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Effects of the most useful offline-online and online-offline channel integration services for consumers

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ABSTRACT

Channel integration services such as click-and-collect provide consumers with a seamless experience across channels. However, research on the effects of simultaneously offered but differently useful offline-to-online (OFF-ON) and online-to-offline (ON-OFF) integration services for consumers is lacking. Managers still find it challenging to decide for those services that increase channel quality and behavioral outcomes. Therefore, this study analyzes ramifications of integration services. The authors apply latent moderated structural equations to analyze mediation paths of most useful OFF-ON and ON-OFF services for consumers to offline and online purchase intentions via perceived quality of offerings in major sales channels. Importantly, they differentiate cross-channel effects and interesting moderators.

Based on data from 722 consumer evaluations of leading omni-channel fashion firms, the results show indirect-only effects. OFF-ON services provide knowledge about and ease of access to both offline and online channels; ON-OFF services show no links to offline channels, i.e., purchase intentions depend on perceived quality of online offerings. Surprisingly, OFF-ON services increase both purchase intentions the most. Additionally, higher levels of consumers' online shopping experience reduce the mediation paths, and higher levels of perceived channel congruence positively and negatively moderate them. Knowing the cross-channel effects of OFF-ON and ON-OFF services that are most important to consumers is essential for decision makers, as they logically matter most to firms in competition.

1. Introduction

Firms use channel integration services, i.e., technology-based solutions that allow consumers to execute different interactive activities across physical and online channels (e.g., [6,61]), to provide consumers with a seamless experience. These services provide consumers knowledge about and ease of access to a channel, i.e., they make a channel more salient, which increases the purchase intention in a channel [31,41]. Offline-to-online (OFF-ON) services support consumers in offline venues to interact with an online channel, e.g., see/order articles not physically available, whereas online-to-offline (ON-OFF) services support consumers to, e.g., pick up/return online purchased articles in offline channels (e.g., [29,32]). However, consumers value integration services differently [2,42,52]. For example, fashion shoppers prefer ON-OFF services the most (click-and-collect/−return, [23]). Moreover, for omni-channel firms that offer a seamless experience by integrating all channels [33], it is still a challenge to decide for appropriate integration services that increase channel quality and behavioral outcomes [6,11]. While extant research stresses the importance of channel integration quality, we show how to reach it for effective decision-making (namely, through offering the most useful integration services for consumers). Therefore, we examine the indirect effects (i.e., mediation paths) of those most useful OFF-ON and ON-OFF services on purchase intentions through the perceived quality of offerings in major sales channels.

In research, integration and decisions across channels have a high priority [16]. Studies have mostly shown indirect effects of perceived integration services on consumer behavior (e.g., loyalty, purchase or repurchase intention, [8,41,49]; see Table 1). They have often studied general channel evaluations that translate integration services through mediators, e.g., offline channel image or quality [50,57,74] or online channel quality or usefulness [31,41,60,72]. These mediators have cross-channel effects on offline or online consumer behavior in omni-channel firms (e.g., [45,61]), which has not yet been simultaneously examined. More importantly, most scholars have provided a joint perspective of channel integration (e.g., [29,59]) or have addressed only OFF-ON or ON-OFF channel integration (e.g., [10,20] or [36,40]). They

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Table 1
Literature review on integration services.

		Effect on various outcomes	
		Direct	Indirect
Directions of integration services	Joint perspective	*Cao and Li* [13]; *Luo, Fan and Zhang* [43]; Melis, Campo, Breugelmans and Lamey [45]; Seck and Philippe [59]; *Tagashira and Minami* [64]	Bendoly, Blocher, Bretthauer, Krishnan and Venkataramanan [8]; Chiu, Hsieh, Roan, Tseng and Hsieh [18]; Frasquet and Miquel [25]; Hamouda [29], Hossain, Akter, Kattiyapornpong and Dwivedi [32]; Li, Liu, Lim, Goh, Yang and Lee [42]; Lee, Chan, Chong and Thadani [41]; Oh and Teo [50]; *Oh, Teo and Sambamurthy* [51]; Schramm-Klein, Wagner, Steinmann and Morschett [57]; Shen, Li, Sun and Wang [60]; Yang, Lu, Chau and Gupta [71]; Zhang, Ren, Wang and He [74]
	Offline to online	Bhargave, Mantonakis and White [10]; Collier and Kimes [20]; Mosquera, Olarte-Pascual, Ayensa and Murillo [48]; Patrício, Fisk and Falcão e Cunha [53]	–
	Online to offline	*Akturk, Ketzenberg and Heim* [2]; *Gallino and Moreno* [26]; *Gao and Su* [27]; Jara, Vyt, Mevel, Morvan and Morvan [36]; Kleinlercher, Emrich, Herhausen, Verhoef and Rudolph [40]; Vyt, Jara and Cliquet [68]	Herhausen, Binder, Schoegel and Herrmann [31]; Murfield, Boone, Rutner and Thomas [49]; Yang, Gong, Land and Chesney [72]
	Both		**This study**

Notes: Studies in *italic* analyze performance (not behavioral) outcomes.

do not yield insights into the effects of the offered but distinctly perceived OFF-ON vs. ON-OFF services.

Scholars in the decision support systems arena study omni-channels (e.g., [7,38,70]) and channel integration (e.g., [33,42,52]) and have also called for respective studies (e.g., [16,60]). We therefore simultaneously study the effects of OFF-ON vs. ON-OFF services that are most useful to consumers. Analyzing ramifications of channel integration can change the results of many studies that analyze only joint or ON-OFF effects (e.g., [29]). Moreover, insights into the effects of offline and online purchase intentions are crucial for decision makers who aim to address consumer preferences in sales channels.

Thus, we aim to answer the research question of whether and how the most useful OFF-ON vs. ON-OFF services for consumers are transformed into offline and online channel purchase intentions. Moreover, we question how two important context factors moderate these effects. Consumers' online shopping experience is an important moderator of the integration service effects [31,60]. Perceived channel congruence is important, as firms spend considerable effort achieving it [41], but its role in the effects of OFF-ON vs. ON-OFF services is unexplored [1,68]. Accordingly, we offer three contributions.

First, we contribute to the extant research by disentangling the effects of the most useful OFF-ON and ON-OFF services for consumers, as those are of paramount importance in the competition of omni-channel firms [33]. Both are may affect purchase intentions differently [10,42]. We initially conceptualize the indirect effects of both services through perceived quality of offerings (also testing direct effects). Moreover, while studies refer to technology acceptance, push-pull-mooring or value theory (e.g., [31,72]), we extend the research by applying accessibility-diagnosticity theory [24]. We argue that channel integration makes sales channels easier accessible and more salient for purchase intention [41]. For consumers, most useful integration service cues become relatively diagnostic for purchase intentions through the perceived quality of offerings. The perceived quality of offerings, such as assortment, price, or store layout, is known to directly affect purchases (e.g., [12]) and makes the services diagnostically. Notably, we study cross-channel links that are fundamental to omni-channel decisions and support decision makers by providing information on the effects of the most useful integration services that should be addressed, as they are likely to increase consumers' cross-channel purchases most.

Second, consumers' online shopping experience, i.e., the extent of their knowledge/experience of searching/purchasing products online [45], is a possible diagnostic cue for purchase intentions. We refer to studies showing that higher levels of experience reduce the effects of ON-OFF services [31] but contribute to research by initially analyzing its role for OFF-ON and ON-OFF services simultaneously [60]. Theoretically, we study whether the original cue, i.e., the services' relative diagnosticity for purchase intentions changes when a possible superior cue, i.e., online shopping experience, is available. In doing so, we provide insights into the conditional effects, i.e., continuous latent moderations on the mediation paths, by using the latent moderated structural equation method (LMS, [17]). Decision makers learn how the increasing online shopping experience will affect the roles of most useful integration services.

Third, firms aim to achieve congruent channels, i.e., synchronizing structures/offerings across channels [9]. The degree to which a customer receives the same response through different channels is seen as crucial for omni-channel retailers (e.g., [6,22]). We therefore add to research by analyzing how perceived congruence as a possible superior cue helps decision makers redirect consumers with integration services or is less effective in steering them to sales channels. Its high levels result in holistic views of consumers (low levels force piecemeal channel evaluations, [28]) and can reduce or increase the role of the perceived quality of offerings and thus the effects of integration services on purchase intentions.

The remainder of this study proceeds as follows. By drawing on theory, we derive hypotheses and test them—after intensive pretests of useful services—based on 722 evaluations of omni-channel fashion firms. After presenting the results, we provide implications and directions for further research.

