

Shopping Benefits of Multichannel Assortment Integration and the Moderating Role of Retailer Type

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Although assortment is one of the most important determinants of customers' channel and retailer choice (Hoch, Bradlow, and Wansink 1999; Verhoef, Neslin, and Vroomen 2007), the outcomes of multichannel assortment integration (i.e., the coordination of assortments between channels) have not yet been scrutinized. Studies on channel coordination address information and delivery services and prices, but not assortments (Neslin and Shankar 2009; Zhang et al. 2010). They show that similar prices can be beneficial for retailers (Zettelmeyer 2000) and that online information on physical stores (e.g., prices and inventory) and delivery services such as in-store pick-ups and returns positively influence customers' purchase decisions (Bendoly et al.

2005; Burke 2002). Research on coordination also studies the addition of entire channels, finding low cannibalization between online and physical channels (Avery et al. 2012; Deleersnyder et al. 2002; Xu et al. 2014).

Assortment integration across channels has its specific challenges and may lead to different outcomes than other retail mix instruments. Several conceptual papers discuss whether retailers should offer no integration or full integration (i.e., different or the same assortment sets across channels), but they do not offer empirical insights on this issue. Berry et al. (2010) argue that capabilities, costs, and competitors differ across channels, so retailers should offer different assortments (i.e., no integration). Similarly, Neslin and Shankar (2009) suggest that offerings can be differentiated if channels target different customer segments. However, the literature also proposes that full integration prevents undesired outcomes, such as customer confusion, distrust, and frustration (Neslin and Shankar 2009). On the continuum between no and full integration, retailers most often use asymmetrical integration, in which one channel carries all of the items

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of the other channel as well as additional merchandise (PWC 2012). Zhang et al. (2010) advocate to offer larger assortments online (i.e., “the long tail,” Anderson 2004), where assortment costs are comparably low. Indeed, 74% of retailers indicate that they selectively differentiate assortments across channels (PWC, 2012).

Despite the many conceptual arguments presented, it remains unclear through which mechanisms positive or negative customer outcomes of multichannel assortment integration may evolve and what they ultimately mean for patronage intentions. Because the previous literature finds that assortment perceptions and choice strongly differ depending on assortment structure (e.g., Kahn and Wansink 2004), the impact of multichannel assortment integration may depend on underlying assortment relations. Assortment relations are determined by the use relatedness of assortment items; that is, how customers perceive assortment items regarding their similarity and compatibility for end use (Kotler and Armstrong 1996). Substitutive relations describe items that serve the same customer need and constitute alternatives within one choice decision (e.g., different DVD players). Complementary relations exist among items that provide a higher consumption utility from joint usage compared with the sum of isolated usage (e.g., DVD player and a DVD movie). Independent relations refer to items that are neither highly similar nor highly compatible with regard to their intended usage, and thus, choice decisions for these items do not influence each other (e.g., DVD player and a vase). Assortment relations are relevant to the extent that they constitute different retailer types; limited-line retailers (e.g., Ace Hardware) have a high assortment depth of items with substitutive relations, broad-line retailers (e.g., Home Depot) have a high assortment breadth of items with complementary relations, and general merchandizers (e.g., Sears) have a high assortment breadth of items with independent relations (Miller, Reardon, and McCorkle 1999).

Our article contributes to two important but unresolved questions in multichannel management. First, we investigate the impact of multichannel assortment integration: How do integration strategies influence customers’ perceived shopping benefits and, ultimately, their patronage intentions? Conceptual articles propose arguments for and against channel integration, but they do not analyze the underlying psychological mechanisms (i.e., shopping benefits such as perceived variety) that determine customer outcomes. Moreover, most retailers realize asymmetrical integration by offering larger assortments online, but the consequences of such a strategy for retailers remain undetermined.

Second, we consider the intervening role of assortment structures: How do assortment relations moderate the impact of multichannel assortment integration? Customer outcomes of channel integration may strongly vary, as the different assortment relations are likely to frame customers’ attention to different contextual aspects (Shocker, Bayus, and Kim 2004). For example, channel integration may influence shopping benefits more strongly in terms of risk reduction at a limited-line retailer where customers’ focus is on finding the best alternative. In comparison, customers at a broad-line retailer may

more strongly focus on the joint usage of items so that convenience benefits of channel integration, such as one-stop shopping opportunities, may play a greater role.

By jointly considering channel structures (i.e., the different integration strategies) and assortment structures (i.e., the underlying assortment relations), this article aims to synthesize the controversy over multichannel assortment integration and to differentiate its impact for different retailer types. Our results inform retailers on their integration strategy and help to understand the mechanisms that lead to contrary effects. We will present a conceptual model of multichannel assortment integration and develop hypotheses regarding its impact on shopping benefits and patronage intentions. Two studies investigate the theoretical model under the assumptions of fully and simultaneously accessible channel information (Study 1) and the more realistic customer setting of more uncertain and subsequently accessible channel information (Study 2).

Theory

Conceptual Model

In Fig. 1, we posit that the influence of multichannel assortment integration on patronage intentions for a retailer can be fully explained by perceived shopping benefits (as mediators) and depends on assortment relations (as moderators). Multichannel assortment integration may affect three key shopping benefits that have been shown to have a positive influence on patronage intentions for a retailer: perceived variety (e.g., Arnold, Oum, and Tigert 1983; Borle et al. 2005), perceived convenience (e.g., Keaveney 1995; Seiders et al. 2007), and reduced perceived risk (e.g., Morgan and Hunt 1994; Sirdeshmukh, Singh, and Sabol 2002).

First, perceived variety of an assortment encompasses an assessment of the number of items available and the diversity of those items (Kahn and Lehmann 1991). The positive relationship between perceived variety and patronage intentions holds as long as an overabundance of assortment items does not lead to customer confusion (Iyengar and Lepper 2000). We assume in this study that the overall assortment does not exceed this critical threshold. We suggest that channel and assortment structures influence perceived variety even though the actual variety—the total number of assortment items across a retailer’s channels—is constant.

Perceived risk in assortment choice refers to the uncertainty of whether a product performs according to customers’ expectations (Dowling and Staelin 1994; Shimp and Bearden 1982). Previous research finds that customers rely on diverse retailer signals, such as ads, price or brands, that diminish this uncertainty (e.g., Dawar and Parker 1994; Erdem and Swait 1998; Kirmani 1990). We propose that the retail infrastructure resulting from channel and assortment structures also affects customers’ risk perceptions (Bitner 1992; Ofek, Katona, and Sarvary 2011).

Perceived convenience results from the perceived savings of time and effort during the purchase process, including the stages of search, evaluation, acquisition, and use convenience (Seiders

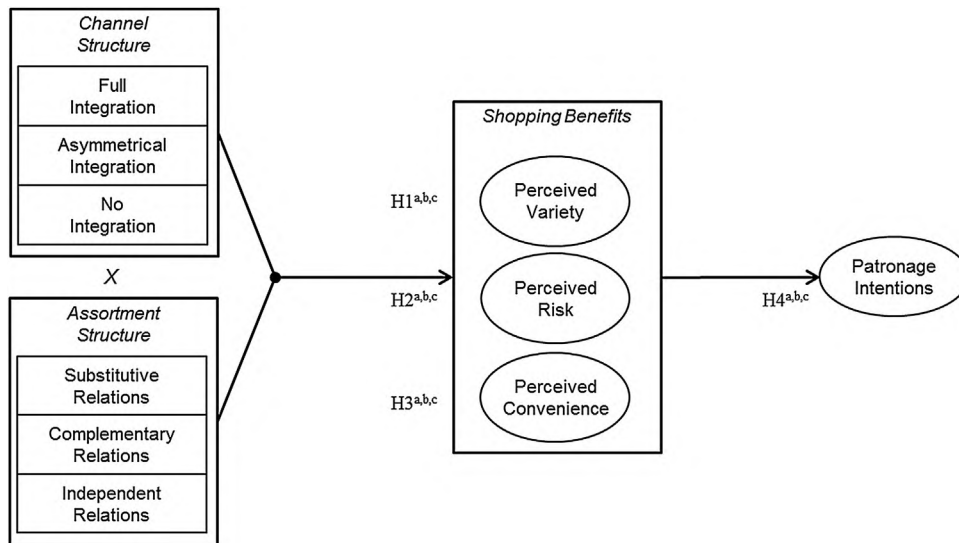


Fig. 1. Conceptual model. ^aContrast between full and no integration with complementary > independent > substitutive relations, except for perceived risk (with substitutive > complementary > independent) and patronage intentions (with no differences across assortment relations). ^bContrast between asymmetrical and no integration with complementary > independent > substitutive relations, except for perceived risk (no differences across assortment relations). ^cContrast between asymmetrical and full integration with substitutive > complementary > independent relations.

et al. 2007). Channel and assortment structures likely influence customers' perceived abilities to organize their shopping process in a comfortable, easy, and effortless way (Verhoef, Neslin, and Vroomen 2007). We will explain in the following sections how channel and assortment structures interact in affecting customers' perceptions of shopping benefits, which ultimately determine patronage intentions. We will propose hypotheses regarding the contrasts of both full and asymmetrical integration to no integration. We will also argue for differences between asymmetrical integration—the most common integration type used by retailers—in contrast to full integration.

