



TECHNICAL UNIVERSITY OF CLUJ-NAPOCA

ACTA TECHNICA NAPOCENSIS

Series: Applied Mathematics, Mechanics, and Engineering  
Vol. 64, Issue Special I, January, 2021

## TESTING THE TRUST DIMENSIONS OF ROMANIAN CONSUMERS IN E-COMMERCE FOR ELECTRONIC AND HOUSEHOLD APPLIANCES

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**Abstract:** *In this paper, we identified and correlated ten factors and five dimensions of Romanian consumer trust in e-commerce platforms from Romania, when purchasing electronic and household appliances. The study carries out an analysis and synthesis of the specialized literature to establish the correct dimensions, in order to test the trust of Romanian consumers in e-commerce platforms, finalizing by designing a dedicated model. To verify this model, a questionnaire was configured, and the data were validated by conceptualizing the nominal logistics model for testing consumers trust, using the nnet package in the „R” software. This study is complementary to four previous models and focuses on identifying the size and dynamics of consumer confidence in e-commerce platforms.*

**Key words:** *testing trust, consumers, e-commerce platforms, models of trust.*

### 1. INTRODUCTION

The research presented in this paper aims to test the dimensions of Romanian consumers' trust in e-commerce platforms, by conceptualizing a nominal logistics model and validating it.

In Romania, e-commerce has seen a surprising evolution, according to ARMO (Romanian Association of Online Stores), this year will exceed 5 billion in online purchases, 3.5 billion being represented by electronic retail. In Romania, the electro-IT trade is of oligopoly type, the E-mag platform is the market leader, standing out from the following traders [1]. If in the beginning, the purpose of the Internet was the rapid exchange of information between researchers, it is now part of the daily lives of over 4.5 billion people. The Internet is the means by which digital spaces have developed, from the first service offered on the Internet, consisting of e-mail address, to web pages, blogs and many other social networks [2]. The Internet has brought with it a new trend, namely e-commerce and the possibility of shopping without having seen it. Also, some shoppers choose to shop online because it saves time and money, they are comfortable shoppers who like to explore the „mysteries” of e-commerce. In

Romania, the eCommerce Awards Gala (GPeC) was founded in 2006, on this occasion, statistical information on Romanian e-commerce is published annually. The studies published by GPeC highlighted the fact that most consumers choose to buy online from well-known platforms with a good reputation on the market.

Both the low price and the fast delivery contribute to making the final purchase decision. The most traded products of 2019 were home appliances, followed by IT accessories [3].

At the same time, since the end of 2019, the 2Performant platform has been operating, updating real-time statistics about Romanian e-commerce daily. The conclusions that can be drawn from viewing the statistics are extremely useful for e-commerce companies. Romanians are more tempted to make a purchase on the phone at the expense of the desktop, but the values of the shopping cart are higher when trading from the computer. Online purchases of household appliances and electronics have increased in 2020, about three times, compared to 2019; reaching an average value of a purchase in the amount of 140 euros [4].

### 2. CONCEPTS AND DEFINITIONS

For a deeper understanding of the model presented, respectively of the concepts used, the basic notions are defined and presented below. The term consumer comes from the Latin “consumens” [5], and according to Dex, means “person who consumes goods resulting from production”. According to Law no. 296/2004 on the Romanian Consumer Code, the consumer is „any natural person or group of natural persons constituted in associations, acting for purposes outside its commercial, industrial or production activity, artisanal or liberal” [6]. E-commerce offers the possibility of trading through electronic communication technology, processing them to create values between companies and individuals [7]. Another definition of (e-commerce) is the sale and purchase of goods and services via the Internet, rapidly changing the way business people manage their business [8]. E-commerce complements and helps traditional commerce, offering the possibility to increase the number of potential consumers without blocking the distance between them and the company [9]. The notion of platform was initially used by social media companies, to later expand and be widely used by both the press and consumers. In 2004, Tim O’Reilly defined Web 2.0 as a platform, so the web was positioned as a “robust development platform” in which “websites become software components” [10].

O’Reilly positioned the computational meaning of the term “platform” in the web center as the concept of platform. In addition to the information publishing environment that was the simple web, the platform provided the necessary infrastructure to build applications, a distributed operating system that could deliver software services [11].

