Online Buyer's Perspective of E-shops Credibility: Measurement Dimensions

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Abstract. *Addressing the debated topic of credibility in online sales, the present study analyses buyer's perspective. The study develops from the literature to test and refine a multi-dimensional measurement of e-shops credibility. Consumer's criteria for assessing e-shops credibility are empirically examined with 817 Romanian student participants. Detailed approach and methodology, as well as the results obtained, research conclusions, limitations, and implications, are presented. The study advances an instrument which reveals new dimensions of establishing credibility although most aspects were found to be similar to results previously presented in other studies. The proposed instrument offers a new multidimensional measurement and knowledge resources for business committed to using Internet advantages, and it might be viewed as a strategic tool which enables e-shops owners to strengthen their market presence, e-sales and customer base through an adequate management of the knowledge regarding online credibility.*

Keywords: *online credibility, online buying, online sales, e-shops, knowledge management, factor analysis.*

Introduction

The expression "knowledge is power" became a motto of the last decade in our society, and knowledge management is seen as a strategic tool in most fields of activity (Vătămănescu, Dumitriu, Andrei & Leovaridis, 2015), as well as a distinct scientific discipline, which is continuously developing its theoretical background (Darroch, 2005).

In the business field, knowledge management is a necessary ingredient for success, translated as flexibility, profitability and/or productivity (Mårtensson, 2000) where businesses' ability to incorporate consumer insights into explicit knowledge and customer management instruments becomes mandatory.

In this context, considering the growing importance of managing the knowledge about the online medium and online sales, the present study aims to identify the dimensions of e-shops credibility in order to propose an up-to-date instrument for measuring it according to the importance granted by online buyers when deciding to buy.

Given the extant studies on persuasion that dragged great attention to the concept of credibility (Ceobanu & Anton, 2008; Fogg & Tseng, 1999), a deep understanding of which information is credible from a customer point of view when making online acquisitions can reveal critical Knowledge management insights that should be considered in business decisions related to the online sales.

Following the literature in the field, the study considers credible information as trusted information (Fogg & Tseng, 1999), and source credibility as the ability of a message to be perceived as delivering accurate information (Flanagin & Metzger, 2000), and it focuses on analyzing the dimensions of e-shops credibility from buyer's perspective, using students as the investigated target. To this end, the study presents a review of the literature on online credibility, highlighting that criteria of credibility assessment might differ between expert evaluators and consumer evaluators (Stanford, 2002).

Consumers' criteria for assessing the e-shops credibility are empirically examined with 817 student participants. The paper presents in detail the empirical approach, methodological insights, and results, as well as research conclusions, limitations and implications for practice, discussing results' importance in the area of knowledge management.

From credibility to online credibility: a brief review

The dimensions identified in the first credibility studies (Hovland & Weiss, 1951; Hovland, Janis & Kelley, 1953,) are c*ompetence* and *trustworthiness*. Further, researchers studied the construct in various situations and found various dimensions such as *expertise, competence,* and *trustworthiness* (Eisend, 2006).

The differences between the online and the physical world credibility are: (1) information is disconnected from the physical environment; (2) interactions are all mediated by software instruments (Lankes, 2008). Designing credible websites had become a major concern for managers, due to online frauds and posted information of a questionable quality (Fogg, 2003).

The construct of credibility has also been studied for websites. Hong (2006) studied the influence of message and structure website information on credibility measured by *fairness, trustworthiness, expertise, goodwill, and depth*. Fogg et al. (2001) research underlined the existence of the credibility construct of websites with seven dimensions: (1) *real world feel;* (2) *ease of use*; (3) *expertise*; (4) *trustworthiness;* (5) *tailoring;* (6) *commercial implications*; (7) *amateurism.*

The assessment of credibility depending on the evaluator type

A very important aspect relates to the assessment of credibility, since it depends on the type of evaluator, as Stanford (2002) research reveals. The researcher compared the assessment of the credibility of web sites in health and finance made by two different evaluators: expert evaluators and consumer evaluators. Stanford's (2002) results in highlight that the two groups used different criteria in order to assess credibility. For example, experts were interested in key aspects such as the reputation of the site, the motivation of the company, purpose of information, the objectivity of information, while consumers were interested mostly in graphic design elements of the Web page (Stanford, 2002).