Hypotheses

The Effects of Channel and Assortment Structure on Perceived Variety

Compared with no integration, full integration makes all assortment options accessible in each channel, which enhances a customer's mental visualization of the use situations for the assortment items and can therefore increase a customer's perceived variety (Dahl and Hoefler 2004; Hoch, Bradlow, and Wansink 1999). Full integration increases perceived variety for complementary relations because such relations evoke engaging diversity; for instance, customers easily imagine using a DVD player to watch DVD movies (Dahl and Hoefler 2004; Diehl, van Herpen, and Lambertson 2015). Full integration also visualizes more and different use situations for independent relations than for substitutive relations, but these situations are less coherent and thus less effective than those provided by complementary relations.

Although asymmetrical integration has more assortment options in one channel than no integration, customers' perception of the actual increase in assortment options may be biased for substitutive relations (Bell and Bucklin 1999). To compare alternatives, customers use reference points, which, in a

multichannel context, are channel assortments (Lattin and Bucklin 1989). Drawing from negativity bias theory (e.g., Skowronski and Carlston 1987), we expect that customers focus on potential losses ("fewer items in a channel") instead of valuing the actually larger assortment in one channel. For substitutive relations, we therefore expect a detrimental impact of asymmetrical integration on perceived variety compared with no integration. Reference point comparisons and, hence, negativity bias do not occur for items with complementary and independent relations because their use similarity is low. In line with previous arguments, the positive impact of asymmetrical integration on perceived variety (compared with no integration) is stronger for complementary relations than for independent relations.

Compared with full integration, asymmetrical integration has a particularly strong negative impact on perceived variety for substitutive relations due to negativity bias. Compared with full integration, asymmetrical integration also decreases perceived variety for complementary relations, and to a lesser extent, independent relations because the mental visualization of use situations is restricted in one channel.

Hypothesis 1.

- (a) Compared with no integration, full integration increases perceived variety most strongly for complementary relations, followed by independent relations, and least for substitutive relations.
- (b) Compared with no integration, asymmetrical integration increases perceived variety most strongly for complementary relations, followed by independent relations; it decreases perceived variety for substitutive relations.
- (c) Compared with full integration, asymmetrical integration decreases perceived variety most strongly for substitutive relations, followed by complementary relations, and least for independent relations.

The Effects of Channel and Assortment Structure on Perceived Risk

Compared with no integration, full integration represents an investment and makes assortment signals more transparent for customers to perceive and interpret. Assortments with substitutive relations have high use similarity, communicating a retailer's focus on competence and specialization (Berger, Draganska, and Simonson 2007). The enhancement of those competence signals decreases customers' perceived risk most strongly for substitutive relations, followed by complementary relations that still share some similarities with regard to their use context. Full integration for independent relations has the smallest effect on risk because it also strengthens the impression of low specialization by making the low similarity of assortment items more transparent.

Although asymmetrical integration requires higher investments from a retailer than no integration, asymmetrical integration also communicates a prioritization of one channel over the other and thus does not send risk-reducing signals. Customers may infer that the retailer is not willing to fully invest in the quality of all of its channel assortments, so we do not expect an effect of asymmetrical integration on perceived risk at any assortment relations.

In line with the arguments stated above, asymmetrical integration (in comparison with full integration) increases perceived risk most strongly for substitutive relations, followed by complementary relations. However, asymmetrical integration mitigates the risk perceptions from independent relations because asymmetrical integration communicates a focus on a core assortment by making it available in all channels while clearly separating those items with low use similarity. Therefore, asymmetrical integration reduces the perceived risk for independent relations compared with full integration.

Hypothesis 2.

- (a) Compared with no integration, full integration decreases perceived risk most strongly for substitutive relations, followed by complementary relations, and least for independent relations.
- (b) Compared with no integration, asymmetrical integration has no effect on perceived risk across assortment relations.
- (c) Compared with full integration, asymmetrical integration increases perceived risk most strongly for substitutive relations, followed by complementary relations; it decreases perceived risk for independent relations.

The Effects of Channel and Assortment Structure on Perceived Convenience

Compared with no integration, both full integration and asymmetrical integration increase customers' perceived options for more conveniently searching and evaluating alternatives across all assortment relations (Seiders et al. 2007). Regarding acquisition convenience, the necessity to switch channels for purchase is also eliminated for complementary and independent relations. For substitutive relations, the differences to no integration are weaker because at least a restricted set of

same-category products is always available in each channel. Finally, full integration and asymmetrical integration enhance the perceived convenience of jointly using different products only for complementary relations for which synergies in use exist. Thus, we expect complementary relations to have the strongest moderating impact on perceived convenience, followed by independent and substitutive relations.

Asymmetrical integration is inferior to full integration in providing these convenience dimensions due to the restricted access in one channel. As already outlined above, it also provides ambiguous (i.e., positive and negative) cues for reference point comparisons at substitutive relations, which can inflate customers' cognitive effort (Bettman, Luce, and Payne 1998). In contrast, asymmetrical integration at independent relations may even relax the cognitive effort that results from the assessment of negative competence-related signals, as previously discussed. Compared with full integration, asymmetrical integration therefore decreases perceived convenience most strongly for substitutive relations, followed by complementary relations, and least for independent relations.

Hypothesis 3.

- (a) Compared with no integration, full integration increases perceived convenience most strongly for complementary relations, followed by independent relations, and least for substitutive relations.
- (b) Compared with no integration, asymmetrical integration increases perceived convenience most strongly for complementary relations, followed by independent relations, and least for substitutive relations.
- (c) Compared with full integration, asymmetrical integration decreases perceived convenience most strongly for substitutive relations, followed by complementary relations, and least for independent relations.

The Mediating Effects on Patronage Intentions

We propose that the perceived shopping benefits fully explain the effects of multichannel assortment integration on patronage intentions. Compared with no integration, full integration increases patronage intentions equally across all assortment relations, but for different reasons; full integration more strongly increases both perceived variety and perceived convenience for complementary and independent relations, but it more strongly reduces perceived risk for substitutive relations. In summary, these opposing effects counterbalance each other so that full integration increases patronage intentions with no differences across assortment relations.

In comparison with no integration, asymmetrical integration increases patronage intentions less strongly for substitutive relations because increases in both perceived convenience and perceived variety are relatively weaker than those for complementary and independent relations and are not compensated by differences in perceived risk. Following previous arguments, the impact is slightly higher for complementary relations than for independent relations.

Compared with full integration, asymmetrical integration decreases patronage intentions most strongly for substitutive relations according to its relative negative effects on perceived variety and perceived convenience. While asymmetrical integration has also a risk-increasing effect for substitutive relations, it reduces both the perceived risk and the cognitive effort associated with independent relations. Compared with full integration, asymmetrical integration thus decreases patronage intentions most strongly for substitutive relations, followed by complementary relations, and least for independent relations.

Hypothesis 4.

- (a) Compared with no integration, full integration increases patronage intentions equally strongly across all assortment relations.
- (b) Compared with no integration, asymmetrical integration increases patronage intentions most strongly for complementary relations, followed by independent relations, and least for substitutive relations.
- (c) Compared with full integration, asymmetrical integration decreases patronage intentions most strongly for substitutive relations, followed by complementary relations, and least for independent relations.

Study 1

Design and Stimuli

We test our hypotheses in a scenario-based online experiment with a 3 (*channel structures*: full, asymmetrical, no integration) \times 3 (*assortment structures*: substitutive, complementary, independent relations) between-subjects design. The study randomly assigns the respondents to one treatment of channel and assortment structures. We ask the respondents to imagine planning to purchase a set of new products, such as a DVD player, DVD movies, and interior accessories (e.g., pillows and vases). We introduce a fictional retailer (ADASA) using a detailed description of channel characteristics and assortment configurations regarding physical stores and an online shop. In this first study, the respondents simultaneously access full channel information according to the respective treatment; that is, we explicitly state in an overview (using text and illustrations) which assortment items are available and which are not available in each channel (according to the treatment).

Regarding channel structures, we manipulate three levels of channel integration. In the full-integration treatment, the retailer's online shop and physical stores carry the same items. In the asymmetrical-integration treatment, the retailer's online shop carries all of the physical store's items as well as additional items. Carrying larger assortments in an online shop than in physical stores is a frequently used channel-assortment strategy (Zhang et al. 2010). Finally, for the no-integration treatment, the retailer's online shop and stores carry completely different items. Importantly, in all of these treatments, the retailer's actual

overall assortment variety remains constant but only differs in its distribution across channels.³

Our second dimension (i.e., assortment structures) concerns the three types of assortment relations. In all treatments, the retailer offers three basic DVD player brands, which represent reference items for the manipulation of assortment relations. In the case of substitutive relations, the retailer offers the aforementioned three DVD player brands as well as three other brands (not provided in the other treatments). In the case of complementary relations, the retailer offers DVD movies in addition to the three DVD players. In the case of independent relations, the retailer offers interior accessories (e.g., pillows and vases) in addition to the three DVD players (see Fig. 2).

