncrasy of web customization that sets it apart from web personalization – the empowerment of users to exert active control. By investigating not only content-oriented mediators in the form of informational fit-to-task and perceived enjoyment, but particularly users' perception of feeling empowered, we are among the first to shed light on the mechanism that is unique to web customization. More specifically, our findings imply that offering AQC increases users' intention to stick to a website because the provision of AQC imbues users with a sense of empowerment. It is this sense of empowerment that stimulates users' involvement with the website as a whole, both cognitively in the form of greater informational fit-to-task as well as affectively in the form of increased perceived enjoyment. As such, we reveal empowerment as a key element that is pivotal to the effect mechanism of web customization and that hitherto has been under-investigated in IS web customization literature. This contribution is important as it allows IS research to not only unblackbox the effect mechanisms that are specific to the phenomenon of web customization, but also to identify moderating factors through which we can improve the design and effectiveness of web customization.

Practical implications

Beyond our theoretical contributions, our findings offer extensive insights for website providers that seek to attract and retain their users more effectively. On the one hand, our results indeed confirm the common belief that displaying ads provokes users in that they are less willing to stick to the website compared to when ads are omitted altogether. On the other hand, we also discover that users do not oppose ads in general. Instead, we find that users' potentially negative reactions are mainly driven by a lack of empowerment over the ads. Surprisingly, including ads on a website while simultaneously empowering users with AQC convinces users to stick more to the website than eliminating ads altogether. These outcomes bring about influential implications for website providers in that ads are not inevitably harmful to users' evaluation of a website. Instead, when coupled with AQC, website providers can remodel ads into an asset that enhances users' web experience and thus increases their intention to stick to the website. One step further, AQC may even help website providers to persuade ad-block users to whitelist their website and accept some amount of ads they agree with to support both the website as well as its dependent provider.

While AQC is a potent mechanism to address users' attitudes toward ads, one must consider that allowing users to tamper with the amount of ads displayed may come at a price for websites. Ad revenue is primarily driven by the number of impressions and the number of clicks on ads. Although participants in our experiment did not use AQC to cancel out ads altogether, they indeed selected fewer ads than what was considered the default amount (i.e., on average 25% of the default ads). As such, the number of ad impressions was reduced compared to the default amount. Although click rates on ads may increase to some degree because users consider ads more important and relevant when they agree to receive them (Hartemo, 2016), AQC may overall still impact a website's ad revenues. In return, AQC considerably boosts a website's stickiness. Hence, whether and to what extent AQC creates value for a website depends on the objectives of its provider. For example, IS research investigating websites' reliance on ads revealed that websites benefit more if they curtail the amount of ads during their growth period and delay the full display of ads to a later point in time when a reliable user base has been established (Dewan et al., 2002). We provide an alternative and perhaps more economical perspective to this finding: Instead of holding back ads to attract more users, websites could draw on AQC to fuel their growth. This not only allows to retain users more effectively through higher website stickiness, but also to feature ads and generate associated ad revenue earlier on, thereby strengthening the websites' business model during and perhaps beyond their growth phase.

Lastly, our finding that the key enabler for users' appreciation of web customization lies in perceived empowerment indicates an opportunity for websites beyond customizing the amount of ads. In essence, website providers can retain their users more by making them feel empowered. Accordingly, it is less important for users to objectively be in control, but rather to *feel* in control over their web experience. Website providers can build on this insight by designing customization interfaces that emphasize to users how this website offers a greater level of freedom and influence over the way the website can be experienced than what users would commonly expect. As such, websites may find ways to capture users through empowerment also beyond the context of customizing ads.

Limitations and directions for future research

This study is subject to limitations and provides several avenues for future research. To study users' responses to AQC, we conducted an online experiment in which participants were asked to customize an experimental website's quantity of ads, followed by reading a news article with as many ads as participants had opted for. This approach includes some limitations: First, to aid comparability, each participant in our AQC treatment group could only customize ad quantity when entering the experimental website, without having the option to readjust their choice at a later point in time to find a setting that suits them better. Without the possibility for participants to optimize their customization choice, our results may underestimate

the effectiveness of AQC – nonetheless without affecting the resulting implications. Second, our experimental setup focused on capturing participants' evaluation based on a one-time visit of our experimental website that does not account for long term effects of interacting with the AQC feature. We can only conjecture that a one-time exposure may indeed be sufficient to induce a prolonged benefit of AQC due to the first impression effect, which suggests that individuals' first exposure to a website has a disproportionally great effect on their judgment. This effect is quite strong, as a positive first impression (e.g., based on the provision of AQC) will only start to be questioned after many subsequent interactions contradict individuals' first impression (Lim et al., 2000). Third, although we accounted for three mediating constructs, our analysis with informational fit-to-task and perceived enjoyment as mediators yielded a remaining direct effect of perceived empowerment on website stickiness – potentially indicating toward another effect mechanism caused by perceived empowerment that may offer an interesting opportunity for future research. Fourth, while participants' subjective evaluation of their intention to stick to the website is a useful indicator for the effectiveness of providing AQC, our findings could be complemented with experimental designs aimed to capture objective variables such as time spent on the website. To address these limitations and extend the findings of our online experiment, we call for future research to investigate the provision of AQC in a field setting. Specifically, it would be of interest to study how users interact with the AQC option when they can readjust their setting in the course of multiple browsing sessions and how the benefits of increased website stickiness develop over time. Furthermore, to investigate contextual influences of users' responses to AQC, future research could study the role of diverse cultural backgrounds, the impact of users' attitude toward ads, the relevance of users' motivation to access a website and the significance of users' device types with potentially smaller screen sizes exacerbating the irritation with ads.