### **2.1. Models of trust**

Trust is the first step in stimulating online shopping. Trust is built by providing secure transactions, quality products, as well as after-sales services (guarantees, servicing). Given that it is extremely difficult to attract new consumers, it is extremely important for online platforms to adapt to consumer needs and be predictable [12].

The term „trust” occupies a central place in online business transactions, being defined by researchers in countless ways, but each

definition reveals different aspects of the dimension of trust [13].

Trust has been multidisciplinary research in various fields such as: social, economic, psychological and behavioral, managerial, technological etc., considering certain inherent risks involved in buying online, models have been formulated and tested, confidence that exogenous variables influence buying intentions and the effects of the buying decision on trust [14].

In this paper, four models are correlated, which are the basis of the current model. The first is the model presented by Corbitt, the second belongs to Musfiq Mannan, the third belongs to Tiago Oliveira, and the fourth model is the closest to the present model, belonging to the authors of the present study.

The perceived B2C (Business to consumer) online trust model, developed by Corbitt and its collaborators, presents seven factors named as follows: web experience, market orientation, technological trust, trust, perceived risk, participation in e-commerce and perception of site quality.

According to this model, trust as a factor in e-commerce is mainly influenced by three main sources: the reputation of e-commerce in general, consumers and the specific website in e-commerce.

In addition, to improve the level of trust, the model proposed by Corbitt urges online businesses to keep customers focused, active and provide them with the necessary information.

Customers should have the opportunity to provide information and suggestions to the sites, so that they feel that they have contributed to the positive development of the web-design of the site.

The model highlighted that there is no strong link between perceived risk and trust or between perceived risk and participation in e-commerce, on the contrary consumers have a fairly high level of confidence in e-commerce although sometimes it involves certain risks.

Furthermore, the role of market orientation is very uncertain [15]. In the Structural Testing Model of confidence after Mannan, only five of the eight proposed hypotheses are confirmed. The first hypothesis highlights that as

confidence in e-commerce increases, the perceived risk associated with e-commerce decreases, with a relationship of complementarity.

At the same time, the analysis of the model showed that: perceived security, technological trust, market orientation and relational benefit are factors that directly influence consumer confidence in e-commerce. Social presence, relational benefit and the importance of the website are irrelevant factors in testing consumer confidence, not being supported hypotheses.

However, the test of consumers trusts in relation to hypothesis 8 (b) regarding the web experience of consumers revealed that a high percentage of about 90% of respondents have more than 5 years of experience in using the Internet.

Unlike Corbitt's 2003 study, e-commerce was in its infancy. Hypotheses 8 (a) and (b) are not supported, as the model reveals that there are no significant differences between users with experience in using the Internet and less experienced users in terms of perceived security and technological trust [16].

Starting from the model of Chen & Dhillon (2003), Tiago Oliveira et al, measured three main dimensions of trust, namely: competence, integrity and benevolence as well as the four sources of trust: consumer characteristics, company characteristics, website infrastructure and sources of consumer confidence in e-commerce.

The study took place in 2014 collecting 365 valid answers. The results showed that 82% of respondents made at least one purchase online in the last 6 months. It has been observed that the level of education influences e-commerce, the higher the level of education, the higher the possibility to make more purchases online [17].

In the model for testing Romanian consumers trust in e-commerce held at the 15th International Symposium in Management 2019, the authors highlighted the fact that factors such as site accessibility and security, significantly contribute to increasing overall consumer trust.

Table 1

The dimensions of trust specific to each model

MODELS OF TESTING TRUST	DIMENSIONS OF TRUST
Perceived B2C online trust model, after Corbitt and colleagues (2003)	Competence Predictability Goodwill
Structural model of confidence testing after Musfiq Mannan (2008)	Ability Integrity Benevolence Predictability
The model for testing the dimensions of consumer trust according to Tiago Oliveira et al. (2017)	Competence Integrity Benevolence
Testing the model of Romanian consumers trust in e-commerce (S.I.M. 2019)	Agility Integrity rate Adaptability
Nominal logistics model for testing the trust dimensions of Romanian consumers	Agility Integrity rate Adaptability G.D.P.R. Predictability

## 2.2. The dimensions of trust

The current conceptual model has five dimensions (hereinafter referred to as variables) of consumer confidence in e-commerce for electronics and home appliances. According to researchers, the presence of the dimensions of trust in e-commerce provides consumers with a favorable environment for building trust and making the final purchase decision. Agility is the first dimension of trust tested, comprising a complex of grouped characteristics (ability, competence, etc.) of the e-commerce platform, which reflect on the transaction in the way desired by the consumer. The integrity rate, the second dimension of trust, means that the e-commerce platform respects a set of rules, providing useful and correct information to consumers, while respecting the quality/price ratio, offering unaltered and unaltered transactions [16].

