Enhancing the shopping well-being: the role of in-store digital tools

Abstract :

The studies on in-store technology use have not sufficiently explored its potential impact on customer shopping well-being. The self-determination theory and shopping value literature allow us to investigate how using these tools affects shopping well-being across shopping value. This research also presents the direct influences of psychological needs such as autonomy and competence on shopping well-being, as well as their moderating influences in the shopping "value - well-being» relationship. Results show that using a digital tool increases the hedonic value, thereby increasing shopping well-being. But this use does not increase the perception of utilitarian value, which has no impact on shopping well-being. In the second study, however, the addition of projection in the use of digital tools modifies this effect. In both studies, shopping well-being is directly enhanced by perceptions of competence and autonomy with regard to digital tools use.

Key words: *digital tool, shopping well-being, shopping value, competence, autonomy.*

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INTRODUCTION

A variety of technologies are used by retailers in their stores, such as smart screens, selfcheckout counters, apps and robots (Grewal et al. 2023). Retailers are also re-considering their offers, processes and interfaces to enhance value through multiple interactions, similar to the digitalized interactive platform exemplified by the Apple store (Roy et al. 2023). These technologies influence the shopper experience (Lao, Vlad and Martin 2021; Flacandji and Vlad 2022) and make retail environments increasingly sophisticated, with shopping frequently blurring transactional, social and leisure boundaries for the consumer (Maggioni et al. 2019). In-store technology can be seen as an artefact that fosters a "hybrid interaction" between physical and virtual worlds, adding further complexity (Roten and Vanheems 2019) and paradoxical perceptions concerning the customer autonomy (Roten and Vanheems 2024).

Value creation and the quality of the customer experience are important consequences, but another strategic challenge in retail that needs to be monitored in an increasingly competitive environment is shopping well-being (El-Hedhli, Zourrig and Chebat 2016). Kumar, Ramachandran and Kumar (2020) advocate for further research on the impact of new technologies on well-being and psychological needs like autonomy. The general use of retail technologies while shopping can fulfill psychological needs for autonomy and competence (Leung and Matanda 2013), potentially leading to an increase in shopping well-being.

Few studies have explored the potential of retail experiences to improve customer well-being (Ali, Mishra and Javed 2021; El Hedhli, Chebat and Sirgy 2013, El Hedhli, Zourrig and Chebat 2016; Gardiazabal, Bianchi and Saleh 2020; Grzeskowiak et al. 2016; Maggioni et al. 2019). In addition, this prior research has mainly considered contexts such as shopping centers, overlooking the impact of in-store technologies use on well-being. Previous research on the impact of technology use on well-being mainly focused on life satisfaction (Linnhoff and Smith 2017), customer well-being (Garrouch and Ghali 2023) or subjective well-being (Roy et al. 2023), rather than specifically addressing shopping well-being. Shopping well-being captures the emotional state of life satisfaction consumers may experience while shopping (El Hedhli, Chebat and Sirgy 2013). To address these research gaps, the present study aims to (1) investigate how in-store technology use affects customer well-being across different dimensions of shopping value and (2) investigate whether general perceived autonomy and competence when using digital tools enhance these effects and shopping well-being.

CONCEPTUAL FRAMEWORK

Shopping well-being

Consumption and shopping experiences can make people happy and induce subjective wellbeing if they lead to positive emotions, thoughts, and behaviors (Ekici et al. 2018 ; Guevara and Howell 2015). Subjective well-being is frequently defined as a positive affect, leading to greater life satisfaction (Purohit, Arora and Paul 2022). It is considered as a relatively stable cognitive orientation towards life (Ryan and Deci 2001) and has been extended recently by El Hedhli, Chebat and Sirgy (2013) to shopping well-being. Shopping well-being stems from experiences linked to a shopping experience and is defined as "a shopper's perceived impact of a shopping mall in contributing to satisfaction in important life domains (such as consumer life, social life, leisure life, and community life) resulting in a global judgement that the mall contributes significantly to one's overall quality of life" (El Hedhli, Chebat and Sirgy 2013, p. 857). For Sirgy et al. (2016), shopping well-being is *"the degree to which consumers perceive that shopping contributes to their overall life satisfaction"*. The latter authors have a more hedonic conception of shopping well-being than El Hedhli, Chebat and Sirgy (2013) and we adopt this conception of the shopping well-being. Previous research has identified several antecedents of shopping well-being, including mall image (Shafiee and Es-Haghi 2017), functional, convenience, safety, leisure, atmospherics and self-related factors (El Hedhli, Chebat and Sirgy 2013), self-congruity (El Hedhli et al. 2021) and shopping experience dimensions (Maggioni et al. 2019). Shopping value is another important antecedent of shopping well-being (El Hedhli, Zourrig and Chebat 2016) but findings concerning its effects on shopping well-being are inconsistent, especially when the analysis focuses on utilitarian value dimension.