The appropriateness of using student samples in online credibility studies

As an investigated target, students are traditionally approached by academics, especially in online credibility studies (Agosto, 2002a, 2002b; Bateman, 1998, 1999; Leckie, 1996; Liu, 2004; Whitmire, 2004). Yet, there are very few studies to investigate in detail the manner students evaluate the information credibility in the online environment (Rieh & Danielson, 2007). Students are very familiar to the Internet and any information delivered from this source. Metzger, Flanagin, and Zwarun (2003) study reveal that students consider the Web information to be more credible than adults do and conclude that it is important to understand the manner students use the Web as a source of information. Most Internet users are highly educated. Students will be the most important consumers of this millennium, in a society driven by e-commerce (Sexton, Johnson & Hignite, 2002).

Research method

An empirical investigation was conducted according to the methodological recommendations of using factor analysis in credibility studies, and the research objective of measuring the credibility of e-shops considering on-line buyer's perspective.

To this end a five steps approach was pursued as follows: (1) data-collection (2) understanding the main reasons of choosing or avoiding online-buying (3)

identifying dimensions of assessing the credibility of e-shops; (4) determining the relative impact of each dimension in assessing e-shop's credibility; (5) identifying an adequate instrument for measuring the credibility of e-shops.

Data collection: the sample and applied questionnaire

In order to investigate the credibility of e-shops considering on-line buyer's perspective, the present research used a questionnaire based survey conducted with student participants from a Romanian public university.

A total sample of 817 participants was included in the analysis, according to the number of valid questionnaires collected.

The questionnaires were distributed to students that made at least one online acquisition in each of the investigated groups, and they were applied according to the following rules: (1) first year of study students - 14 groups * 20 students = 280 questionnaires; (2) second year of study students – 2 groups per each specialization * 7 specializations * 20 students (average) per group = 280 questionnaires; (3) third year of study students - 2 groups per each specialization * 7 specializations * 20 students (average) per group = 280 questionnaires. Respondents were selected with a mechanical stochastic survey.

Convenience sampling from student population was decided based on literature indications highlighting that the students consider the web information to be more credible, comparing to other Internet user categories (Metzger et al., 2003). Also, the students rely greatly on the Internet in order to find general and academic information (Metzger et al., 2003). Since most TAM (Technology Acceptance Model) studies (Gefen & Straub, 2000) investigated student samples, and online consumers are less risk adverse while consumers oriented to intimacy and security register lower online shopping rates (Kwak, Fox & Zinkhan, 2002; Miyazaki & Fernandez, 2001), we considered students as an appropriate population in our study.

The questionnaire contained 76 items measured on a 7 points credibility scale (1 – criterion is not accomplished; 7 – criterion is very well accomplished)

Each of the 76 questionnaire items assessed the credibility of online sales websites as resulted from scales available in the literature (Fogg et al., 2001) and the results we have obtained in a previous qualitative research. The research assumed that a part of the credibility dimensions of online sales websites is: real world feel, expertise, creating a relationship with site user, ease of use, trustworthiness, amateurism. It also assumed that other specific dimensions are expected to be identified, due to a specific investigated target. Expertise and trustworthiness were supposed to be the most important, as the majority of online credibility researches reveal these two dimensions. Comfortability was thought to be connected to the most important reasons that make students buy from the Internet (as derived from the focus group discussions). *Delivery uncertainty* might be connected to the most

important reasons that make the students avoid buying from the Internet (as derived from the focus group discussions).

The content validity of our data collection instrument was established using four experts (web-design specialists) which confirmed that questionnaire reached all important aspects considered when building an online sales website.

Factor analysis – a specific statistical analysis in credibility studies

The decision of using exploratory factor analysis in the present study was based on the following arguments: (1) although the study develops on scales available in the literature (Fogg et al., 2001), it adds new items resulted from qualitative research; (2) discovering new dimensions to be added to a scale, and testing the item structure of a new construct is always based on the exploratory factor analysis; (3) potential dimensions and potential item structure of constructs cannot be anticipated; (4) factor analysis is well-known as a necessary tool for improving measurement instruments in social sciences.

As literature indicates, the main purpose of an exploratory factor analysis is to group initial observable variables into latent variables, also known as unobserved internal attributes, factors or dimensions (Tucker & MacCallum, 1997). The objective of conducting a factor analysis may be either to simplify data or to reveal a data structure of the initial variables (Ciobanu, 2011; Sudman & Blair, 1998).

The first decision when conducting a factor analysis is whether an exploratory or confirmatory analysis should be conducted (Tucker & MacCallum, 1997). If there are no hypotheses or the hypotheses are not clearly stated, an exploratory factor analysis is recommended. On the other hand, if hypotheses are very clearly stated, based on a previous research, a confirmatory analysis is recommended (Brown, 2006).

