



A study on impact of digital service channels on consumer satisfaction: A mediating role of age, gender and education

Dr. Naveen Kumar Singh¹, Dr. Abhishek Mishra²

¹ Department of Behavioral Sciences and Forensic Investigations, Rashtriya Raksha University, Gujarat, India

² School of Interdisciplinary and Trans-disciplinary Studies, Indira Gandhi National Open University, New Delhi, India

Abstract

The evolution of technology has ushered in a new era of communication between businesses and consumers, offering an array of digital channels to influence consumer behavior. This study aims to delve into the intricate relationship between these digital service channels and customer satisfaction while exploring how demographic variables moderate this relationship. By surveying 189 consumers residing in Delhi NCR, it was discovered that digital service channels, particularly those characterized by ease of use, convenience, and personalization, significantly enhance customer satisfaction. However, the impact of these channels varies depending on demographic factors such as age, gender, and education, suggesting a nuanced interplay between technology and individual characteristics. This study sheds light on an often-overlooked aspect in existing literature, where the role of demographics was sidelined in discussions surrounding digital service channels. By highlighting the moderating influence of demographic variables, this research underscores the need for businesses and policymakers to adopt a more tailored and inclusive approach to their consumer engagement strategies. The insights gleaned from this study have practical implications for both businesses and government entities, offering valuable guidance in developing consumer-centric policies and initiatives. Ultimately, this research contributes to a deeper understanding of the dynamic interplay between technology, demographics, and customer satisfaction in the digital age.

Keywords: Digital service channels, customer satisfaction, demographics, digital channels

Introduction

'Digital channels' are defined as digital shopping formats that are used by businesses to offer online shopping opportunities to consumers (Wagner, Schramm-klein and Steinmann, 2020; Pires *et al.*, 2022). It helps companies make shopping an emotional experience for consumers (Behera *et al.*, 2020) [7]. Companies from a wide range of industries, sectors, and sizes are implementing innovative digital strategies to attract more customers and enhance their experience (H. M. Taiminen and Karjaluoto, 2015; Marco *et al.*, 2017; Styvéń and Wallström, 2017). Some of the popular digital channels used by top companies like Amazon, Apple, Facebook, Microsoft, Tesla, Uber, Spotify, Adobe, and Slack are email, social messaging, social media, live chats and chatbots, Virtual Reality (VR) and Augmented Reality (AR), voice agents, and mobile apps (Ramachandran *et al.*, 2017). McKinsey revealed that in every country and region, the willingness to consider digital channels is more than 70% (Khon *et al.*, 2022). Thus, in today's interconnected world, using digital service channels is not a choice but a necessity for companies to target consumer experience and satisfaction.

Statistics show that the usage of the Internet has developed quickly during the past decade, and the exact figures show that over 90% of society already handles at least one digital channel. (Fin-Stat, 2023)

Sophisticated digital channels have the capability to deliver responses to intricate customer inquiries that necessitate comprehension of the conversational context, in addition to handling straightforward transactions like product returns and reservations. In the case where a problem cannot be resolved through the channels, it can be escalated to a human agent, thereby safeguarding consumer satisfaction. However, the adoption and acceptance of digital channels

for customer service management are influenced by a variety of factors. One such aspect is service quality, which has conventionally been defined as the customer's evaluation of the service received in terms of its overall excellence or superiority. In order to establish competitive advantages, companies are increasingly optimizing their service quality. This holds particularly true with regard to e-commerce and e-services, where the integration of digital channels such as chatbots presents encouraging prospects for enhancement (Misischia *et al.*, 2022). Research has indicated that the effectiveness of information system implementations is significantly influenced by the quality of the digital service channel (Hsu & Lin, 2023).