Adaptability is the third and most important dimension of the platform's perspective to provide consumers with the electronic and home appliances they need. Platforms must also provide the necessary technology to build trust

[19]. G.D.P.R. (General Data Protection entered into force on 25 May 2018. The Regulation applies if legal entities are established in the EU or collect and process personal data of residents from the EU. [20] Online transactions are sometimes characterized as insecure with several risks of fraud [18]. Consumers provide sensitive personal information to each transaction such as (first / last name, email address, credit card number) based on a legal and reliable e-commerce system [21]. Transactions must remain intact, confidential through the use of firewall systems through the use of codes that prevent the dissemination of personal information of consumers in the public environment [7]. With this Regulation, companies must take more responsibility for the transparency, use and management of personal data; sanctions being imposed in extremely large fines [9]. This dimension of trust gives dynamism and novelty to the present study, with its help, an optimal configuration of the multinomial logistics model was obtained. Predictability is a way to reduce the uncertainty of the platform, highlights how past shopping experiences affect future consumer behavior [16].

### 3. RESEARCH METHOD

In the present study, the questionnaire method was used as a research and data collection strategy. The collection of standardized data was done through the MS Excel program, then proceeded to analyze the regression models (generalized) for the five dimensions of confidence called variables. The questionnaire focused on the factors and dimensions of trust found in the literature, they are named in the present study, predictors and variables. The multinom function from the nnet package in the "R" software was used. The "backward selection procedure" was used to determine the optimal model. Starting with all 10 predictors, we eliminated that predictor that has the P-value (corresponding to the t test, because the number of observations is 30, according to the student distribution, t approximates the normal distribution) the highest average (of course higher than a

threshold of significance  $\alpha = 0.01$ , ie errors below 1%). The mean P-value means the arithmetic mean of the P-values t the J-1 (5-1 = 4) regression relations. The main purpose of the questionnaire was to obtain the optimal model of the dimensions of confidence and to highlight the dependence of variables on predictors. In the first stage we proceeded to calculate the correlation matrix between the 10 predictors (noted as follows: X1 = RTV, X2 = EXP, X3 = RB, X4 = ACC, X5 = SEC, X6 = INF, X7 = GAR, X8 = CAL, X9 = SOF, X10 = PER / FID) and the 5 response variables specific to the confidence dimensions: Y1 = AG, Y2 = RI, Y3 = AD, Y4 = GDPR, Y5 = PRED). Likert's scale was used by constructing a set of questions directly related to the researched aspects. Respondents agreed or disagreed with them.

Before proceeding to address the questions specific to the factors (predictors) in the literature, it was verified whether each of the 30 respondents made at least one online purchase for electronic products and appliances in the last 3 months. The answer was obviously Yes, and then the respondents noted in order of preference some e-commerce platforms in Romania with which they are familiar. More than 50% of respondents stated that they frequently purchase electronic and household appliances from e-commerce platforms.

#### 3.1. Questionnaire

In order to obtain consistent data, the questionnaire was configured to include all factors characteristic of the platform and consumer behavior noted with X, in correlation with the five dimensions of trust, also called variables noted with Y.

X1. Does TV advertising help you to store an electronic / household appliance product that you later access on an e-commerce platform? (X1 = RTV)

X2. Do I think that previous experience influences my decision to buy from the same e-commerce platform? (X2 = EXP)

X3. Do you take into account the brand reputation of the e-commerce platform when you buy an electronic or home appliance product? (X3 = RB)

X4. Does the presentation of household / electronic products and their accessibility on the site give you confidence in the respective platform? (X4 = ACC)

X5. Do you purchase electronic / home appliances from platforms that have secure payment applications? (X5 = SEC)

X6. Does the logistics (delivery time, active information via sms / e-mail / phone, order tracking, transport) of the e-commerce platform influence your purchasing decision? (X6 = INF)

X7. Does the warranty services offered by the e-commerce platform influence your purchasing decision? (X7 = GAR)

X8. Do you buy electronic / household appliances that can be easily tested and returned in a maximum of 30 days? (X8 = CAL)

X9. Do you read the reviews of other consumers posted on the platform where you intend to purchase electronic / household appliances? (X9 = S.O.F.)