Moreover, this research focused on website stickiness as the core user response. While this construct is a suitable indicator of users' interest in a website, we need future research to expand our knowledge on the financial ramifications of AQC. Specifically, we require insights to what extent websites can monetize AQC, for example through a broader user base increasing the number of ad impressions, through closer attention toward ads and thus higher click-through rates and through paid subscriptions as a prerequisite to continued access to AQC. Similarly, IS researchers can draw on their experience in users' decision making to understand how and why users select a specific ad quantity option. Such knowledge may be instrumental for website providers to influence users in their decision to support the website while simultaneously benefitting from an enhanced web experience. By guiding users in their ad quantity decision, AQC could strengthen the business model not only

of growing websites seeking to expand their user base, but also of mature websites interested in monetizing their traffic.

Lastly, this study concentrated on website provider-enabled customization of ad quantity. Future research could investigate whether offering users to customize the content or format of ads on websites could lead to similar levels of website stickiness and ad acceptance. On a broader note, research could expand our knowledge on web customization by studying how website provider-enabled customization competes with users' detrimental self-empowerment, such as ad-blocking. Understanding whether and how web customization can successfully address and convince users to refrain from forceful intervention can be a pivotal step for IS research to provide guidance to website providers struggling with their ad-revenue-based business models.

Conclusion

Websites featuring ads face increasing pressure to attract and retain users that are becoming progressively intolerant of ad clutter. Consequently, website providers are starting to loosen their firm grip on the ads displayed on their website by offering AQC as a website feature that empowers users to customize the website's ad quantity. In the field of web customization, several studies investigated how users customize websites' primary editorial content (i.e., content related to the main purpose of the website). However, advertising content is fundamentally distinct from editorial content in that users oftentimes perceive ads as unsolicited and irritating – raising the question whether users have any interest in customizing ads they typically seek to avoid. As such, the purpose of this study was to uncover whether, how and why website provider-enabled AQC can influence users' intention to stick to a website.

We examined the effectiveness of providing AQC in an online experiment and analyzed the results using partial least squares. The results indicate that a website with AQC elicits higher website stickiness than a website without AQC. Counterintuitively, we find that even a website entirely free of ads is not as attractive to users than a website offering AQC, contradicting the common belief that users perceive ads as generally negative. In fact, users even appreciate the introduction of ads on websites, as long as they can customize these ads' quantity. Furthermore, our results suggest that the effect of AQC on website stickiness is primarily driven by users' sense of being empowered, which enhances both users' cognitive as well as affective evaluations of the website. These findings underline the importance of feeling empowered as a thus far neglected mechanism of web customization. The results have important theoretical implications for our understanding of web customization and provide strong practical implications for website providers seeking new ways to take advantage of their ads.

Appendix

Participant instructions

Your task:

Imagine it is Saturday and you are surfing on the Internet at home. You recently developed an interest in commercial aviation and are curious to know what happened in the series of accidents involving Boeing 737 MAX aircrafts. After a quick Google search, you hit on an article from the news portal The Epoch Times. You access the website with the intention to find out what might have caused the accidents.

Cover page

Fig. 6 Cover page upon accessing the experimental website

Assessment of measurement model

Table 6 Fornell-Larcker criterion demonstrating discriminant validity (Fornell & Larcker, 1981)

	STICK	EMP	IFTT	ENJ	CLUTT	PCUST
Website Stickiness (STICK)	**0.946**					
Perceived Empowerment (EMP)	0.632	**0.933**				
Informational Fit-to-Task (IFTT)	0.543	0.547	**0.946**			
Perceived Enjoyment (ENJ)	0.724	0.656	0.501	**0.928**		
Perceived Ad Clutter (CLUTT)	-0.397	-0.390	-0.331	-0.259	**0.935**	
Perceived Customizability (PCUST)	0.332	0.426	0.212	0.317	-0.220	**0.925**

Table 7 Heterotrait-monotrait ratio of correlations demonstrating discriminant validity (Henseler et al., 2015; Voorhees et al., 2016)

	STICK	EMP	IFTT	ENJ	CLUTT	PCUST
Website Stickiness (STICK)	–					
Perceived Empowerment (EMP)	0.702	–				
Informational Fit-to-Task (IFTT)	0.576	0.608	–			
Perceived Enjoyment (ENJ)	0.775	0.739	0.535	–		
Perceived Ad Clutter (CLUTT)	0.413	0.417	0.347	0.265	–	
Perceived Customizability (PCUST)	0.352	0.480	0.223	0.339	0.225	–

Assessment of structural model

Table 8 Effect sizes (Cohen's f^2) of AQC website vs. default website (Cohen, 1988)

	EMP	IFTT	ENJ	STICK
AQC (absent vs. present)	**0.043**	0.003	0.002	0.007
Perceived Empowerment (EMP)		**0.301**	**0.538**	0.033
Informational Fit-to-Task (IFTT)				**0.030**
Perceived Enjoyment (ENJ)				**0.389**