The customers' expectations are higher nowadays with the development of digital platforms, and they want seamless services and easy usage, but does it always need to be online and faceless service? You might think everyone wants to do the same thing as you, but there are as many opinions and thoughts as there are people. Someone might want to handle all their matters over a mobile application or any other digital platform, but there might still be more people than we think who want personal contact. One crucial aspect to keep in mind is that in what matters, people want to use different satisfaction channels.

Customer satisfaction is the attitude of the consumer that affects the purchase which directly influences the repurchase intention of the person (Bilgili and Ozkul, 2015) [8]. Faced with the existence of rapid technological innovations and increased regulatory constraints, the focus of companies on customer satisfaction is important to work on service loyalty relationships and service quality (Dash, Kiefer and Paul, 2021) [12]. It also helps businesses raise their profitability along with deriving consumer trust. However, over the years, the concept of consumer

satisfaction has changed. Initially, good quality consumer service by salespersons was regarded as the means of satisfying consumers but now the demands of consumers are more customized which are according to their lifestyles, needs, and tastes (Lee, 2018; Lee and Lim, 2018). The evolution of technology helped in providing more customized services to customers, and Netflix and FedEx are primary examples (Lee and Lee, 2020).

In the literature, it was found that most studies connected either digital channels or demographic variables to customer satisfaction. In the context of Indian fintech enterprises, customer service is the primary determinant of customer satisfaction. Concerning general information, consumers may approach digital channel teams; for responses, the teams will provide assistance through digital channel platforms and can be reached via email, IVR, or in-person customer service. However, given that the preferences of the consumers are affected by their needs, desires, and lifestyles, demographics form a key component of the extent to which digital channels affect customer satisfaction. Moreover, there is extant literature examining “predetermined” factors such as customer loyalty (Olotewo, 2017) and brand image (Dhingra, Sainy and Mishra, 2019)^[14]. To bridge this gap, the study examines the effect of digital service channels on consumer satisfaction with the inclusion of demographical characteristics as moderators.

The structure of the article is as follows. The conceptual foundations of digital service channels and consumer contentment are examined initially. Then, to illustrate the mediating effect of control variables between digital service channels and consumer satisfaction, we construct the research model and hypothesis. Thirdly, the results of the empirical study were presented following the analysis of the data. Finally, consumer satisfaction has been linked to digital service channels, demographics, and customer satisfaction.

Literature Review

a. Relevance of digital service channels

The COVID-19 pandemic boosted the growth of internet-based businesses as a large number of consumers are now relying on the usage of digital technologies. With this, organizations are compelled to explore digital technologies for value creation and consumer interaction (Dubbelink, Herrando, and Constantinides, 2021)^[15]. Nowadays digital channels are used by companies for activities like rationalization, reaching target groups, automated document handling, procession supervision, and delivery of services (Heinonen and Michelsson, 2010). The usage of digital channels creates the ability to interact with customers, providing opportunities of reaching new consumer segments, and increasing access to insights and data (Heinonen and Michelsson, 2010).

Digital channel implementation is versatile and actionable for almost every industry for targeting consumers more effectively. Banks are using digital service channels like mobile banking, internet banking, digital banking kiosks, and ATMs to deliver the best quality services to consumers to reduce operating costs and raise profitability (Kaur *et al.*, 2020; 2021). For SMEs, digital channels enable raising sales to existing customers, enhancing customer service, facilitating communication, facilitating advertising, and strengthening the brand (H. Taiminen and Karjaluo, 2015). For example, in the healthcare sector, digital

channels are integrated to raise patient interaction opportunities with the healthcare center staff and caregivers (Ross *et al.*, 2016).

b. Growing complexity of consumer satisfaction

Consumer satisfaction is defined as the cognitive process wherein consumer compares their expectations with the perceived value they receive from consumption. The favorable agreement between consumption and expectation leads to satisfaction among consumers (Ahrholdt, Gudergan and Ringle, 2019)^[3]. In the new worldwide trend of Industry 4.0, the nature of consumers being less loyal to a single company, less forgiving towards the company's mistakes, and informed, results in raising the expectations of consumers from businesses (Leipzig *et al.*, 2017). Consumers expect quick responses from companies in the age of digital channels. The chances of a rise in response time represents less effort of companies towards solving consumer issues leading to feeling of dissatisfaction. They must design their strategies with the purpose of quick response to the consumer.

