

# Instrument Validation by Experts, For the Acceptance of Commercialization of Purified Water through E-Commerce

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**Abstract:** *For the proper collection of quantitative data, it is necessary to design an instrument that allows measuring the variables of the investigation. This article briefly describes the validation by experts of the questionnaire for the commercialization of purified water through e-commerce, for which the questionnaire was designed, which is validated by the method of approval by experts, in which the relevance and adequacy are measured. and that it is qualified with a Likert scale, in order to obtain information on the attributes of a web page that attract the attention of buyers, this will be the fundamental basis for making a decision regarding its architecture finally. The results obtained were favorable, and the application of the questionnaire was decided, with the certainty that the questions are highly appropriate and pertinent.*

**Keywords:** Instrument validation, E-commerce, relevance, adequacy

## 1. Introduction

Internet sales are a tool that has facilitated the marketing of many products at a local, national and international level. It is an efficient way of selling for all those merchants who do not have a physical location and want to sell their products, it is a trend that every merchant can adopt to grow their business, from large companies to MSMEs make use of these methods of purchase and in addition to this, statistics reveal that in more than 100 countries at least 51% of the world population uses a mobile device, and at least 31% have made purchases online (América RETAIL, 2020).

Rodríguez, Vargas, & González (2019), express that information architecture is a process that demands planning and analysis of the problem to be treated, at the same time; it is an important labor field for professionals in Library Science with an interest in incorporating technology into their work. Professional practice, on the other hand, the influence of font size, amount of text, illustrations and the speed of navigation on the response of users when using digital services (Leyva, Alarcón & Ortigón, 2016).

Escofer (2020), in his article "Service-learning and digital technologies: a possible relationship", states that the widespread use of digital technologies together with the extension of social networks has created new communication and meeting spaces in which people, social and political actors enter into interconnection. For its part, Sánchez, Ramírez & Soriano (2019), analyze that business websites must ensure that their employees, suppliers, competitors, customers and interested parties can find general and specific information about the company.

It seeks to be in trend and increase sales, however, to make a decision proposes surveying consumers of purified water and knowing the degree of acceptance of sale through a pweb page, therefore, the researcher took on the task of designing the questionnaire based on the study variables, and then submit it to expert validation. The results obtained will allow the proposal to market or not products through the internet, in addition to proposing an architecture design based on the e-commerce model.

The questionnaire is a classic procedure in the social sciences for obtaining and recording data. Its versatility allows it to be used as a research tool and as a tool for evaluating people, processes and training programs. It is an evaluation technique that can cover quantitative and qualitative aspects. Its singular characteristic lies in the fact that, in order to record the information requested from the same subjects, it takes place in a less profound and impersonal way than the "face to face" interview. At the same time, it allows a large population to be consulted quickly and cheaply (García, 2003).

## 2. Literary Survey

The questionnaire is an instrument that allows the collection, quantification and analysis of information. The construction process is uncertainly complex and a methodology must be carried out that allows the viability and reliability of the instrument to be achieved.

Validity and reliability are criteria that must be met in any research instrument, and be subjected to expert judgment, with the aim that researchers can apply it.

The validity of the content is determined by the validity and representativeness in the definition of the construct,

the group of items, grammatical aspects of the items and clarity of the instructions.

Arguedas (2009) mentions in his article that hehe research question must be important to solve situations or problems of people or the community. It must also be related to our professional work or our areas of "expertise", that is, the question must be relevant.

On the other hand, e-commerce has been a evolution in the Internet, and that has influenced the power of the exchange of information so that it is carried out in a faster and more efficient way; which enables users to more easily access goods and services. They indicate that the Internet is constantly increasing its level of global penetration, during 2017 51.8% of the world population was an Internet user according to indicators from the Internet World Stats site (Perdigón, Viltres, & Madrigal (2018).

To conclude, information architecture is a process that requires planning and analysis of the problem to be addressed, at the same time, it is an important field of work for professionals interested in incorporating technology into their professional practice (Rodríguez, Vargas, & González 2019).