Note: f^2 values of 0.020, 0.150, 0.350 indicate a predictor variable's low, medium, or large effect in a structural model (Cohen, 1988)

Table 9 Effect sizes (Cohen's f^2) of AQC website vs. ad-free website (Cohen, 1988)

|	EMP	IFTT	ENJ	STICK
AQC (absent vs. present)	**0.093**	0.004	0.002	0.001
Perceived Empowerment (EMP)		**0.364**	**0.555**	0.009
Informational Fit-to-Task (IFTT)				**0.064**
Perceived Enjoyment (ENJ)				**0.398**

Note: f^2 values of 0.020, 0.150, 0.350 indicate a predictor variable's low, medium, or large effect in a structural model (Cohen, 1988)

As evident from Tables 8 and 9, the effect of AQC on perceived empowerment can be considered moderate (0.043 / 0.093), whereas perceived empowerment exerts strong effects on both informational fit-to-task (0.301 / 0.364) and perceived enjoyment (0.538 / 0.555). Lastly, the resulting effect on website stickiness is driven less by informational fit-to-task (0.030 / 0.064), but more by perceived enjoyment (0.389 / 0.398). This means that while AQC exerts a moderate impact on perceived empowerment, this shift in empowerment powerfully affects both informational fit-to-task and perceived enjoyment, whereas the latter contributes particularly strongly to enhanced website stickiness. As such, we find support that the feeling of empowerment as a stimulant for the highly influential perception of enjoyment can be considered the primary driver of the increase in website stickiness.