Sample and Measures

A stratified random sample in a major European country is drawn in collaboration with a global marketing research company with quotas on age and gender according to the representative distribution in the population. Of 1,082 participants, we eliminate 123 respondents who needed fewer than eight minutes or more than one hour to complete the survey, interrupted the survey or consistently indicated the same scores in the questionnaire. The final sample of 959 respondents with 51% females has a mean age of 44 years ($SD = 15$ years).

We adapt three items from established scales for perceived variety (Kahn and Wansink 2004), perceived risk (Biswas and Biswas 2004; Inman 2001), and perceived convenience (Paul et al. 2009) (see Appendix A.1 for all items). To measure patronage intentions, we use a five-item scale by Zeithaml, Berry, and Parasuraman (1996), whose items are used in laboratory experiments to assess patronage intentions (e.g., Baker et al., 2002). To account for differences in channel preference, we use a two-item measure by Shim et al. (2001). All items are measured with seven-point scales anchored from 1 = "completely disagree" to 7 = "completely agree." Reliability (α) is satisfactory for all constructs (perceived variety = .97, perceived risk = .93, perceived convenience = .83, patronage intentions = .96, and channel preference = .74). As manipulation checks, we use the statement "Items in the online shop compared to the store are completely different/completely the same" (seven-point scale) for multi-channel integration and a statement of the similarity perception with regard to end use for assortment relations (seven-point scale ranging from 1 = "very dissimilar" to 7 = "very similar"; Shine, Park, and Wyer 2007).

³ We included an additional experimental group ($n = 95$) that allows for an additional validation of the proposed biasing impact of reference points in the case of asymmetrical integration for substitutive relations. This treatment exposes the participants to channels that carry only the same basic set of three DVD players in both channels (i.e., substitutive relations). The treatment provides an additional contrast that contains an actual reduction in overall variety, compared with asymmetrical integration. Please note that no integration contains a reduced actual variety in one channel; the various integrations have the same actual overall variety across channels.

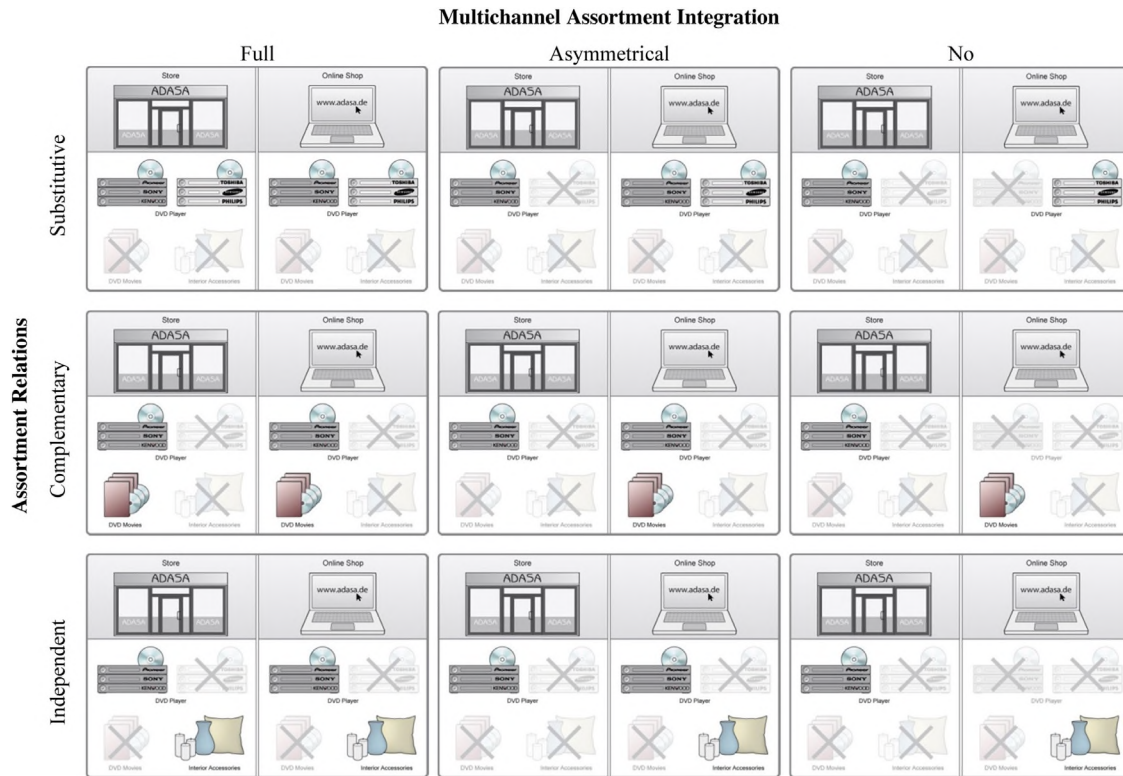


Fig. 2. Experimental manipulations in Study 1.

Manipulation Checks and Validity Assessment

Participants perceive both multichannel integration ($M_{FULL} = 6.00$, $M_{ASYMM} = 4.19$, $M_{NO} = 2.45$; $p < .05$; pairwise post hoc tests) and assortment relations ($M_{SUBST} = 5.91$, $M_{COMPL} = 5.20$, $M_{INDEP} = 2.61$; $p < .05$; pairwise post hoc tests) in line with our intended treatments. We find no significant effect of assortment relations on perceptions of channel assortment integration ($M_{SUBST} = 4.32$, $M_{COMPL} = 4.25$, $M_{INDEP} = 4.22$; ns; pairwise post hoc tests), but we find a significant effect of channel assortment integration on perceptions of assortment relations ($M_{FULL} = 4.80$, $M_{ASYMM} = 4.58$, $M_{NO} = 4.28$; $p < .05$; pairwise post hoc tests). A comparison of the effect sizes of the intended ($\eta^2 = .80$) and unintended manipulations ($\eta^2 = .09$) shows that our experimental manipulations work well because the effect of the unintended manipulation is only marginal. Thus, in line with other experimental research, we conclude that the manipulations are successful (Hennig-Thurau et al. 2006; Perdue and Summers 1986). A realism check using three items ($\alpha = .89$; see Appendix A.1) indicates an acceptable external validity for our experiment ($M = 4.75$, 1 = “completely disagree” and 7 = “completely agree”).

Results

We investigate effects simultaneously in a structural equation model using maximum likelihood because the simultaneous assessment better accounts for dependencies among constructs and allows for more accurate factor measurement (Iacobucci

2010; Zhao, Lynch, and Chen 2010). For the treatments of multichannel assortment integration, we use dummy coding where full integration is coded as (1, 0), asymmetrical integration is coded as (0, 1), and no integration is the omitted base level (0, 0). Because assortment relations do not have a natural base level, we use weighted effect coding, which sets each level in relation to the grand mean of all levels, to analyze whether effects for substitutive, complementary, and independent relations are significantly below or above the average of all assortment relations (coded as (1, 0) and (0, 1), and (-1, -1); cp. Cohen and Cohen 1983).

The measurement model has acceptable internal validity because all factor loadings are above .70 except for perceived convenience (the lowest loading is $-.59$ for the reversed item) which is still in the range of acceptable factor loadings (cp. Tabachnick and Fidell 2007). We allow for covariance between error terms of construct components where items represent the same theoretical facets (Kline 2011). The average variance extracted (AVE) is above .50 for all constructs, and the discriminant validity is acceptable, with the square root of AVE being higher than the correlations between the latent constructs (see Appendix A.2; Fornell and Larcker 1981). Overall, the measurement and structural models fulfill all fit criteria ($\chi^2 = 584.62$, $df = 163$, $RMSEA = .052$, $SRMR = .031$, $CFI = .975$, $TLI = 966$). Tables 1 and 2 show the results of our structural equation model.

Overall, we find that full integration has main effects on all dependent variables, and, to a lesser extent, asymmetrical integration has main effects on patronage intentions, perceived

Table 1
Coefficients for the comparison of full and asymmetrical integration versus no integration (as base level) in Study 1.

	Perceived variety		Perceived risk		Perceived convenience		Patronage intentions	
	β	$t(p)$	β	$t(p)$	β	$t(p)$	β	$t(p)$
Full channel integration	.74*	5.72 (.000)	-.69*	-6.01 (.000)	1.57*	12.70 (.000)	.94*	8.79 (.000)
Asymmetrical channel integration	.22	1.65 (.100)	-.19 [†]	-1.70 (.089)	.82*	6.59 (.000)	.49*	4.59 (.000)
Substitutive assortment relations	.54*	3.94 (.000)	-.06	-.51 (.609)	.51*	3.93 (.000)	.28*	2.55 (.011)
Complementary assortment relations	-.36*	-2.83 (.005)	-.15	-1.34 (.181)	-.21 [†]	-1.77 (.077)	-.10	-.93 (.353)
Independent assortment relations	-.14	-1.04 (.300)	.22 [†]	1.88 (.060)	-.26*	-2.10 (.035)	-.17	-1.60 (.109)
Channel preference (online store/physical store)	.05	1.23 (.217)	-.15*	-3.84 (.000)	.09*	2.25 (.025)	.11*	3.06 (.002)
Full integration × substitutive relations	-.50*	-2.62 (.009)	-.33*	-2.00 (.045)	-.41*	-2.27 (.023)	-.17	-1.12 (.263)
Full integration × complementary relations	.46*	2.61 (.009)	.00	.01 (.995)	.34*	2.03 (.043)	.20	1.44 (.150)
Full integration × independent relations	-.01	-.03 (.977)	.32*	1.99 (.046)	.04	.21 (.832)	-.05	-.34 (.731)
Asymmetrical integration × substitutive relations	-.61*	-3.19 (.001)	.16	.93 (.351)	-.69*	-3.80 (.000)	-.50*	-3.20 (.001)
Asymmetrical integration × complementary relations	.41*	2.27 (.023)	-.14	-.91 (.363)	.44*	2.56 (.010)	.26 [†]	1.82 (.069)
Asymmetrical integration × independent relations	.16	.84 (.402)	.00	.01 (.990)	.20	1.15 (.249)	.19	1.31 (.192)
<i>Patronage intentions</i>								
Perceived variety	.38*	14.90 (.000)						
Perceived risk	-.06*	-2.20 (.028)						
Perceived convenience	.45*	15.38 (.000)						
Channel preference (online store/physical store)	.05 [†]	1.80 (.072)						

* $p < .05$, [†] $p < .10$, two-sided test statistics. For effect coding, the grand mean is used for comparison, which enables us to display coefficients for all assortment relations.