**Definition of the Problem**

In the water purifiers, customer service is provided in a traditional way, home deliveries are made once your order has been requested. order, by phone call or by message, However, customers can't always come within the hours, let alone request their orders, that is why the proposal of an e-commerce architectural model can be a useful and innovative tool to further increase your sales, and at the same time time to continue with the objective of offering purified water of excellent quality at more flexible hours for its purchase, obtaining a larger number of clients and managing to have greater communication, from the traditional establishment or from social networks. That is why a questionnaire is developed, which is evaluated by the expert method.

**Objectives**

- Design the questionnaire proposal to be applied to the clients of Agua Inmaculada “San Andrés”
- Validate the instrument by the expert method
- Present the results of the approval of the instrument by experts

**Scope of instrument validation**

Questioning customers about an e-commerce marketing proposal, this will provide important data for the establishment to take strategic sales alternatives through an online platform. Therefore, the validation of the instrument has the purpose of obtaining the approval by experts to carry out the data collection.

**3.Methodology**

The validation was carried out through three stages; first stage, the questionnaire is designed using the study variables through a congruence matrix, second stage the questionnaire is validated by experts, third stage, results are given using scales, established in the guide to validate research instruments (UNACH, 2018).

**Instrument design**

The congruence matrix was structured based on the identification of the dependent and independent variables in order to adapt the questions, giving answers to each of the study variables Figure 1. The congruence matrix is a tool that provides the opportunity to abbreviate the time dedicated to the investigation; its usefulness allows organizing the stages of the investigation process so that from the beginning there is consistency between each of the parties involved in said procedure(Pedraza, 2007).

VARIABLE		QUESTION	SCALE TYPE
Dependent	Independent		
Digital marketing	Personalization	Considers it important that Agua Inmaculada "San Andrés" has a web site to sell its products	Likert
		It is important that there is a section of promotions and discounts on a web page	Likert
	Participation	Have you made any purchases online?	closed polytomous
		Do you think it is difficult to make purchases online?	closed polytomous
	Peer-to-peer in communities	What do you think has prevented you from shopping online?	closed polytomous
		Would you recommend this method of purchase with your acquaintances?	closed polytomous
Mediated productions	How often do you purchase purified water per month?	numeric	
	How much money do you invest in purified water per month? (M\$)	numeric	
	What do you look for when buying purified water?	closed categoric	
	How important do you think web pages contain more images and videos than written content?	Likert	
E-commerce Architectural Design	Structure	What font size makes it easier for you to read a web page?	closed categoric
		Does the amount of text on web pages inconvenience you how?	closed categoric
		What type of design do you like to see on web pages?	closed categoric
		What colors do you like best on a web page?	closed categoric
		What service options would you like the company to have to meet your needs?	closed categoric
		From the following options, choose to 0 forms of payment that you would use to make your purchases online	closed categoric

**Figure 1:** Congruence matrix

Own elaboration 2022

It is important to consider variables such as digital marketing and architectural design of e-commerce, to carry out the study on the acceptance of Agua Inmaculada "San Andrés" customers to market through e-commerce. Subsequently, the construct of the questionnaire is passed on. This was organized in four parts: 1) data from the respondents; 2) information about your online purchases; 3) attributes you like about a web page; 4) information about your purified water purchases.

**Treatment**

First, the dependent study variables (digital marketing, and architectural design of e-commerce) were identified, then the independent variables were related. with the dependents, having clear cagiven one of the variables, the items were structured, responding to the study variables. Once the variables to be studied have been selected, it is necessary that within the corresponding section it is clearly indicated how they will be measured.

Subsequently, the support of 5 experts, postgraduate professors of the master's degree in Administrative Engineering of the National Technological Institute of Mexico, Apizaco Campus, was requested. The who have experience in the subject of study and in the development of questionnaires. The same ones who rated each of the items in their different sections according to the Likert scale, with the purpose of validate both the adequacy and relevance of each question (UNACH, 2018). Validity is the effectiveness with which an instrument measures what is intended (Chávez, 2005), in other words, the validation of the instrument must be related to the fulfillment of the research objective.