Fig. 7 Iterative introduction of the mediators perceived empowerment, informational fit-to-task and perceived enjoyment for AQC website vs. default website. Note: *p < 0.05, **p < 0.01, ***p < 0.001
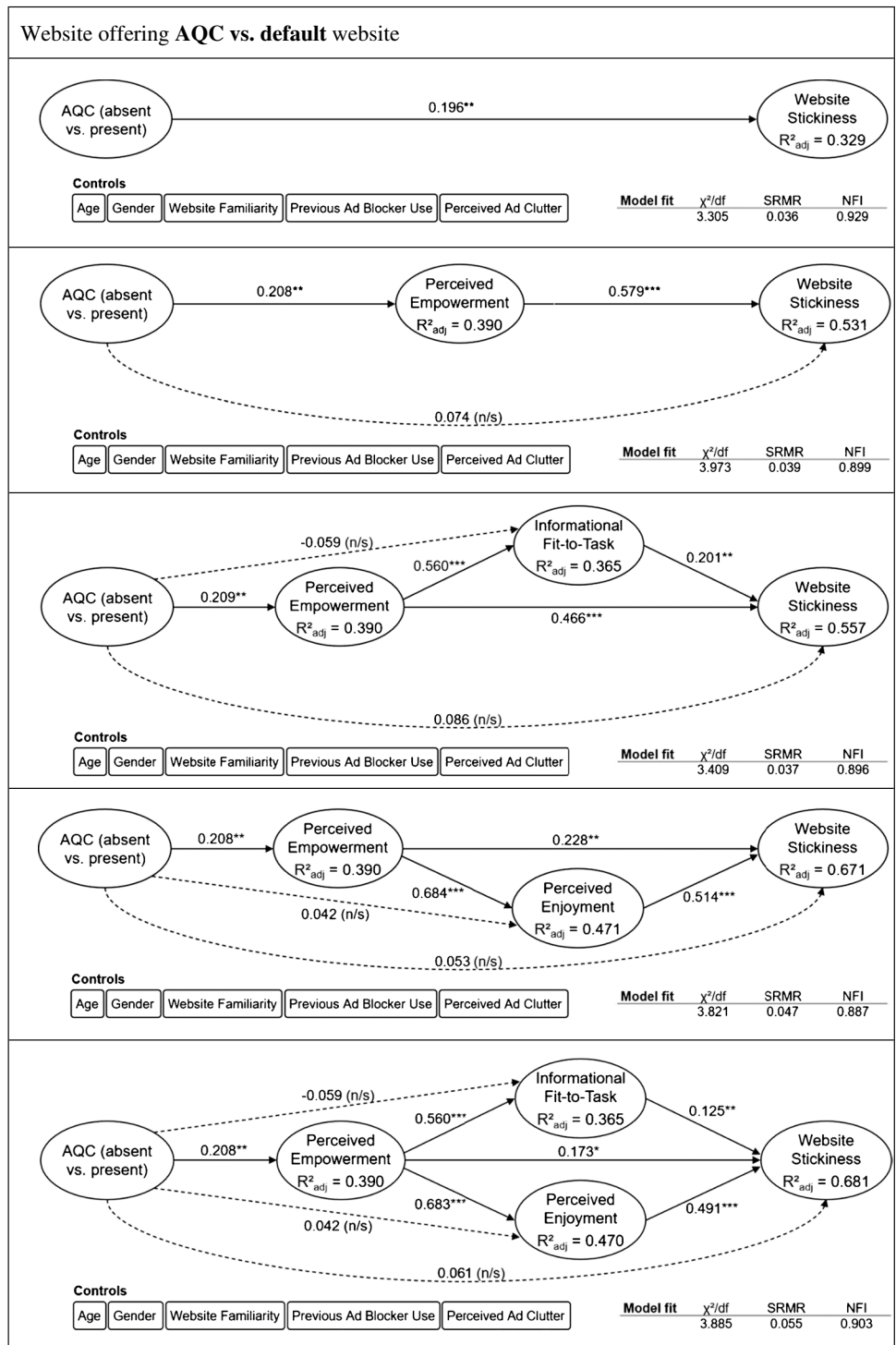
Fig. 8 Iterative introduction of the mediators perceived empowerment, informational fit-to-task and perceived enjoyment for AQC website vs. ad-free website. Note: *p < 0.05, **p < 0.01, ***p < 0.001
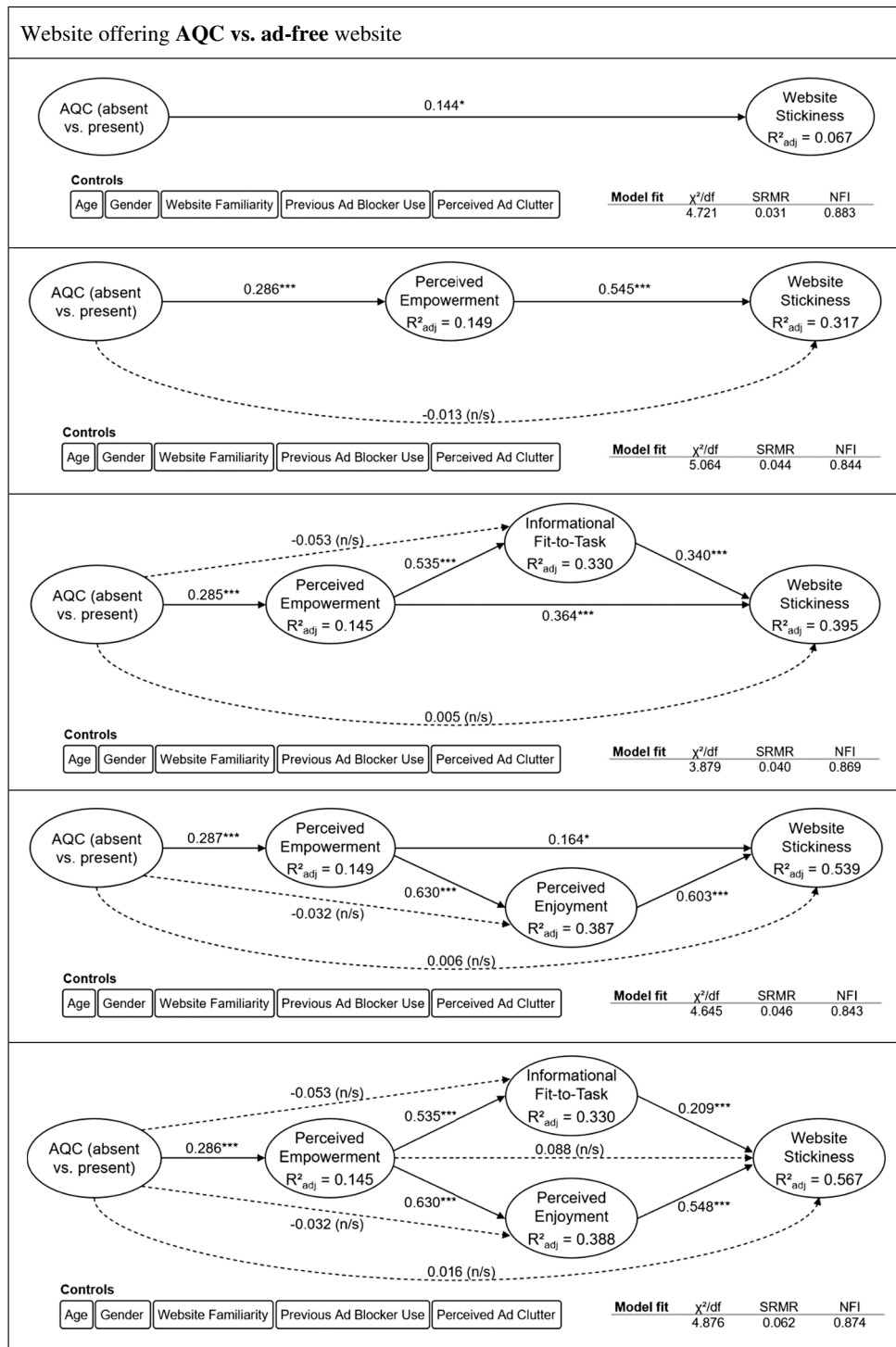
Table 10 Bootstrapping of linear regression indirect effects of AQC on Website Stickiness using PROCESS by Hayes (2018)