Shopping value and its effects on well-being

In the brand-consumer relationship chain, overall perceived value plays a fundamental role (Aurier, Benavent and N'Goala 2001). By reflecting the consumer's evolving experiences with a product or service, perceived value moves beyond the transactional focus of concepts like satisfaction to adopt a relational orientation of the interaction (Filser 2007). Shopping value results from the interaction between the consumer and the shopping environment and can be evaluated through two main dimensions: utilitarian and hedonic value (Babin, Darden and Griffin 1994; Jones, Reynolds and Arnold

2006; Mencarelli and Rivière 2020). Social dimension of shopping value or consumption value through social ties (Aurier, Evrard and N'Goala 2004) is sometimes considered but the main dimensions of shopping value are utilitarian and hedonic even in an omnichannel context as confirmed by Picot-Coupey et al. (2021).

Utilitarian value refers to functional benefits of the shopping (Holbrook and Hirschman 1982) and involves the fulfillment of the functional expectations' consumers may have for a product or service. Hedonic value helps to fulfill fantasies and provides a sense of fun during the purchase process rather than simply buying for its own sake (Holbrook and Hirschman 1982). The hedonic shopping value which stems especially from the enjoyment and pleasure that a shopper experiences during his shopping activities has a positive effect on shopping well-being (El Hedhli, Zourrig and Chebat 2016; Shafiee and Es-Haghi 2017; Ali, Mishra and Javed 2021). This result is in line with the conclusions of research on the positive link between hedonic consumption and subjective well-being (Burroughs and Rindfleisch 2002; Gilovich, Kumar and Jampol 2015). The utilitarian shopping value seems to have no significant impact on shopping well-being (El Hedhli, Zourrig and Chebat 2016; Shafiee and Es-Haghi 2017; Ali, Mishra and Javed 2021). However, these previous studies did not consider the in-store technology use which has an important impact on utilitarian shopping value (Flacandji and Vlad 2022; Lao, Vlad and Martin 2021; Adapa et al. 2020). The in-store technology provides access to a wide range of information, stimulates the consumer (Grewal et al. 2023; Muratore and Nannipieri 2023) and increases the utilitarian value thanks to the cognitive dimension of the experience (Goudey 2013; Muratore and Nannipieri 2023). Antéblian, Filser and Roederer (2013) speak of directed self-production, where the consumer plays an active role and this instrumental form of participation in the shopping experience is a source of utility and functional value. Lao, Vlad and Martin (2021) studied precisely the in-store digital kiosk use and show that the pragmatic, cognitive, and sensorial dimensions of experience significantly influence utilitarian value.

Other technologies used in-store like apps can provide customers with new capabilities (Dacko 2017) enhancing their in-store shopping experience (Molinillo et al. 2020) and both utilitarian and hedonic shopping value (Flacandji and Vlad 2022). Considering that Maggioni et al. (2019) prove the positive impact of both utilitarian and hedonic dimensions of the shopping experience in commercial centers on well-being, we propose the following hypothesis:

H1: Digital tools use during the shopping experience has a positive effect on perceived (a) utilitarian value and (b) hedonic value, compared to non-use

H2: Perceived (a) utilitarian value and (b) hedonic value have positive effects on shopping well-being