Although the modern consumer prefers the digital medium for making a purchase, the presence of uncertainty affects their rate of satisfaction (Rao *et al.*, 2021). The existence of consumer satisfaction creates a sense of repurchase, cooperation, and spread of positive word of mouth. However, sometimes there are exceptions. Even with the existence of a lower satisfaction level, the consumer tends to remain loyal to the company. This could be due to a lack of choice, experience, information or past costs (Demtsura, 2017)^[13]. Thus, consumer satisfaction is not something very straightforward. It's a complex procedure associated with the feelings of an individual and also prior experience. Quality and price are one of the important components, but now the digital revolution changed the priority of consumers towards having more innovative technology. Studies identified that the existence of innovative virtual technologies is the means of communication for consumers and also for influencing their brand preferences (Lemon and Verhoef, 2016; Alwan and Alshurideh, 2022; Pfister and Lehmann, 2023)^[5].

Therefore, companies need to work on creating more digital channels for engaging consumers and interacting with them. Hence, to address the growing complexity the investment in digital channels is a reasonable solution. To evaluate this solution's effectiveness, this study proposes the hypothesis that

Hypothesis 1: Digital service channels have a contribution in affecting consumer satisfaction levels.

c. Role of demographics in affecting digital channels and consumer satisfaction

Demographics are an important referential variable that enables the segmentation of consumer groups. The consumer demographics consist of elements like gender, age, income, education, and literacy (Wang and Pang, 2021). In service marketing, consumer demographics influence consumer choices and decision-making. They contribute to affecting consumers' behavioural intentions and consumer decision-making (Manyanga, Makanyeza and Muranda, 2022). Thus, demographic characteristics influence the behaviour of consumers and consequently the satisfaction level (Juneja and Mehta, 2018).

Consumers’ intent to adopt digital channels is also influenced by consumer demographics. For example, young and educated consumers are more likely to adopt digital channels like mobile banking applications in Jordon (Alafeef, Singh and Ahmad, 2011) [4]. This also has been highlighted by Gazal *et al.* (2019) [19] who highlighted that demographics are significant predictors of promoting social media or technology adoption, such as the probability of using social media decreasing with an increase in age. Similarly, Yannacopoulos *et al.* (2014) also identified that demographics influence the adoption of online banking as consumers’ perspective varies based on gender. Therefore, with the change in demographics, the preference and adoption of digital channels vary. Accordingly, the below-stated hypothesis is proposed.

Hypothesis 2a: The age of the consumer has a moderating role in influencing the link between digital channels and consumer satisfaction.

Hypothesis 2b: The gender of the consumer has a moderating role in influencing the link between digital channels and consumer satisfaction.

Hypothesis 2c: The education of the consumer has a moderating role in influencing the link between digital channels and consumer satisfaction.

d. Empirical review: Impact of digital service channels on consumer satisfaction

Many studies have explored the relationship between digital channels and consumer satisfaction. Herein, Gimpel *et al.* (2016) explored cultural differences and found that social presence and perceived media richness have an impact on customer satisfaction. Schutte & Chauke (2022) examined the impact of digital marketing on consumer behaviour using 14 millennial consumers of the Gauteng region and found that millennial consumers consider digital marketing as an effective means for affecting their intentions. Extending the consumer behaviour scope to satisfaction, Alwan & Alshurideh (2022) [5], with an exploration of 315 consumers’ perceptions, revealed that social media and mobile marketing contributes to having a positive influence on customer satisfaction. The area was further explored by including mediating variables wherein Salameh *et al.* (2022) with an examination of 100 participants’ perceptions using qualitative analysis revealed that online advertisement enables the creation of brand recognition and having more knowledge about the brand and its services. This enables building consumer confidence leading to a rise in customer satisfaction. Bachri *et al.* (2023) [6] also explored mediating impact by including purchase decisions as a mediating variable. The analysis of 100 respondents’ perceptions using SEM revealed that digital marketing has an impact on the purchasing decision of the consumer and customer