X10. In most cases, do you buy products from e-commerce platforms, from which you have purchased electronic / household appliances in the past? (X10 = PER / FID)

Confidence-specific questions (variables)

Y1. Do you buy from platforms whose Website has the technological capacity to offer you as many filters as possible to personalize or suggest shopping for electronic / household appliances products? (Y1 = AG)

Y2. Do you buy online from platforms that live up to their commitments? (Y2 = RI)

Y3. Do the platforms you buy online have the ability to adapt to consumer needs? (Y3 = AD)

Y4. With each online purchase on the platforms, do you check that the confidentiality of personal data has been respected? (Y4 = G.D.P.R)

Y5. As a consumer, is your purchase decision influenced by the discounts charged by the e-commerce platform over certain periods of time? (Y5 = PRED).

#### 4. DATA ANALYSIS AND INTERPRETATION OF RESULTS

Next, the model adapted to the lifestyle of Romanian consumers is interpreted and validated, based on a research conducted in

Romania. We observe in the present study that, on the one hand there are correlations between the 10 predictors and the 5 response variables and on the other hand there is a weak connection between the 5 response variables, between the dimensions of confidence.

Given that all 5 response variables are categorical random variables with values in the set {1,2,3,4,5} (i.e., 5 response categories), the link between the response variables and the 10 predictors can be obtained using a generalized linear regression model.

From the category of generalized linear models there are two models that are suitable for response variables with values from several categories (more than two categories), namely the logarithmic model (which applies to distributed Poisson variables) and the multinomial logistics model (for multinomially distributed variables).

To apply the first type of model, it must be checked whether the response variable has a Poisson distribution. Because in the case of the Poisson distribution, the mean is equal to the depression (variant) it is accepted because a logarithmic node can be applied if the mean and the statistical variant are almost equal.

In this case, for the five response variables we have:

- mean(Y1) [1] 3.9> var(Y1) [1] 1.334483;
- mean(Y2) [1] 4.433333> var(Y2) [1] 0.5988506;
- mean(Y3) [1] 4.166667> var(Y3) [1] 0.6264368;
- mean(Y4) [1] 3.5 > var(Y4) [1] 1.293103;
- mean(Y5) [1] 4.133333 > var(Y5) [1] 0.7402299.

Given the fact that, for none of the 5 response variables, the mean is far from equal, it was concluded that the multinomial logistics model will be used. For the first response variable Y1, the optimal model was obtained, which depends on the predictors X2, X3, X4, X5, X6, X7, X8, X9.

A random variable  $Y_i$  was considered, which can take one of several discrete values, which are denoted by: 1;2; : : : ;J.

$$p_{ij} = \Pr[Y_i = j] \quad (1)$$

That is, the probability that the answer "i" falls into the category "j". The number of cases in group i is denoted by  $n_i$ , then the variable  $Y_{ij}$  indicates the number of responses from group i that fall into category j, and by  $y_{ij}$  the observed value. For individual data  $n_i = 1$  and  $Y_{ij}$  becomes an indicator variable that takes the value 1 if the answer i falls into category j and 0 otherwise. The probability distribution of the variable  $Y_{ij}$  is given by the multinomial distribution:

$$\Pr[Y_{i1} = y_{i1}, \dots, Y_{iJ} = y_{iJ}] = n_i! / (y_{i1}! \dots y_{iJ}!) p_{i1}^{y_{i1}} \dots p_{iJ}^{y_{iJ}} \quad (2)$$

The special case  $J = 2$  with only two response categories is the binomial distribution (in our analysis  $J = 5$ ). The simplest approach to multinomial data is to consider one of the response categories as a base or reference cell, by calculating log-quotas (logarithm of the ratio between two probabilities, probability of success / probability of failure = share). For all other categories in relation to the initial value, then the logarithm of the quotas is considered to be a linear function of predictors. Usually the first category is chosen as a base cell and the odds are calculated so that a member of the group "i" falls into the category "j", as opposed to the base cell by the  $p_{ij} / p_{i1}$  relationship. In the multinomial logistics model, we will assume that the log-odds for each answer follow a linear model, namely:

$$h_{ij} = \log(p_{ij}/p_{i1}) = a_j + \bar{x}_i \cdot \bar{b}_j \quad (3)$$

The explanation is that, „ $a_j$ ” is a constant, and „ $b_j$ ” is a vector of regression coefficients, for  $j = 1, 2, \dots, J$  ( $x_i$  the aspora observations of the predictors). This model is analogous to a logistic regression model, except that the probability distribution of the answer is multinomial instead of binomial and we have  $J-1$  equations instead of one.