Technology use and psychological need satisfaction

Self-determination theory (SDT) states that subjective well-being is experienced when the innate basic psychological needs for autonomy, competence and relatedness are fulfilled (Deci and Ryan 1985; Ryan and Deci 2008). If shopping experiences satisfy these psychological needs for autonomy, competence, and relatedness, they can make people happy and induce subjective well-being (Guevara and Howell 2015). In the shopping context, autonomy is the consumers' conscious or unconscious impression of freedom and the perception of control over the shopping process (Shen, Wan and Li 2023). Since digital tools in-store are specifically designed to offer a convenient shopping experience and to facilitate the buying of products or services, we suppose their features will foster consumer autonomy. Technological features like connectivity, personalization, controllability, and responsiveness can improve consumers' independent choices and autonomy (Shen, Wan and Li 2023). Shoppers may feel empowered and more in control of their choices and decisions (Bachouche and Sabri 2019). In the context of mobile payment apps, Zhang et al. (2022) observed that when users reach a high level of need satisfaction using an app, it boosts their confidence in their own autonomy. On the other hand, the freedom these technologies provide can also lead to feelings of overwhelm due to the complexity of decisions or the broad range of options available (Markus and Schwartz 2010).

Competence refers to a person's need for feelings of effectiveness, achievement, and challenge (Deci and Ryan 2000). Since in-store technologies like retail apps offer access to additional information, enabling customers to make more informed and confident choices (Fuentes, Bëackstrëom and Svingsted 2017), their use can enhance consumer competence (Flacandji, Vlad and Lunardo 2024; Japutra, Higueras-Castillo and Liebana-Cabanillas 2022). To our knowledge, only Flacandji, Vlad and Lunardo (2024) have examined satisfaction of the psychological needs for autonomy and competence as specific antecedents of shopping wellbeing in the in-store shopping experience with app use, showing a positive relation only between competence and well-being. However, these authors' approach is contextualized to a particular store and technology, whereas this research opts for a general perception of the use of digital tools. Nevertheless, this positive relationship between autonomy, competence and subjective well-being has been supported in various contexts related to digitalized experience, such as online retail (Shen, Wan and Li 2023) or AI-enabled technologies (Andre et al. 2018). Considering that autonomy and competence are the psychological needs with the greatest influence on well-being (Deci and Ryan 2000), we propose the following hypotheses:

H3: Perceived autonomy with regard to digital tools increases shopping well-being
H4: Perceived competence with regard to digital tools increases shopping wellbeing

Moderating role of autonomy, competence and projective use of technology

The variation in consumer differences arising from personality traits is of greatest interest in attitude formation and behavioral intentions (Dabholkar and Bagozzi 2002). It is important to understand the role of consumer-specific characteristics in shaping well-being, as recognized by the literature focusing on personality factors and subjective well-being (Ryan and Deci 2001). These characteristics are also recognized as moderators that interact with customer experience in relation to behavioral outcomes (Verhoef et al. 2009). In the context of self- service technologies, the self-efficacy or the sense of self-confidence in one's ability to do something makes consumers look on that activity as fun and to improve the enjoyment of the technology use (Dabholkar and Bagozzi 2002). We can therefore assume that perceptions of general competence and autonomy with regard to digital tools play a moderating role in the relationship between the shopping value and shopping well-being :

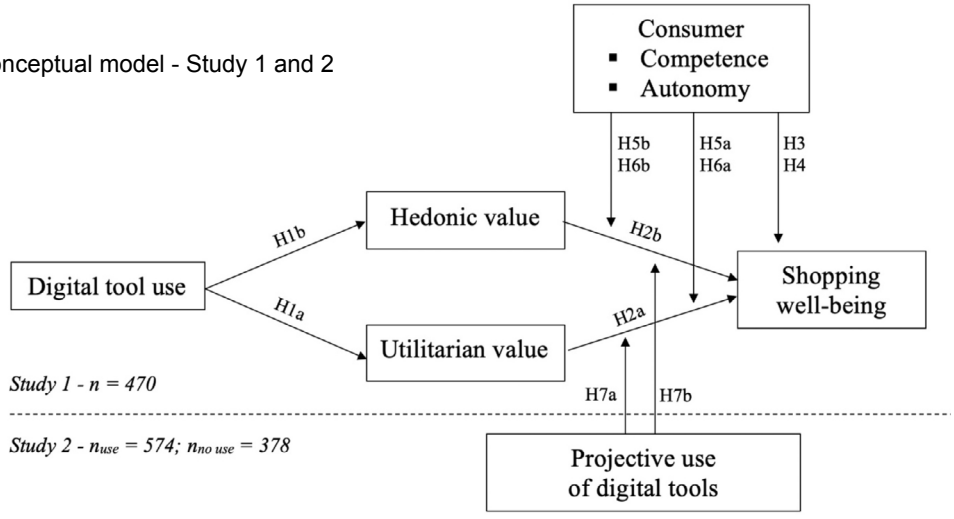
H5: Perceived autonomy reinforces the effect of (a) utilitarian and (b) hedonic value on shopping well-being
H6: Perceived competence reinforces the effect of (a) utilitarian and (b) hedonic value on shopping well-being

