

Factors influencing online and in-store purchase of telecommunications services and equipment in Croatia

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Abstract

The purpose of this paper is to examine differences in factors affecting the probability of online and in-store purchase of telecommunications equipment in the Republic of Croatia. Online questionnaire survey conducted in September 2019 gathered responses that identified respondents' method of telecommunications services and equipment purchase, their information gathering tools, factors affecting respondents' telecommunications services and equipment purchasing decisions in general, and online and in-store purchasing decisions. 125 gathered responses were analysed using a binomial logistic regression. The results state that general factors incite respondents to purchase telecommunications equipment and services in-store. Factors inciting online purchases are enabling factors and cause respondents to purchase telecommunications services and equipment online. Responses were further divided into subsamples depending on gender and education level. Results are consistent in tested subsamples. In the sample of male respondents, the results are consistent, while the female subsample shows does not exhibit statistically significant results. Furthermore, subsamples that allowed education level differences showed the results are supported for the subsample of respondents with higher education, and are not supported for respondents with secondary education.

Keywords: telecommunications industry, online, retail, customer segment, purchasing habits.

JEL Classification: L81, L96

1. Introduction

Under the umbrella of the European Union's single market strategy, the European Commission prioritised creation of a Digital Single Market (European Commission, 2019). Wireless connections induced an increase in mobile traffic and creating a level playing field for buyers and sellers across the European Union. Investments amounting more than 41.3 billion Euros in the digital sector and 14 billion Euros in digital

technologies were used to anticipate a rising demand. Apart from investments bureaucratic red tape has also been minimised. The EU cross-border e-shopping had been facilitated by regulation concerning: cross-border delivery, VAT, consumer protection, data protection and non-cash payments.

The purpose of this paper is to study the factors affecting online and in-store purchase in Croatia and examine their effect on the probability of online purchase of telecommunications equipment. Namely, after the 2020 break-out of the covid-19 pandemic and nation-wide lockdowns individuals and businesses were forced to increase their usage of Internet and, consequently, e-shopping. The pandemic and lockdowns caused a change of consumption habits, and, accordingly, supply. As the use of Internet and e-shopping grew, information and telecommunication sectors proved to be resilient to the pandemic (Croatian National Bank, 2020a, 2020b), hence their importance and share in consumers' budget increased. This paper examines the factors influencing purchasing habits of individuals in the telecommunications sector.

Although the rise in e-shopping is attributed to all age groups, the sharpest increase is recorded in individuals younger than 25 years old (European Commission, 2019a). Hence, this paper aims to study the factors influencing online and in-store purchase of individuals of different age groups whereby the examined sample corresponds to this characteristic. Furthermore, differences in on-line purchasing habits of individuals depending on the gender and level of education are depicted. The paper is structured as follows. Firstly, it provides a literature overview. Secondly, it explains the methodology and depicts the results of the study. Finally, it concludes with limitations and managerial implications of the study.

2. Literature review

About 82% of households in Croatia have access to and use the Internet (European Commission, 2019a). 63% of individuals in the EU-28 Member states and 45% of those in Croatia purchased online in 2019. Nonetheless, the importance of e-shopping for both buyers and sellers in Croatia stems from the fact that Croatia is one of the EU-28 Member States that experienced the largest increase in e-shopping in 2019. Continuous changes in consumption habits and retail methods over the years, such as the growth in small and medium size retailers and modern retail management attributed to this trend (Anić & Nušinović, 2003).

Changes in purchasing habits occur slowly. City centres' stores could be substituted with online shops (Weltevreden & van Rietbergen, 2009). Croatia's urban population growth is 0.6%, while urban population currently accounts for 57.24 % of the total population (United Nations Population Division, 2020), ensuring a slow but steady increase, and, hence, increase in online shopping. On the other hand, complementarity between brick-and-mortar and online shops could remain (Farag et al., 2006). E-

shopping reduces the amounts of shopping trips, i.e., the substitution effect (Crocco et al., 2013). Time saved from shopping trips is spent on additional shopping trips, i.e., the complementarity effect (Hiselius et al., 2015). Weltevreden (2007) accentuates that although in the short run the effect of complementarity is evident, in the long run, the substitution effect should take place. Therefore, firms need to carefully envision their strategic positioning in the online market to be able to meet customers demand.

In 2018 only about 14% of the EU firms used e-commers (European Commission, 2019a), while Internet retailing accounted for less than 2% of total retailing in Croatia in 2015 (Bourlier & Gomez, 2017). Its predicted increase of compound 15% per annum (Bourlier & Gomez, 2017) should incite Croatian firms to increase its turnover from web sales that is currently 5% of total turnover for Croatia to at least 9% of total turnover, which the EU Member States such as Poland, Hungary, or Slovakia experience (European Commission, 2019a). Hence, multi-channel product placement seems unavoidable.