If  $J = 2$  the multinomial logistics model is reduced to the usual regression logistics model. Therefore,  $J-1$  equations are needed to describe a response variable with  $J$  categories. The multinomial logit model can be written in terms of the original  $p_{ij}$  probabilities, rather than for

log-odds. Starting from the initial regression equation (3) and the convention  $h_{i1} = 0$ , we can consider:

$$p_{ij} = \exp[h_{ij}] / (\exp[h_{i1}] + \dots + \exp[h_{iJ}]) \quad (4)$$

For  $j = 1, \dots, J$ . This result is obtained by applying exponential to the regression equation (3) (ie the inverse function of the logarithm) to obtain  $p_{ij} = p_{i1} \exp[h_{ij}]$  and with the convention  $h_{i1} = 0$ . Thus the sum of the probabilities:  $p_{i1} + \dots + p_{iJ} = 1$  is obtained as:

$$p_{i1} = 1 / (\exp[h_{i1}] + \dots + \exp[h_{iJ}]). \quad (5)$$

Estimation of the parameters of this model by the maximum likelihood method for the multinomial probability distribution with the probabilities  $p_{ij}$  considered as functions of the parameters „ $\bar{a}_j$ ” and „ $\bar{b}_j$ ” from the above equation. Most statistical packages include a multinomial logistics function (in R, we have, for example, the multinom function in the nnet package, there are also other functions in other statistical packages).

- $\log(p_{12}/p_{11}) = 1329.5822269.7402X_2 + 74.80075 \cdot X_3 + 194.3893 \cdot X_4 + 290.5537 \cdot X_5 + 20.56172 \cdot X_6 + 64.32125 \cdot X_7 - 326.1809 \cdot X_8 - 185.8264 \cdot X_9$ ;
- $\log(p_{13}/p_{11}) = 614.1487 - 405.8237 \cdot X_2 + 256.23569 \cdot X_3 - 102.2662 \cdot X_4 + 382.6967 \cdot X_5 + 323.5099 \cdot X_6 - 214.00974 \cdot X_7 - 278.4682 \cdot X_8 + 38.6559 \cdot X_9$ ;
- $\log(p_{14}/p_{11}) = 603.2360 - 401.9275 \cdot X_2 + 256.72065 \cdot X_3 - 105.3205 \cdot X_4 + 650.3433 \cdot X_5 + 326.61161 \cdot X_6 - 215.22656 \cdot X_7 - 276.0741 \cdot X_8 - 232.0985 \cdot X_9$ ;
- $\log(p_{15}/p_{11}) = 2628.3655 + 408.3280 \cdot X_2 + 218.18336 \cdot X_3 + 3920.5290 \cdot X_4 + 401.8756 \cdot X_5 + 1143.02256 \cdot X_6 - 386.33029 \cdot X_7 + 126.8776 \cdot X_8 - 341.5933 \cdot X_9$ .

Using the relations (4) - (5) the probabilities  $p_{i1}$  are determined (as value answer  $Y_1$  the value 1 is taken) respectively  $p_{12}, p_{13}, p_{14}, p_{15}$ . Unlike the first model, which is the optimal one, for the response variable  $Y_2$  only three relations

are observed, because it does not take the values 1, so the reference value will be 2, we find only once the value 1).

The optimal model cannot be obtained at the significance threshold  $\alpha = 0.01$ . The best model that is obtained in this case is the one that depends on X1, X2, X4, X5, X7, X8, X9, X10.

For the response variable Y3 (there are only 3 relations, the variable Y3 does not take the value 1), the optimal model depends on the predictors X2, X3, X4, X5, X7, X8, X9 and X10.

For the response variable Y4, the optimal model is configured, which depends on all the predictors X1, X2, X3, X4, X5, X6, X7, X8, X9 and X10.