Regardless of these individual characteristics, facilitating and helping the consumer to project themselves into a digital tool use can also improve their evaluation or encourage their adoption. Projection incorporates the concept of mental imagery, where a mental image is a mental representation of one or more entities corresponding (or not) to reality and is part of a cognitive process that occurs in the absence of the stimuli that triggered the corresponding perceptions (Lao 2010, 2013). The generated mental images, also called imagination images, thus come from conscious mental activity in the individual. In the context of our research, they come from an instruction given in the scenario, and highlight a projection of a possible future use of a technology (Lao 2010, 2013), which is equivalent to imagining oneself using a digital tool.

Soley (2010) argues that projective techniques are reliable and exhibit greater predictive validity than many positivist instruments. Thus, utilitarian or hedonic values have a significant influence on shopping experiences involving the use of technology (Childers et al. 2002; Fiore, Kim and Lee 2005). And according to Jarrier (2015), an individual can experience moments of enjoyment or micro-immersions in the experience, leading to a wide variety of benefits (Carù and Cova 2003, 2006) such as a sense of well-being (Kaplan 1995; Packer 2008). Thus, we assume that the projective use of a digital tool in store can moderate the effects of value on well-being. Specifically, in the absence of the actual use of the digital tool but rather within the context of an individual's projection of its use, we wish to study the moderating influence of this projected use on the "value – well-being" relationship. Thus, we propose hypothesis 7:

H7: The projective use of digital tools enhances the effects of perceived (a) utilitarian and (b) hedonic value on shopping well-being

Figure 1. Conceptual model - Study 1 and 2



STUDY 1

The first study tests our basic prediction that using digital tools during shopping (as opposed to not using them) increases shopping value, which in turn improves shopping well-being. Customers' general levels of perceived autonomy and competence with digital tools are likely to enhance this well-being, as are the effects of value on this well-being.

Procedure and measures

The data collected comes from 470 participants (Appendix A) in an online survey about a recent shopping experience. A total of 489 French consumers took part but we excluded 19 participants for failing the attention checks[2]. In this first study, 60.2% of respondents are women and 39.8% are men. Among the 470 respondents, 226 (48%) have already used digital tools in physical non-food stores (digital kiosks, digital screen, connected cabin, excluding automatic checkouts) while 244 say not.

For all constructs, items were adopted from well-established measures (Appendix B).

Utilitarian value was measured with two items and hedonic value with three items adapted from

Picot-Coupey et al. (2021) who recently validated the seminal scale of Babin, Darden and Griffin (1994) in the context of omnichannel retailing. Shopping well-being was measured with 4 items adapted from past studies of Nicolao, Irwin and Goodman (2009) and Sirgy et al. (2016). Autonomy and competence were captured using respectively four and five items adapted from Thomson (2006). All 7-point Likert items were anchored with 1 -"Do not agree at all" and 7 - "Fully agree" and were found to be reliable. The reliability of the measurements is confirmed because the values of Jöreskog's Rhô vary between 0.821 and 0.917. Convergent validity was assessed using the average variance extracted (AVE) score. Like the previous reliability indicator, these statistics were calculated on Amos. Convergent validity is confirmed if the AVE score is above the threshold of 0.50. As shown in Table 1, the minimum AVE is 0.64. The square root of the minimum average variance extracted (AVE) of each construct (0.799) being greater than the maximum correlation (0.771) between the constructs of the model, the discriminant validity of the measures is also verified (Fornell and Larcker 1981). Mean comparison tests allow us to control the levels declared on individual variables. The statistics, produced using SPSS, show that the levels of autonomy ($t=3.900$; $p<.01$) and competence ($t=3.039$; $p<.01$) are perceived as higher if the respondents have already used a digital tool in a non-food physical store than if they have never used one.