Exploratory factor analysis is a statistical procedure used by researchers in order to identify dimensions of a construct, grouping variables based on the item inter-correlation. Confirmatory factor analysis is useful in order to estimate the reliability of a scale, to examine if a measurement instrument is accurate for different types of investigated groups, to develop new measurement instruments etc. (Brown, 2006; Harrington, 2009; Lehmann, Gupta & Steckel, 1998).

Results

Collected data were processed and analyzed using SPSS software.

General statistics indicated that out of the 817 participating students that made at least one online acquisition, 38% of respondents have a relative generous income, and the most frequently bought products from the Internet are: clothes and accessories, laptops, other types of technical objects (such as computer components, TVs, GPS, other electronics), books, cosmetics. The online shopping basket may include various types of goods, from low to high risk goods.

Applying a multiple-response analysis, we found that some of the most important reasons in favor of e-shopping are *"comfort ability", "saving time"* and *"advantageous price"*, while one reason that was rarely selected is "*high security of the online environment*", as the Romanian online environment has many security issues. The reasons in favor of online buying are all about advantages/ potential gain such as discounted price, time saving and so on, as detailed in Table 1 and Figure 1.

On the other side, the most important reason to avoid online buying is related to a higher faith in the offline environment (*I have more faith when the product is bought from the offline environment*).

The results of the multiple-response analysis are detailed above in Table 1 and Figure 1 (reasons in favor of online buying), respectively in Table 2 and Figure 2 (reasons to avoid online buying).

Table 1. Reasons to buy from the online environment

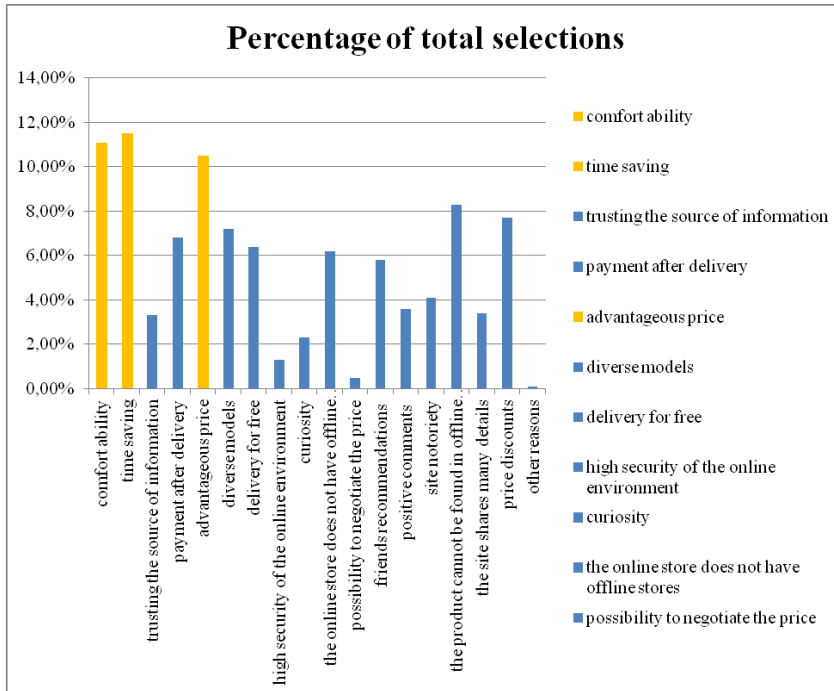| Reasons for e-shopping	No. of students that selected the variant	Percentage of total selections	Percentage selecting the variant
comfort ability	563	11.1%	73.3%
time saving	580	11.5%	75.5%
trusting the source of information	168	3.3%	21.9%
payment after delivery	346	6.8%	45.1%
advantageous price	529	10.5%	68.9%
diverse models	363	7.2%	47.3%
delivery for free	322	6.4%	41.9%
high security of the online environment	64	1.3%	8.3%
Curiosity	118	2.3%	15.4%
the online store does not have offline stores	314	6.2%	40.9%
possibility to negotiate the price	23	0.5%	3.0%
friends recommendations	296	5.8%	38.5%
positive comments	184	3.6%	24.0%
site notoriety	205	4.1%	26.7%
the product cannot be found in offline stores	421	8.3%	54.8%
the site shares many details	171	3.4%	22.3%
price discounts	389	7.7%	50.7%
other reasons	5	0.1%	0.7%
Total	5061	100.0%	659.0%

Figure 1. The percentage of students that selected each variant for reasons to buy from the online environment