satisfaction. Further, Chandrasekar & Janani (2023) [9] focused on examining the impact of digital marketing on the buying behaviour of consumers for electronic goods. The examination of 125 consumer behaviours using one-way ANOVA shows that gender has no impact on selecting the channels for digital marketing. Abdelkader (2023) [1] examined a new technique, i.e., chat GPT impact on customer experience, by analyzing 394 clients’ perceptions using SPSS. The analysis with the inclusion of demographics as a moderating variable revealed that all demographics except gender have a moderating role in influencing the linkage between customer experience with ChatGPT and overall satisfaction with digital marketing. With this, the conceptual framework for this study can be yielded as follows:

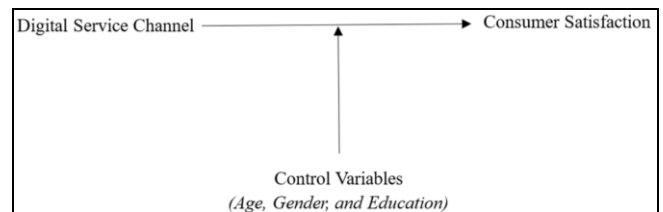


Fig 1: Conceptual framework (Source: Researcher)

The above figure highlights that with the study objective, the digital service channel is included as an independent variable, consumer satisfaction as the dependent variable, and demographics as a moderating variable.

Research methodology

a. Data collection

The study used a quantitative research approach along with an interpretivism paradigm for testing the research hypothesis. For this, we used a sample of 200 consumers who are using digital channels in the Delhi NCR region of India. The survey measure was used for the collection of data on consumers. Herein, an open-ended questionnaire was used as the main instrument for the collection of sample data. Among the selected sample, young consumers are the most relevant sample group for the study as they are majorly the ones using digital channels and are more demanding towards personalization of products (Ahmed *et al.*, 2019) [2]. To ensure that biasness is not present, the questionnaire is formulated using the existing verified responses for each of the variables i.e. consumer satisfaction and digital service channels. The respondents were contacted via phone and once their consent was derived, the questionnaire was shared using Google Forms. A sample of about 110 respondents was derived post-first follow-up while for the remaining 90 respondents data were collected post-second follow-up. The demographic details of the collected sample are stated below

Table 1: Demographics of the sample

Demographic	Characteristics	Frequency	Percent
Age	18-25 years	19.00	10.05
	25-35 years	75.00	39.68
	35-45 years	53.00	28.04
	45-55 years	24.00	12.70
	More than 55 years	18.00	9.52
Gender	Male	82.00	43.39
	Female	95.00	50.26

	Don't want to say	12.00	6.35
Marital status	Married	66.00	34.92
	Unmarried	71.00	37.57
	Divorced	44.00	23.28
	Widow/Widower	8.00	4.23
Monthly Income	Below Rs 20000	16.00	8.47
	Rs 20000 - 40000	25.00	13.23
	Rs 40000- 60000	36.00	19.05
	Rs 60000-80000	65.00	34.39
	Rs 80000-100000	31.00	16.40
Education	Above Rs 100000	16.00	8.47
	Graduate	65.00	34.39
	Postgraduate	54.00	28.57
	Diploma	16.00	8.47
	Professional Degree	15.00	7.94
Occupation	Others	39.00	20.63
	Student	48.00	25.40
	Businessman	54.00	28.57
	Employed	21.00	11.11
	Prefer not to say	66.00	34.92

Source: Output SPSS v26

The researcher continuously connected with respondents via email to ensure that the study's aim and purpose were known to the sample and also to clarify their queries regarding the questionnaire. Among the 200 questionnaires, about 11 were excluded due to lack of information and omission of responses, so the statistical analysis was only applied to 189 questionnaires. After creating an Excel sheet of collected data using MS Excel and importing the data in IBM SPSS 23, the following statistical tests were applied to the data.