For hypothesis testing, the PROCESS 4 model, implemented on SPSS, is used to explore the potential mediating role of utilitarian value and hedonic value in the relationship between the use or non-use of digital tools in a physical store and associated well-being. Model 14 extends this mediation analysis by further testing the direct influences of competence and autonomy and their moderating effects on the relationships posited between values and shopping wellbeing (Table 2). Hayes, Montoya and Rockwood' (2017) PROCESS procedure uses regressions to make its estimates. PROCESS 4 analyzes the mediation of a variable between an independent variable and the dependent variable. PROCESS 14 adds to these relationships the test of a moderator variable in the relationship between the mediator variable and the dependent variable.

Although "composite" SEM methods overcome some of the disadvantages of structural equations (Sarstedt et al., 2020). Hayes, Montoya and Rockwood (2017) point out that the PROCESS procedure allows better estimation of interaction terms and fewer requirements on sample sizes. Even if PROCESS presents a dilution of the measurement error, for a simple model as here, i.e. applied to a single dependent variable imposed by the use of the macro of Hayes, Montoya and Rockwood (2017), this method is particularly well adapted. For more complex models, the use of SEM would be more relevant. Finally, as Borau et al. (2015) point out, thanks to bootstrapping, PROCESS is less sensitive to deviations from the conditions of normality of the distributions and linearity of the effects tested. The method also has the advantage of directly testing the significance of indirect effects at different values of the moderator variable.

Results

The correlation with well-being is insignificant for utilitarian value, whereas it is significant ($p<.01$) with hedonic value (Table 1).

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[2] *In the middle of the survey, among the mixed items designed to assess individual competence and autonomy, the following statement was introduced: "Check 2 if you read this question". Respondents who failed to tick box 2 on the Likert scale were deleted from the response file.*

Table 1. Correlations between model variables - Study 1

	Shopping well-being	Utilitarian value	Hedonic value	Competence	Autonomy
Shopping well-being	.857				
Utilitarian value	-.070	.840			
Hedonic value	.771**	-.042	.799		
Competence	.416**	.109*	.326**	.802	
Autonomy	.488**	.030	.415**	.751**	.819

The values of the extracted mean variance roots are presented on the diagonal.
*p < 0.05; **p < 0.01 (two-tailed test).

First of all, the results show a direct effect of the prior use of digital tools on shopping wellbeing. They also show that utilitarian value is not influenced by the use of digital tools, and has no effect on well-being. On the other hand, hedonic value is positively influenced by the use of digital tools (b=.290; p<.01), and this value reinforces well-being (b=.678; p<.01). The mediation of hedonic value in the relationship between usage and well-being also appears to be significant (b=0.1966; CI 95% [.0723; .3249]). These initial results validate the H1b and H2b hypotheses for hedonic value, and reject the H1a and H2a hypotheses associated with utilitarian value.

Table 2. Effects on shopping well-being: mediation and moderation analyses - Study 1

Model 4			***Mediator : Utilitarian Value***			***Mediator : Hedonic Value***		
Dependent variable	Utilitarian Value	Hedonic Value	Well-being			Well-being		
Digital tool usc	-.072	.290**	.414**			.221**		
Mediator : Utilitarian Valuc			-.057			-		
Mediator : Hedonic Valuc			-			.678**		
F	.076	10.0556**	11.481**			227.632**		
R^2	.001	.021	.047			.494		
			Indirect Effects – CI 95%					
			Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI
		Mediator	.0041	-.0083	.0246	.1966	.0723	.3249

Model 14		***Moderator : Autonomy***				***Moderator : Competence***					
Dependent variable		Well-being			Well-being			Well-being			Well-being		
Digital tool use		.261**			.187**			.307**			.187**		
Utilitarian Value		-.076			-			-.094			-		
Moderator		.416**			.171**			.370**			.183**		
Utilitarian Value X Moderator		.050			-			.104**			-		
Hedonic Value					.605**						.623**		
Hedonic Value X Moderator					-.039						-.009		
F		32.850**			131.105**			28.679**			127.753**		
R^2		.220			.530			.198			.524		
		Indirect Effects – CI 95%											
Autonomy	*Competence*	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI
-1.1490	*-1.2516*	.0096	-.0154	.0439	.1882	.0720	.3087	.0161	-.0251	.0647	.184	.0663	.3092
.1418	*.0781*	.0050	-.0078	.0256	.1737	.0639	.2877	.0062	-.0094	.0299	.181	.0657	.3024
1.1003	*1.0039*	.0015	-.0103	.0197	.1630	.0586	.2826	-.0007	-.0165	.0162	.178	.0644	.2993
Conditional effects of utilitarian value at values of competence	*-1.2516*							-.224**	-.3474	-.1002			
	.0781							-.086*	-.1684	-.0041			
	1.0039							.010	-.0996	.1187			

