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Tesis

**Impact of e-commerce on the performance of  
agroexports in The Central Region Of Peru**

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**IMPACT OF E-COMMERCE ON THE PERFORMANCE OF AGROEXPORTS IN THE CENTRAL REGION OF PERU**

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wvicente@continental.edu.pe (corresponding author)**Keywords:** e-commerce, export performance, distribution efficiency, communication efficiency

**Abstract:** The objective of the research was to determine the impact of electronic commerce on the performance of agro-exports in the central region of Peru, 2020. The study was carried out from a quantitative approach with a non-experimental - cross-sectional - causally correlated research design. Using the survey technique, two questionnaires were applied to 95 agro-exporters, one for electronic commerce and the other for export performance. Using the structural equations model, it was obtained that electronic commerce in its compatibility dimension does not have a positive impact on the efficiency of the distribution of companies ( $p > 0.05$ ) and does have a positive impact on the efficiency of communication ( $p < 0.05$ ). Regarding ease of use, it does not have a positive impact on the efficiency of the distribution ( $p > 0.05$ ); however, it does have a positive impact on the efficiency of communication ( $p < 0.05$ ). Regarding the perceived utility it has a positive impact on the efficiency of distribution ( $p < 0.05$ ), but it does not have a positive impact on the efficiency of communication. It is concluded that the compatibility and ease of use of electronic commerce positively impact the performance of communication efficiency in agro-exports and the perceived utility has a positive impact on the performance of the efficiency of distribution in agro-exports of the companies of the central region of Peru.

## 1 Introduction

In a globalized environment where the dissemination and use of information technologies have caused great changes in society in general and in companies, E-commerce has been one of its main tools for integration, communication and information between companies and their customers [1]. E-commerce can be explained not only as a simple type of commerce but as one of the largest marketing and strategic support systems for companies within their local and international market [2]. E-commerce changed the commercial system of companies offering great opportunities thereby achieving rapid growth and expansion of the same. For example, in Indonesia by 2019, more than 13 million companies implemented and adopted this new system, as well as 77% of internet users were looking for information on products and services in online e-commerce stores. It is necessary to take advantage of the advancement of technologies and E-commerce to help the development of companies, intensifying their use, advertising, generating and performing usual commercial functions, thereby achieving greater benefits, options and value propositions for current and potential markets that can be covered [3]. Worldwide, the sales of products and services through the internet have grown, with the countries of China, Japan and the United States being the first to use and implement their companies.

In Latin America, the growth of E-commerce was between 6% and 11%, representing US \$ 29,800 million in 2015 to US \$ 64,400 million by the end of 2019, among the countries that registered the highest growth were Argentina, Brazil, Chile and Mexico.

In Peru, a sustained growth of 30% is maintained, but if the industry works as a team to boost online trust, and with a boost from the government, it could grow to more than 100%. Also highlighting that in Peru E-commerce is in constant growth and expansion, in addition to that according to the [4]. E-commerce in Peru has contributed 5.75% to the national GDP of 2018, highlighting the importance of carrying out this type of transactions for the country. According to the Mincetur, the companies of the agricultural sector of the Junín region had an increase in the exports of goods of 20%, whose main foods they exported were achiote, aguaymanto, chili pepper, artichoke, carob, banana, sweet potato, cocoa, coffee, caigua, among other highly valued products in the foreign market and of great income for companies in the region. Highlighting the constant growth in the use of E-commerce to carry out commercial transactions, it is gaining more and more followers among entrepreneurs considering an increase in the penetration of technological advances

The companies of the agricultural sector are immersed in the world of E-commerce at the same time that they have

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and use these online business platforms, they do not know the importance, help and contribution they can make to increase the sales of their products abroad and thus increase your exports. They are unaware of the great advantages of this tool, as mentioned in a study entitled e-commerce decision factors in Peruvian organizations in the retail sector [5] where it refers that although there is high potential for a greater development of electronic commerce in Peru, there is a lack of information on its potential, losing opportunities to generate a competitive advantage locally and internationally.

The main objective of this study is to determine the impact of electronic commerce on the performance of agricultural exports in the central region of Peru, serving the present so that entrepreneurs can know to what extent it supports the development and growth of companies.