- Descriptive analysis of background information
- The scale reliability was examined using the Cronbach alpha test with a required level of 0.7.
- Pearson correlation analysis for testing the linkage between digital service channels and customer satisfaction.
- The regression analysis to determine the moderator (demographic variable) impact on the link between digital service channels and customer satisfaction.

b. Measures

Digital service channels -The features of digital service channels are used as statements. Herein 5 point Likert scale is used to represent the statements. Based on (Abdelkader, 2023; Bachri *et al.*, 2023) ^[1, 6], the features included are better communication facilities, easy-to-use features, clear information availability, more convenience features, and personalized services.

Demographic– The demographic is the moderating variable in the study. Generally, the essential demographical characteristics of an individual (Abdelkader, 2023) ^[1] are age, gender, and education. Thus, these variables are included in the questionnaire.

Customer satisfaction– Customer satisfaction is the dependent variable in the study and thus, a single question for stating digital channels' impact on customer satisfaction is stated.

c. Analysis procedure

The present study uses IBM SPSS to state the model for assessing the relationship between variables. The tool is

widely used in social science and business studies for estimating the indirect and direct effect of mediating variables, the interactions in the form of moderation, and the combination of mediating and moderating variables. In this study, the purpose was to examine the impact of digital service channels on consumer satisfaction with demographics moderating, therefore the regression analysis with the interaction effect of the moderating variable was implemented for testing the hypothesis. We employed ordinary least square regression to test the hypotheses. Two regression models were estimated, each with a different dependent variable and the same set of independent variables and covariates.

d. Ethical consideration

The researcher handled the ethical issues for the study by keeping the personal information of the sample confidential and also keeping them secured in password-protected devices.

Data analysis

a. Descriptive analysis

Descriptive analysis is the means of evaluating the responses to have an overview of the data. Herein, the background information is collected to know about consumers' perceptions of digital channels and customer satisfaction.

Table 2: Descriptive of background knowledge

	N	Minimum	Maximum	Mean	Std. Deviation
Meaning	189	1	3	1.80	0.87
Factors	189	1	5	3.28	1.10
Usage	189	1	5	2.65	1.16
Type	189	1	9	5.44	2.70
Device	189	1	5	2.71	1.24
Channel	189	1	9	4.25	2.55
Important	189	1	10	5.32	2.92
Expertise	189	1	5	2.78	1.28

Source: Output SPSS v26

Table 2 reveals that the meaning value is approximately close to 2 showing that most people consider customer

satisfaction as the degree by which expectations are met. About the factors, price, convenience, and customer service are important. The usage reveals that majorly people have more usage of digital service channels i.e. monthly or weekly. The most common use of digital service channels is for shopping, healthcare services, banking, entertainment, and communication. Digital service channels are most used via smartphones, laptops/PCs, and voice assistants. The commonly used digital service channels are chatbots, self-service, SMS, social media, and live chat. About the importance of digital service channels, speed, convenience, data security, ease of use, and consistency are the most relevant features for customers. Lastly, the respondents considered for the study are highly advanced with technology usage but have expertise in using digital service channels. Thus, the background information reveals that the

respondents are aware of relevant concepts, familiar with digital channels, and also use them making them suitable for study.

b. Reliability of the scale

The reliability of the digital channel scale was evaluated using the Cronbach alpha test. The value for 5 statements was 0.94 which is more than the required level of 0.7. Thus, the total Cronbach alpha value is good and is also above the minimum acceptable value.

c. Correlation

The essential step in the procedure of building the model is to test the linkage between the variables. The Pearson correlation analysis is used for this.