**p< 0.01; * p< 0.05; (two-tailed test)

The results then show that general perceptions of autonomy and competence associated with the use of digital tools increase perceptions of shopping well-being, validating hypotheses H3 and H4 respectively. Mediations of hedonic value are maintained irrespective of perceived levels of autonomy and competence. Moderated mediation indexes do not show significant values. Moderation analyses show that only one interaction appears: that between competence and utilitarian value (b=0.104; p<.01). The conditional effects analysis shows that when the individual feels competent, there is no effect of utilitarian value on well-being, but when he or she feels little or no competence, utilitarian value reduces well-being.

STUDY 2

In Study 2, considering the low rate of digital tool use, we first attempt to replicate the results observed in Study 1 in a scenario-based experiment. We then examine how the use projection of the digital tool affects relations between shopping value and shopping well-being always considering general autonomy and competence, in order to test H7.

Procedure, design and measures

A scenario-based between-subjects experiment with 2 conditions (projection in the use of digital tools; non-projection in the use) was here used in the second study. Two photos of digital tool in store were shown with the following instructions: *"imagine that the store where you bought your last non-food product offers you a digital terminal or a digital screen allowing you to have information on products, find inspiration, consult the opinions of other customers, order a product out of stock, etc"*. In the scenario of projection in the use of the tool, participants were then told to imagine that they were going to use the digital tool during the in-store visit. In the scenario of projection in the non-use of the tool, the respondents were invited to answer the questions based on their actual shopping experience without digital tool use. 20 respondents for the first scenario (projection in use) and 14 for the second scenario (non-projection in use) were eliminated because they failed the attention checks, leading to a total sample of 952 individuals, 574 and 378, respectively. In this second study, the statistics are very close to study 1 (Appendix A) because 59.9% of respondents are women, 40.1% are men and 52.6% are students. The product categories associated with the store in the study are also very varied. Finally, the most used digital tools are also digital terminals and touch screens.

For this study 2, among the 952 respondents, 550 (58%) have already used these digital tools and 402 respond that they have not. Here again, the statistics show that the levels of autonomy (t=3.310; p<.01) and competence (t=4.471; p<.01) are perceived as higher if the respondents have already used a digital tool in a non-food physical store than if they have never used one. The measures were the same as in Study 1 and value and well-being measures have been adapted in the future tense. Reliability and validity indicators are also validated.

Results

As in Study 1, the correlation with well-being is not significant for utilitarian value while it is significant (p<.01) with hedonic value (Table 3).

Table 3. Correlations between model variables - Study 2

	Shopping well-being	Utilitarian value	Hedonic value	Competence	Autonomy
Shopping well-being	.873				
Utilitarian value	.061	.843			
Hedonic value	.709**	.083*	.780		
Competence	.547**	.167**	.530**	.838	
Autonomy	.580**	.151**	.489**	.773**	.847

The values of the extracted mean variance roots are presented on the diagonal.
**p< 0.01; * p< 0.05 (two-tailed test)

Results indicate that utilitarian value is not influenced by the use of digital tools and that it does not affect well-being (Table 4). Hedonic value is positively influenced by the use of digital tools (b=.130; p<.05) and this value reinforces well-being (b=.621; p<.01). The mediation of hedonic value in the relationship between use and well-being is significant at the threshold of p<.10 when the sample is considered in its entirety. These results, allow us to validate hypothesis H1b and H2b for hedonic value and to reject hypothesis H1a and H2a associated with utilitarian value.