2. Conceptual framework and hypotheses development

2.1. Framework and theory

To address our aims, we build on accessibility-diagnosticity theory and additionally studies on the effects of perceived integration services on consumer behavior by analyzing the (total) indirect effects of OFF-ON and ON-OFF services on offline and online purchase intention (i.e., the likelihood that consumers use firms' channels to purchase [34], see Fig. 1). Decision makers use integration services to enhance transparency and point consumers to offerings across channels [6,61]. While studies stress the importance of integration quality, we indicate the behavioral relevance of most useful integration services due to consumers' evaluations (see examples in Table 3): OFF-ON services as the perceived access to online stores, product information in online stores, and helpful employees when using its online store; ON-OFF services as information about available products offline, pick up and return of products in offline stores. The perceived quality of offline and online offerings, e.g., assortment or price, represents the channel-specific evaluation of quality or benefits by consumers [1,28]. The mediation

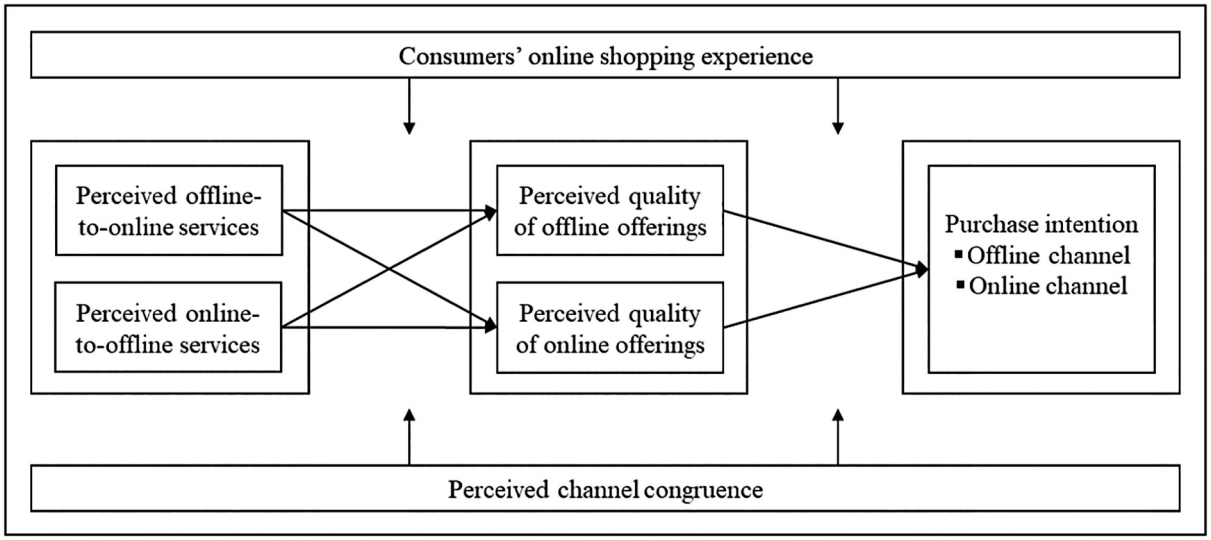

Fig. 1. Conceptual framework.

paths are moderated by consumers' online shopping experiences and perceived channel congruence.

Accessibility-diagnosticity theory provides a congruent, cognitive explanation for our research aims [24]. This theory suggests that the likelihood of using a cue or input for decision-making depends on the specific input's accessibility and its relative diagnosticity. Accessibility refers to the ease and extent of retrieving a cue. This input is more likely to be used for evaluation when it is easily recalled from the mind and perceived as useful. Relative diagnosticity refers to the extent to which the inferences based on this input can be used to make a decision, i.e., the degree to which the input is decision relevant [44]. In decisions, all available cues are utilized, although their relevance for evaluation differs. The most accessible, diagnostic input, i.e., the superior cue, will be more relevant [46]. Boundary conditions as further diagnostic cues can change the relevance. However, even if such a higher-order cue is available, the lower-order cue still operates and is attenuated with the availability of a higher-order cue [24].

In an omni-channel firm's context, multiple cues exist to consider for decision-making. The probability that OFF-ON and ON-OFF services are used to evaluate firms' channels in purchase decisions is a function of the accessibility and relative diagnosticity of these cues. Although the services are accessible and useful, they may not be equally relevant for offline or online purchase intentions (i.e., one dominates, [3,44]). They become relatively diagnostic by affecting the perceived quality of offerings (rendering information predominant for purchase decisions). The latter are known to have channel-specific relevance, e.g., perceived quality of offline (online) offerings will contribute most to offline (online) purchase intentions. Whether perceived OFF-ON and ON-OFF services enhance perceived qualities and purchase intentions is the subject of the next steps in our analysis.

Boundary conditions will moderate the mediation paths. The relative diagnosticity of the original input (useful integration services) diminishes if a more diagnostic, superior cue is available [24]. For example, individuals tend to rely on their online shopping experience for evaluations and rate further accessible cues as less useful [58]. For consumers with higher levels of online shopping experience, perceived OFF-ON services might lose their relative diagnosticity in purchase decisions and might just be seen as services added to existing online services. Higher levels of perceived channel congruence affect the diagnosticity by promoting a more holistic evaluation of channels and their relevance [9,28]. The mediation paths are likely to be reduced or increased, as higher channel congruence as a superior cue affects the processing of inputs in mind [3,69].

Next, we provide hypotheses for the mediation paths and moderations referring to theoretical rationales and empirical studies. We are interested in the cross-channel indirect and total effects (of OFF-ON vs. ON-OFF services on purchase intentions via the quality of offerings) in offline and online purchases.

2.2. Hypotheses development

2.2.1. Mediation paths of the integration services

Although most useful integration services are easily accessible in consumers' minds, we believe they do not directly affect purchase intentions in omni-channel firms (e.g., [42]). We hypothesize indirect effects using theoretical reasoning for the mediation paths of OFF-ON vs. ON-OFF services on purchase intentions across channels through perceived quality of offline vs. online offerings.

In *offline purchase decisions*, the most useful OFF-ON and ON-OFF integration services become theoretically diagnostic when consumers link them to the quality perceptions of channel offerings. Both services may be easily accessible and a relative diagnostic input for offline decision-making [44]. However, differences in the mediation paths are likely due to channel-specific relevance, as for offline purchases, consumers rely on the channel-specific quality of offline offerings [12]. Reduced cross-channel effects from both services via the perceived quality of online offerings are logical [63]. Moreover, OFF-ON services certainly dominate in relevance, as they put consumers at ease and make the quality of offline and online offerings more salient [10]. We conclude that OFF-ON (vs. ON-OFF) services more strongly enhance offline purchase intention via the perceived quality of offline (vs. online) offerings and that both services become more diagnostic.

In *online purchase decisions*, we similarly assume differences in the usefulness and relevance of the services [44]. Here, consumers rely more on the channel-specific quality of online offerings and predominantly on ON-OFF services, which expands their salience through this quality perception [47]. As ON-OFF services also provide consumers with knowledge about offline channel offerings, cross-channel links are logical. We conclude that ON-OFF (vs. OFF-ON) services become more diagnostic for online purchase intentions through online (vs. offline) quality perceptions. Moreover, due to the channel specificity, OFF-ON services will also proceed more strongly via the perceived quality of online offerings.

Empirical studies on OFF-ON or ON-OFF services in the review in Table 1 showed that OFF-ON (or ON-OFF) services are only valuable for offline (or online) behavior (e.g., [53]), whereas crosswise ON-OFF

services are only weakly linked to offline outcomes (e.g., via online evaluations, [31]). In contrast, studies using a joint integration construct show indirect links to offline and online behavior (e.g., [25,71]). We refer to theory and propose the following (additionally testing further relationships mentioned):

H1. : The indirect effects of (a) OFF-ON services and (b) ON-OFF services on offline purchase intention are stronger through the perceived quality of offline (vs. online) offerings.

H2. : The indirect effects of (a) OFF-ON services and (b) ON-OFF services on online purchase intention are stronger through the perceived quality of online (vs. offline) offerings.

2.2.2. Role of Consumers' online shopping experience

Consumers in omni-channel systems may rely on their online shopping experience, as a superior cue and experience is likely to affect the mediation paths. As consumers' online shopping experience theoretically interferes with OFF-ON and ON-OFF channel integration services' accessibility and diagnosticity across channels, we hypothesize its moderation for the total effects in parallel mediation models.

In *offline purchase decisions*, consumers' online shopping experience provides additional knowledge, and consumers are less likely to value further accessible cues from memory for purchase intentions [46]. According to the literature, online experience as a superior cue in omni-channel systems interferes with the retrieval of further accessible cues [45,58]. Therefore, we argue that consumers with higher levels of online shopping experience find accessible integration services less useful in assessing the quality of offline and online offerings for offline purchase intentions [60]. The most useful OFF-ON and ON-OFF channel integration services become less diagnostic. Their total effects on offline purchase intentions will be reduced.

In *online purchase decisions*, consumers' online shopping experience also affects their responses to perceived integration services. Highly experienced consumers are more confident in online shopping environments and less dependent on channel integration services [45]. They may even see integration as another service that has been added to existing online services. According to the theory, these consumers rate accessible integration services as less useful, and therefore, the total effects of OFF-ON and ON-OFF services on online purchase intention will be reduced. The experience itself becomes a superior cue and relatively diagnostic for purchase intention (e.g., [58]).

Few studies in the literature review support our reasoning. Studies show for highly experienced consumers decreasing ON-OFF service-online channel quality-channel outcomes-links [31] and find a diminishing moderation of online usage experience and joint integration services on omni-channel service usage [60]. We hypothesize the following:

H3. : Higher levels of consumers' online shopping experience negatively moderate the total effects of (a) OFF-ON services and (b) ON-OFF services on offline purchase intention.

H4. : Higher levels of consumers' online shopping experience negatively moderate the total effects of (a) OFF-ON services and (b) ON-OFF services on online purchase intention.

2.2.3. Role of channel congruence

Perceived channel congruence is important because it supports a valued exchange between channels for consumers and influences the information processing of channel evaluation (e.g., [41,45]). A high level of perceived congruence leads to a more holistic assessment of channel offerings, i.e., consumers rely on pre-existing information in mind [9,69], while a low level forces a piecemeal channel evaluation [28]. We therefore see congruence as a possible superior cue and an important moderator in particular for the indirect paths through the perceived quality of offline and online offerings.