Table 2
Coefficients for the comparison of asymmetrical integration versus full integration (as base level) in Study 1.

	Perceived variety		Perceived risk		Perceived convenience		Patronage intentions	
	β	$t(p)$	β	$t(p)$	β	$t(p)$	β	$t(p)$
Asymmetrical channel integration	-.52*	-4.06 (.000)	.49*	4.40 (.000)	-.74*	-6.09 (.000)	-.45*	-4.29 (.000)
Substitutive assortment relations	.04	.30 (.763)	-.39*	-3.41 (.001)	.10	.79 (.428)	.11	1.03 (.302)
Complementary assortment relations	.10	.81 (.421)	-.15	-1.42 (.157)	.12	1.08 (.280)	.11	1.11 (.266)
Independent assortment relations	-.14	-1.12 (.265)	.53*	4.83 (.000)	-.23 [†]	-1.88 (.060)	-.22*	-2.15 (.031)
Channel preference (online store/physical store)	.05	1.23 (.217)	-.15*	-3.84 (.000)	.09*	2.25 (.025)	.11*	3.06 (.002)
Asymmetrical integration × substitutive relations	-.11	-.60 (.549)	.49*	2.97 (.003)	-.28	-1.59 (.112)	-.32*	-2.13 (.034)
Asymmetrical integration × complementary relations	-.05	-.28 (.776)	-.14	-.95 (.345)	.10	.60 (.550)	.06	.43 (.671)
Asymmetrical integration × independent relations	.16	.88 (.378)	-.31*	-1.98 (.048)	.17	.97 (.335)	.25 [†]	1.67 (.095)

* $p < .05$, [†] $p < .10$, two-sided test statistics. Regression coefficients for the effects of perceived variety, perceived risk, perceived convenience, and channel preferences on patronage intentions are identical with Table 1. For effect coding, the grand mean is used for comparison, which enables us to display coefficients for all assortment relations.

convenience and, in tendency, perceived risk, compared with no integration.⁴ Using effect coding, we test the proposed effect order for assortment relations according to H1a because coefficients indicate for each assortment relation whether the effect of channel integration is higher than, equal to, or lower than the grand mean of assortment relations.

In comparison with no integration, the positive effects of full integration and asymmetrical integration on perceived variety are strongest for complementary relations (i.e., higher than the grand mean; *full*: $\beta = .46$, $t = 2.61$, $p < .05$; *asymmetrical*: $\beta = .41$, $t = 2.27$, $p < .05$), followed by independent relations (i.e., not significantly different from the grand mean; *full*: $\beta = -.01$, $t = -.03$, ns; *asymmetrical*: $\beta = .16$, $t = .84$, ns), and they are weakest for substitutive relations (i.e., lower than the grand

mean; *full*: $\beta = -.50$, $t = -2.62$, $p < .05$; *asymmetrical*: $\beta = -.61$, $t = -3.19$, $p < .05$; see Table 1). As shown in the spotlight analysis of perceived variety (Fig. 3, Panel A), the slope from no integration to asymmetrical integration is negative for substitutive relations at a ten percent significance level ($\beta = -.40$, $t = -1.71$, $p = .090$).⁵ In comparison with full integration, we

⁵ To further validate the detrimental effect of asymmetrical integration for substitutive relations, we contrast this condition with the additional experimental group (cp. Footnote 3) containing an actual reduction in overall variety (the same basic set of only three DVD players in both channels). Asymmetrical integration does not increase perceived variety ($\beta_{ASYMM} = .36$, $t = 1.47$, ns), whereas no integration and full integration both increase perceived variety ($\beta_{NO} = .77$, $t = 3.12$, $p < .05$; $\beta_{FULL} = .98$, $t = 4.02$, $p < .05$). Asymmetrical integration does also not increase patronage intentions compared with the reduced assortment ($\beta_{ASYMM} = -.13$, $t = -.58$, ns). Interestingly, asymmetrical integration induces both higher risk ($\beta_{ASYMM} = .56$, $t = 2.63$, $p < .05$) and lower convenience ($\beta_{ASYMM} = -.55$, $t = -2.43$, $p < .05$). This result is a further validation of the paradoxical finding that asymmetrical integration can be detrimental for substitutive relations even if it actually provides more assortment options.

⁴ Please note that due to the effect coding of assortment relations, the coefficients for full and asymmetrical integration represent main effects even if the model includes interactions (Cohen and Cohen 1983).

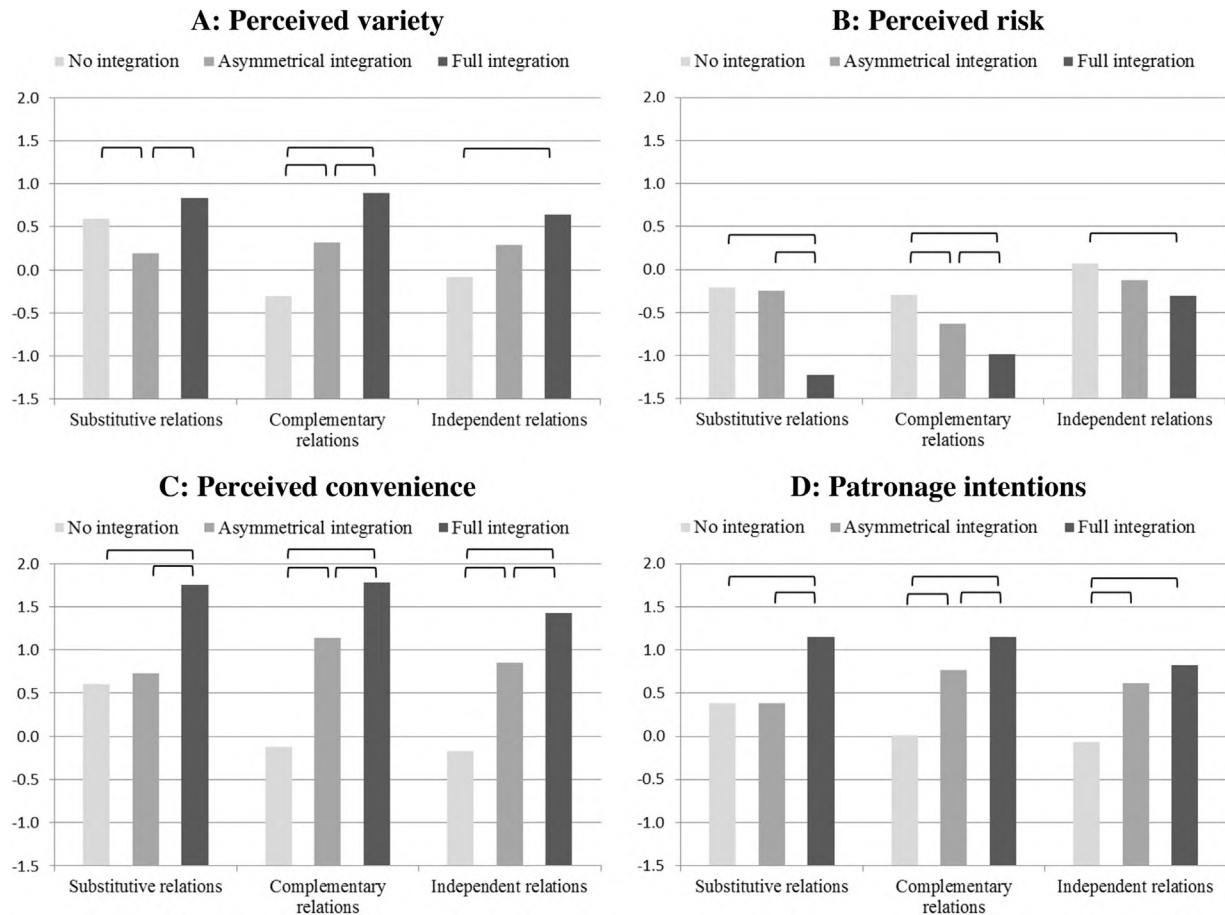


Fig. 3. Spotlight analysis for shopping benefits and patronage intentions in Study 1. Brackets indicate significant slopes (at least $p < .10$).

find a negative main effect of asymmetrical integration on perceived variety ($\beta = -.52$, $t = -4.06$, $p < .05$) but no significant differences across assortment relations (ns) (see Table 2). Thus, the results support H1a–b, but not H1c.