Pathway of indirect effect	Website offering **AQC vs. default** website			Website offering **AQC vs. ad-free** website		
	Effect (Boot SE)	Boot LLCI	Boot ULCI	Effect (Boot SE)	Boot LLCI	Boot ULCI
AQC → EMP → IFTT	0.360 (0.118)	0.138	0.610	0.413 (0.098)	0.235	0.619
AQC → EMP → ENJ	0.506 (0.148)	0.210	0.793	0.590 (0.117)	0.363	0.822
EMP → IFTT → STICK	0.106 (0.034)	0.042	0.173	0.177 (0.040)	0.105	0.260
EMP → ENJ → STICK	0.345 (0.056)	0.238	0.455	0.370 (0.053)	0.265	0.474
AQC → EMP → IFTT → STICK	0.061 (0.031)	0.012	0.133	0.113 (0.040)	0.049	0.206
AQC → EMP → ENJ → STICK	0.248 (0.081)	0.097	0.419	0.274 (0.071)	0.145	0.427
AQC → EMP → STICK	0.147 (0.081)	0.018	0.333	0.083 (0.072)	-0.048	0.235
AQC → IFTT → STICK	-0.028 (0.039)	-0.121	0.037	-0.041 (0.043)	-0.138	0.030
AQC → ENJ → STICK	0.099 (0.112)	-0.116	0.325	-0.044 (0.095)	-0.225	0.147

Bootstrapping with 5,000 samples and a 95% confidence interval using PROCESS model 81 by Hayes (2018)

EMP = Perceived Empowerment, IFTT = Informational Fit-to-Task, ENJ = Perceived Enjoyment, STICK = Website Stickiness, SE = standard error, LLCI = lower limit confidence interval, ULCI = upper limit confidence interval

References

Adam, M., Wessel, M., & Benlian, A. (2021). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets*. https://doi.org/10.1007/s12525-12020-00414-12527

Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly*, *16*(2), 227–247. 249577

Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., & Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of Retailing, 91*(1), 34–49. https://doi.org/10.1016/j.jretai.2014.09.005

Alexa Internet. (2019). *Alexa - Top Sites by Category: Top / News / Newspapers*. Retrieved Nov 27, 2019 from https://www.alexa.com/topsites/category/Top/News/Newspapers

Alt, R., Ehmke, J. F., Haux, R., Henke, T., Mattfeld, D. C., Oberweis, A., Paech, B., & Winter, A. (2019). Towards customer-induced service orchestration-requirements for the next step of customer orientation. *Electronic Markets, 29*(1), 79–91. https://doi.org/10.1007/s12525-019-00340-3

Amichai-Hamburger, Y., McKenna, K. Y., & Tal, S.-A. (2008). E-empowerment: Empowerment by the internet. *Computers in Human Behavior, 24*(5), 1776–1789. https://doi.org/10.1016/j.chb.2008.02.002

Ariely, D. (2000). Controlling the information flow: Effects on consumers' decision making and preferences. *Journal of Consumer Research, 27*(2), 233–248. https://doi.org/10.1086/314322

Aseri, M., Dawande, M., Janakiraman, G., Mookerjee, S., & V. (2020). Ad-blockers: A blessing or a curse? *Information Systems Research, 31*(2), 627–646. https://doi.org/10.1287/isre.2019.0906

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Behrend, T. S., Sharek, D. J., Meade, A. W., & Wiebe, E. N. (2011). The viability of crowdsourcing for survey research. *Behavior Research Methods, 43*(3), 800–813. https://doi.org/10.3758/s13428-011-0081-0

Belanche, D., Flavián, C., & Pérez-Rueda, A. (2020). Consumer empowerment in interactive advertising and eWOM consequences: The PITRE model. *Journal of Marketing Communications, 26*(1), 1–20. https://doi.org/10.1080/13527266.2019.1610028

Benlian, A. (2015). Web personalization cues and their differential effects on user assessments of website value. *Journal of Management Information Systems, 32*(1), 225–260. https://doi.org/10.1080/07421222.2015.1029394

Brajnik, G., & Gabrielli, S. (2010). A review of online advertising effects on the user experience. *International Journal of Human-Computer Interaction, 26*(10), 971–997. https://doi.org/10.1080/10447318.2010.502100

Bright, L. F., & Daugherty, T. (2012). Does customization impact advertising effectiveness? an exploratory study of consumer perceptions of advertising in customized online environments. *Journal of Marketing Communications, 18*(1), 19–37. https://doi.org/10.1080/13527266.2011.620767

Buhrmester, M., Kwang, T., & Gosling, S. D. (2016). Amazon's mechanical Turk: A new source of inexpensive, yet high-quality data? *Perspectives on Psychological Science, 6*(1), 3–5. https://doi.org/10.1037/14805-009

Cacioppo, J. T. (1986). Communication and persuasion: Central and peripheral routes to attitude change. *Springer.* https://doi.org/10.1037/0022-3514.51.5.1032

Cho, C.-H., & Cheon, H. J. (2004). Why do people avoid advertising on the internet? *Journal of Advertising, 33*(4), 89–97. https://doi.org/10.1080/00913367.2004.10639175

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *Routledge.* https://doi.org/10.4324/9780203771587

Cohen, J. (1992). A Power Primer. *Psychological Bulletin, 112*(1), 155. https://doi.org/10.1037/0033-2909.112.1.155

Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review, 13*(3), 471–482. https://doi.org/10.5465/amr.1988.4306983

Dahan, E., & Hauser, J. R. (2002). The virtual customer. *Journal of Product Innovation Management, 19*(5), 332–353. https://doi.org/10.1111/1540-5885.1950332

Dewan, R. M., Freimer, M. L., & Zhang, H. (2002). Management of valuation of advertisement-supported web sites. *Journal of Management Information Systems, 19*(3), 87–98.