In *offline purchase decisions*, a more holistic evaluation evoked by higher levels of perceived channel congruence may reinforce the most useful integration services' diagnosticity through channel-specific offerings [3]. A more holistic evaluation theoretically reduces the channel-specific relevance of the quality of offline offerings and respective diagnostic paths of OFF-ON and ON-OFF integration services, as both offerings are perceived as more congruent and thus relevant for purchase intentions [66]. The perceived quality of online channel offerings gains salience, while the channel-specific quality of offline channel offerings loses relevance for intentions [5,9]. In contrast, a lower level of perceived congruence will strengthen the paths initially hypothesized. In summary, the paths of both services through the perceived quality of offline offerings become less useful and diagnostic, while those through the perceived quality of online offerings gain relevance.

In *online purchase decisions*, higher levels of perceived channel congruence may similarly reinforce most useful integration services' diagnosticity through the quality of perceived offline offerings, while the channel-specific quality of online offerings loses relevance [3]. Theoretically, an increasing (decreasing) diagnosticity of integration services via the quality of offline (vs. online) offerings is likely. In contrast, lower levels of congruence, i.e., a piecemeal channel evaluation, will maintain the paths of integration services through online quality [9,69]. In summary, with an increasing level of perceived congruence, the paths of both services through the perceived quality of online offerings become less useful and diagnostic, while those through the quality of offline offerings gain relevance.

This moderator has seldom been studied in our context. Scholars show that high congruence leads consumers to evaluate sales channels more holistically [69]. Further studies are inconclusive, e.g., showing that congruent channels positively affect online perceptions and purchase intention [22] vs. decrease the online evaluations-online behavior-links [14]. We refer to theory and hypothesize the following:

H5. : With higher levels of perceived channel congruence, the indirect effects of OFF-ON services and ON-OFF services on offline purchase intention are moderated (a) negatively via the perceived quality of offline offerings and (b) positively via the perceived quality of online offerings.

H6. : With higher levels of perceived channel congruence, the indirect effects of OFF-ON services and ON-OFF services on online purchase intention are moderated (a) negatively via the perceived quality of online offerings and (b) positively via the perceived quality of offline offerings.

3. Empirical study

3.1. Sample selection

For the empirical study, we carefully chose one retail sector, leading firms and face-to-face interviews.

We chose fashion retailing for several reasons. It is one of the largest retail sectors in most Western economies with high shares of online or omni-channel sales (40% of online sales shares are forecast in the U.S. or Germany for 2023, [54]). Consumers buy across channels and take advantage of integration services. For example, in Germany, 50% of offline sales occur after ON-OFF service usage, and 25% of online sales occur after OFF-ON service usage [54]. Retail firms and verticals dominate here. We selected the leading four omni-channel pure fashion firms in Germany (due to sales in 2017). These firms—two former offline retailers and two verticals—have stores in suburban areas across the country and online stores. They are omni-channel, and their OFF-ON and ON-OFF services are likely to be well known. We ensured the offer of services in five areas: integrated information access, product/price information, promotions, transactions, and order fulfillment [51]. This procedure is superior to choosing one firm or various firms selected by consumers.

To improve data quality and reduce nonresponse bias, we conducted

Table 2
Sample characteristics.

	Realized quota sample (in %)			Planned quota sample (in %)		
	Male	Female	Total	Male	Female	Total
	Fashion sector (N = 722)					
Age 15–29	14.0	13.9	27.9	12.3	11.5	23.8
Age 30–39	8.3	8.7	17.0	8.2	8.0	16.2
Age 40–69	25.1	30.0	55.1	28.4	31.6	60.0
Total	47.4	52.6	100.0	48.9	51.1	100.0

face-to-face in-home interviews by using standardized questionnaires [30]. To develop the sample in 2018, quota sampling was employed for 1000 consumers (with a national distribution according to age and gender). Respondents were recruited from an existing consumer panel in a typical midsized city and had to have made offline and online purchases at the selected firms in the last year [42]. We asked individuals to participate by e-mail/phone by providing general information about the research. At least 1550 individuals who followed the intended quotas were contacted until 1000 agreed to participate. They were visited by 15 trained interviewers during one week (twice when a first attempt failed). Approximately 100 respondents each were not available or canceled their appointments. The multi-stage response rate was 50.9% and 79.0% for the final stage. The average interview length was 20 min.

In a screening phase, respondents were first asked to name and identify the fashion firms they knew (awareness, [5]). They next indicated the firms where they had shopped during the last year (based on a list that included the preselected firms and a 5-point Likert-type scale from 1 = I don't purchase at the firm's offline/online channel to 5 = I purchase at the firm's offline/online channel very often). Respondents who had at least occasionally (=2) shopped at the firms' offline and online channels were interviewed. A total of 762 respondents had purchased from both channels of at least two of the selected firms. We randomly chose one of both firms for evaluation: better/weaker known for a first/s respondent. Twenty-four incomplete cases emerge. Sixteen cases were omitted based on the Mahalanobis distance. This procedure led to 722 observations. With respect to the quotas, the 15–29 age group was slightly overrepresented; the 40–65 age group was slightly underrepresented (see Table 2).

Prior to the analysis, we tested for univariate and multivariate normality. All values indicated that the data were normally distributed. We chose the maximum likelihood estimator.

3.2. Measurement

We used scales from previous studies (all based on seven-point Likert-type scales, e.g., from 1 = strongly disagree to 7 = strongly agree) and additionally provided pretests.

Table 3
Selection of perceived integration services (pretest).

	Importance			Usefulness			Stages of consumer journey		
	MV/ Std.	*t*-test	*p*	MV/ Std.	t-test	*p*	Pre-purchase	Pur-chase	Post-purchase
Perceived OFF-ON services									
The firm advertises the website at its local stores.	3.0/ 1.3	−3.219	0.004	3.2/ 1.4	−2.238	0.036	X		
The physical store provides Internet kiosks for customers to place orders for out-of-stock items.	3.6/ 1.8	0.554	0.585	3.8/ 1.8	1.374	0.183	X		
The firm provides access to the website within its stores.	5.1/ 1.5	6.952	0.000	5.5/ 1.6	7.666	0.000	X		
The employees at firm's stores are knowledgeable and helpful regarding the use of the website.	5.2/ 1.6	5.298	0.000	5.5/ 1.4	5.058	0.000		X	
The firm allows customers to access their prior integrated purchase history.	2.6/ 1.3	−2.545	0.018	2.9/ 1.3	−1.207	0.240		X	
The local store allows checking for inventory status of products available in the online store.	5.4/ 1.4	5.789	0.000	5.8/ 1.4	9.660	0.000		X	
The gift coupons or vouchers issued by the store can be redeemed either online or offline for the next purchase.	4.5/ 1.9	0.632	0.534	4.7/ 1.9	0.295	0.087			X
The website provides post-purchase services such as support for the products purchased at physical stores.	3.8/ 1.9	0.312	0.758	3.8/ 1.9	0.564	0.579			X
The firm makes future purchase recommendations based on past consolidated online and offline purchases.	2.9/ 1.3	−3.325	0.003	3.4/ 1.3	−1.704	0.102			X
Perceived ON-OFF services									
You can receive nonproduct information on firm's stores (e.g., driving directions) via e-mail contact or other electronic communication made available through firm's website.	3.4/ 1.8	−3.352	0.001	3.9/ 1.9	−0.505	0.615	X		
The firm advertises its local stores through the website.	3.4/ 1.6	−3.418	0.001	4.1/ 1.7	0.507	0.613	X		
The website provides interactive access to the customer service assistant through a real-time chat program.	3.1/ 1.6	−5.378	0.000	3.5/ 1.8	−7.811	0.000	X		
The website allows customers to search for products available in the physical store.	6.0/ 1.2	16.787	0.000	6.2/ 1.1	19.720	0.000		X	
The firm allows customers to make payment in the physical store for their online purchases.	3.2/ 1.8	−4.163	0.000	3.4/ 1.7	−3.546	0.001		X	
The firm allows consumers to purchase items through firm's website and pick them up in physical stores.	5.9/ 1.3	15.175	0.000	5.9/ 1.3	14.954	0.000		X	
The firm accept returns at its stores for purchases made through firm's website.	5.8/ 1.2	14.497	0.000	6.0/ 1.2	17.609	0.000			X
The in-store customer service center accepts repair or exchange of products purchased online.	3.9/ 2.0	−0.186	0.853	4.1/ 2.0	0.462	0.645			X
After each purchase, the website customizes webpages for customers based on past consolidated online and offline purchases.	2.7/ 1.4	−9.650	0.000	3.0/ 1.7	−5.772	0.000			X

Notes: N = 106, MV/Std. = Mean value and standard deviation. Items selected for this analysis (in italic) show the most positive mean difference due to *t*-tests to the neutral point of 4.0. All items measured on 7-point Likert-type scales: 1 = not important (useful) at all, 7 = very important (useful).
*** $p < .001$; ** $p < .01$; * $p < .05$; ns = not significant.

Table 4
Reliability and validity of measurements.