Both compared with no integration and asymmetrical integration, the risk-reducing effect of full integration is strongest for substitutive relations (*full vs. no*: $\beta = -.33$, $t = -2.00$; *asymmetrical vs. full*: $\beta = .49$, $t = 2.97$, $p < .05$) and weakest for independent relations (*full vs. no*: $\beta = .32$, $t = 1.99$; *asymmetrical vs. full*: $\beta = -.31$, $t = -1.98$, $p < .05$), with complementary relations falling in between (*full vs. no*: $\beta = .00$, $t = .01$; *asymmetrical vs. full*: $\beta = -.14$, $t = -.95$, ns). No moderation effects occur for asymmetrical integration compared with no integration (see Table 1). These findings support the proposed order of effects in H2a–c. However, the slope from full to asymmetrical integration is not negative for independent relations as proposed in H2c (ns; see Fig. 3, Panel B).

In line with H3a and H3b, full and asymmetrical integration increase perceived convenience most strongly for complementary relations (*full*: $\beta = .34$, $t = 2.03$, $p < .05$; *asymmetrical*: $\beta = .44$, $t = 2.56$, $p < .05$) and least strongly for substitutive relations (*full*: $\beta = -.41$, $t = -2.27$, $p < .05$; *asymmetrical*: $\beta = -.69$, $t = -3.80$, $p < .05$), with effects for independent relations falling in between (*full*: $\beta = .04$, $t = .21$, ns; *asymmetrical*: $\beta = .20$, $t = 1.15$, ns). In comparison with full integration, the negative

effect of asymmetrical integration tends to be stronger for substitutive relations, but it is not significant ($\beta = -.28$, $t = -1.59$, ns). For complementary and independent relations, no differences to the grand mean exist. Thus, the results fully support H3a–b, but not H3c. Fig. 3 (Panel C) displays the spotlight analysis of perceived convenience.

In comparison with no integration, full integration generally increases patronage intentions across all assortment relations ($\beta = .94$, $t = 8.79$, $p < .05$, no significant interactions). The positive impact of asymmetrical integration (in comparison with no integration) on patronage intentions is weakest for substitutive relations ($\beta = -.50$, $t = -3.20$, $p < .05$) and tends to be strongest for complementary relations ($\beta = .26$, $t = 1.82$, $p = .069$). Compared with full integration, asymmetrical integration decreases patronage intentions most strongly for substitutive relations ($\beta = -.32$, $t = -2.13$, $p < .05$), and, in tendency, least for independent relations ($\beta = .25$, $t = 1.67$, $p = .095$). The findings support H4a–c. Panel D in Fig. 3 shows the spotlight analysis of patronage intentions.

Confirming our overall model, the effects of perceived variety, perceived convenience, and perceived risk on patronage intentions are all significant and fully mediate the relationship between integration types and patronage intentions, which further depends on assortment relations (see Appendix A.3 for tests).

Discussion of Study 1 and Rationale for Study 2

Study 1 establishes a framework for analyzing the benefits of multichannel assortment integration and their impact on patronage intentions, depending on assortment relations. As a core result of Study 1, we find for all assortment relations that full integration dominates no integration. Asymmetrical integration is also more beneficial than no integration, except for substitutive relations. In addition, no integration is rather a theoretical case. Companies usually do not have completely different channel assortments under the same retailer name, but they have at least a partial assortment overlap. Accordingly, participants in the condition of no integration evaluate realism substantially lower than in the asymmetrical and full integration conditions ($M_{NO} = 3.88$ vs. $M_{ASYMM} = 4.74$ and $M_{FULL} = 5.15$; $p < .05$). As no integration is found to be clearly inferior and perceived as unrealistic by the participants based on their retail experiences, we will focus more deeply on the contrast between full integration and asymmetrical integration in Study 2, which will address the following aspects.

First, the impact of multichannel assortment integration may vary depending on whether a customer can assess the channel assortments simultaneously or sequentially. In Study 1, all channel information has been visible to the respondent simultaneously. In reality, customers typically visit a retailer's channels subsequently. Thus, Study 2 will model a more realistic scenario that places the customer into a sequential choice process.

Second, Study 1 has assumed that customers possess full information on channel assortments. Study 2 will introduce a higher uncertainty by not explicitly stating information about unavailable channel assortment items. The explicit statement about unavailable items in Study 1 might create a negative framing, which can potentially affect results. In addition to the higher internal validity, the lack of explicit statements increases external validity because most retailers do not or only covertly provide channel information about unavailable items.

Third, channel characteristics may influence customer perceptions during search stages, which we did not account for in Study 1. In Study 2, we will randomly assign customers to start in the online shop (search stage 1) and proceed in the physical store (search stage 2), or vice versa. Additionally, Study 1 has assumed for asymmetrical integration that the online channel has a larger assortment. In Study 2, we will randomly vary whether the online channel or the physical channel has a larger assortment for asymmetrical integration. Additionally, we will investigate how strongly the impact of asymmetrical integration varies depending on whether a customer's individually preferred products are still available in the channel with the smaller assortment.

Study 2

Method

Overall Treatments

Overall, we use a scenario-based online experiment with a 2 (*channel structures*: full integration, asymmetrical

integration) \times 3 (*assortment structures*: substitutive, complementary, independent relations) between-subjects design. In the full integration condition, the same six products are presented in both channels. In the asymmetrical integration condition, six products are presented in one channel and three out of those six products are presented in the other channel. We randomize the selection of those three items to avoid any confounding bias. For assortment relations, three photo cameras serve as reference items for the manipulation of assortment relations. In the case of substitutive relations, six photo cameras are provided. In the case of complementary relations, three camera bags are provided in addition to three photo cameras. In the case of independent relations, three hair dryers are provided in addition to three photo cameras. Importantly, the actual variety of assortment remains constant across all channel structure and assortment structure conditions.

Scenario

To avoid individual differences in past experiences with a retailer, we invent the fictional retailer "Hensley", a British retail chain that has branches in other countries. The study asks the respondents to imagine wanting to buy a set of new products, such as a photo camera, a camera bag, and a hair dryer. In an extensive scenario description, we detail information on Hensley's physical channel and online channel. We use both text descriptions and image illustrations to allow the respondents to experience the assortments. The respondents are randomly exposed to the online shop or physical store for the first search stage. The channel is first presented in an overall view of products in the channel environment (according to the experimental treatment). After inspecting the detailed product information (each described by four attributes) on the following page, the respondents are told to think about their impressions and are asked to build a consideration set where they should distribute 100% according to their preferences across three products for photo cameras (and camera bags/hair dryers where applicable) (e.g., Day and Deutscher 1982). This information is used for a nested treatment within asymmetrical integration, as explained later.

In an intermission, the respondents solve some unrelated puzzles, which serve as a filler task. The introduction to search stage 2 tells the respondents that they want to gather further information in the other channel. Analogously to search stage 1, products are first presented in the overall channel context and then presented with more detailed product information (according to the experimental treatment). The search process closes with the statement, "You have received an impression of which products are available in the online shop and which products are available in the physical store. You can now decide whether you want to make a purchase at Hensley." The respondents then indicate their patronage intentions and perceived shopping benefits, followed by manipulation and control checks as well as general channel behavior and demographics.

Nested Treatments

To investigate whether the effects of channel structures depend on specific channel configurations or products, we

include additional treatment groups. As already mentioned, the respondents are randomly assigned to an online \rightarrow offline or offline \rightarrow online search process. Second, nested within asymmetrical integration, customers can first be exposed to the channel with the larger or the smaller assortment, which we explicitly consider by assigning the respondents randomly to one of these two nested conditions. Third, for substitutive relations, we additionally manipulate the subjective relevance of unavailable products in the smaller channel of asymmetrical integration. Based on the consideration set measurement after search stage 1, we introduce two additional treatment groups in which the other channel contains none or all of their considered alternatives. By including these additional treatments, we can assess in a sensitivity analysis whether the effects of channel structures hold in general or depend on certain search contexts. In total, we have 22 treatment groups that are used in the overall analysis according to their weighted proportions and that are explicitly differentiated in a sensitivity analysis. Analogous to the reduced (objectively inferior) assortment condition in Study 1, we additionally include two contrast conditions (online \rightarrow offline and offline \rightarrow online) in which only the three basic photo cameras are offered in both channels.

Measures

To measure patronage intentions, we use five items adapted from Baker et al. (2002) and Zeithaml, Berry, and Parasuraman (1996). For perceived shopping benefits, we each use three items for perceived variety (Kahn and Wansink 2004), perceived risk (Biswas and Biswas 2004; Inman 2001), and perceived convenience (Seiders et al. 2007).⁶ As a control measure, we use the two-item channel preference scale by Shim et al. (2001). All constructs (measured on seven-point Likert scales) show satisfactory reliability (α : patronage intentions = .95, perceived variety = .98, perceived risk = .75, perceived convenience = .94, and channel preference = .77).