Table 2. Reasons to avoid buying from the online environment

Reasons against e-shopping	No. of students that selected the variant	Percentage of total selections	Percentage selecting the variant
exaggerated high price	61	2.0%	10.4%
I have more faith when the product is bought from the offline environment	442	14.4%	75.7%
fear not to get the product	219	7.1%	37.5%
the desired model is not available	192	6.3%	32.9%
unclear information	202	6.6%	34.6%
unclear images of the product	135	4.4%	23.1%
too large delivery fees	140	4.6%	24.0%
fear the product is not delivered in the presented format	60	2.0%	10.3%
too many steps in ordering	166	5.4%	28.4%
past negative experience	199	6.5%	34.1%
exaggerated small price	190	6.2%	32.5%
few models	156	5.1%	26.7%
impossibility to try on and analyze the product	204	6.6%	34.9%
lack of warranty	170	5.5%	29.1%

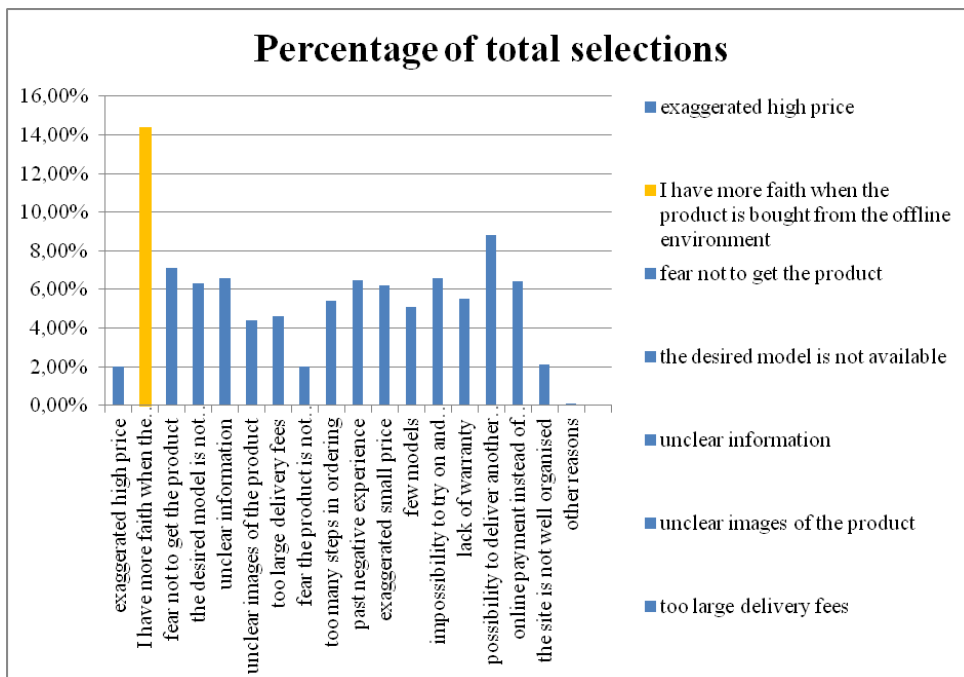| possibility to deliver another product	270	8.8%	46.2%
online payment instead of payment at delivery	198	6.4%	33.9%
the site is not well organized	66	2.1%	11.3%
other reasons	2	0.1%	0.3%
Total	3072	100.0%	526.0%

Figure 2. Percentage of students that selected each variant for reasons to avoid buying from the online environment

Results of the exploratory factor analysis

Exploratory factor analysis, Principal Components method had been conducted in SPSS including all 76 questionnaire items in the initial analysis.

The analysis was successfully conducted given the generosity of our sample size: 817 participants. We remind in this regard the various opinions concerning the sample size indicated in the literature for factor analysis (Fabrigar, Wegener, MacCallum & Strahan, 1999), such as those restrictions which are related with the size of the sample correlated with the number of variables included in the analysis. The minimum size of the sample for a factor analysis is stated by various rules presented in the literature. Therefore, the rule 100 states that the number of respondents

should be 5 times larger than the number of variables or 100 respondents minimum (Hatcher, 1994). The rule 150 states that the sample should include between 150 and 300 cases in the analysis (Hutcheson & Sofroniou, 1999). The rule 200 states that the sample should include at least 200 cases (Gorsuch, 1983). Lawley and Maxwell (1971) present a rule of significance where the number of cases should be 51 plus the number of variables. According to Velicer and Fava (1998), in moderate conditions, the sample size should be of minimum 200 respondents. As our research conducted the factor analysis on a data-set collected with over 800 respondents, the sample-size of our study complied with literature indications reminded above.

The initial exploratory factor analysis revealed 19 items with Eigen values > 1, explaining 58% of the total variance.