	MV/ Std.	FL	KMO	ItTC	α	OFPI		ONPI	
						CR	λ	CR	λ
If you think about the [offline/online] store of [firm], to what extent would you shop there, please rate on a 7-point scale … Offline purchase intention (adapted from [56])									
If I find something I like, it's likely that I'll shop at the [firm's] offline store.	5.3/ 1.5	0.909	0.772	0.871	0.939	0.897	0.910	–	
If I find something I like, it's probable that I'll shop at the [firm's] offline store	5.7/ 1.3	0.919		0.878			0.917		–
If I find something I like, it's possible, that I'll shop at the [firm's] offline store	5.4/ 1.4	0.924		0.881			0.924		
Online purchase intention (adapted from [56])									
If I found something I like, it's likely that I'll shop at [firm's] online store.	4.0/ 1.8	0.914	0.772	0.887	0.953	–		0.954	0.918
If I found something I like, it's probable that I'll shop at [firm's] online store.	4.6/ 1.7	0.934		0.901			–		0.932
If I found something I like, it's possible, that I'll shop at [firm's] online store.	4.3/ 1.8	0.954		0.916					0.953
Please rate on a 7-point scale to what extent [firm] usefully provides the following … Perceived OFF-ON services									
When I purchase from [firm's] offline store, the firm provides access to its online store.	3.7/ 2.0	0.920	0.690	0.762	0.829	0.835	0.894	0.835	0.892
When I purchase from [firm's] offline store, I can inform myself about available products in its online store.	4.3/ 1.8	0.717		0.650			0.743		0.744
When I purchase from [firm's] offline store, employees are helpful when using its online store.	3.7/ 1.8	0.728		0.657			0.735		0.735
Perceived ON-OFF services									
When I purchase from [firm's] online store, I can inform myself about the availability of products in its offline store.	5.1/ 1.8	0.902	0.663	0.731	0.804	0.821	0.900	0.821	0.898
When I purchase from [firm's] online store, I can pick up the product from its offline store.	5.4/ 1.6	0.821		0.695			0.819		0.820
When I purchase from [firm's] online store, I can return the product to its offline store.	4.8/ 1.8	0.602		0.555			0.596		0.596
Please rate the quality of the offerings offered by [firm] on a 7-point scale … Perceived quality ~~of~~ offline offerings (e.g., [19] and [73])									
[Firm's] offline store has a good variety of products.	5.3/ 1.2	0.612	0.657	0.492	0.799	0.749	0.680	0.756	0.652
I like the store layout of [firm's] offline store very much.	5.4/ 1.2	0.702		0.559			0.663		0.791
I think the prices at the [firm's] offline store are always reasonable.[a]	5.1/ 1.2	–		–			–		–
[Firm's] offline advertising is very informative.	4.5/ 1.3	0.545		0.489			0.520		0.812
Perceived quality of online offerings (e.g., [19] and [73])									
[Firm's] online store has a good variety of products.	5.6/ 1.1	0.624	0.680	0.554	0.789	0.753	0.658	0.798	0.652
I like the store layout of [firm's] online store very much.	5.4/ 1.2	0.864		0.704			0.791		0.792
I think the prices at the [firm's] online store are always reasonable.[a]	5.4/ 1.2	–		–			–		–
[Firm's] online advertising is very informative.	5.4/ 1.3	0.764		0.650			0.808		0.812
Please rate your online shopping experience with [firm] on a 7-point scale … [21]									
I have often shopped at [firm's] online store.	3.6/ 1.9	0.907	0.747	0.894	0.965	0.966	0.908	966	0.910
I am very familiar with [firm's] online store.	3.5/ 1.9	0.955		0.929			0.957		0.957
I have many experience with [firm's] online store.	3.3/ 1.9	0.989		0.953			0.987		0.986
Please rate the congruence of the offline and online store of [firm] on a 7-point scale … [5]									
The offline and online store of [firm] are similar.	4.8/ 1.2	0.784	0.813	0.716	0.864	0.867	0.791	0.867	0.791
The service/functions in offline and online store of [firm] are consistent.	4.8/ 1.3	0.747		0.687			0.758		0.758
The online store represents the offline store of [firm].	4.9/ 1.4	0.897		0.799			0.881		0.881
The offline and online store are typical for [firm].	5.3/ 1.2	0.707		0.653			0.712		0.712

Confirmatory model fits: Model 1: CFI 0.971, TLI 0.964, RMSEA 0.047, SRMR 0.043, $\chi^2(188) = 485.715$.
Model 2: CFI 0.969, TLI 0.962, RMSEA 0.049, SRMR 0.043, $\chi^2(188) = 519.490$.
Notes: OFPI=Offline purchase intention, ONPI=Online purchase intention, MV/Std. = Mean values and standard deviations; FL = Factor loadings (exploratory factor analysis); KMO=Kaiser-Meyer-Olkin criterion (≥0.5), ItTC=Item-to-total correlation (≥0.3), α = Cronbach's alpha (≥0.7), CR = Composite reliability (≥0.6), λ = Standardized factor loadings (confirmatory factor analysis) (≥0.5). All items measured on 7-point Likert-type scales: 1 = strongly disagree, 7 = strongly agree. [a]Item deleted due to low factor loading.

Purchase intention was measured for both channels with three items each: "if I find something I like, it is (1) likely, (2) probable, (3) possible, that I will shop at the [firm's] offline/online store" [56].

Pretests were used to identify the most useful integration services. We selected 35 OFF-ON and ON-OFF services from the literature (e.g., [8,18,51]). Twenty-three graduate students rated the nine best-known OFF-ON and ON-OFF services (also offered by our firms). These were evaluated by undergraduate students regarding importance and usefulness ($n = 106$, see Table 3) as follows: "please rate how important (useful) are the following integration services provided by fashion firms in general (1=not important (useful) at all to 7=very important (useful))." A clear preference for three OFF-ON services emerged (over the neutral point, $M_{important} = 5.4–5.1$, $p < .05$, $M_{useful} = 5.8–5.5$, for H_0: $\mu = 4$): access to online stores, online products, employee help. These were ranked 1st-3rd place in 59–70% of the cases (the fourth item, gift coupons for a next purchase, was ranked 1st-3rd in 27% of the cases). Similarly, three ON-OFF services were selected ($M_{important} = 6.0–5.8$, $M_{useful} = 6.2–5.9$, $p < .05$, for H_0: $\mu = 4$): product information, click-and-collect, and returns (ranked 1st-3rd place in 63–74% of the cases). In the main survey, we also asked, "please rate on a seven-point scale to what extent [firm] usefully provides the following (see Table 4): when I purchase from [firm's] offline store, (1) it provides access to its online store, (2) I can inform myself about available products in its online store, (3) employees are helpful when using its online store;" for ON-OFF services: "when I purchase from [firm's] online store (1), I can inform myself about the availability of products in its offline store, (2) I can pick up the product from its offline store, and (3) I can return the product to its offline store."

The perceived quality of offline and online offerings was measured by typical channel attributes in the fashion sector [1,28]. We used one item per attribute for the offline and online channels: "[firm's] offline/online store has a good variety of products; I like the store layout of [firm's] offline/online store very much" and "I think that the prices at [firm's] offline/online store are always reasonable; [firm's] offline/online advertising is very informative" [19,73].

Consumers' online shopping experience was measured with the following three items: "I have often shopped at [firm's] online store; I am very familiar with [firm's] online store; I have many experience with [firm's] online store" [21]. Perceived channel congruence was measured with four items: "the offline and online stores of [firm] are similar; the service/functions in the offline and online stores of [firm] are consistent; the online store represents the offline store of [firm]; the offline and online stores are typical for [firm]" [5]. We additionally obtained an "objective" measure. Six fashion experts (CEOs/professors) evaluated the congruence of the offline and online channels of our firms with six items [5,9]. Higher/lower congruent groups emerge: $M_{high1} = 6.4$, $M_{high2} = 5.7$ vs. $M_{low1} = 3.0$, $M_{low2} = 3.1$. The higher congruent firms were also ranked in 1st and 2nd place in 67–100% of the cases.

We used covariates because offline and online purchase intentions are likely to be affected by gender (0/1 = male/female) and age [34]. We also controlled for general internet expertise, as users with high expertise are more confident in using online shops ("How would you characterize your level of expertise with the internet?" [47]).

We tested for the nested data structure and found only small intra-class correlations (025/0.002 for offline/online purchase intentions). No additional explanations of variance were found; hypotheses were not tested with multilevel modeling.

The reliability of the measurements was confirmed (see Table 4). The values for construct and convergent validity were above the common thresholds. The average variance extracted values exceeded the squared correlations of the constructs and supported discriminant validity (see Table 5). The fit values for the confirmatory models were satisfactory.

Common method variance (CMV) was addressed by using an appropriate questionnaire design. A single-factor test was performed (with lower fit values than the proposed model: offline/online purchase intention: $\Delta\chi^2\,(24) = 2834.24$, $p < .001/\Delta\chi^2\,(24) = 2868.78$, $p < .001$). We applied the marker variable technique by using self-efficacy, which is theoretically unrelated to our constructs but is similar in content/format and has some correlations with quality measures (see Web Appendix A). It was measured with three items ("I am able to achieve the goals that I have set for myself; compared to other people, I can do most tasks well; even when things are tough, I can perform quite well," [15]). The highest amount of method variance was 16.80% (lower than in former research, see Web Appendix A). The coefficients and correlations showed no significant changes, and CMV appeared not to be a problem in this study.