Teltzrow et al. (2007) study consumer trust in a multi-channel retailer. They find that privacy, reputation and perceived size of the store influence consumer trust. More familiar consumers are with the retailer, trust in the e-shop is greater. Privacy is important regardless of the level of consumers familiarity with the retailer. Potential purchases then also depend on the returns, refunds and security. As online shopping is correlated with in-store shopping, it depends also on attitudes and perceptions (Lee et al., 2017). Hence, openness to new technologies and efficiency gains from online shopping influence customers switching purchasing habits, specifically customers willingness to adopt new technologies (Maat & Konings, 2018). Price, quality design and brand are important factors affecting young persons' purchasing habits together with short lines at self-checkouts, greater speed in mobile payments, easy access to additional information on interactive screens, in-app navigation tools (Renko et al., 2019). Online store's design matters as it influences customers' shopping experience (Weltevreden, 2007). Porat et al. (2007) found that design that incites the emotions of pleasure, arousal and dominance, namely expressive aesthetics and usability, positively influenced customer attitudes towards e-store.

Demographic characteristics influence both search and purchased decisions depending on type of products customers purchase (Levin et al., 2005). In terms of gender, majority of online shoppers are male (Vrechopoulos et al., 2001; Farag et al., 2006). Online purchases are mainly made by younger, wealthier and more educated persons (Bellman, Lohse, and Johnson, 1999; Vrechopoulos et al., 2001; Swinyard and Smith, 2003). Namely, majority of clothes and sporting goods were purchased by individuals younger than 25 years old, travel and holidays individuals between 25 and 54 years old, and books and magazines those older than 54 years old (European Commission, 2019). Levin et al. (2005) found that demographic characteristics affect purchase decisions for electronic products, but not computer products. Clothes or

sports equipment have attributes of products which customers prefer to see and examine in person before purchasing it, while computer software or airline tickets do not. Attributes of computer equipment can be checked and reviewed online (Girard et al., 2002). Websites here serve to inspect the characteristics of products and services, influencing the search for potential purchases (Häubl and Trifts, 2000; Levin et al., 2005). Renko et al. (2019) found that young consumers in Croatia are familiar with online shopping, but still enjoy the benefits of brick-and-mortar shops.

Although Farag et al. (2006) find complementarity between online and in-store shopping, Weltevreden (2007) states that complementarity exists only in the short term, while the substitution of brick-and-mortar stores with virtual stores will take place depending on the product category and customers' shopping habits. As properties of computer equipment are similar to properties of telecommunications equipment and services, there is an opportunity arising from e-shopping in telecommunications market segment.

There has been an average rise in e-shopping of telecommunication services by individuals on the EU-28 level, from 9% of individuals in 2013 to 13% in 2019. In Croatia, the share of individuals e-shopping of telecommunication services has remained 4% throughout the same period, 3% of individuals purchased computer software online compared to the 15% of the EU-28 average. 6% computer hardware compared to 11% EU-28, 12% electronic equipment compared to 17%, 4% telecommunication services compared to 13%, 30% from national sellers compared to 55%, 18% from sellers from other EU Member States and 19% from sellers from non-EU Member States in 2019. Delivery, payment, or technical problems on websites were some of the common problems encountered with e-shopping, while the main reasons for in-store purchases was the ability to see the product before purchase.

The aim of this paper is the study of factors influencing online and in-store purchase of telecommunications services and equipment in Croatia. To achieve this, we propose the following hypotheses based on the abovementioned literature:

Hypothesis 1: General factors facilitating customer habits influence in-store rather than online purchase decision.

Hypothesis 2a: Factors affecting online purchases lead to online purchases.

Hypothesis 2b: Factors inciting in-store purchase lead to online purchases.

3. Methodology

Data source and sample

The purpose of this research was to study the factors influencing purchase of telecommunications services and equipment in the Republic of Croatia. This study

specifically examines whether there exist differences in the factors affecting the online versus in-store purchasing decision based on the demographic characteristics of individual customers.

Empirical research instrument for this study was an online questionnaire survey composed of ten questions. The questions identified respondents' method of telecommunications services and equipment purchase, their information gathering tools, factors affecting respondents' telecommunications services and equipment purchasing decisions in general, and online and in-store purchasing decisions specifically. Data was gathered in September 2019. The survey was placed on a website and respondents were invited to fill-in the questionnaire survey via social networks. 125 responses were collected prior closing the survey.