The Component Matrix presents the initial solution factors loadings in the Principal Component method. Loadings under 0.3 are considered to be weak, loading between 0.3 and 0.6 are considered to be moderated and loadings over 0.6 are considered to be strong (DeCoster, 2004). Most researchers use standards such as 0.3 or 0.4 (Raubenheimer, 2004). Hair, Anderson, Tatham, and Black (1998) state that loadings over 0.6 are strong and loadings under 0.4 are weak.

After several analysis commands, we eliminated items with loadings < 0.4 from the Component Matrix. The eliminated items are:
- The site promotes products with services included;
- There are conversations with positive comments on forums/blogs about the company and promoted products;
- The site or the products it promotes are promoted by other types of media;
- The company promotes products according to its' main activity field;
- The site promotes products with a long validity term;
- The structure of the site does not insist on ordering;
- The site promotes various product lines;
- The site presents an award that it has won;
- The site has little news type of information but has detailed information for each piece of news;
- The site promotes confirmed/recommended products by specialized institutions;
- The delivery is free;
- The company delivers products using Romanian Post services;
- Site registration is required;
- Data concerning the bank account are not required;
- The products on the site are not sold for an exaggerated small price comparing to the same type of products;
- A seller is a private person;
- The site or a product promoted by the site is recommended by a friend;
- Former customers recommend products promoted by the site or the site itself;
- In the products' presentation, I can find positive effects of their use;
- The site offers information in more than one language;
- Information on the site belongs to specialists.

The items described above derive from Fogg et al. (2001) instrument and from the qualitative research (mostly personal options that cannot be analyzed on a large group of respondents).

After eliminating items from the component matrix in successive commands, the factor analysis was conducted again, without including the 21 items above.

The new analysis indicated 12 factors explaining 55.5% of the total variance. According to Garson (2010), some researchers use the simple rule of retaining factors that explain 90% or 80% of the variance. If the purpose of the researcher is to explain the total variance using as least factors as possible, the criterion can descend to as low as 50%.

The eliminated items in successive analysis commands with similar loadings on two or more factors in the Rotated Component Matrix were:
- The site promotes products that have warranty;
- The price of the products on the site is written with very small letters;
- The name of the domain of the site fits the name of the company;
- The site makes aggressive advertising (such as spam, many pop-up windows, etc.);
- I have previously ordered from that site;
- The site specifies that it is the official one for a certain subject;
- The company updates data on the site (I can see an update since the last visit);
- The site specifies the confidentiality policy.

After the successive commands, the final analysis revealed 10 factors with Eigen values > 1, explaining 54.7% of the total variance.

Considering all 10 factors with Eigen values > 1, the internal consistency of a potential 10 factors solution for e-shop's credibility assessment was estimated considering Cronbach-alpha coefficient.

A Cronbach-alpha value of 0.876 was found, indicating a good overall reliability of such a measurement, according to all literature standards detailed below.

The limit of the Cronbach-alpha coefficient that allows a researcher to consider a scale to be reliable is usually considered to range between 0.6 and 0.7 (Nunnally, 1967), although some researchers indicate the use of a higher Cronbach-alpha coefficient limits such as 0.75 or 0.80 (Garson, 2010), while others deem that lower limits are also acceptable, recommending to take into consideration Cronbach-alpha coefficients around the value of 0.5 (Fogg et al., 2001). George and Mallery (2003) propose this simple rule: 0.9 excellent reliability, 0.8 good reliability, 0.7 acceptable reliability, 0.6 doubtful reliability, 0.5 weak reliability, lower than 0.5 unacceptable reliability.

Measurement instrument and the dimensions of e-shops credibility

Since a good overall reliability of e-shop's credibility assessment (Cronbach-alpha = 0.876), was found for the 10 factor solution resulted after performing factor analysis in successive steps, each of the 10 potential dimensions was analyzed one by one.

As detailed in the below reporting the results of one by one analysis of reliability indicated two potential instruments that might prove useful for measuring the credibility of online sales websites.

The first and strictest potential solution represents a 4-dimensions instrument for measuring e-shops credibility, where each dimension has Cronbach-alpha values higher than 0.7. Such an instrument would comprise only 4 dimensions for measuring e-shops credibility, as follows: 'ease of use' (Cronbach-alpha = 0.810); 'detailed information' (Cronbach-alpha = 0.790); 'real world feel' (Cronbach-alpha = 0.748); 'booking and delivery' (Cronbach-alpha = 0.717).