Table 3: Correlation analysis

	Customer satisfaction	Communicate	Easy to use	Insights	Convenience	Personalized
Customer satisfaction	1.00					
Communicate	0.79*	1.00				
Easy to use	0.83*	0.83*	1.00			
Insights	0.75*	0.76*	0.74*	1.00		
Convenience	0.90*	0.71*	0.75*	0.71*	1.00	
Personalized	0.83*	0.80*	0.77*	0.89*	0.75*	1.00

Source: Output SPSS v26

The analysis reveals that for each of the variables, the value is significant at a 5% level of significance with a Pearson correlation magnitude of more than 0.5. Though there are chances of having multicollinearity between independent variables due to significant values but the independent variables are included to compute the interaction effect, so herein, the problem of multicollinearity could be addressed. This reveals that the digital channels and customer satisfaction are related, and the hypothesis could be tested to assess their linkage and moderating effect of demographic variables.

d. Regression

In the model for assessing the main effect between variables, the value of coefficient and significance is examined. The regression results for the hypothesis 1 is presented below.

Table 4: Regression analysis for the impact of digital service channels on customer satisfaction

Variables	Model 1
R square	0.89
Adjusted R square	0.89
F	306.31
N	189
Constant	0.14
<i>Independent variables</i>	
Communicate	0.08
Easy to use	0.21****
Insights	-0.15***
Convenience	0.52****
Personalized	0.33****
Notes: *p ≤ 0.10, **p ≤ 0.05, ***p ≤ 0.01, ****p ≤ 0.001	

Source: Output SPSS v26

The table shows the model is effective with an R square and adjusted R square value of 0.89 showing 89% of variation in

customer satisfaction. The F value of the model is 306.31 with a significance of 0.00 representing that the model is precise. The coefficient value of easy-to-use, insights, convenience, and personalized services is statistically significant with a p-value of less than 0.01. Recalling hypothesis 1, it could be stated that digital service channels contribute to affecting customer satisfaction. The shown coefficient value represents a rise in customer satisfaction by 0.21%, 0.152%, and 0.33%, with a 1% rise in digital service channels integrating easy-to-use, convenient, and personalized services.

e. Testing moderation effect

To test the moderating effect, recalling hypothesis 2, demographic variables moderation between digital service channels and customer satisfaction relationship is stated.

Table 5: Regression model with interaction effect

Variables	Model 1	Model 2
R square	0.89	0.94
Adjusted R square	0.89	0.93
F	189.45	104.61
N	189	189
Constant	0.22	0.11
<i>Independent variables</i>		
Communicate	0.09 (0.10)	0.06
Easy to use	0.21****	0.28****
Insights	-0.16***	-0.32****
Convenience	0.52****	0.58****
Personalized	0.33****	0.40****
<i>Demographic variables</i>		
Age	-0.01	0.01
Gender	0.00	-0.02
Education	-0.02	-0.02
<i>Interaction effect</i>		
age*communicate		0.04
age*easy to use		0.04
age*insights		-0.25***

age*convenience	0.15***
age*personalized	0.01
gender*communicate	0.09
gender* easy to use	0.08
gender*insights	-0.46****
gender*convenience	-0.17***
gender*personalized	0.44****
education*communicate	-0.1
education*easy to use	-0.12**
education*insights	-0.15*
education*convenience	0.25****
education*personalized	0.15*
Notes: *p ≤ 0.10, **p ≤ 0.05, ***p ≤ 0.01, ****p ≤ 0.001	

Source: Output SPSS v26

As for the results, the model is significant with R square and adjusted R square value of 0.89 without an interaction effect and 0.94 and 0.93 respectively with an interaction effect. Even the F-value of both models is 189.45 and 104.61 with a significance of 0.00. The findings depict that with a higher adjusted R square value with the inclusion of the interaction effect, the interpretive power of the regression model has increased. The results reveal no direct effect of demographic variables on customer satisfaction but with the inclusion of interaction effect age and insight, age and convenience, gender and insights, gender and convenience, gender and personalized, education and easy to use, and education and convenience has an impact on customer satisfaction. Thus, it reveals that demographics have an impact on assessing the linkage between digital service channels and customer satisfaction revealing acceptance of hypothesis 2.