Sample

We conduct the study in a major European country with quotas for age and gender according to their representative distributions in the population. A global marketing research company invites the respondents to the online experiment, which is accessible between 9 a.m. and 10 p.m. Of 2,370 completed surveys, we eliminate 365 apparently distracted respondents who needed either more than thirteen minutes to answer the four dependent variables, who took only a few seconds to click through the questions or who constantly indicated the same value across questions. The final sample of 2,005 respondents has a mean age of 47 years ($SD = 15$ years) and consists of 47.9% women.⁷

⁶ Some items are improved in comparison to Study 1 by relating them more strongly to assortment perceptions (see Appendix A.1).

⁷ Please note that the sample size is rather small compared with the power requirements of the study due to the randomization of products (twenty combinations) within each cell (average cell size is 84).

Manipulation and Control Checks

We include the same manipulation checks as in Study 1 and use additional control checks for channel and product attitudes. Our manipulations influence perceptions of integration ($M_{FULL} = 5.58$, $M_{ASYMM} = 4.72$, $p < .05$) and assortment relations ($M_{SUBST} = 5.56$, $M_{COMPL} = 4.09$, $M_{INDEP} = 2.25$; $p < .05$; pairwise post hoc tests) in the intended way. For our main manipulations, we do not find a significant effect of channel assortment integration on perceptions of assortment relations ($M_{FULL} = 3.90$, $M_{ASYMM} = 3.95$; ns), but we find a significant effect of assortment relations on perceptions of channel assortment integration ($M_{SUBST} = 4.48$, $M_{COMPL} = 5.42$, $M_{INDEP} = 5.56$; $p < .05$). However, comparing the effect sizes of the intended ($\eta^2 = .40$) and unintended manipulations ($\eta^2 = .07$), the unintended effect is only marginal, which confirms that the manipulations work successfully (Hennig-Thurau et al. 2006; Perdue and Summers 1986).

Next, we examine potential confounding biases regarding our selected product stimuli for assortment relations. Previous research indicates that the adequacy of products for multichannel distribution differs based on their utilitarian and hedonic attributes as well as the inherent product-related risk (Kushwaha and Shankar 2013). Measuring utilitarian versus hedonic product attitudes as control variables (Voss, Spangenberg, and Grohmann 2003), no differences across our stimuli for assortment relations exist ($M_{SUBST} = 4.39$, $M_{COMPL} = 4.34$, $M_{INDEP} = 4.41$, ns; pairwise post hoc tests). The inherent product-related risk (Dowling and Staelin 1994) does not differ across assortment relations ($M_{SUBST} = 2.39$, $M_{COMPL} = 2.48$, $M_{INDEP} = 2.29$, ns; pairwise post hoc tests). The score for realism ($\alpha = .90$) strongly exceeds the scale average ($M = 5.38$) and is considerably higher than in Study 1 ($M = 4.75$), indicating a substantial increase in external validity.

Results

We investigate all effects in the same structural equation framework as in Study 1 using analogous model specifications and coding schemes. That is, we use dummy coding for the treatments of multichannel integration (1 = asymmetrical integration, 0 = full integration) and weighted effect coding for substitutive, complementary, and independent relations (coded as (1, 0) and (0, 1), and (-1, -1), weighted according to the relative proportions). As covariates, we include channel preferences (as in Study 1) and a dummy variable for the direction of shopping paths (offline \rightarrow online is coded as 1). The measurement model shows a satisfactory internal validity with all factor loadings above .70 except for one item of perceived risk (.65). For all constructs, reliability is high ($\alpha > .70$) and discriminant reliability is sufficient ($AVE > .50$ greater than squared construct correlations). The structural model shows a high fit ($\chi^2 = 541.24$, $df = 140$, $RMSEA = .040$, $SRMR = .030$, $CFI = .983$, $TLI = 977$). Table 3 shows the results for our hypothesis testing. Table 4 presents an overview of the hypotheses testing across the two studies.

We find no main effect of asymmetrical integration on any dependent variable compared with full integration (ns).

Table 3
Coefficients for the comparison of asymmetrical integration versus full integration (as base level) in Study 2.

	Perceived variety		Perceived risk		Perceived convenience		Patronage intentions	
	β	$t(p)$	β	$t(p)$	β	$t(p)$	β	$t(p)$
Asymmetrical channel integration	.02	.22 (.827)	-.03	-.46 (.647)	-.01	-.21 (.832)	-.09	-1.11 (.266)
Substitutive assortment relations	.43*	4.64 (.000)	-.23*	-2.72 (.007)	.19*	2.47 (.014)	.19 [†]	1.93 (.054)
Complementary assortment relations	-.13	-1.30 (.194)	-.02	-.23 (.816)	.00	.03 (.978)	.07	.69 (.49)
Independent assortment relations	-.28*	-3.16 (.002)	.23*	2.83 (.005)	-.17*	-2.39 (.017)	-.24*	-.267 (.008)
Channel preference (online store/physical store)	-.06 [†]	-1.78 (.075)	-.01	-.26 (.792)	.06*	2.27 (.023)	-.00	-.07 (.942)
Direction of shopping paths (offline → online)	.16*	2.13 (.033)	.03	.45 (.653)	.05	.83 (.405)	.04	.49 (.623)
Asymmetrical integration × substitutive relations	-.28*	-2.78 (.006)	.23*	2.45 (.014)	-.19*	-2.35 (.019)	-.21 [†]	-1.95 (.051)
Asymmetrical integration × complementary relations	-.03	-.20 (.842)	.06	.57 (.569)	-.05	-.53 (.596)	-.01	-.11 (.91)
Asymmetrical integration × independent relations	.15	1.29 (.196)	-.26*	-2.62 (.009)	.24*	2.58 (.010)	.22 [†]	1.90 (.057)
<i>Patronage intentions</i>								
Perceived variety	.31*	12.23 (.000)						
Perceived risk	-.13*	-4.26 (.000)						
Perceived convenience	.48*	15.15 (.000)						
Channel preference (online store/physical store)	-.01	-.46 (.646)						
Direction of shopping paths (offline → online)	-.03	-.48 (.629)						

* $p < .05$, [†] $p < .10$, two-sided test statistics. For effect coding, the grand mean is used for comparison, which enables us to display coefficients for all assortment relations.

Regarding perceived variety, asymmetrical integration has a significant negative effect for substitutive relations ($\beta = -.28$, $t = -2.78$, $p < .05$), but no effects for both complementary ($\beta = -.03$, $t = -.20$, ns) and independent relations ($\beta = .15$,

$t = 1.29$, ns) (see also Fig. 4, Panel A). Furthermore, asymmetrical integration leads to (1) a significant increase in perceived risk ($\beta = .23$, $t = 2.45$, $p < .05$) and decrease in perceived convenience ($\beta = -.19$, $t = -2.35$, $p < .05$) for substitutive relations, (2) a