The second solution represents a more inclusive approach, where only one dimension is excluded from the 10 factors solution indicated by the results of factorial analysis. Excluded dimension is 'site image' (Cronbach-alpha = 0.170). Since all other dimensions excepting one indicated Cronbach-alpha values higher than 0.6 or 0,7 they were all were kept in the proposal, resulting an instrument for measuring e-shops credibility with 9 dimensions: 'ease of use'; 'detailed information'; 'real world feel'; 'booking and delivery'; 'reference-authority'; 'expertise'; 'personal experience'; 'framing adverts'; 'personalization'.

The dimension 'detailed information'

The internal consistency of the scale '*detailed information'* is 0.790. The scale contains 9 items and explains 20% of the total variance.

Table 3. The dimension 'detailed information'

Items	Mean
The site offers details about the manufacturing process and about the products.	3.83
The company is the producer of the products promoted by the site.	4.04
The company answers fast to my customer support questions	5.32
The company makes available as many information as possible about company and its members	4.80
The presentation of the products also underlines weaknesses/side effects of their use.	3.69
I can contact a company representative in real time	3.77
The products are presented in a clear, detailed, precise manner.	5.43
The site posts link to competitors' sites.	3.07

The posted partners on the site are credible.	5.33

The most important items that contribute to increase a website's credibility are "*The products are presented in a clear, detailed, precise manner*", "*The company answers fast to my customer support questions*", "*The company is the producer of the products promoted by the site*", "*The posted partners on the site are credible*" and "*The company makes available as many information about the company and its members as possible*". These items have a corresponding mean greater than 4.

The dimension 'ease of use'

The internal consistency of the scale *ease of use* is 0.810. The dimension has 7 items and explains 9.97% of the total variance.

Table 4. The dimension 'ease of use'

Items	Mean
The site loads rapidly.	5.63
The site presents no access errors.	5.18
All the links posted on the site are functional.	5.55
The site is easy to navigate.	5.93
The site has no typing errors.	4.86
The presentation of products is attentively realized.	5.50
The site offers the internal search possibility.	5.11

We notice that all the component items of this scale are important in increasing online sales website's credibility as the mean value for each item is almost 5 or > 5.

The dimension 'expertise'

The internal consistency of the scale expertise is 0.682. It contains 5 items and explains 4.97% of the total variance. The items are important in assessing online sales website's credibility.

Table 5. The dimension 'expertise'

Items	Mean
The site promotes very well-known brands.	5.62
The company has experience in the commercial field.	5.54
The company is a prestigious/respected/serious one.	5.74
The site promotes absolute new products.	5.04
The site promotes and/or sales popular, mass products.	5.37

The dimension 'booking and delivery'

The internal consistency of the scale *booking and delivery* is 0.522 consisting of 6 items that explain 3.61% of the total variance. All the component items of this dimension are important from the credibility's point of view for an online sales website.

Table 6. The dimension 'booking and delivery' – initial version

Items	Mean
I have the possibility to change the product/return the products and get my money back.	5.78
The site sends e-mails to confirm transactions.	5.97
The delivery is made in short time	5.60
The company acts legally.	5.99
Payment is not asked before the delivery.	3.38
The site sustains sales using sales promotions techniques.	5.56

In order to improve the scale, "scale if item deleted" option was included in the command. Eliminating the item "*Payment is not asked before the delivery*", the scale's internal consistency is 0.717, which is an acceptable reliability. The scale *booking and delivery* becomes:

Table 7. The dimension 'booking and delivery' – final version

Items	Mean
I have the possibility to change the product/return the products and get my money back.	5.78
The site sends e-mails to confirm transactions.	5.97
The delivery is made in short time	5.60
The company acts legally.	5.99
The site sustains sales using sales promotions techniques.	5.56

All items of this scale are important from the credibility's point of view, as all items have corresponding means > 5.

The dimension 'real world feel'

The internal consistency of the scale *real world feel* is 0.748, consisting of 4 items that explain 3.25% of the total variance. All items are important from the credibility's point of view for an online sales website. Two items are very important, exceeding the mean value of 6 ("*The site offers a phone number for contact*" and "*The site offers an e-mail address for contact*").

Table 8. The dimension 'real world feel'

Items	Mean
The site offers a phone number for contact.	6.17
The site offers an e-mail address for contact.	6.11
The site offers more contact information than a phone number or an e-mail.	5.78
I receive e-mails from the customer support department.	5.44

The dimension 'reference-authority'

The internal consistency of the scale reference-authority is 0.683, consisting of 5 items that explain 3.08% of the total variance. Two items are relative important ("*The site offers the name and e-mails of the authors of the articles included in the page*" and "*The site has articles with references*") and the other three items are not important in assessing the credibility of an online sales website.