3.3. Method

We tested for endogeneity with the instrumental variable (IV) method to control for omitted variables ([4], see Web Appendix B). Antecedents of perceived integration services were used as IVs. Offline store accessibility as an important antecedent of ON-OFF services (e.g., [37]) was measured with one item ("I can easily reach the offline store of [firm]," [65]). Perceived online service quality as an important antecedent of OFF-ON services (e.g., a first step toward stimulating consumer interest, [60]) was measured with one item: "[firm] provides helpful service through its online store" [47]. F-tests show that the IVs were strong predictors [4]. In addition to the efficient models, consistent models with the IVs were calculated, while both did not significantly

Table 5
Discriminant validity.

	Constructs	1	2	3	4	5	6	7
Model 1								
1	Perceived OFF-ON services	**0.630**						
2	Perceived ON-OFF services	0.222	**0.612**					
3	Perceived quality of offline offerings	0.042	0.020	**0.503**				
4	Perceived quality of online offerings	0.065	0.038	0.487	**0.506**			
5	Offline purchase intention	0.014	0.017	0.308	0.160	**0.783**		
6	Consumers' online shopping experience	0.020	0.030	0.310	0.222	0.075	**0.905**	
7	Perceived channel congruence	0.045	0.065	0.366	0.442	0.088	0.124	**0.621**
Model 2								
1	Perceived OFF-ON services	**0.630**						
2	Perceived ON-OFF services	0.223	**0.612**					
3	Perceived quality of offline offerings	0.042	0.018	**0.510**				
4	Perceived quality of online offerings	0.065	0.038	0.489	**0.570**			
5	Online purchase intention	0.031	0.028	0.110	0.277	**0.873**		
6	Consumers' online shopping experience	0.020	0.030	0.109	0.223	0.404	**0.905**	
7	Perceived channel congruence	0.045	0.065	0.368	0.441	0.133	0.124	**0.621**

Notes: AVE = Average variance extracted (≥0.5, due to Fornell and Larcker); values in italics represent squared correlations between constructs; values in bold represent the AVE of the construct. Correlations of the covariates (gender/age/general internet expertise) to all other variables are below 0.135/−0.089/0.157.

Table 6
Results for path coefficients: Offline purchase intention.

			Model 1				Model 1a			Model 1b		
			β	b	*p*	*Diff. test*	β	b	*p*	β	b	*p*
Direct effects												
OFF-ON	→ OFO		0.155	0.091	**		0.143	0.084	*	0.135	0.119	**
OFF-ON	→ ONO		0.186	0.095	***		0.192	0.097	**	0.173	0.128	***
ON-OFF	→ OFO		0.074	0.038	ns		0.028	0.015	ns	0.090	0.080	ns
ON-OFF	→ ONO		0.118	0.053	**		0.021	0.009	ns	0.108	0.080	*
OFO	→ OFPI		0.528	0.867	***		0.473	0.773	***	0.452	0.707	***
ONO	→ OFPI		0.375	0.708	***		0.313	0.594	**	0.214	0.398	**
OFF-ON	→ OFPI		−0.076	−0.073	ns		−0.061	−0.058	ns	−0.025	−0.035	ns
ON-OFF	→ OFPI		−0.001	0.001	ns		0.021	0.017	ns	0.025	0.034	ns
Interactions												
ONSE	→ OFO						0.288	0.234	***			
OFF-ON	× ONSE	→ OFO (H3a)					−0.010	−0.006	ns			
ON-OFF	× ONSE	→ OFO (H3b)					−0.009	−0.004	ns			
ONSE	→ ONO						0.434	0.303	***			
OFF-ON	× ONSE	→ ONO (H3a)					−0.129	−0.065	**			
ON-OFF	× ONSE	→ ONO (H3b)					0.013	0.006	ns			
CON	→ OFPI									0.014	0.018	ns
OFO	× CON	→ OFPI (H5a)								−0.123	−0.192	*
ONO	× CON	→ OFPI (H5b)								0.106	0.196	*
Indirect effects[a]												
OFF-ON	→ OFO	→ OFPI	0.108	0.079	*	*t* = .519 ns	0.085	0.065	**	0.073	.084[c]	*
OFF-ON	→ ONO	→ OFPI	0.092	0.067	**	(H1a)	0.075	0.058	*	0.044	.051[c]	*
ON-OFF	→ OFO	→ OFPI	0.051	0.033	ns	*t* = .271 ns (H1b)	0.017	0.011	ns	0.048	.056[c]	ns
ON-OFF	→ ONO	→ OFPI	0.059	0.037	*		0.008	0.006	ns	0.027	.032[c]	*
Total effects												
OFF-ON	→ OFPI		0.200	0.146	**	*t* = 4.527**	0.140	.122[b]	**	0.117	0.135	**
ON-OFF	→ OFPI		0.110	0.070	*		0.020	.017[b]	ns	0.076	0.088	*
Covariates												
Gender			0.085	0.225	*		0.054	0.145	*	0.077	0.200	*
Age			−0.049	−0.004	ns		−0.029	−0.003	ns	−0.047	−0.004	ns
General internet expertise			0.014	0.013	ns		−0.010	−0.009	ns	0.014	0.012	ns

Structural model fit Model 1: CFI 0.957, TLI 0.944, RMSEA 0.053, SRMR 0.049, $\chi^2(114) = 345.046$.
Notes: OFF-ON=Perceived offline-to-online services, ON-OFF=Perceived online-to-offline services, OFO=Perceived quality of offline offerings, ONO=Perceived quality of online offerings, ONSE = Consumers' online shopping experience, CON=Perceived channel congruence, OFPI=Offline purchase intention, β = standardized coefficients, b = unstandardized coefficients; Differences between total indirect and indirect standardized effects have been tested using *t*-tests.
*** $p < .001$; ** $p < .01$; * $p < .05$; ns = not significant.
[a] Further differences tests: OFF-ON vs. ON-OFF →OFO → OFPI t = 3.612**, OFF-ON vs. ON-OFF→ONO → OFPI t = 2.524**.
[b] Total effect in the mean value of moderator is shown (see Fig. 2 for conditional results).
[c] Indirect effect in the mean value of moderator is shown (see Fig. 3 for conditional results).

differ (the z-values were all<1.96). The probability of endogeneity among the perceived integration services seems to be reduced.

We additionally tested for measurement equivalence to ensure comparability across the objective congruence groups (we found full metric invariance for all constructs, offline model: $\Delta\chi^2(10) = 14.245$, $p > .05$; online model: $\Delta\chi^2(10) = 16.981$, $p > .05$, see Web Appendix C).

We used Mplus 8 and the LMS approach for the latent interaction effects, i.e., continuous latent moderators and conditional effects, to predict the moderated mediation [17]. LMS provides unbiased estimators and standard errors that justify its complexity [39]. Two models are necessary: without latent interactions and with latent interactions (see Web Appendix D). The conditional effects were probed by using the Johnson-Neyman floodlight test to identify the regions in the moderator measures where the conditional effects were significant. This test is superior to other tests, as the effects are interpreted by using all moderator values to limit the potentially arbitrary choice of values [62].

4. Results

4.1. Results of the path coefficients

The results show no direct effect of perceived OFF-ON or ON-OFF services on either purchase intention in any model (see Tables 6-7). Indirect-only mediation is established.

Offline purchase intention is significantly linked to OFF-ON services via both the quality of offline and online offerings, but the difference is nonsignificant (model 1: β = 0.108, $p < .05$, β = 0.092, $p < .01$, $t = 0.519$, $p > .05$). Offline purchase intention is differently linked to ON-OFF services: nonsignificant through the quality of offline offerings (β = 0.051, $p > .05$) and significant through the quality of online offerings (β = 0.059, $p < .05$) but with a nonsignificant difference ($t = 0.271$, $p > .05$). We reject H1a-b but support H2a-b. *Online purchase intention* is linked to OFF-ON services via the quality of offline offerings and stronger via online offerings (model 2: β = 0.065, $p < .05$, β = 124, $p < .001$, significant difference, $t = 2.079$, $p < .05$). Online purchase intention is linked to ON-OFF services via the quality of online but not offline offerings (significant difference, β = 0.068, $p < .05$, β = 0.024, $p > .05$, $t = 2.300$, $p < .05$). A reason for the rejection of H1a-b (OFF-ON services' equal effects via both offerings) is that the services put consumers at ease [10], i.e., both offerings are salient. The nonsignificant effect of ON-OFF services is based on the lack of a direct link to the quality of offline offerings, i.e., the stores' salience.

We consider *stability tests and alternative models* for a richer discussion (see Web Appendix E). First, a bootstrap test confirms the missing direct effect of OFF-ON and ON-OFF services on purchase intention (5000 samples, Model $1_{OFF\text{-}ON/ON\text{-}OFF}$/Model $2_{OFF\text{-}ON/ON\text{-}OFF}$: ß = −0.076/−0.001/−0.021/0.009, SE = 0.058/0.058/0.052/0.050, lower interval limit [LIL] = −0.172/−0.097/−0.107/−0.078, upper interval [UIL] = 0.019/0.093/0.065/0.087). The mediation paths show the same results.

Second, ON-OFF services (without OFF-ON) show effects on online purchase intention via the quality of online offerings only (ß = 0.116, $p < .001$) and support respective studies (e.g., [31]) but neglect the OFF-

Table 7
Results for path coefficients: Online purchase intention.