## 2 Literary Review

### 2.1 E-commerce

Electronic commerce is defined as the use of the internet to carry out commercial transactions at the national and international level in an appropriate way. According to [6], electronic commerce is the process of selling or exchanging products, services and information through the internet. [7] mention that electronic commerce is mainly focused on the possibility of rapid and updated access to different research sources and the supply of goods and services, without obstacles from the spatial and temporal barriers that physical commerce has to face.

#### 2.1.1 Compatibility of E-commerce

According to the Royal Spanish Academy, the term compatibility is defined as that, said of a person or of a thing; that it can be, function and coexist without impediment with another; From this, it can be interpreted that the compatibility factor measures how adaptable E-commerce can be with the operations and procedures of the company, that is, how much it adapts and integrates with the objectives, culture, values and way of working of the same [8]. The compatibility of E-commerce with the company depends largely on the vision, mission, objectives and strategies that govern the organization.

#### 2.1.2 Usability of E-commerce

The perceived ease of use is the degree to which a person considers that using a specific system or technology does not require additional effort and that the use is of simple and easy way. The success of electronic commerce in companies depends on the ease of adoption and mastery of it by different areas and components that make up [9].

For [10] the widespread use of electronic commerce allows companies to take advantage of a completely new set of capabilities that create a level of global connectivity necessary for the success of the complete export. Transforming resources based on technology and specialized capabilities since they are essential for companies to achieve organizational efficiencies.

#### 2.1.3 Perceived utility

The perceived utility as the degree to which the person considers using a system or new technology will improve results mention that electronic commerce through the internet offers an instrument that will help organizations to fulfil some of their main functions, such as promoting, coordinating and developing economic objectives of operations and strategies with their partners to strengthen, consolidate and integrate their economic activity.

### 2.2 Agro-export performance

According to [11], define performance as a measure of corporate goals, whether economically or strategically with respect to the export of a product or service to a foreign market, is achieved through the good implementation of export marketing strategies. Export performance can be represented in terms of recipient or customer satisfaction.

[12] mentions that there are two main categories of export performance measures: financial performance which emphasizes export sales, growth, intensity and profitability of exports; market performance which emphasizes the performance or strategic results of the export as it was possible to achieve the strategic objectives or the strengthened strategic position.

#### 2.2.1 Distribution Efficiency

According to [13], define distribution as the process by which distributors are selected, as well as the support and commitment of distributors, are important aspects of efficiency and serve as a key export to success factors. Distribution is a key aspect of the export business; the use of resources and capabilities of e-commerce provides numerous ways in which companies can gain efficiency and improve their performance. The efficiency of distribution generated by electronic commerce allow exporters to reduce the number of channels in the distribution chain or also called the process of elimination of intermediaries.

#### 2.2.2 Communication Efficiency

According to [10], Generally define communication efficiency as the set of activities involved in facilitating exchange. Communication efficiencies can reduce buyers' search and negotiation costs. On the other hand, he mentions that the reason why search costs decrease with e-commerce is due to the capabilities of marketing which derives a broader geographic scope from potential suppliers and buyers, with the potential of a direct conversation.

## 3 Research Model and Hypotheses

For the independent variable E-commerce, the following conceptual constructs and their respective items were considered:

- a) Compatibility: E-commerce is in accordance with my company culture (C1) and E-commerce is in accordance with my company values (C2).

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- b) Usability: My company adapted to technology and it was easy for us to use electronic commerce (U1), It was easy for my company to implement electronic commerce (U2) and My company's interaction with electronic commerce was clear and understandable (U3).
- c) Perceived Utility: Using electronic commerce in my company improved job performance (PU1), Using electronic commerce in my company increased production (PU2) and My company finds electronic commerce useful for the activity it performs (PU3).

For the dependent variable Export performance, the following conceptual constructs and their respective items were considered:

- a) Distribution Efficiency: My company is efficient in the logistics process (electronic reservation, transport, inspections, online shipment tracking, etc.) (DE1), My company has been able to reduce the number of distribution channels (intermediaries) necessary for the export market (DE2) and My company brings products to the international market quickly (DE3)
- b) Communication Efficiency: My company is efficient in the exchange of information between clients and partners (CE1), In general my company realizes the efficiencies in after-sales service (CE2) and My company is efficient in researching export markets (CE).