Variables and measures

Dependent variable

In-store or online purchase telecommunications' services or equipment is a dependent variable. The respondents were asked to evaluate the usual way of telecommunications' services or equipment purchase on a Likert scale from 1 – never, 2 – seldom, 3 – sometimes, 4 – often and 5 – always. For the purpose of this study responses for both in-store and online of telecommunications equipment were evaluated. Each respondents' ordinal scale response on the frequency of in-store purchase was subtracted from online purchase. The results were grouped in two groups. A group that more frequently used in-store purchase was attributed 0 ($n_{\text{online}} = 81$), while a group that used both methods of purchase evenly or used online purchase more frequently was attributed 1 ($n_{\text{in-store}} = 44$).

Independent variables

Respondents evaluated the most important factors for telecommunications services and equipment purchase on a five-point Likert scale from 1 – not at all important to 5 – the most important.

General factors included: quality of telecommunications service, ease of purchase, price of a product or service, image of the telecommunications operator, customer support during purchase and after-sale customer support.

Respondents were asked to evaluate the factors inciting *online purchase*: ease of purchase, discounts, availability of purchase, delivery services, delivery options, payment methods, chat agent and the existence of mobile application.

Additionally, respondents were asked to evaluate the importance of factors affecting *in-store purchase*: sales personnel, ability to test the equipment, additional services (i.e., promotions), atmosphere and store design.

Control variables

Three control variables are used in our model. Both models test the effect of general factors affecting purchase methods, and online and in-store factors inciting online purchase. Respondents' age is a control variable in both models. The rationale is that younger respondents spend more time online, which affects the tendency for online purchases. Secondly, gender was used as a control variable. Herein, we study the tendency to purchase telecommunications equipment and services and, hence, we expect that gender will generally affect the tendency to purchase telecommunications equipment and services. Thirdly, level of education is a control variable. Respondents are grouped in three groups according to the education level: (1) secondary school, (2) tertiary professional education, (3) higher education (university).

4. Results and discussion

125 responses were recorded in the online questionnaire survey depicting motivation and method of purchase of telecommunications equipment and services. 55,20% of respondents were females and 44,80% were males. Based on their age, 52,80% of respondents were between 19 and 25 years old, 23,20% were between 26 and 35 years old, and 24,00% were between 36 and 60 years old. Respondents purchase telecommunications equipment and services in-store ($\mu=3.70$) rather than online ($\mu=2.17$). However, respondents predicted a growth of online purchases making this survey relevant for telecommunications firms.

Table 1. Constructs and items' descriptive statistics

Component	Factor loadings	N	Min	Max	Mean	S.D.
General factors affecting (Cronbach's alpha = 0.69)						
Quality	0.44	125	1	5	4.49	0.62
Ease of purchase	0.52	125	1	5	3.94	0.83
Customer support during purchase	0.74	125	1	5	3.64	0.87
After-sale customer support	0.70	125	1	5	3.74	0.99
Factors inciting online purchase (Cronbach's alpha = 0.92)						
Ease of purchase	0.80	125	1	5	4.14	1.10

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Availability of purchase	0.86	125	1	5	4.01	1.06
Delivery services	0.79	125	1	5	3.80	1.05
Delivery options	0.89	125	1	5	3.78	1.08
Payment methods	0.82	125	1	5	3.99	1.05
Factors inciting in-store purchase						
(Cronbach's alpha = 0.64)						
Ability to test the equipment	0.14	125	1	5	4.07	0.94
Additional services (e.g., promotions)	0.47	125	1	5	2.66	1.04
Atmosphere and store design	0.43	125	1	5	3.06	1.00

Note: N = 125. S.D. = standard deviation

Constructs were tested for construct validity in SPSS. Initially items used in the questionnaire survey had more items. However, when exploratory factor analysis was conducted on each separate construct more than one construct was obtained. Firstly, principal components analysis was performed with varimax rotation. Based on eigenvalues greater than 1 and items that exhibited coefficients greater than 0.1. Those items that were loaded on the second construct were eliminated. Confirmatory factor analysis was performed only on the items that were loaded on the principal component. Principal axis factoring was used for confirmatory factor analysis. Factors affecting *general purchase* explain 37,41% of total variance of the construct. Kaiser-Meyer-Olkin measure of sampling adequacy is 0.67, Bartlett's test of sphericity has a p-value less than 0.00, and Cronbach's alpha 0.69. Factors inciting *online purchase* explain 69,45% of total variance, obtain Kaiser-Meyer-Olkin measure of sampling adequacy 0.86, Bartlett's test of sphericity's p-value is less than 0.00, and Cronbach's alpha 0.92. Factors inciting *in-store purchase* explain 40,26% of total variance, have Kaiser-Meyer-Olkin measure of sampling adequacy 0.60, Bartlett's test of sphericity's p-value is less than 0.00, and Cronbach's alpha 0.64.