**Analysis**

Once the score is established for each of the variables relevance and adequacy, both are added to obtain a total weighting, derived from this we obtain a correct score if the questions meet the characteristics in formulation, structure of the question, and whether or not it is adequate. for the questionnaire, in this way it is already assumed validated the questionnaire for each of the experts, adding the score of each section, and the results are analyzed, according to Hernández, Fernández, & Baptista, (2014), which are presented in scoring scales.

**4.Results**

Once the evaluation of the 5 experts has been analyzed, the results are tabulated in Table 1, identifying the weights of the two variables that were measured, adequacy and pertinacity.

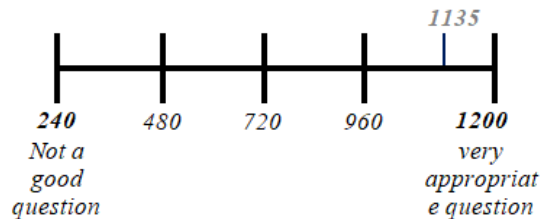
**Table 1: Qualification of variables**

Item No.	Variable	
	Adequacy	Relevance
1	71	49
2	71	44
3	72	46
4	74	48
5	74	49
6	69	40
7	71	46
8	62	43
9	71	48
10	75	50
11	71	50
12	75	50
13	69	48
14	73	50
15	74	50
16	63	46

TOTAL	1135	757
MAX	1200	800
MIN	240	160

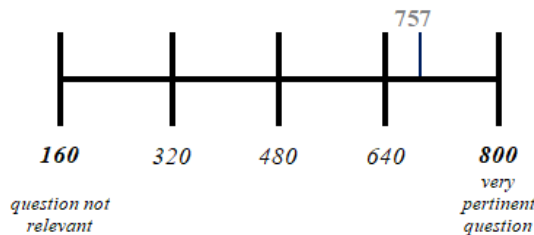
Source: Own elaboration (2001)

The results are presented graphically according to Hernández, Fernández, & Baptista, (2014), which can be seen in the following graphs.



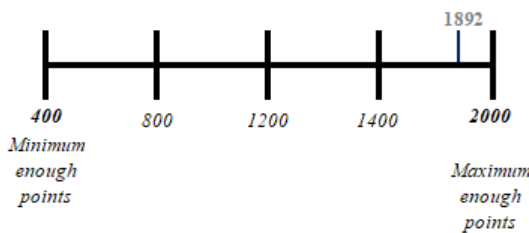
**Graph 1: Scale appropriateness of the question**  
Source: Own elaboration (2021)

According to the results, the experts consider that the questions are adequate for the present investigation with a score of 1.135, which is located in a higher range than the expected average.



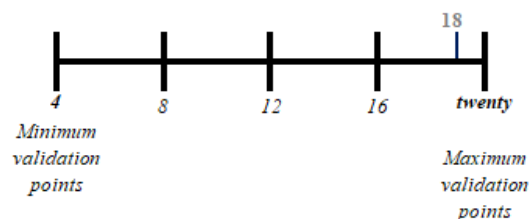
**Graph 2: Relevance scale of the question**  
Source: Own elaboration (2021)

Experts judge the questions to be highly relevant with a score of 757.



**Graph 3: Relevance scale of the question**  
Source: Own elaboration (2021)

The experts value that the questions of the questionnaire are sufficient for the present investigation with a score of 1, 892, which is located in a higher range than the expected average.



**Graph 4: Question adequacy scale**  
Source: Own elaboration (2021)

Finally, the experts judge that the questionnaire is totally valid for the present investigation with a score of 18, which is located in a higher range than the expected average.

## 5. Conclusion

In this article, the procedure that was carried out for the validation of a research instrument was exposed, which every study should apply in order to be successful in data collection. In conclusion, the methodology used it was functional to hit the questions that should be applied, so the results obtained were favorable, and the application of the questionnaire was decided to determine the acceptance of the commercialization. Ion of purified water, because experts judged as highly favorable.

## 6. Future Scope

Performing this type of procedure will lead to many investigations to achieve, collect and accurately apply your research instrument, likewise it is important to emphasize that marketing through web media is a boom for business, regardless of the size of the company.

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