- $\text{Log}(p42/p41) = -617.4002 + 679.9494 \cdot X1 + 10303.17 \cdot X2 - 2012.890 \cdot X3 - 4127.609 \cdot X4 - 4008.4400 \cdot X5 + 6276.4854 \cdot X6 - 2546.103 \cdot X7 + 2209.594 \cdot X8 + 398.8713 \cdot X9 - 5486.9384 \cdot X10$ ;
- $\text{Log}(p43/p41) = -2253.4482 - 6338.4296 \cdot X1 - 15030.05 \cdot X2 + 2917.014 \cdot X3 - 6435.225 \cdot X4 - 2203.0122 \cdot X5 + 12128.8035 \cdot X6 + 8022.775 \cdot X7 + 7024.389 \cdot X8 + 2926.1295 \cdot X9 - 983.2583 \cdot X10$ ;
- $\text{Log}(p44/p41) = 18786.1445 - 2770.8798 \cdot X1 - 16405.32 \cdot X2 - 1426.587 \cdot X3 - 5113.051 \cdot X4 - 981.7587 \cdot X5 + 14449.5753 \cdot X6 + 5106.727 \cdot X7 + 6337.930 \cdot X8 - 380.8424 \cdot X9 - 990.7122 \cdot X10$ ;
- $\text{Log}(p45/p41) = -15821.9600 + 402.4428 \cdot X1 + 2337.08 \cdot X2 - 17408.321 \cdot X3 + 3280.485 \cdot X4 + 9424.4852 \cdot X5 - 971.1769 \cdot X6 - 5688.618 \cdot X7 + 8986.776 \cdot X8 - 1397.6106 \cdot X9 + 5781.1545 \cdot X10$ ;

Respectively for the response variable Y5 there are only 3 relations due to the fact that Y5 does not take the value 1, and the value 2 will be the reference cell. The optimal model depends on the predictors: X1, X2, X3, X5, X8, X9 and X10.

Unlike the previous model of testing the confidence of Romanian consumers in e-commerce held at 15th SIM, in this model we consider the exclusion of two factors, which were not confirmed. Because the P value was

greater than or equal to 0.05, they were not considered to be statistically significant at a confidence level of 95% or higher.

Consequently, we considered the elimination of the psychological profile of the consumer in relation to the trust offered by the e-commerce company. The simplification of the model also considered the elimination of the variety factor, only 30% of consumers believed a wide variety of products would motivate them to approach e-commerce with pleasure [18].

As novelties in this study, we added as a predictor TV advertising (X1 = RTV) and market orientation (X9 = S.O.F.). Because television is considered the most persuasive and dominant communication medium [22]. TV advertising influences consumer choices, manipulates and changes consumer behavior.

To study the desires of consumers, e-commerce platforms need to collect data, in relation to consumer needs and be receptive to their opinions, to measure market orientation [16]. Dissemination and filtering of information by consumers often takes place by reading reviews of other consumers (X9 = S.O.F.).

Most e-commerce platforms in Romania encourage consumers to send feedback, so according to EU Directive 2019/2161, which aims to improve compliance with European Union rules on consumer protection and modernization. Romania is obliged that until November 28, 2021 to obligatorily display the consumer reviews, as they have the possibility to offer notes to the products [23].

In addition, as an element of novelty, compared to the previous research, the predictor (X10 = PER / FID) was analyzed in relation to the dimensions of consumer confidence. Consumers become loyal to certain e-commerce platforms due to their popularity, but also to the trust offered by the quality-price ratio.

Gaining a consumer's loyalty in relation to gaining their trust is a much more difficult task than offering them a quality product, according to Nielsen's Global Survey of Loyalty Sentiment [24]. Furthermore, some shoppers choose to shop online because it saves time and money, they are comfortable shoppers who like to explore the "mysteries" of e-commerce [25].

## 5. CONCLUSIONS

Following the study, very good relations were obtained for the 3 response variables (Y1, Y4 and Y5) and good for Y2 and Y3. Except for the variable Y4, not all 10 predictors are needed. Regression models (generalized linear) allow the determination of a useful relationship for the logistic function (logarithm of odds or chances) of the probabilities that the response variable will obtain values in one of the 5 (respectively at Y2, Y3, Y5), after applying the formulas (4) - (5) to the determined regression models and for observed values of the predictors.