Constructs and control variables' correlations and descriptive statistics are given in Table 2.

Table 2. Constructs and control variables’ correlations and descriptive statistics

		Mean	S.D.	1	2	3	4	5	6	7
1	Method of purchase	0.35	0.04	1						
2	General factors affecting purchase decisions	0.00	0.08	-0.15	1					
3	Factors inciting online purchase	0.00	0.09	0.10 [†]	0.41**	1				
4	Factors inciting instore purchase	0.00	0.08	-0.01	0.28**	0.33**	1			
5	Age	30.14	0.97	0.01	0.11	-0.09	-0.21*	1		
6	Gender	0.55	0.05	-0.21*	0.27**	0.07	0.11	-0.16 [†]	1	
7	Education	2.15	0.08	-0.01	0.02	-0.09	-0.17 [†]	0.65**	-0.12	1

Note: N = 125. S.D. = standard deviation. Two-tailed test. Spearman correlation reported.

** p < 0.01, * p < 0.05, [†] p < 0.10

Source: Authors’ calculations.

Positive significant correlation exists between: (1) methods of purchase and factors inciting online purchase, (2) general factors affecting purchase decisions and factors inciting online purchase, (3) general factors affecting purchase decisions and factors inciting in-store purchase, (4) general factors affecting purchase decisions and gender, (5) factors inciting online purchase and factors inciting in-store purchase, (6) age and education. Significant negative correlation exists between (1) methods of purchase and gender, (2) factors inciting in-store purchase and age, (3) factors inciting in-store purchase and education, (4) age and gender, (5) age and current studies, (6) education and current studies.

Dependent variable is a usual method of purchase either in-store (value 0) or online (value 1). Similar to Farag et al. (2006) who used logistic and ordinary least square regression, we used binomial logistic regression to test the hypotheses. The results are presented in Table 3 and 4.

Table 3. Parameter estimates and results of binomial logistic model: Gender

Variable	Full model				Male				Female			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Age	0.00 (0.02)	0.01 (0.02)	0.00 (0.02)	0.00 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.03)	-0.02 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Education	-0.26 (0.21)	-0.32 (0.21)	-0.27 (0.23)	-0.27 (0.23)	-0.41 (0.31)	-0.49 (0.32)	-0.52 (0.33)	-0.53 (0.33)	-0.21 (0.31)	-0.22 (0.31)	-0.12 (0.32)	-0.13 (0.33)
General factors affecting purchase decision		-0.42 [†] (0.23)	-0.74** (0.27)	-0.73** (0.28)		-0.51 (0.32)	-0.93* (0.41)	-0.88* (0.42)		-0.06 (0.37)	-0.35 (0.42)	-0.37 (0.43)
Factors inciting online purchase			0.63* (0.25)	0.63* (0.26)			0.78* (0.37)	0.84* (0.38)			0.52 (0.38)	0.47 (0.40)
Factors inciting instore purchase				-0.02 (0.26)				-0.21 (0.39)				0.15 (0.37)
Pseudo R ² (Nagelkerke)	0.10	0.13	0.20	0.28	0.05	0.11	0.22	0.22	0.23	0.23	0.26	0.26
-2 log-likelihood	163.46	160.00	153.05	94.75	75.59	72.78	67.66	67.37	82.93	82.90	80.84	80.70
χ ²	9.83	13.29	20.24	18.93	2.04	4.86	9.97	10.26	12.73	12.75	14.81	14.99

Note: N_{Full model} = 125; N_{male} = 56; N_{female} = 69. Standard error reported in brackets.

** p < 0.01, * p < 0.05, [†] p < 0.10

Source: Authors’ calculations.

Binomial logistic regression tested four models: (1) control variables, and (2) general factors affecting purchase, and (3) factors affecting online and (4) in-store purchase. We then proceeded to test each model for gender differences, i.e., between male and female.

In a full model general factors affecting purchase decision of telecommunications services and equipment have a significant and negative effect on the intention to purchase the telecommunications services and equipment online. Only the factors inciting online purchase have a significant positive affect on the intention to purchase telecommunication services and equipment online. Furthermore, we inspected the existence of gender differences in factors affecting an intention to purchase the equipment online. The analysis has shown there exist differences between male and females. Namely, all variables have an insignificant effect on the intention to purchase telecommunications services and equipment online for females, while both general factors affecting purchase decision and factors inciting online purchase have a significant and expected effect on the intention to purchase equipment online for males.