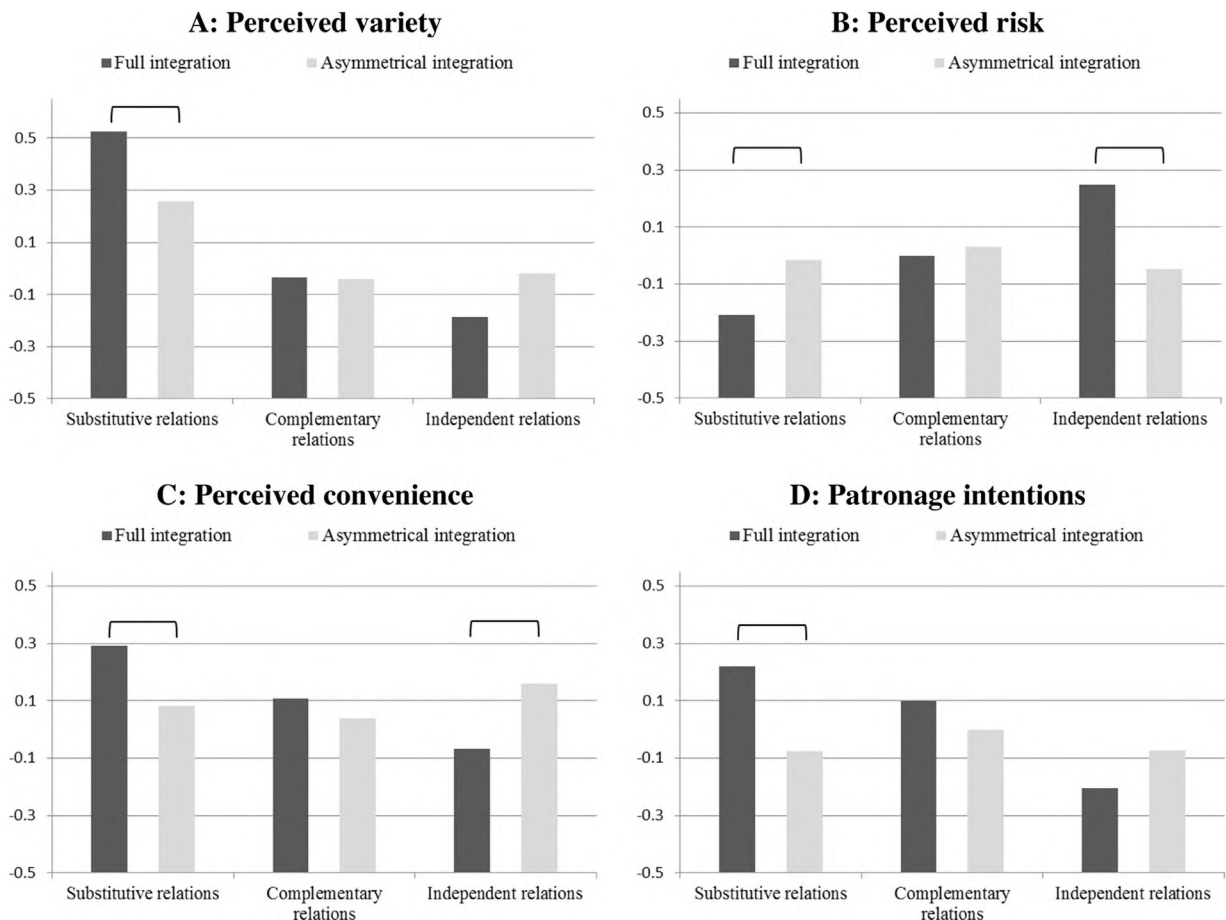


Fig. 4. Spotlight analysis for shopping benefits and patronage intentions in Study 2. Brackets indicate significant slopes (at least $p < .10$).

Table 4
Overview of hypotheses on the order of effects across assortment relations and results from Study 1 and 2.

	(a) Benefits of full integration compared with no integration	Study 1	(b) Benefits of asymmetrical compared with no integration	Study 1	(c) Drawbacks of asymmetrical compared with full integration	Study 1	Study 2
Perceived variety (H1)	Complementary > Independent > Substitutive	sig.	Complementary > Independent > Substitutive	sig.	Substitutive > Complementary > Independent	ns	ps
Perceived risk (H2)	Substitutive > Complementary > Independent	sig.	Complementary = Independent = Substitutive	*	Substitutive > Complementary > Independent	sig.	sig.
Perceived convenience (H3)	Complementary > Independent > Substitutive	sig.	Complementary > Independent > Substitutive	sig.	Substitutive > Complementary > Independent	ns	sig.
Patronage intentions (H4)	Complementary = Independent = Substitutive	*	Complementary > Independent > Substitutive	sig.	Substitutive > Complementary > Independent	sig.	sig.

sig. = significant across all proposed relationships; ps = partially significant (for one proposed relationship); ns = nonsignificant; $p < .10$, see Tables 1–3 for exact p -values.
* Because H2b and H4a are null hypotheses, no significance testing can be applied but the null effect is empirically supported.

significant decrease in perceived risk ($\beta = -.26, t = -2.62, p < .05$) and increase in perceived convenience ($\beta = .24, t = 2.58, p < .05$) for independent relations, and (3) no effect for complementary relations ($\beta = .06, t = .57; \beta = -.05, t = -.53; ns$). Finally, asymmetrical integration decreases patronage intentions for substitutive relations ($\beta = -.21, t = -1.95, p = .051$). The effect of asymmetrical integration on patronage intentions for complementary relations is not different from the grand mean across assortment relations ($\beta = -.01, t = -.11, ns$), and tends to be higher than the grand mean for independent relations ($\beta = .22, t = 1.90, p = .057$). Thus, H1c–4c are confirmed.

Fig. 4 shows the plotted slopes. For substitutive relations, the slope from full integration to asymmetrical integration is significantly negative for patronage intentions ($\beta = -.30, t = -2.27, p < .05$), perceived variety ($\beta = -.27, t = -2.11, p < .05$), and perceived convenience ($\beta = -.21, t = -1.98, p < .05$), and shows a marginally significant risk-increasing effect ($\beta = .19, t = 1.69, p = .091$). For independent relations, the slope from full to asymmetrical integration is significantly positive for perceived convenience ($\beta = .23, t = 2.00, p < .05$) and shows a significant risk-reducing effect ($\beta = -.30, t = -2.42, p < .05$). Overall, we find negative, detrimental effects of asymmetrical integration for substitutive relations and no effects for complementary relations. For independent relations, asymmetrical integration even has positive effects compared with full integration.

Sensitivity Analysis

In a sensitivity analysis, we investigate whether the effects on patronage intentions or perceptions of shopping benefits depend on a specific situational context.

Direction of Shopping Paths (Online → Offline vs. Offline → Online)

We investigate if effects depend on whether customers first visit the offline channel and then the online channel (=1) or vice versa (=0), using a dummy variable. We do not find any significant differences for the effect of integration type (two-way interactions, ns) in general or at any assortment relation (three-way interactions, ns). That is, the direction of shopping paths does not influence patronage intentions or perceptions of shopping benefits.

Order of Exposure to the Larger and Smaller Channel Assortment

As a nested condition within asymmetrical integration, customers can first be exposed to the channel with the larger or smaller assortment. Using a dummy variable (smaller → larger = 1, else = 0), we neither find a general effect of being exposed to the channel with the smaller or larger assortment (ns) nor an interaction effect with assortment relations (ns).

Larger Online Assortment Versus Larger Offline Assortment

For asymmetrical integration, the larger assortment can be located in the online channel or in the offline channel. Using a dummy variable for this nested condition (1 = online > offline, 0 = else), we find that a larger online assortment leads to higher

perceived risk ($\beta = .20, t = 2.63, p < .05$), lower perceived variety ($\beta = -.19, t = -2.10, p < .05$), and, in tendency, lower patronage intentions ($\beta = -.16, t = -1.90, p = .06$) than a larger offline assortment. Regarding risk reduction, a large offline assortment has a higher signaling effect than a large online assortment due to the comparably higher investments required by the retailer. Interestingly, physical environments that provide more sensations than online shops seem to enhance the variety impressions of large assortments. An additional explanation may be that customers have become used to massive online assortments of pure Internet retailers such that extending assortments online differentiates the multichannel retailer less effectively. Importantly, all of the proposed interactions between integration types and assortment relations remain robust. We find no interactions with assortment relations (ns).

Different Levels of Asymmetrical Integration Within a Category

For asymmetrical integration within a product category, the channel in the second search stage may carry different degrees of individually preferred products from the channel in the first search stage. That is, nested in the condition of asymmetrical integration and substitutive relations, we explicitly consider the fit with customer's consideration set (which was studied after the first-stage channel visit).

If the channel in the second search stage contains all products of a customer's individual consideration set, patronage intentions and perceptions of shopping benefits (except for convenience) are directionally increased, but not significantly different from the average slope of asymmetrical integration and substitutive relations (ns). This result shows that even if retailers eliminate only the irrelevant, nonpreferred product alternatives from the smaller channel, asymmetrical integration still leads to detrimental effects. No fit with the consideration set directionally augments the detrimental effects, but not significantly (ns). This finding underscores how substantial the influence of channel structures is, irrespective of the availability of preferred products.

Contrast With a Reduced Overall Assortment

We investigate for substitutive relations the extent to which asymmetrical integration causes negative effects by including additional control groups in which the overall assortment is reduced across channels. In contrast to Study 1, participants recognize a higher variety at asymmetrical integration compared with the reduced assortment ($\beta = .36, t = 2.50, p < .05$), presumably because they subsequently process the assortments in each channel and therefore more strongly build consideration sets. But, even when actively processing the higher variety, asymmetrical integration still does not increase patronage intentions compared with the reduced assortment (ns). Patronage intentions and all shopping benefits are generally enhanced by full integration, but not by asymmetrical integration. This result further substantiates the previous finding that asymmetrical integration does not have beneficial effects at substitutive relations, even when compared with a reduced—objectively inferior—assortment.

General Discussion

Theoretical Findings

The experimental studies demonstrate that the perceived shopping benefits of variety, convenience, and reduced risk fully explain the relationship between multichannel assortment integration and patronage intentions. This article shows that multichannel structures induce different psychological mechanisms, depending on assortment structures, which extends theories related to perceived shopping benefits to the context of multichannel assortment integration.

Perceived variety: In line with the assortment literature that analyzes conditions for deviations between actual and perceived variety (Kahn and Wansink 2004), our article shows that multichannel settings introduce reference points, leading to biased variety perceptions for substitutive relations. Although asymmetrical integration provides more alternatives in one channel than no integration, customers focus on potential losses because they use the larger channel assortment as a reference point to evaluate the seemingly restricted assortment in the other channel. This negativity bias implies that higher product availability in one channel due to multichannel retailing may actually decrease customers' sense of autonomy and freedom of choice, which is an interesting venue for future research.

Perceived risk: The findings show that channel structures interact with the assortment's signaling effect (Berger, Draganska, and Simonson 2007): The positive signaling effect of substitutive relations is realized with full integration but is undermined by asymmetrical integration. In contrast, asymmetrical integration can even offset negative signals from the perceived lack of competence that customers attribute to a retailer based on independent assortment relations (Berger, Draganska, and Simonson 2007). Future research should also investigate how the channel structure moderates spillover effects between channels, similar to the phenomenon of brand extensions (Sood and Keller 2012).