			Model 2				Model 2a			Model 2b		
			β	b	*p*	*Diff. test*	β	b	*p*	β	b	*p*
Direct effects												
OFF-ON	→ OFO		0.159	0.088	**		0.146	0.081	*	0.142	0.114	**
OFF-ON	→ ONO		0.194	0.097	***		0.187	0.098	**	0.174	0.128	***
ON-OFF	→ OFO		0.059	0.028	ns		−0.018	−0.009	ns	0.068	0.055	ns
ON-OFF	→ ONO		0.107	0.047	*		−0.009	−0.004	ns	0.109	0.080	*
OFO	→ ONPI		0.318	0.681	***		0.395	0.855	***	0.064	0.134	ns
ONO	→ ONPI		0.495	1.169	***		0.536	1.236	***	0.440	1.015	*
OFF-ON	→ ONPI		−0.021	−0.025	ns		−0.066	−0.079	ns	0.015	0.025	ns
ON-OFF	→ ONPI		0.009	0.010	ns		0.035	0.036	ns	0.021	0.037	ns
Interactions												
ONSE	→ OFO						0.439	0.339	***			
OFF-ON	× ONSE	→ OFO (H4a)					−0.001	0.000	ns			
ON-OFF	× ONSE	→ OFO (H4b)					−0.007	−0.004	ns			
ONSE	→ ONO						0.524	0.380	***			
OFF-ON	× ONSE	→ ONO (H4a)					−0.121	−0.064	**			
ON-OFF	× ONSE	→ ONO (H4b)					0.013	0.006	ns			
CON	→ ONPI									0.075	0.119	ns
OFO	× CON	→ ONPI (H6a)								−0.005	−0.012	ns
ONO	× CON	→ ONPI (H6b)								−0.051	−0.107	ns
Indirect effects[a]												
OFF-ON	→ OFO	→ ONPI	0.065	0.060	*	t = 2.079* (H2a)	0.088	0.070	*	0.011	.015[c]	ns
OFF-ON	→ ONO	→ ONPI	0.124	0.114	***		0.153	0.121	**	0.089	.129[c]	**
ON-OFF	→ OFO	→ ONPI	0.024	0.019	ns	t = 2.300* (H2b)	−0.011	−0.007	ns	0.005	.007[c]	ns
ON-OFF	→ ONO	→ ONPI	0.068	0.055	*		−0.007	−0.005	ns	0.056	.082[c]	*
Total effects												
OFF-ON	→ ONPI		0.190	0.174	**	*t* = 4.233**	0.223	.190[b]	**	0.100	0.145	**
ON-OFF	→ ONPI		0.093	0.074	*		−0.015	-.012[b]	ns	0.061	0.089	*
Covariates												
Gender			0.011	0.035	ns		−0.050	−0.168	ns	0.005	0.017	ns
Age			−0.168	−0.019	***		−0.143	−0.016	***	−0.168	−0.018	***
General internet expertise			0.080	0.087	*		0.034	0.038	ns	0.084	0.089	*

Structural model fit Model 2: CFI 0.960, TLI 0.947, RMSEA 0.053, SRMR 0.050, $\chi^2(114) = 345.222$.
Notes: OFF-ON=Perceived offline-to-online services, ON-OFF=Perceived online-to-offline services, OFO=Perceived quality of offline offerings, ONO=Perceived quality of online offerings, ONSE = Consumers' online shopping experience, CON=Perceived channel congruence, ONPI=Online purchase intention, β = standardized coefficients, b = unstandardized coefficients; Differences between total indirect and indirect standardized effects have been tested using t-tests.
*** $p < .001$; ** $p < .01$; * $p < .05$; ns = not significant.
[a] Further differences tests: OFF-ON vs. ON-OFF→OFO → ONPI t = 4.733**, OFF-ON vs. ON-OFF→ONO → ONPI t = 4.100**.
[b] Total effect in the mean value of moderator is shown (see Fig. 2 for conditional results).
[c] Indirect effect in the mean value of moderator is shown (see Fig. 3 for conditional results).

ON effects. However, even models with only one of the perceived qualities (both OFF-ON/ON-OFF services) support the dominance of OFF-ON services, as their effects through the quality of online offerings lose significance (even for online purchase intention, $ß_{OFF\text{-}ON} = 0.122$, $p < .001$, $ß_{ON\text{-}OFF} = 0.058$, $p > .05$, $t = 5.657$, $p < .05$). Thus, neglecting the mediation paths that make the perceived quality of offline/online offerings more salient disregards certain effects.

Third, we applied alternative measures. A joint view of perceived integration services was measured as a second-order construct of both integration services. The results show (slightly) stronger paths via the quality of offline offerings to offline purchase intentions ($\beta_{OFO} = 0.169$, $p < .001$; $\beta_{ONO} = 0.157$, $p < .001$, $t = 0.424$; $p > .05$) and online offerings to online purchase intentions ($\beta_{OFO} = 0.092$ $p < .001$; $\beta_{ONO} = 0.201$; $p < .001$, $t = 3.873$; $p < .01$). These results are less insightful than our differentiated findings. Moreover, we measure the total purchase intention toward the firm: "if I find something that I like, it is (1) likely, (2) probable, (3) possible, that I will shop at the [firm]" [56]. This variable is linked to OFF-ON services equally via the quality of offline and online offerings (ß = 0.096, $p < .05$, ß = 0.099, $p < .01$, $t = 0.519$, $p > .05$) and to ON-OFF services via the quality of online offerings only (ß = 0.062, $p < .05$, ß = 0.044, $p > .05$, t = 0.519, $p > .05$). OFF-ON services still dominate, which appear to reduce the idiosyncrasies of various purchase intentions.

4.2. Results of the moderators

Next, we present the results of the LMS approach by testing the conditional effects. Consumers' online shopping experience moderates the total effects of OFF-ON services on *offline purchase intention* (model 1a: $ß_{OFF\text{-}ON x ONSE \rightarrow ONO} = -0.129$, $p < .01$). Fig. 2a illustrates this negative interaction. With very high levels of experience, the lower confidence band cuts the x-axis, i.e., integration services are valuable again. H3a is supported, while H3b is not, as the nonsignificant interactions of ON-OFF services via the quality of both offerings emerge ($ß_{ON\text{-}OFF x ONSE \rightarrow OFO} = -0.009$, $p > .05$; $ß_{ON\text{-}OFF x ONSE \rightarrow ONO} = 0.013$, $p > .05$). Consumers' online shopping experience moderates the total effects of OFF-ON services on *online purchase intention* (model 2a: $ß_{OFF\text{-}ON x ONSE \rightarrow ONO} = -0.121$, $p < .01$); Fig. 2b illustrates this negative interaction. The effects of ON-OFF services are again nonsignificant ($ß_{ON\text{-}OFF x ONSE \rightarrow OFO} = -0.007$, $p > .05$; $ß_{ON\text{-}OFF x ONSE \rightarrow ONO} = 0.013$, $p > .05$). Therefore, H4a is supported, and H4b is not. A reason for the nonsignificant effect is that consumers' experience itself becomes useful, while ON-OFF services become less relevant to the evaluation.

Perceived channel congruence moderates the indirect effects of perceived integration services. In the *offline decisions* for OFF-ON services, reduced effects through the quality of offline offerings emerge ($ß_{OFO x CON \rightarrow PUI} = -0.123$, $p < .05$). Fig. 3a shows the interaction; Fig. 3b shows the same marginally for ON-OFF services. A reinforcing effect of both OFF-ON and ON-OFF services on offline purchase intention through the quality of online offerings occurs ($ß_{ONO x CON \rightarrow PUI} = 0.106$,

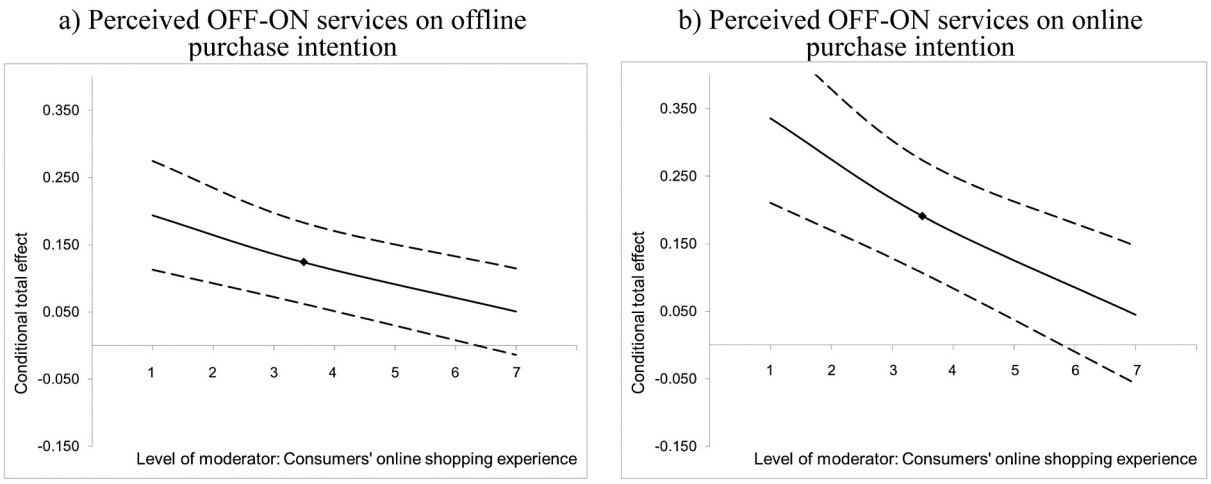

Fig. 2. Plots of the conditional total effects: Consumers' online shopping experience.