Hence, it seems that telecommunications services and equipment purchase influences more strongly males than females.

Table 4. Parameter estimates and results of binomial logistic model: Education level

Variable	Full model				Secondary education				Tertiary education			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Age	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Gender	-1.01** (0.36)	-0.93* (0.37)	-0.96* (0.38)	-0.96* (0.38)	-1.56* (0.63)	-1.54* (0.63)	-1.78** (0.68)	-1.79* (0.70)	-0.73 (0.46)	-0.61 (0.47)	-0.44 (0.49)	-0.43 (0.49)
General factors affecting purchase decision		-0.26 (0.23)	-0.61* (0.28)	-0.62* (0.28)		-0.17 (0.48)	-0.32 (0.52)	-0.47 (0.59)		-0.32 (0.26)	-0.81* (0.35)	-0.75* (0.35)
Factors inciting online purchase			0.68* (0.26)	0.67* (0.27)			0.76 (0.59)	0.21 (0.69)			0.77* (0.31)	0.81* (0.31)
Factors inciting instore purchase				0.04 (0.27)				0.90 (0.61)				-0.26 (0.33)
Pseudo R ² (Nagelkerke)	0.17	0.18	0.25	0.25	0.26	0.26	0.31	0.37	0.13	0.15	0.25	0.26
-2 log-likelihood	156.82	155.50	147.82	147.79	50.26	50.14	48.33	45.87	105.32	103.79	96.38	95.74
χ^2	16.47	17.79	25.47	25.49	9.36	9.48	11.28	13.74	8.36	9.88	17.30	17.93

Note: N_{Full model} = 125; N_{secondary education} = 43; N_{tertiary education} = 82. Standard error reported in brackets.

** p < 0.01, * p < 0.05, † p < 0.10

Source: Authors' calculations.

We further studied the factors affecting purchase decision and specifically both online and in-store purchase based on respondents' education level. For the purpose of this study respondents were grouped into two groups: (1) secondary education (N_{secondary education} = 43), and (2) tertiary education (N_{tertiary education} = 82). The analysis has shown that there is significant and expected effect on the intention to purchase

equipment online only for respondents with tertiary education. For respondents with secondary education neither general factors nor factors inciting online purchase do not exhibit statistically significant effect on the purchase of telecommunications services or equipment online or in-store.

A summary of tested hypotheses is presented in Table 5.

Table 5. Summary of hypotheses' tests

		Full model	Gender: Male	Gender: Female	Full model	Secondary education	Tertiary education
H1	General factors → Purchase method	Supported	Supported	-	Supported	-	Supported
H2a	Factors inciting online purchase → Purchase method	Supported	Supported	-	Supported	-	Supported
H2b	Factors inciting in-store purchase → Purchase method	-	-	-	-	-	-

Source: Authors.

5. Conclusion

This paper studies the effect of general, online and in-store factors affecting in-store or online purchase method of telecommunications equipment and services. General factors affecting purchases of telecommunications equipment and services include: quality, ease of purchase, customer support during purchase and after-sale customer support. Factors inciting online purchases encompass: ease of purchase, availability of purchase, delivery services, delivery options and payment methods. Factors inciting in-store purchases are: ability to test the equipment, additional services (e.g., promotions) and in-store atmosphere and design.

Results of a binomial logistic regression showed that general factors incite respondents to purchase telecommunications equipment and services in-store. However, factors inciting online purchases are enabling factors and cause respondents to purchase telecommunications services and equipment online. Both results are valid when subsamples were tested. The first subsample allowed gender differences. The results are supported for the subsample of male respondents and are not supported for the subsample of female respondents. Furthermore, subsamples that allowed differentiation based on education level showed the results are supported for the subsample of respondents with higher education, and are not supported for respondents with secondary education.

The managerial contribution for contemporary business of this paper is twofold. Firstly, it depicts gaps not addressed by telecommunications firms in purchasing habits

of specific customer segments, namely females and customers with secondary education. Secondly, in times of covid-19 pandemic, it depicts stores as central for customer support during or after purchase of equipment and services. Online purchase, although can address some customer questions, majority of answers are obtained face-to-face, i.e., in-store.

The limitation of this study is that it relates to a specific time period, September 2019. It would be interesting to address the same questions after the 2020 covid-19 pandemic lockdown as telecommunications industry was one that kept growing due to online schooling, using home as office, etc.

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