Table 6: Confirmation of study hypotheses

Hypothesis	Path	Support
H1	Digital Service Channel → Consumer Satisfaction	Yes
H2a	Digital Service Channel*Age → Consumer Satisfaction	Yes
H2b	Digital Service Channel*Gender → Consumer Satisfaction	Yes
H2c	Digital Service Channel*Education → Consumer Satisfaction	Yes

Source: Output SPSS v26

Discussion

The research finds no direct correlation between demographics and customer satisfaction in digital service channels, but interaction effects among demographics do matter. Factors like age and insight, age and convenience, gender with insight, gender with convenience, gender with personalization, education with ease of use, and education with convenience subtly influence customer satisfaction. Although demographic factors alone don't drive satisfaction, they shape how customers perceive and interact with digital services.

A major challenge noted is that poorly designed digital service channels can limit users' engagement in value co-creation. Value co-creation allows customers to actively contribute to and benefit from the service experience, which can increase their satisfaction. However, when digital channels lack user-centered design, customers may struggle to fully engage, often preferring human interaction as an alternative. According to Collier *et al.* (2015) [11], ineffective design can discourage users from fully utilizing digital platforms, diminishing their satisfaction and pushing them

toward traditional, human-supported channels for a more straightforward experience.

Among all factors influencing customer choice, convenience is the most critical. Customers favor channels that allow quick, efficient access to information and support, requiring minimal effort. Personalized, user-friendly communication and insights are secondary considerations, appealing to customers' preferences for simplicity and customization, thus enhancing satisfaction. In a fast-paced world, convenience in digital service channels has become vital for achieving customer satisfaction and loyalty.

Customer satisfaction in digital channels also relies on their sense of control throughout the process. Customers who feel empowered to navigate services on their own report higher satisfaction. In contrast, a lack of flexibility or overly rigid digital platforms can lead to dissatisfaction and a shift to alternatives, including human-operated channels. User-friendly designs that foster control contribute to a positive experience, while complex or inflexible interfaces may erode satisfaction.

While convenience is primary, other factors such as user-friendliness, social benefits, and insights also shape customer decisions, albeit secondarily. Easy navigation helps users complete tasks efficiently, while social benefits—like engaging with a community or feeling connected—add value. Insights, such as personalized recommendations or updates, create a sense of relevance. Together, these features contribute to a satisfying digital experience, even though they rank below convenience.

Interestingly, the study found that human insights did not directly influence customer satisfaction, challenging the idea that human advice is always beneficial in digital contexts. Satisfaction in digital services relies more on the seamlessness of the interface and customer autonomy. This finding suggests that, in digital self-service channels, customers value efficiency over human input. While human interaction remains essential in complex service scenarios, it may have a limited role in straightforward digital experiences where customers prioritize speed and ease of use.

These findings have implications for academia and industry. In academia, they enrich research on digitalization and customer satisfaction, highlighting how demographics and channel design intersect. Understanding these dynamics can inform further studies on optimizing digital services for diverse demographics. For educators, these insights help raise student awareness of the role academic research plays in improving consumer satisfaction by studying service factors.

Practically, this research emphasizes the importance of user-centered digital service design. Companies can improve customer satisfaction by focusing on convenience, ease of use, and personalization. Recognizing how demographic factors influence experience can help companies tailor their services for diverse clientele. By emphasizing customer-centric design principles, businesses can enhance engagement and loyalty, adapting effectively to a competitive digital landscape.