Table 9. The dimension 'reference-authority'

Items	Mean
The presentation of the information on the site is sustained by sound	3.32
The site offers the name and e-mails of the authors of the articles included in the page.	4.38
The site has articles with references.	4.43
The site is small (less than 5 pages).	2.95
The site requires paying a subscription in order to access it.	2.41

The dimension 'personalization'

The internal consistency of the scale personalization is 0.474, consisting of 3 items and explains 2.75% of the total variance. Scales with a Cronbach-alpha coefficient value between 0.5 and 0.6 are accepted in the literature (see Fogg et al., 2001). The scale *personalization* has a Cronbach-alpha coefficient value close to 0.5 but below this limit. Researchers also accept this type of scales as constructs with less correlated items. Although the internal consistency is very low, the items have a great importance in increasing credibility. The dimension is kept in the construct.

Table 10. The dimension 'personalization'

Items	Mean
The site makes possible the internal search.	5.11
I am allowed to check my personal data that I use to get registered.	5.40
The site selects new articles according to my preferences.	5.25

The dimension 'framing adverts'

The internal consistency of the scale framing adverts is 0.621, consisting of 3 items and explains 2.52% of the total variance. All items are important in increasing credibility of online sales websites.

Table 11. The dimension 'framing adverts'

Items	Mean
The site contains adverts that fit the content of the page.	5.06
The site has one or more adverts on each page.	4.58
The site structure clearly distinguishes the presented information by the adverts.	5.04

The dimension 'personal experience'

The internal consistency of the scale personal experience is 0.651, consisting of 2 items and explains 2.3% of the total variance. All items are important in increasing credibility of online sales websites

Table 12. The dimension 'personal experience'

Items	Mean
I had a positive experience using the products presented on that website.	5.76
One of the products presented on the site is described exactly as I know it is in reality, according to my experience (I previously used the product).	5.69

The dimension 'site image'

The scale of *site image* has an internal consistency of 0.170. This dimension is created by 2 items explaining 2.24% of the total variance. As the internal consistency of the scale is unacceptable, the scale is only composed of two items and there is no logical connection between them, this dimension will be eliminated from the construct of credibility of online sales websites.

Table 13. The dimension 'site image'

Items	Mean
I find contradictory conversations about the company and its products on online groups of discussions.	4.48
The site has much news, without many details.	4.58

Therefore, our results are suggesting two possible instruments for measuring the credibility of e-shops from the on-line buyers' perspective.

Based on our results the 4-dimensions instrument exhibits a higher degree of statistical reliability at each dimension level.

Still, given the exploratory nature of the research additional statistical analyses are recommended to be conducted before deciding if the 4-dimensions instrument ('ease of use'; 'detailed information'; 'real world feel'; 'booking and delivery') or the 9-dimensions instrument ('ease of use'; 'detailed information'; 'real world feel'; 'booking and delivery'; 'reference-authority'; 'expertise'; 'personal experience'; 'framing adverts'; 'personalization') would be more appropriate for assessing the online credibility of e-shops.

Additional analysis: the relative impact of each dimension

To decide which approach of measuring e-shop's credibility would be more advisable to use (the instrument with 4 dimensions or the instrument with 9 dimensions) an additional analysis was conducted. Following Fogg et al. (2001) model, the relative impact of each dimension in assessing e-shop's credibility was estimated by revealing dimensions with positive and negative impact.

The first step was to convert values on the 1-7 scale to -3 to +3 scale. Further, values were converted on the -100 to +100 scale, for revealing dimension with positive and negative impact.

The table below presents the values based on which the graph from Figure 1 was created.

Table 12. The relative impact of each factor on the credibility of online sales websites