From which the following conceptual model and hypothesis are established (Figure 1).

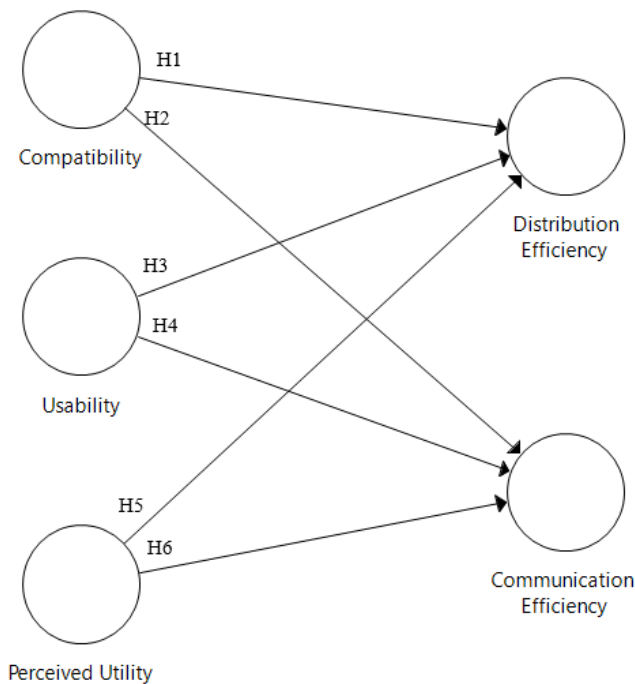


Figure 1 Conceptual model and hypotheses

H1: The Compatibility of e-commerce generates a positive impact on the Distribution Efficiency of agro-exports.

H2: The Compatibility of e-commerce generates a positive impact on the Communication Efficiency of agro-exports.

H3: The Usability of e-commerce generates a positive impact on the Distribution Efficiency of agro-exports.

H4: The Usability of e-commerce generates a positive impact on the Communication Efficiency of agro-exports.

H5: The Perceived Utility of e-commerce generates a positive impact on the Distribution Efficiency of agro-exports.

H6: The Perceived Utility of e-commerce generates a positive impact on the Communication Efficiency of agro-exports.

**4 Method**

A correlational cross-sectional deductive study was conducted between January 2020 and September 2020.

**4.1 Population and sample**

The study population was made up of 126 managers or owners of agro-export companies, between men and women within a range of 18 to 65 years of age, who carry out their business activities from the Junín region; distributed in 9 provinces: Huancayo, Concepción, Jauja, Satipo, Tarma, Chanchamayo, Yauli, Junín, Chupaca. The representative sample consisted of 95 agro-exporters, obtained through the finite sample formula with a margin of error allowed of 5%, with a “p” factor of 0.5 and “q” of 0.5, confidence level of 95%.

**4.2 Data collection instrument**

A directed questionnaire was developed based on 8 questions for the electronic commerce variable (2 for compatibility, 3 for ease of use and 3 for perceived utility) and 6 questions for the export performance variable (3 for distribution efficiency and 3 for communication efficiency). For the validation of the instrument, the Delphi methodology was followed, by which the background validation was carried out with 3 experts in Administration and International Business, the form was validated through the application of the survey to 45 agro-export entrepreneurs, who participated in simultaneously with the pilot. After the first correction of the observations made by the experts, the instrument underwent a second validation, in charge of 2 experts in Administration and International Business and 2 businessmen from the sector. In these stages (for the validation of substance and form), the evaluation of the questions was considered on a four-point scale (one was totally in disagreement and four was totally in agreement), these stages verified the understanding of the questions, identified gaps in the reagents, they eliminated questions and refined the data collection mechanism.