Model limitations take into consideration the following aspects:

- Use of a smaller sample of people compared to other studies. Thus, in the future research, a sample of 500-700 respondents will be used;
- Most respondents have higher education, being frequent users of the Internet. In the future, the frequency of Internet use will be tested in relation to the level of training and their influence on e-commerce;
- The study is not simple and comprehensive enough, limited to a certain type of trust, namely, trust in e-commerce platforms for electronics and home appliances;
- The model requires an approach to the dimensions of trust and from the perspective of research conducted in the context of risk determination.

The findings of this study are based on previous research by the authors held on 15th S.I.M 2019. Factors such as: previous purchasing experiences and product quality are defining in increasing consumer confidence and determination in making the final purchasing decision. E-commerce platforms need to be agile, focus on consumer data protection and predictable, so that consumer confidence will improve and e-commerce transactions will increase. Given the multitude of platforms, there is a possibility that a consumer dissatisfied with the design and accessibility of a page, will not return to it, so it is important to know the effectiveness of the platform [26].

Finally, we notice a sharp increase in e-commerce in general, because of the current context created by the COVID-19 pandemic.

Legislators, both at European and national level, discourage unfair practices by imposing severe sanctions and highlighting the consumer and his experiences, which will preferably also take place online.

## ACKNOWLEDGEMENT

Thanks to the participation in: „PROM Program - Międzynarodowa wymiana stypendialna doktorantów i kadry akademickiej” - PROM Program - International scholarship exchange of doctoral students and academic staff - which took place in Wroclaw, Poland (01.05.2019-10.05.2019); we obtained several bibliographic sources.

## 6. REFERENCES

- [1] Romanian Competition Council, *Investigation report on the e-commerce sector - component on marketing strategies*, 2018, Rapporteur Florin Opran [http://www.consiliulconcurrentei.ro/uploads/docs/items/bucket13/id13813/raport\\_comel\\_final.pdf](http://www.consiliulconcurrentei.ro/uploads/docs/items/bucket13/id13813/raport_comel_final.pdf)
- [2] Katzer C., *Cyberpsychology, Network life: How does the internet change our lives?* ALL publishing house, translated from German by Cora Radulian, 2016, p. 31
- [3] GPEC E-Commerce Romania 2019 report: *Online shopping of over 4.3 billion euros*, up 20% compared to 2018 <https://www.gpec.ro/blog/raport-gpec-e-commerce-romania-2019>
- [4] *eCommerce Statistics*, <https://2performant.com/ecommerce-statistics/>
- [5] Rzemniak, M., *New tendencies in consumer behaviour – A marketing perspective*, Organizacja I Zarzadzanie z. 120, 2018, 164.
- [6] Law no. 296/2004, *Consumer Code*, [www.ilegis.ro](http://www.ilegis.ro)
- [7] Andam Z. R., *e-Commerce and e-Business, e-ASEAN Task Force*, UNDP-APDIP, [www.eprimers.org](http://www.eprimers.org). and [www.apdip.net](http://www.apdip.net), 2003, p. 6, p. 388.