1. Conclusion

The growth familiarity with digitalized services motivated companies to shift to digital channels to connect with more customers and provide them with more customized services. The existing literature focused on exploring the link

between digital channels and customer satisfaction, but the present study argues for the relationship between digital service channels and consumer satisfaction with the inclusion of an important moderating variable, i.e., demographic factors. Consequently, this study included age, gender, and education as moderating variables and verified that demographic variables have a moderating role in influencing digital service channels and consumer satisfaction relationships. The digital channels considered for the study are email, social messaging, social media, live chats and chatbots, Virtual Reality (VR) and Augmented Reality (AR), voice agents, and mobile apps. Our objective was to examine the impact of digital service channels on customer satisfaction, considering the human demographic factor that influences value (Flores and Vasquez-Parraga, 2015) ^[18]. This is significant because demographics are a reliable predictor of consumer satisfaction in a broader sense (Mohd-Any *et al.*, 2015). The objectives were approached by formulating the research hypothesis that digital service channels have a positive impact on the level of consumer satisfaction. We examined the postulated connections between these concepts by employing regression and correlation analysis on empirical survey data.

Implications

This study has significant consequences for the academic discourse surrounding customer experience development in the service channel. It establishes a basis for understanding how value perceptions are formed. Moreover, the study findings indicate to firms that there is no clear correlation between customers and services. According to the concept of service-dominant logic, a service is the act of creating value in collaboration with consumers (Fliess *et al.*, 2014) ^[17]. This needs the use of a suitable service channel to facilitate customer participation. In the future, we recommend that service researchers make closer attention to the behavioral principles of their target customers. This is important because the service channels, which serve as a visible interface for customers, have the ability to either facilitate or hinder the social, learning, pragmatic, economical, and hedonic value outcomes for customers. When building customer-centric strategies, it is crucial to evaluate the characteristics and demographics of the consumer, as there are various external and internal factors that can influence their choice. According to the literature and our research findings, we contend that the design of digital service channels is crucial in order to prevent behavioral constraints that could limit consumers' access to services. Furthermore, the study suggests that the government should prioritize the integration of digital service channels in its services, initiatives, and campaign launches. This approach should take into account the demographics of the target audience, as it would enhance the effectiveness of message delivery to consumers and increase citizen satisfaction. The empirical findings of the study present three significant difficulties for future service development from a managerial perspective. Prior to proceeding, it is essential to have a clear understanding of the prerequisites associated with the cognitive and physical capacities of consumers in digital service channels. This is crucial as the preparedness of individuals plays a vital role in the collaborative production of value (Fliess *et al.*, 2014) ^[17]. Furthermore, the cognitive capacities of a customer play a significant role in new services. These services should aim

to create a sense of familiarity and make use of the client's past experiences (Chiu and Hofer, 2015; Collier *et al.*, 2015) ^[10, 11]. Furthermore, it is crucial for a multi-channel digital service to maintain overall consistency. Inconsistency can lead to an increased cognitive burden for customers, which can have negative consequences on the net value, especially in instances when service errors occur (Scherer *et al.*, 2015). Therefore, the study has numerous practical ramifications, rendering its findings highly significant.

Limitations and future directions

There are various limitations in our study that affect the reliability and generalizability of the findings. The relationship between demographics, digital service channels, and customer satisfaction has been established. However, the study has only included a small number of consumers due to time and resource constraints. Additionally, the demographics considered in the study are limited to age, gender, marital status, monthly income, education, and occupation. As many other elements are not included and even the scope of the study was reserved to one country only, future studies could widen the study and integrate these aspects too. Longitudinal studies are necessary to have a deeper understanding of the development of consumer satisfaction with digital service channels over time. Instead of the broad analysis offered in this article, it is important to focus more narrowly on services that cater to certain goals. Also, the studies could focus on determining the contribution of each digital service channel so that it could be determined which service channel is more effective in targeting customers. Future studies may endeavor to establish precise boundaries and metrics for gauging consumer satisfaction in digital service channels.

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