Table 4. Effects on shopping well-being: mediation and moderation analyses - Study 2

Model 4			***Mediator : Utilitarian Value***			***Mediator : Hedonic Value***		
Dependent variable	Utilitarian Value	Hedonic Value	Well-being			Well-being		
Digital tool use	-.005	.130*	-.045			-.036		
Mediator : Utilitarian Value			.070			-		
Mediator : Hedonic Value			-			.621**		
F	.0059	3.9493*	2.597			296.5448**		
R^2	.000	.006	.005			.385		
			Indirect Effects – CI 95%					
			Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI
		Mediator	-.0004	-.0110	.0116	.0809	-.0004	.1612
			Indirect Effects – CI 90%					
		Mediator	-.0004	-.0085	.0086	.0809	.0121	.1501

Model 14		***Moderator : Projection into use***					
Dependent variable		Well-being			Well-being		
Digital tool use		.043			-.043		
Utilitarian Value		-.035			-		
Moderator		-. 064			.114**		
Utilitarian Value X Moderator		.172**			-		
Hedonic Value					.668**		
Hedonic Value X Moderator					-.060		
F		3.229*			151.376**		
R^2		.013			.390		
	Projection	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI
	No use	.0002	-.0089	.0106	.0870	.0012	.1791
	Use	-.0007	-.0209	.0191	.0792	.0010	.1632
Conditional effects of utilitarian value at values of Projection	*No use*	-.0346	-.1350	.0659			
	Use	.1378**	.0561	.2196			

Model 14		***Moderator : Autonomy***						***Moderator : Competence***					
Dependent variable		Well-being			Well-being			Well-being			Well-being		
Digital tool use		-.073			-.088			-.111			-.091		
Utilitarian Value		-.017			-			-.027			-		
Moderator		.546**			.336**			.528**			.275**		
Utilitarian Value X Moderator		.005			-			-.018			-		
Hedonic Value					.488**						.511**		
Hedonic Value X Moderator					.037†						.084**		
F		97.994**			219.549**			86.203**			199.590**		
R^2		.293			.481			.267			.457		
		Indirect Effects – CI 95%											
Autonomy	*Competence*	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI	Effect	Boot LLCI	Boot ULCI
-1.1338	*-1.1511*	.0001	-.0078	.0075	.0581	.0001	.1178	.0000	-.0073	.0064	.0540	.0014	.1079
.0656	*.0957*	.0001	-.0048	. 0055	.0639	.0001	.1288	.0001	-.0056	. 0064	.0676	.0018	.1353
1.0966	*.9908*	.0001	-.0052	. 0067	.0689	.0001	.1409	.0002	-.0071	. 0093	.0774	.0021	.1572
Conditional effects of utilitarian or hedonic value at values of moderator		*-1.1338*			.4461**	.3828	.5094	*-1.1511*			.4146**	.3496	.4796
		.0656			.4909**	.4378	.5439	*.0957*			.5195**	.4634	.5756
		1.0966			.5292**	.4498	.6086	*.9908*			.5948**	.5168	.6728

**p< 0.01; * p< 0.05; † p<0,10 (two-tailed test)

PROCESS procedure 14 then indicates that general autonomy and competence increase feelings of shopping well-being and these significant relationships also validate hypotheses H3 and H4 for this study 2. The mediations of hedonic value are also observed regardless of the levels of perceived autonomy and competence. The moderated mediation indices do not present significant values except for the interaction of competence with hedonic value (b=.011; 95% CI [.0001; .0283]). These analyses actually show that the two moderations are significant in the relationship between hedonic value and well-being: autonomy (b=.037; p< .10) and competence (b=.084; p<.01). The conditional effects highlight that the influence of hedonic value on wellbeing is greater when competence or autonomy increases, validating H5b and H6b for this study

2. PROCESS model 14 is also used to test hypothesis H7. The results indicate that the moderation of the projection in the use of digital tools is significant for the effect of perceived (a) utilitarian value on well-being (b=.172; p<.01). The conditional effects show that utilitarian value has no influence on well-being when the individual is not projected into the use of digital tools. This impact becomes significant when the individual is projected into their use (b=.138; p<.01). The moderation posed by H7b on the effect of hedonic value is not verified. The mediation of hedonic value between prior use and well-being always remains significant whether or not for projection into use.

GENERAL DISCUSSION

In both studies, shopping well-being is directly reinforced by general perceptions of competence and autonomy with regard to digital tools, but also by the hedonic value of shopping. The mediation of the hedonic value, i.e. the indirect effect of prior use of digital tools on well-being through this value, is emphasized both in Study 1, which analyzes past experience in a non-food store, and in Study 2, which looks at future experience and whether or not the use of digital tools is projected. In this second study, competence and autonomy appear even more as individual characteristics that reinforce the beneficial effect of hedonic value on well-being. Thus, the central role of joy, pleasure and escape is confirmed in this study, and the prior use of digital tools reinforces the well-being felt through this hedonic value. These results are in line with the conclusions of El Hedhli, Zourrig and Chebat (2016), Shafiee and Es-Haghi (2017) and Ali, Mishra and Javed (2021).