Dholakia, U. M., Bagozzi, R. P., & Pearo, L. K. (2004). A social influence model of consumer participation in network-and small-group-based virtual communities. *International Journal of Research in Marketing, 21*(3), 241–263. https://doi.org/10.1016/j.ijresmar.2003.12.004

Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, *39*(2), 297–316. https://www.jstor.org/stable/26628355

Dukes, A. J., Liu, Q., & Shuai, J. (2020). Skippable ads: Interactive advertising on digital media platforms. *Marketing Science, Forthcoming.* https://doi.org/10.1287/mksc.2021.1324

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Füller, J., Mühlbacher, H., Matzler, K., & Jawecki, G. (2009). Consumer empowerment through internet-based co-creation. *Journal of Management Information Systems, 26*(3), 71–102. https://doi.org/10.2753/MIS0742-1222260303

Garett, R., Chiu, J., Zhang, L., & Young, S. D. (2016). A literature review: Website design and user engagement. *Online Journal of Communication and Media Technologies, 6*(3), 1–14.

Globalwebindex (2018). *Ad-blocking: A deep-dive into ad-blocking trends, insight report 2018*. Retrieved Nov 29, 2019 from https://www.globalwebindex.com/hubfs/Downloads/Ad-Blocking-trends-report.pdf

Goodman, J. K., & Paolacci, G. (2017). Crowdsourcing consumer research. *Journal of Consumer Research, 44*(1), 196–210. https://doi.org/10.1093/jcr/ucx047

Gritckevich, A., Katona, Z., & Sarvary, M. (2021). Ad blocking. *Management Science, Forthcoming.* https://doi.org/10.1287/mnsc.2021.4106

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hartemo, M. (2016). Email marketing in the era of the empowered consumer. *Journal of Research in Interactive Marketing, 10*(3), 212–230. https://doi.org/10.1108/JRIM-06-2015-0040

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Ho, S. Y., & Lim, K. H. (2018). Nudging moods to induce unplanned purchases in imperfect mobile personalization contexts. *MIS Quarterly*, *42*(3), 757–778. https://doi.org/10.25300/Misq/2018/14083

Ho, S. Y., & Bodoff, D. (2014). The effects of web personalization on user attitude and behavior: An integration of the elaboration likelihood model and consumer search theory. *MIS Quarterly, 38*(2), 497–520.

Hong, W., Cheung, M. Y., & Thong, J. Y. (2021). The impact of animated banner ads on online consumers: A feature-level analysis using eye tracking. *Journal of the Association for Information Systems, 22*(1), 204–245.

Human, S., Gsenger, R., & Neumann, G. (2020). End-user empowerment: An interdisciplinary perspective. *Proc. of the 53rd Hawaii International Conference on System Sciences (HICSS)*, Hawaii, USA.

Interactive Advertising Bureau. (2019). *IAB Internet Advertising Revenue Report*. Retrieved October 21, 2019 from https://www.iab.com/wp-content/uploads/2019/05/Full-Year-2018-IAB-Internet-Advertising-Revenue-Report.pdf

Jiang, Z., & Benbasat, I. (2007a). The effects of presentation formats and task complexity on online consumers' product understanding. *MIS Quarterly, 31*(475–500), 25148804.

Jiang, Z., & Benbasat, I. (2007b). Investigating the influence of the functional mechanisms of online product presentations. *Information Systems Research, 18*(4), 454–470. https://doi.org/10.1287/isre.1070.0124

Jiang, Z., Chan, J., Tan, B. C. Y., & Chua, W. S. (2010). Effects of interactivity on website involvement and purchase intention. *Journal of the Association for Information Systems*, *11*(1), 34–59. https://doi.org/10.17705/1jais.00218

Johar, M., Mookerjee, V., & Sarkar, S. (2014). Selling vs. Profiling: Optimizing the offer set in web-based personalization. *Information Systems Research*, *25*(2), 285–306. https://doi.org/10.1287/isre.2014.0518

Johnson, M. D., Herrmann, A., & Huber, F. (2006). The evolution of loyalty intentions. *Journal of Marketing, 70*(2), 122–132. https://doi.org/10.1509/jmkg.70.2.122

Junglas, I., Goel, L., Ives, B., & Harris, J. (2019). Innovation at work: The relative advantage of using consumer IT in the workplace. *Information Systems Journal, 29*(2), 317–339. https://doi.org/10.1111/isj.12198

Kalyanaraman, S., & Sundar, S. S. (2006). The psychological appeal of personalized content in web portals: Does customization affect attitudes and behavior? *Journal of Communication, 56*(1), 110–132. https://doi.org/10.1111/j.1460-2466.2006.00006.x

Kamis, A., Koufaris, M., & Stern, T. (2008). Using an attribute-based decision support system for user-customized products online: An experimental investigation. *MIS Quarterly, 32*(1), 159–177. 25148832

Kang, Y. J., Lee, J. Y., & Kim, H.-W. (2017). A psychological empowerment approach to online knowledge sharing. *Computers in Human Behavior, 74*, 175–187. https://doi.org/10.1016/j.chb.2017.04.039

Kim, H.-W., & Gupta, S. (2014). A User empowerment approach to information systems infusion. *IEEE Transactions on Engineering Management, 61*(4), 656–668. https://doi.org/10.1109/TEM.2014.2354693

Kim, K., Schmierbach, M. G., Bellur, S., Chung, M. Y., Fraustino, J. D., Dardis, F., & Ahern, L. (2015). Is it a sense of autonomy, control, or attachment? Exploring the effects of in-game customization on game enjoyment. *Computers in Human Behavior, 48*, 695–705. https://doi.org/10.1016/j.chb.2015.02.011

Klesel, M., Haag, S., Oschinsky, F. M., & Ortbach, K. (2019). Freedom of technology choice: An experimental evaluation. *Proc. of the 40th International Conference on Information Systems (ICIS)*, Munich, Germany.