- [8] Steffano K. & Ellis J., *The e-commerce Book Building the E-Empire*, Academic Press, 2000, p. IX.
- [9] Mureșan C. M., *Traditonal Commerce Versus E-Commerce: A Comparative Analysis*, Acta Technica Napocensis Series: Applied Mathematics, Mechanics, and Engineering, Vol. 61, Issue Special, September, 2018, 148.
- [10] O Reilly T., *What is Web 2.0, Design Patterns and Business Models for the Next Generation of Software*, 2005 <https://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html>
- [11] Helmond A., *The Platformization of the Web: Making Web Data Platform Ready*, SM+S, Social Media+Society, <https://journals.sagepub.com>, 2015, p.3.
- [12] Chiu C.-M., Hsu M. H., Lai H., Chung C.-M., *Re-examining the influence of trust on online repeat purchase intention: The moderating role of habit and its antecedents*, [www.elsevier.com](http://www.elsevier.com), 2012, p. 8-9.
- [13] Grabner-Krauter S., *Consumer trust in electronic commerce: Conceptualization and classification of trust building measures*, <https://www.researchgate.net/publication/292009188>, 2008, p. 8-11.
- [14] Kim D. J., Donald L. Ferrin, H. Raghav Rao, *A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk and their antecedents*, 2008, pp. 544-564, [www.sciencedirect.com](http://www.sciencedirect.com)
- [15] Corbitt B. J., Thanasankit T., Yi H., *Trust and e-commerce: a study of consumer perception*, [www.computerScienceWeb.com](http://www.computerScienceWeb.com), 2003, p. 205-208
- [16] Choudhury, Mannan M., *A study of the significant factors affecting trust in electronic commerce*, Durham theses, Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/2533/>, 2008, p. 22, p. 157, p. 173, p. 176, p. 71-72.
- [17] Oliveira T., Alhinho M., Rita P., Dhillon G., *Modelling and testing consumer trust dimensions in e-commerce*, Computers in Human Behavior, [www.elsevier.com](http://www.elsevier.com), 2017, p. 153, 157.
- [18] Lup P., Negrea R., Prosteian G., *Testing the Trust of Romanian Consumers in E-Commerce*, International Symposium in Management Innovation for Sustainable Management and Entrepreneurship, SIM 2019: Innovation in Sustainable Management and Entrepreneurship pp 527-537 [https://link.springer.com/chapter/10.1007/978-3-030-44711-3\\_39](https://link.springer.com/chapter/10.1007/978-3-030-44711-3_39)
- [19] *Electronic Commerce: The Issues and Challenges to Creating Trust and a Positive Image in Consumer Sales on the World Wide Web*, <https://firstmonday.org/ojs/index.php/fm/article/view/601/522>
- [20] *GDPR – Implementare pe website / magazin online*, 2019, <https://www.zonk.ro/totul-despre-gdpr/>
- [21] Grabner-Kräuter S., University of Klagenfurt & Ewald A. Kaluscha, ACNielsen, Vienna, *Consumer trust in electronic commerce: conceptualization and classification of trust building measures*, Chapter in „Trust and New Technologies” edited by Teemu Kautonen & Heikki Karjaluo, Edward Elgar Publishing 2008, pp. 3-22.
- [22] Hussain S. S., *The Influence of TV Commercials on the Lifestyle of Youngsters*, Bangladesh e-Journal of Sociology. Volume 13, Number 2. July 2016, p. 157.
- [23] deloitte, *Afișarea recenziilor în comerțul online – viitoare obligații legale, dar și potențial avantaj competitiv*, 18 mai 2020, <https://www2.deloitte.com/ro/en/pages/busines-continuity/articles/afisarea-recenziilor-in-comertul-online-viitoare-obligatii-legale-dar-si-potential-avantaj-competitiv.html>
- [24] Nielsen H., *Loialitatea fata de branduri si magazine, la cote din ce in ce mai joase. Ce e de facut?*, 2013, <https://modernbuyer.ro/nielsen-loialitatea-fata-de-branduri-si-magazine-la-cote-din-ce-in-ce-mai-joase-ce-e-de-facut/>
- [25] Cathy S. Lyn, Sheng Wu, *Exploring antecedents of online group-buying: Social commerce perspective*, Human Systems Management 34 (2015) 133–147 DOI 10.3233/HSM-150837 IOS Press, p. 142.

- [26] Kuanchin Chen, J., Michael Tarn, Bernard T. Han, *Internet dependency: Its impact on online behavioral patterns in E-commerce*, Human Systems Management, 23(2004), 49–58 IOS Press, p. 57.

### **Testarea dimensiunilor încrederii consumatorilor români în e-commerce pentru produse electronice și electrocasnice**

**Rezumat:** În această lucrare, s-au identificat și corelat zece factori și cinci dimensiuni ale încrederii consumatorilor români în platformele de comerț electronic în România, la achiziționarea de electrocasnice și electrocasnice. Studiul realizează o analiză și sinteză a literaturii de specialitate stabilind dimensiunile corecte, pentru a testa încrederea consumatorilor români în platformele de comerț electronic, finalizându-se prin proiectarea unui model dedicat. Pentru a verifica acest model, a fost configurat un chestionar, iar datele au fost validate prin conceptualizarea modelului logistic nominal pentru testarea încrederii consumatorilor, folosind pachetul nnet din software-ul „R”. Acest studiu este complementar celor patru modele anterioare și se concentrează pe identificarea dimensiunii și dinamicii încrederii consumatorilor în platformele de comerț electronic.

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