Dimension	Sum of means on the initial scale	Sum of means on scale -3, +3	Impact (-100, +100)
detailed information	39.28	1.87	62.33
ease of use	37.76	2.31	77
Expertise	27.31	2.34	78
booking and delivery	28.90	2.47	82.33
real world feel	23.50	2.51	83.66
reference-authority	17.49	1.49	49.66
Personalization	15.76	2.25	75
framing adverts	14.68	2.09	69.66
personal experience	11.45	2.45	81.66
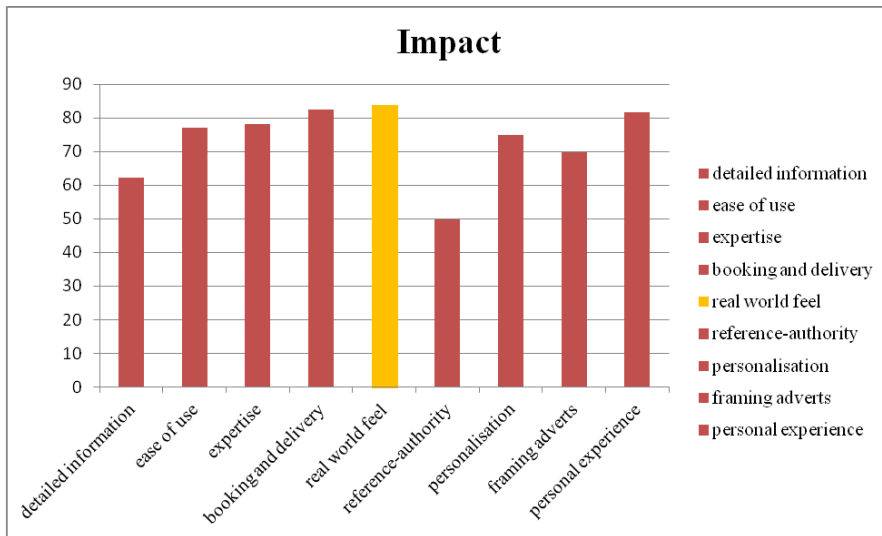
***Figure 3. The relative impact of each factor on e-shop's credibility
(Standardized vertical axis were used).***

The additional analysis indicated that dimensions with a high impact are: *real world feel*; *booking and delivery; personal experience*.

Therefore, the additional analysis indicated 'personal experience' as having a high impact on online buyer's evaluation of e-shop's credibility. Since the 'personal experience' dimension is included only in one of the two potential instruments indicated by the results of the factorial analysis, we conclude that the instrument with 9 dimensions would provide a better approach for e-shop's credibility measurement.

Overall, the results indicated that an appropriate e-shop's credibility measurement would be obtained using our instrument with 9 dimensions: 'ease of use'; 'detailed information'; 'real world feel'; 'booking and delivery'; 'reference-authority'; 'expertise'; 'personal experience'; 'framing adverts'; 'personalization'.

Conclusions

The present study analyses e-shops credibility from buyer's perspective. Developing from field literature and previous qualitative findings, the study tests and refines a measurement instrument based on consumer evaluations. Using an empirical research applied with 817 Romanian students, the study analyses potential dimensions of e-shops credibility and advances an up-to-date instrument with 9 dimensions for measuring it.

From a theoretical point of view our research reveals new dimensions of establishing credibility (such as: 'booking and delivery'; 'reference-authority'; 'framing adverts' although other credibility dimensions (such as real world feel, ease of use, expertise)

comprised in the instrument we are proposing were also found in previous studies (Fogg et al., 2001; Hong, 2006; Stanford, 2002).

Derived from research sample, the main limitation of the study relates to investigated population (Romanian students only) and it should be taken into consideration when applying the instrument on different targets. Although such limitation is not as problematic as it might seem, since students represent a big part of the present and future online consumers, additional research is needed to investigate different cultures and to conduct a confirmatory analysis on the 9 dimensions of e-shops credibility measurement advanced by proposed instrument.

Still, the proposed instrument reflects consumer's evaluation and offers a valuable decision-making tool for business committed to using the advantages of the online markets. The instrument contains 9 dimensions establishing e-shops credibility as follows: 'ease of use'; 'detailed information'; 'real world feel'; 'booking and delivery'; 'reference-authority'; 'expertise'; 'personal experience'; 'framing adverts'; 'personalization', allowing businesses to manage the knowledge about the online buyers.

As immediate implications for practice, the instrument might be found useful for businesses to decide what content, functionalities and design elements to emphasize when launching an online sales website (Andrei & Zait, 2014a, 2014b; Andrei, Zait, Vătămănescu & Pînzaru, 2017) or improving an existing one. In this direction study results outlines that the managers and business owners willing to benefit from the advantages of online sales should consider at least four aspects: (1) the site should be easy to use, meaning it should load rapidly, present no error access, be functional in every detail; (2) the website should create the real world feel while navigating it, as it should supply as many contact manners and information as possible; (3) the site should offer detailed information about the company and offered products; (4) booking and delivery should be very flexible and all legal aspects should be clearly described.

On a medium to long term perspective, bearing in mind the relation and integration of knowledge management and strategic thinking as "mental process oriented toward the future, which expresses our philosophy about life, work, competition and winning" (Bolisani & Bratianu, 2017, p.236), the instrument advanced in the present study might be viewed as a strategic tool for e-shops owners which enables them to strengthen their market presence, e-sales and customer base through an adequate management of the knowledge regarding online credibility.

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