Komiak, S. Y., & Benbasat, I. (2006). The effects of personalization and familiarity on trust and adoption of recommendation agents. *MIS Quarterly*, *30*(4), 941–960. 25148760

Köster, A., Matt, C., & Hess, T. (2020). Do all roads lead to Rome? Exploring the relationship between social referrals, referral propensity and stickiness to video-on-demand websites. *Business & Information Systems Engineering, 63*, 349–366. https://doi.org/10.1007/s12599-020-00660-1

Kumar, S., Tan, Y., & Wei, L. (2020). When to play your advertisement? Optimal insertion policy of behavioral advertisement. *Information Systems Research, 31*(2), 589–606. https://doi.org/10.1287/isre.2019.0904

Levine, T. R. (2005). Confirmatory factor analysis and scale validation in communication research. *Communication Research Reports, 22*(4), 335–338. https://doi.org/10.1080/00036810500317730

Li, H., Edwards, S. M., & Lee, J.-H. (2002). Measuring the intrusiveness of advertisements: Scale development and validation. *Journal of Advertising, 31*(2), 37–47. https://doi.org/10.1080/00913367.2002.10673665

Liang, T.-P., Lai, H.-J., & Ku, Y.-C. (2006). Personalized content recommendation and user satisfaction: Theoretical synthesis and empirical findings. *Journal of Management Information Systems, 23*(3), 45–70. https://doi.org/10.2753/MIS0742-1222230303

Libert, T., & Nielsen, R. K. (2018). *Third-party web Content on EU news sites: Potential challenges and paths to privacy improvement*. Reuters Institute For The Study of Journalism. Retrieved Nov 29, 2019 from https://timlibert.me/pdf/Libert_Nielsen-2018-Third_Party_Content_EU_News_GDPR.pdf

Lim, K. H., Benbasat, I., & Ward, L. M. (2000). The role of multimedia in changing first impression bias. *Information Systems Research, 11*(2), 115–136. https://doi.org/10.1287/isre.11.2.115.11776

Little, J. R. (2001). A librarian's perspective on portals. *Educause Quarterly, 24*(2), 52–54.

Liu, Y. (2003). Developing a scale to measure the interactivity of websites. *Journal of Advertising Research, 43*(2), 207–216. https://doi.org/10.1017/S0021849903030204

Liu, B. Q., & Goodhue, D. L. (2012). Two worlds of trust for potential e-commerce users: Humans as cognitive misers. *Information Systems Research, 23*(4), 1246–1262. https://doi.org/10.1287/isre.1120.0424

Loiacono, E. T., Watson, R. T., & Goodhue, D. L. (2007). WebQual: An instrument for consumer evaluation of web sites. *International Journal of Electronic Commerce, 11*(3), 51–87. https://doi.org/10.2753/JEC1086-4415110302

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A Comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83–104. https://doi.org/10.1037/1082-989x.7.1.83

Marathe, S., & Sundar, S. S. (2011). What drives customization? Control or Identity? *Proc. of the SIGCHI Conference on Human Factors in Computing Systems*, New York, NY, USA.

Matt, C., Trenz, M., Cheung, C. M., & Turel, O. (2019). The digitization of the individual: Conceptual foundations and opportunities for research. *Electronic Markets, 29*(3), 315–322. https://doi.org/10.1007/s12525-019-00348-9

McCoy, S., Everard, A., Polak, P., & Galletta, D. F. (2007). The effects of online advertising. *Communications of the ACM, 50*(3), 84–88. https://doi.org/10.1145/1226736.1226740

Michailidou, E., Harper, S., & Bechhofer, S. (2008). Visual Complexity and aesthetic perception of web pages. *Proc. of the 26th ACM International Conference on Design of Communication*.

Mousavi, R., Chen, R., Kim, D. J., & Chen, K. (2020). Effectiveness of privacy assurance mechanisms in users' privacy protection on social networking sites from the perspective of protection motivation theory. *Decision Support Systems, 135*. https://doi.org/10.1016/j.dss.2020.113323

Nunnally, J. C. (1994). The assessment of reliability. *Psychometric Theory, 3*, 248–292.