Perceived convenience: Full integration provides a higher accessibility of assortment options and should therefore increase perceived convenience (Berry et al. 2010). However, we find in Study 2 that perceived convenience is higher for asymmetrical integration than for full integration at independent relations. Asymmetrical integration may disburden consumers from cognitive effort associated with the processing of assortments with independent relations, particularly if purchase situations are inherently uncertain (such as in Study 2). This paradox effect may incite research on the relationship between the accessibility of multiple assortment options with independent relations and customer confusion, which to date mainly focuses on substitutive assortment relations (Iyengar and Lepper 2000).

Managerial Findings

This article assesses the importance of multichannel assortment integration, which is a highly relevant decision for retail managers because it is very cost-intensive (Zhang et al. 2010). We synthesize the contradictory arguments in the previous

literature by showing that the impact differs strongly for different retailer types based on their dominant share of assortment relations. A complete assortment separation of channels (i.e., no integration) is clearly inferior to full integration for all retailer types. However, full integration is not superior to asymmetrical integration for every retailer as often proposed in previous discussions. Full integration does not increase patronage intentions for general merchandizers (i.e., with independent relations); on the contrary, general merchandizers can even benefit from asymmetrical integration because it mitigates the impressions of limited expertise and disburdens customers from cognitive effort. Shopping benefits of full integration are stronger for broad-line retailers (i.e., with complementary relations) but they need to clearly communicate the assortment availability in both channels because full integration is less effective if channel information is not simultaneously accessible (as shown in Study 2).

Interestingly, the implications regarding asymmetrical integration controvert some popular beliefs in retailing practice. Specifically, many retail experts suggest that multichannel retailers should generally provide a “long tail” of assortment online, that is, they should extend their assortments in online shops compared with physical stores. Our study is the first empirical investigation to show that the provision of a long tail can have drawbacks for certain types of retailers. Asymmetrical integration is highly detrimental to limited-line retailers (i.e., with substitutive relations) because it undermines competence and expertise as a major value proposition of limited-line retailers, which leads to an increase in perceived risk. The long tail also harms search and evaluation convenience at a limited-line retailer and customers’ variety perceptions become negatively biased which conflicts with the expectations of deep assortments at a limited-line retailer.

As many limited-line retailers have already asymmetrically integrated their assortment (PWC 2012), we want to provide some guidance about how to mitigate the negative effects based on insights from the analysis of shopping benefits. The negativity bias may be less likely to occur if retailers clearly communicate that a larger assortment set in one channel does not discount the assortment options in the other channel by, for example, shifting customers’ reference point to competitors with smaller assortments. As customers even react negatively if the reduction in one channel actually does not concern their preferred products, limited-line retailers must proactively explain why certain

items are only available in one channel and provide compelling arguments that both customers’ convenience and risk considerations are satisfactorily addressed in the channel with the smaller assortment (e.g., by offering additional cross-channel services).

Research Limitations

The choice context of our experimental scenario involves a relatively low number of products. The impact of integration types may differ for assortments whose size inherently leads to customer confusion (Iyengar and Lepper 2000). Additionally, channel and assortment structures may be less easily observable for customers at retailers with very large assortments and more complex categories. However, customers typically consider a limited number of products for their choice (e.g., a consideration set usually consists of only a few items). For these products, customers will be able to observe differences between channels, as modeled in our scenarios. Additionally, the findings were replicated independently across two studies, supporting the validity of the findings.

As a further limitation of this study, retailers should consider not only the effects of multichannel integration on patronage intentions and, in turn, on revenues but also the costs of different integration levels (presumptive integration costs: full > asymmetrical > no). A joint assessment of patronage intentions (i.e., revenue effects) and cost considerations is therefore required. That is, full integration may be only essential for limited-line retailers, while it more strongly depends on cost considerations for broad-line retailers, and it seems to be inferior to asymmetrical integration for general merchandizers in both costs and customer outcomes.

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Appendix A.

A.1. Scales Used in Study 1 and 2

Constructs/scales

Study 1

Patronage intentions (adapted from Baker et al. 2002; Zeithaml, Berry, and Parasuraman 1996)

- I would consider [...] to be my first choice.
- I would do more business with [...] in the next few years.
- I would say positive things about [...] to other people.
- I would recommend [...] to someone who seeks my advice.
- I would encourage friends and relatives to do business with [...].

Perceived variety (adapted from Kahn and Wansink 2004)

- In the assortment of [...], there is much variety.
- The assortment at [...] gives me a lot of variety to enjoy.
- The assortment at [...] offers more ways to enjoy it.

Study 2

- I would consider [...] to be my first choice.
- My willingness to buy at [...] is very high.
- The likelihood that I would buy at [...] is very high.
- I would recommend [...] to someone who seeks my advice.
- I would encourage friends and relatives to do business with [...].

- In the assortment of [...], there is much variety.
- The assortment at [...] gives me a lot of variety to enjoy.
- The assortment at [...] offers more ways to enjoy it.

Constructs/scales	
Study 1	Study 2
Perceived risk (adapted from Biswas and Biswas 2004; Inman 2001)	
I find it very risky to choose products from the assortment at [...].	Choosing products from the assortment at [...] is very risky.
When choosing products from the assortment at [...], I am not sure whether the selected products will perform satisfactorily.	When choosing products from the assortment at [...], I am not sure whether I will find products that meet my expectations.
When choosing products from the assortment at [...], I am not certain whether the selected products will perform as expected.	When choosing products from the assortment at [...], I am not certain whether the selected products will perform as expected.
Perceived convenience (adapted from Paul et al. 2009; Seiders et al. 2007)	
I can do my shopping quickly and easily at [...].	Overall, I can choose quickly and easily from the assortment at [...].
It requires little time and effort to purchase [products] at [...].	Choosing from the assortment requires little time and effort at [...].
It is complicated to do my shopping at [...]. (R)	It is easy to find the products in the assortment I am looking for at [...].
Channel preference (adapted from Shim et al. 2001)	
Where do you usually prefer to search for product information? (information search entirely in stores)–(information search entirely on the Internet)	Where do you usually prefer to search for product information? (information search entirely in stores)–(information search entirely on the Internet)
Where do you usually prefer to shop for products? (shop for products entirely in stores)–(shop for products entirely on the Internet)	Where do you usually prefer to shop for products? (shop for products entirely in stores)–(shop for products entirely on the Internet)
Realism check (own items)	
Retailer [...] and its channels could exist in reality as described.	Retailer [...] could exist in reality as described.
I think the purchase situation at the retailer [...] is realistic.	The described sales channels could exist in reality.
It was very easy for me to put myself into the purchase situation.	I think the purchase situation at the retailer [...] is realistic.
	It was very easy for me to put myself into the purchase situation.

A.2. Descriptives, AVE, and Correlations between Latent Constructs

	Construct	Mean	Std. dev.	1	2	3	4	5
<i>Study 1</i>								
1	Perceived variety	3.23	1.66	.92				
2	Perceived convenience	4.30	1.57	.55*	.69			
3	Perceived risk	3.25	1.58	-.24*	-.49*	.78		
4	Channel preference	4.44	1.24	.05*	.09*	-.13*	.61	
5	Patronage intentions	3.35	1.55	.70*	.69*	-.34*	.11*	.82
<i>Study 2</i>								
1	Perceived variety	4.07	1.59	.93				
2	Perceived convenience	4.91	1.41	.57*	.83			
3	Perceived risk	2.71	1.21	-.33*	-.35*	.51		
4	Channel preference	4.53	1.14	-.05*	.06*	-.01	.62	
5	Patronage intentions	4.07	1.42	.60*	.62*	-.35*	.01	.79

AVE is on the diagonal.

* $p < .05$.

A.3. Bootstrap Results for the Mediation Test (Full Integration as Base Level)

Indirect effects	Lower 95%	β	$t(p)$	Upper 95%
No integration → perceived variety → patronage intentions	-.38	-.28	-4.96 (.000)	-.19
No integration → perceived risk → patronage intentions	-.09	-.05	-1.96 (.050)	-.01
No integration → perceived convenience → patronage intentions	-.84	-.69	-8.12 (.000)	-.55
Asymmetrical integration → perceived variety → patronage intentions	-.28	-.20	-4.00 (.000)	-.12
Asymmetrical integration → perceived risk → patronage intentions	-.07	-.04	-1.85 (.064)	-.01
Asymmetrical integration → perceived convenience → patronage intentions	-.44	-.33	-5.43 (.000)	-.24

Note: We perform a bootstrap analysis to test mediation simultaneously by analyzing indirect effects with no integration, asymmetrical integration, and full integration (base level) as independent variables (draws = 2,500, Zhao, Lynch, and Chen 2010). Results show significant indirect effects of no and asymmetrical integration for the mediators perceived variety, perceived risk, and perceived convenience ($p < .10$). Full mediation is supported; all direct main effects and interaction effects of the contrasts between asymmetrical integration with no integration and with full integration on patronage intentions are insignificant if mediators are included (ns; i.e., fully mediated moderation, cp. Muller, Judd, and Yzerbyt 2005). The contrast between full integration and no integration for patronage intentions is not moderated by assortment relations (ns; i.e., fully moderated mediation, cp. Muller, Judd, and Yzerbyt 2005).

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