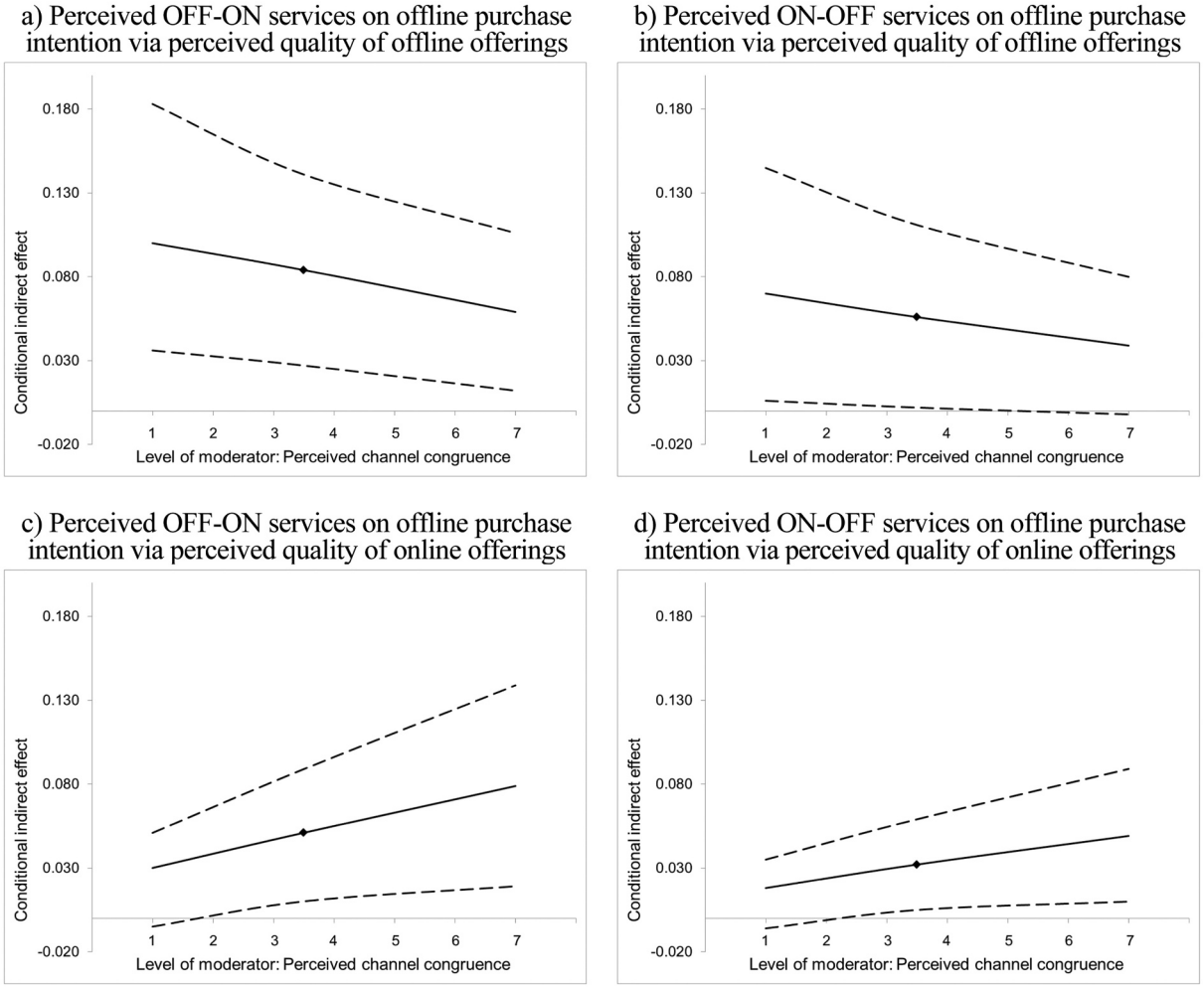

Fig. 3. Plots of the conditional indirect effects: Perceived channel congruence.

$p < .05$; see Figs. 3c-d). H5a-b are supported. Regarding *online decisions*, H6a-b are not supported (model 2b). The interactions with the online and offline offerings are nonsignificant ($ß_{ONOxCON→PUI} = -0.005$, $p > .05$; $ß_{OFOxCON→PUI} = -0.051$, $p > .05$). Increasing levels of channel congruence do not affect the relative diagnosticity mechanism. In online decisions, the channels are evaluated in a more piecemeal way.

The objective congruence measure and multi-group SEM provide further insights (see Web Appendix E). In *offline decisions*, firms with a higher (vs. lower) channel congruence achieve weaker (stronger) mediation paths of OFF-ON services via the perceived quality of offline (vs. online) offerings ($Δß_{OFO-ONO} = -0.021$, $p < .05$). No differences for ON-OFF services ($Δß_{OFO-ONO} = -0.008$, $p > .05$, H5a-b) and in *online*

decisions occur ($\Delta ß_{ONO\text{-}OFO} = 0.094, p < .05$, $\Delta ß_{ONO\text{-}OFO} = 0.017, p > .05$, H6a-b). Our perceptual results are supported for ON-OFF services in offline decisions. Here, congruent firms benefit from OFF-ON services but still face a tradeoff between weaker and stronger quality effects.

5. Discussion and conclusion

This study advances our cross-channel understanding of the mediation paths through which firms transform OFF-ON and ON-OFF services into purchase intentions. We focused on retailing, but studying the effects of useful integration services for consumers is insightful for other service sectors that decide to comprise physical and online encounters (e.g., banking, [6]). Moreover, the results help decision makers determine whether and how important boundary conditions as diagnostic cues moderate the paths. We carefully provide major theoretical and managerial implications.

5.1. Theoretical implications

Regarding our *first research question*, we emphasize that firms indirectly participate in the most useful channel integration services for consumers. We contribute to research by studying perceived OFF-ON and ON-OFF services simultaneously by detangling the underlying mediation paths that transform the services into offline and online channel purchase intentions. Thus, *in general*, this study adds to a joint perspective by disentangling ramifications of channel integration services and to OFF-ON or ON-OFF channel integration perspectives [31,32] by considering crucial cross-channel effects in omni-channel firms. Accessibility-diagnosticity theory provides new rationales for the mediation paths and is a promising alternative to the theories used. *In particular*, we identify the most important mediation paths of the services in offline vs. online purchase decisions through perceived quality of channel offerings.

Next, general and more particular implications of purchase decisions are provided.

In general, all indirect and total effects of perceived OFF-ON integration services are significant (not of ON-OFF services). Theoretically, OFF-ON services provide consumers knowledge about and ease of access to perceived quality of both offline and online channel offerings, while perceived ON-OFF services fail to make both qualities more salient. Thus, it is wise to distinguish the integration services for decisions in omni-channel firms and to pay attention to the perceived quality of channel offerings to prevent a disruption of integration service outcomes [6]. One reason for the differences is a nonsignificant cross-channel direct effect (model 1: $ß_{ON\text{-}OFF \rightarrow OFO} = 0.074, p > .05$, model 2 $ß_{ON\text{-}OFF \rightarrow OFO} = 0.059, p > .05$; nonsignificant indirect effect). Adding OFF-ON services to the studies on ON-OFF services changes their results (underlined in alternative models, [2]). Surprisingly, OFF-ON services are a superior cue that increases both offline and online purchase intentions the most, with a stronger diagnosticity via perceived quality of offline (vs. online) offerings (model 1: $ß_{OFO \rightarrow OFPI} = 0.528, p < .001$, $ß_{ONO \rightarrow OFPI} = 0.375, p < .001$, model 2: $ß_{OFO \rightarrow ONPI} = 0.318, p < .001$, $ß_{ONO \rightarrow ONPI} = 0.495, p < .001$). For OFF-ON (vs. ON-OFF) services, the total effects are also stronger (model 1: $ß_{OFF\text{-}ON \rightarrow OFPI} = 0.200, p < .01$, $ß_{ON\text{-}OFF \rightarrow OFPI} = 0.110, p < .05$, model 2: $ß_{OFF\text{-}ON \rightarrow ONPI} = 0.190, p < .01$ $ß_{ON\text{-}OFF \rightarrow ONPI} = 0.093, p < .05$). The results may be affected by our choice of leading but former brick-and-mortar fashion firms. However, we believe that the results are noteworthy, as they enhance the studies that do not disentangle the integration services and their cross-channel effects.

Theoretically, this study draws attention to the accessibility and diagnosticity of integration services. Although the most useful services for consumers are easily accessible, they are not equally relevant to behavioral intentions. The "why not-question"—in the case of the failure of ON-OFF services to make the quality of offline channel offerings more salient—can be explained by further theories. Fewer cognitive schemata and a poor retrieval between ON-OFF services and offline offerings may exist. Even if consumers often decide memory- rather than stimulus-based [44], motivational intensity might also affect the ON-OFF services-quality of offline offerings-links.

In particular, the results indicate differences in the most important mediation paths in offline and online decisions. We discuss selected implications in addition to the implications discussed above.