This research reveals that the use of in-store digital tools does not increase utilitarian value, and this value has no effect on well-being, with the exception of two situations: projection in the use of digital tools makes the effect of utilitarian value on well-being significant; when consumers analyze a past shopping experience, if they feel little or not competent in the use of digital tools, utilitarian value diminishes the feeling of well-being. This surprising result (Lao, Vlad and Martin 2021; Flacandji and Vlad 2022 prove the opposite) may be explained by the perceived complexity of in-store digital tools that can have a negative effect on shopping value (Adapa et al. 2020). The perceived complexity of in-store technology depends on the consumers' level of competence (Mencarelli and Rivière 2014). The lack of effect of in-store digital tools usage on utilitarian value can also be explained by the consumer ambivalence (Flacandji and Vlad 2020) and by the ambiguous effects of technology usage (Mencarelli and Rivière 2014). In addition to the well-identified benefits in terms of time-saving, convenience and information, technology can also lead to a waste of time and an information overload, which can complicate the shopping process and reduce utilitarian value.

Projection into use of a digital tool may, however, increase the perceived utilitarian value and its effect on well-being. This result can possibly be explained by the customer's self-mental imagery encouraged by the use of a digital tool, in the absence of real conditions, with both visual and textual information. Mental imagery plays a crucial role in information processing and thus on utilitarian value (Lao, Vlad and Martin 2021). Previous literature has been inconclusive as to whether technology use has a positive or negative impact on well-being. We show that it has a positive impact on well-being via the hedonic value which is reinforced by competence and autonomy. Contrary, to findings of Flacandji, Vlad and Lunardo (2024) who show no effect of in-store application use on autonomy, we show that both perceptions of competence and autonomy associated with the use of digital tools have a positive impact on shopping well-being. This research contributes to the literature on omnichannel retailing by showing the positive role of in-store digital tools use on shopping well-being. The use of digital tools in physical stores (such as digital kiosks, connected screens, etc.) represents one of the most concrete expressions of omnichannel. They are firm-controlled touchpoints (Becker and Jaakkola 2020) and must be coherently and complementary linked with the physical channel in order to improve the customer's shopping experience (Roten and Vanheems 2019; Molinillo et al. 2020).

At the level of managerial implications, since both studies show the hedonic shopping value improves shopping well-being, retailers should highlight this effect in their communication campaigns. Communication about the digital tools should clearly highlight the features that enable customers to become smart and autonomous shoppers and the positive impact of digital use on their shopping well-being. To reinforce feelings of autonomy and competence in the customer, retailers can also offer simple tutorials, demonstrations or provide a one-off assistant to help with the first use. It would even be possible to gamify the learning of these tools by offering missions or rewards in the form of promotions. To reinforce this

learning, retailers can also personalize the approach according to the customer's level of digital competence, in order to avoid any negative experiences. Retailers should also encourage the use of these digital tools for hedonic purposes, and not just for functional use. These digital tools could offer fun and engaging experiences to stimulate positive emotions, such as pleasure. The addition of social features (customer reviews, shared recommendations, suggestions, etc.) could also improve the psychological need of relatedness according to the SDT.

The current research is not exempt from some limitations that offer potentially useful opportunities for future research. First of all, half of the respondents are students in both studies. It can be useful to test the proposed hypotheses on a more demographically diverse and representative sample. Then, Study 2 led respondents to imagine using/not using a specific version of digital kiosk of their choice based on a photo and written instructions. This method has some limitations, and to increase external validity, it could be useful to run a field experiment with a given retailer. Our results also showed no impact of digital tool use on utilitarian shopping value. Further research could thus attempt to better understand the underlying mechanism that explains this result.

Finally, our research did not take the relatedness dimension developed by SDT into consideration since some in-store digital tools, may provide low social interactions (Grewal et al. 2020). Future studies could thus explore the impact of digital tools usage on the social interactions, social shopping value dimension and well-being, and take into account other moderating factors such as cultural influences or brand trust. Furthermore, since perceived value is a dynamic and contextual variable (Filser 2007), an analysis of the value before and after the use of digital tools would allow a better understanding of its impact on shopping wellbeing.

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