Oracle. (2019). *Moat Ad Search*. Retrieved Nov 21, 2019 from https://moat.com/

Parboteeah, D., Valacich, J., & Wells, J. (2009). The influence of website characteristics on a consumer's urge to buy impulsively. *Information Systems Research, 20*(1), 60–78. https://doi.org/10.1287/isre.1070.0157

Pierrakos, D., Paliouras, G., Papatheodorou, C., & Spyropoulos, C. D. (2003). Web usage mining as a tool for personalization: A survey. *User Modeling and User-Adapted Interaction, 13*(4), 311–372. https://doi.org/10.1023/A:1026238916441

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A Critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of General Psychology, 14*(2), 154–166. https://doi.org/10.1037/a0019440

Rejón-Guardia, F., & Martínez-López, F. J. (2014). Online advertising intrusiveness and consumers' avoidance behaviors. In *Handbook of Strategic e-Business Management* (pp. 565–586). Springer. https://doi.org/10.1007/978-3-642-39747-9_23

Richter, N. F., Cepeda, G., Roldán, J. L., & Ringle, C. M. (2016). European management research using partial least squares structural equation modeling (PLS-SEM). *European Management Journal, 34*(6), 589–597. https://doi.org/10.1016/j.emj.2016.08.001

Röthke, K., Klumpe, J., Adam, M., & Benlian, A. (2020). Social influence tactics in e-commerce onboarding: The role of social proof and reciprocity in affecting user registrations. *Decision Support Systems, 131*. https://doi.org/10.1016/j.dss.2020.113268

Schneider, D., Klumpe, J., Adam, M., & Benlian, A. (2020). Nudging users into digital service solutions. *Electronic Markets*. https://doi.org/10.1007/s12525-12019-00373-12528

Seyedghorban, Z., Tahernejad, H., & Matanda, M. J. (2016). Reinquiry into advertising avoidance on the internet: A conceptual replication and extension. *Journal of Advertising, 45*(1), 120–129. https://doi.org/10.1080/00913367.2015.1085819

Slagsvold, B., & SØrensen, A. (2008). Age, education, and the gender gap in the sense of control. *The International Journal of Aging and Human Development*, 67(1), 25-42. https://doi.org/10.2190/AG.67.1.b

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*(5), 1442–1465. https://doi.org/10.5465/256865

Steelman, Z. R., Hammer, B. I., & Limayem, M. (2014). Data collection in the digital age: Innovative alternatives to student samples. *Journal of Consumer Psychology, 23*(2), 212–219.

Sun, Y., Lim, K., & Peng, J. Z. (2013). Solving the distinctiveness-blindness debate: A unified model for understanding banner processing. *Journal of the Association for Information Systems, 14*(2), 49–71.

Sundar, S. S. (2012). *Social psychology of interactivity in human-website interaction*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199561803.013.0007

Sundar, S. S., & Marathe, S. S. (2010). Personalization versus customization: The importance of agency, privacy, and power usage. *Human Communication Research, 36*(3), 298–322. https://doi.org/10.1111/j.1468-2958.2010.01377.x

Sundar, S. S., Kalyanaraman, S., & Brown, J. (2003). Explicating web site interactivity: Impression formation effects in political campaign sites. *Communication Research, 30*(1), 30–59. https://doi.org/10.1177/0093650202239025

Sutanto, J., Palme, E., Tan, C. H., & Phang, C. W. (2013). Addressing the personalization-privacy paradox: An empirical assessment from a field experiment on smartphone users. *MIS Quarterly*, 37(4), 1141–1164. https://doi.org/10.25300/Misq/2013/37.4.07

Tam, K. Y., & Ho, S. Y. (2005). Web personalization as a persuasion strategy: An elaboration likelihood model perspective. *Information Systems Research, 16*(3), 271–291. https://doi.org/10.1287/isre.1050.0058

Tam, K. Y., & Ho, S. Y. (2006). Understanding the impact of web personalization on user information processing and decision outcomes. *MIS Quarterly, 30*(4), 865–890. https://doi.org/10.2307/25148757

Thomas, K. W., & Tymon, W. G. (1994). Does empowerment always work: Understanding the role of intrinsic motivation and personal interpretation. *Journal of Management Systems, 6*(2), 1–13.

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "Interpretive" model of intrinsic task motivation. *Academy of Management Review, 15*(4), 666–681. https://doi.org/10.5465/amr.1990.4310926

Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application, 11*(2), 5–40.

Van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS Quarterly*, 28(4), 695–704.25148660.

Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: an analysis, causes for concern, and proposed remedies. *Journal of the Academy of Marketing Science, 44*(1), 119–134. https://doi.org/10.1007/s11747-015-0455-4

Wicker, S. B., & Karlsson, K. (2017). Internet advertising: technology, ethics, and a serious difference of opinion. *Communications of the ACM, 60*(10), 70–79. https://doi.org/10.1145/3048384

Wills, C. E., & Zeljkovic, M. (2011). A personalized approach to web privacy: Awareness, attitudes and actions. *Information Management & Computer Security, 19*(1), 53–73. https://doi.org/10.1108/09685221111115863

Xue, J., Liang, X., Xie, T., & Wang, H. (2020). See now, act now: How to interact with customers to enhance social commerce engagement? *Information & Management*, 57(6). https://doi.org/10.1016/j.im.2020.103324

Zhang, P. (2013). The affective response model: A Theoretical framework of affective concepts and their relationships in the ICT context. *MIS Quarterly, 37*(1), 247–274.

Zhao, X., Lynch, J. G., Jr., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37*(2), 197–206. https://doi.org/10.1086/651257

Zimmerman, M. A. (1995). Psychological empowerment: issues and illustrations. *American Journal of Community Psychology, 23*(5), 581–599. https://doi.org/10.1007/BF02506983