- In *offline purchase decisions*, indirect effects of perceived OFF-ON (vs. ON-OFF) integration services are stronger via channel-specific quality of offline offerings ([12]; see further difference tests in the notes of Table 6, $t = 3.612, p < .01$). This is not surprising, but the respective cross-channel effect via quality of online offerings is also stronger ($t = 2.524, p < .05$). Offline purchase intention is mostly affected by OFF-ON integration services. For firms, these services are the strongest lever to attract consumers, and they are equally diagnostic via the quality of online and offline offerings. Firms offering those most useful OFF-ON services for consumers provide them ease of access to the quality of all offerings (even online; see the direct effects model 1: $ß_{OFF\text{-}ON \rightarrow OFO} = 0.155, p < .01$, $ß_{OFF\text{-}ON \rightarrow ONO} = 0.186, p < .001$). In contrast, the cross-channel effect of ON-OFF services is not diagnostic. Firms are not succeeding in steering consumers to a strategically important offline store.
- In *online purchase decisions*, the total effect of perceived OFF-ON (vs. ON-OFF) integration services is stronger through the quality of online and offline offerings (see the difference tests in the notes of Table 7, $t = 4.100, p < .01$ and $t = 4.733, p < .01$). The respective direct links are also stronger. Perceived OFF-ON services put consumers at ease and leverage online purchase intentions [10]. Adding perceived OFF-ON services and quality of offline offerings to online-only studies changes their results (important for decision makers, [31]). Cross-channel links are important: OFF-ON services are relatively diagnostic via the quality of online offerings (H2a), and ON-OFF services are relatively diagnostic via the channel-specific quality of online offerings for online purchase intentions only (H2b).

In summary, we have studied the most useful OFF-ON and ON-OFF services to consumers, which partly comprise two stages of the consumer journey: one informational and two transactional OFF-ON services vs. two transactional and one order fulfillment ON-OFF services (see Table 3). Further services in the pre-, purchase, and post-purchase stages exist [52] and we see advantages for future research (e.g., focusing on after-sales services, which may make additional information salient [51]).

Regarding *our second research question*, consumers' online shopping experience negatively moderates the total effects of perceived OFF-ON (not ON-OFF) services on offline and online purchase intention (H3a, H4a). It is a superior cue [41]. This result provides novel implications for integration services (e.g., adding to studies on OFF-ON or ON-OFF services only, [37]). Within these interactions, the cross-channel effects are moderated, but they reduce the total effects (e.g., the salience of the online channel decreases, [60]). For consumers with lower levels of online shopping experience, OFF-ON services are relatively diagnostic for both purchase decisions. Importantly, increasing levels of experience diminish the relative diagnosticity as experience itself becomes relatively diagnostic for decision-making. However, the floodlight tests show that the conditional total effects are nonsignificant at the highest level of consumers' online shopping experience (values of 6.0 for offline and 5.5 for online purchase intention, see Fig. 2a-b; indirect effects mentioned are nonsignificant even at values of 5.0; see Web Appendix E). Very high levels of online shopping experience do not decrease the accessibility-diagnosticity mechanism in either online and offline decisions. Increasing levels of online shopping experience in the future may make the integration services examined not irrelevant.

Regarding *our third research question,* channel congruence as a diagnostic superior cue affects the relative diagnosticity mechanism. It moderates the paths of perceived OFF-ON and ON-OFF integration services to offline (not online) purchase intention (H5a-b). *In general*, higher levels of channel congruence negatively affect the indirect effects via the channel-specific quality of offline offerings, while online offerings become more salient, *particularly* as follows.

- For perceived OFF-ON services, a reduced relative diagnosticity via the perceived quality of offline offerings and an increased relevance of the perceived quality of online offerings emerge. Consumers generalize information from one channel to another [66].
- In contrast, perceived ON-OFF services affect offline purchase intention via the perceived quality of online offerings (marginal via offline offerings). Consumers are steered across channels. The channel-specific offline quality loses marginal relevance.

Perceived channel congruence is a diagnostic cue for offline decisions, as congruent channels provide consumers with information and facilitate cognitive efforts [9]. Additionally, the positive and negative moderation of the total effects of perceived OFF-ON and ON-OFF services are more insightful than the findings of only one mediator (see alternative models). Congruence offers advantages depending on the decision [66,67]. Floodlight tests on the conditional indirect effects provide further insights for offline decisions. A marginal decreasing mediation path of ON-OFF services via the perceived quality of offline offerings at low levels of channel congruence emerges (see Fig. 3b). In contrast, the effects of both OFF-ON and ON-OFF services through the quality of online offerings increase above certain levels of congruence (over 1.5/2.0, respectively, see Fig. 3c-d). Low levels of congruence do not increase the accessibility-diagnosticity mechanism in offline decisions.

Our objective congruence measure supports the results of the perceived OFF-ON services in offline decisions. Firms with higher (vs. competitors with lower) congruence can reinforce cross-channel effects due to the positive effects via perceived online and negative via established offline quality perceptions. Firms that synchronize channels face tradeoffs (e.g., former online pure players such as Apple, [41]). Careful management of perceived/objective channel congruence is necessary to benefit from integration services in offline purchase decisions.

5.2. Managerial implications

Practice has changed dramatically due to the increasing options of channel integration [33]. For effective decision-making, managers of omni-channel firms should be interested in the paths of the most useful integration services for consumers and, logically, the most important in the competition between firms.

This study identifies OFF-ON services as the most important lever for offline and online purchase intentions (additionally toward the firm in total). However, the mediation paths differ.

- In offline decisions, perceived OFF-ON services equally leverage purchase intentions through the knowledge of and ease of access to the quality of both offline and online offerings.
- In online decisions, OFF-ON services more strongly leverage purchase intentions via the quality of online offerings; firms' aim to steer consumers from offline to online channels is successful.

Our results indicate a dominant role of OFF-ON services, which is interesting given the emergence of technologies to create seamless customer experiences across channels [16]. Fashion firms, in particular, should decide for OFF-ON services (e.g., employees with tablets that serve consumers in stores) to benefit from offline and online purchases. ON-OFF services enhance offline and online purchase intentions via the quality of online offerings only. Retailers offering ON-OFF services redirect consumers to their online stores and fail to make the quality of offline offerings more salient. However, ON-OFF services also enhance offline purchase intentions across channels, and retailers that want to strengthen their online quality perceptions should in particular decide to offer them (e.g., [31]).

Regarding the moderators, omni-channel managers currently may benefit by targeting consumers with a lower level of online shopping experience who value OFF-ON services. However, in the future, an increasing consumers' online shopping experience decreases these effects of the main lever. At the highest levels of this experience, OFF-ON (vs. ON-OFF) services are seen as valuable again and positively affect consumers' purchase intentions. The respective consumer segments need to be differentiated. Managers can also manage perceived channel congruence to benefit from integration (a cost-intensive issue, [66,67]). However, only offline purchase intentions are contingent on channel congruence. Pushing consumer perceptions of high channel congruence supports offline purchases and the goal of most useful integration services to make the cross-channel more salient. The objective congruence results underline this issue for the main lever OFF-ON services only.

5.3. Limitations and further research

This study has certain limitations that suggest future research directions.

Although we paid special attention to sample selection, broadening the database would provide further insights (e.g., consumer groups, industries with further OFF-ON or ON-OFF services such as travel, or former pure online players). We used cross-sectional data, whereas research could capture the changes in perceptions over time (e.g., by using cross-lagged panel models).

Regarding the measures, options to study further integration services in the consumer journey were mentioned. We measured the most useful integration services according to the literature, theory and pretests. However, experiments will allow manipulations of the accessibility of services [10], and measuring diagnosticity directly may provide further insights into the boundary conditions of the mediation paths [55]. We used an intentional purchase measure (like most studies), while the findings need to be complemented with actual purchase data. Finally, due to convergence problems, the moderators cannot be tested simultaneously [17], which will allow the identification of the most important lever.

Adapting our framework could provide further insights into the effects of integration services. Instead of mediation paths/cross-channel effects, scholars may study the role of both services for channel quality, usefulness or value. More complex, scholars may study our framework in a reciprocal design, as these relationships among perceived channel quality or image are obvious but seldom tested in omni-channel studies (e.g., [63]). Studying drivers of integration services is also advantageous [6]. We use cognitively rationales, as most decisions are memory- rather than stimulus-based [44]. Alternative theories are interesting. Although we focus on the major sales channels, further directions for integration exist (e.g., online-to-online services of platforms/social media, [35]). Incorporating them will account for further touchpoints in customer journeys.

6. Conclusion

Omni-channel retailers are increasingly offering technology-based integration services that help consumers engage in different interactive activities across channels (e.g., [6,61]). However, there is an urgent need to better understand whether and how such decisions reach the consumer, given the large investments and resources required to build such cross-channel capabilities. Therefore, this study helps retailers make effective decisions by detangling the ramifications of the most

useful integration services for consumers by considering important cross-channel effects. This study has highlighted the importance of OFF-ON (vs. ON-OFF) services, which is of interest to decision makers given the emergence of integration services [33]. Today, retailers mostly benefit from OFF-ON services when targeting consumers with lower levels of online shopping experience.

In the future, consumers will have higher levels of online shopping experience due to the ongoing trend toward e-commerce, and such individual differences shown in our first moderation results should be monitored across consumer segments. Finally, omni-channel retailers should focus their channel congruence, as offering OFF-ON services with high perceived congruence increases the perceived quality of online offerings but reduces that of offline offerings. Decision makers redirect consumers to online stores here, which subsequently increases offline purchase intentions in a cross-channel manner. Since this is a costly decision [66,67], the tradeoff must be weighed.

Decision makers in omni-channel firms who are not aware of this study's effects may make ineffective decisions, e.g., impacting the wrong channels or behaviors.

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Declaration of Competing Interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dss.2021.113522.

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