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**5 Results**

**5.1 Assessment of the Measurement Model**

Table 1 shows the measurement analysis of the model, based on the reliability and validity of the measurement scales. With regard to reliability, the internal consistency of the scales is evidenced by the Cronbach Alpha value (between 0.630 and 0.969) and the composite reliability (between 0.810 and 0.980). With respect to convergent

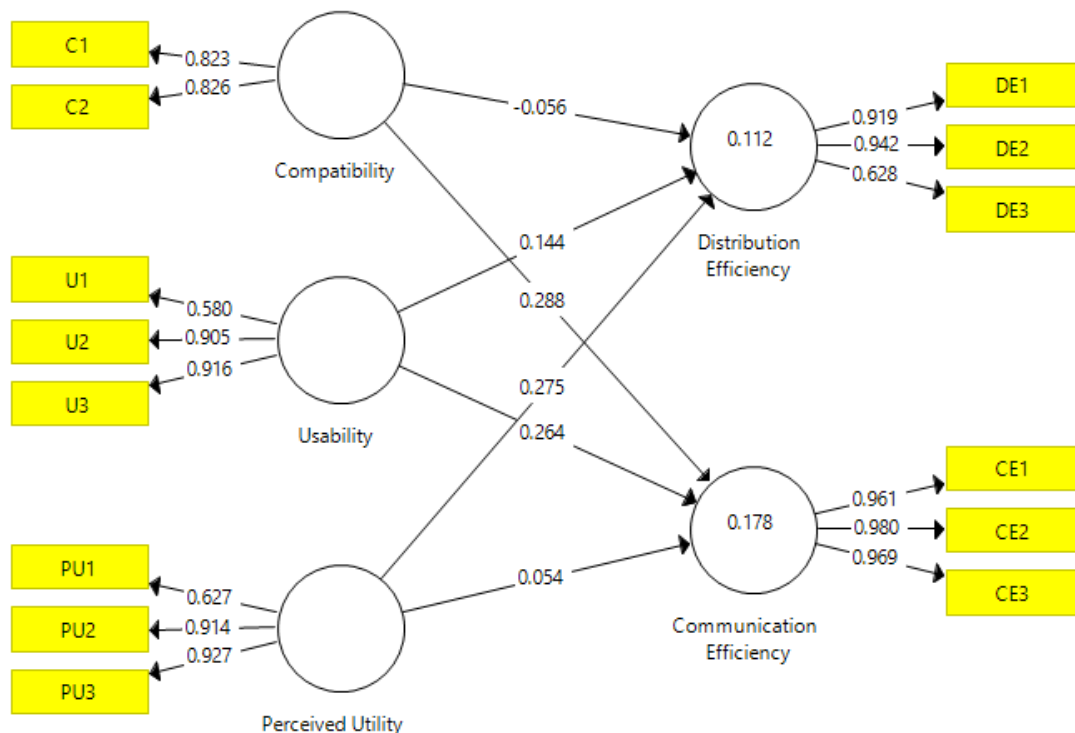
validity, all factor loadings are above 0.815. Likewise, all the scales have percentages of average variance extracted (AVE) greater than 50%. The discriminant validity of the construct was tested by the Fornell Larcker criteria, which verifies the independence of each of the scales, considering that the square root of the AVE is greater than the correlations with the rest of the scales. In all cases, the assumption was met.

*Table 1 Results of the model measurement analysis*

Variables	Cronbach alpha	Composite reliability	Factor loads (range)	Average variance extracted (AVE)	Discriminant Validity
Compatibility	0.630	0.810	0.823 – 0.826	0.680	0.825
Usability	0.721	0.851	0.580 – 0.916	0.665	0.815
Perceived Utility	0.762	0.870	0.627 – 0.927	0.696	0.834
Distribution Efficiency	0.775	0.876	0.628 – 0.942	0.709	0.842
Communication Efficiency	0.969	0.980	0.961 – 0.980	0.941	0.970

As shown in Figure 2, in all cases an R2 greater than 0.112 was obtained, which is very significant, showing that

the model significantly explains the variance of the conceptual constructs of the dependent variable.



*Figure 2 Results for the hypothesized model with structural equations*

**5.2 Assessment of the Structural Model**

After verifying the validity and reliability of the measurement model, the relationships of the constructs were tested [14]. The hypotheses were tested by examining

the road coefficients and their significance levels. Bootstrapping was performed with 5000 subsamples to verify the statistical significance of each of the road coefficients. Figure 3 shows the estimated trajectory of the PLS analysis.

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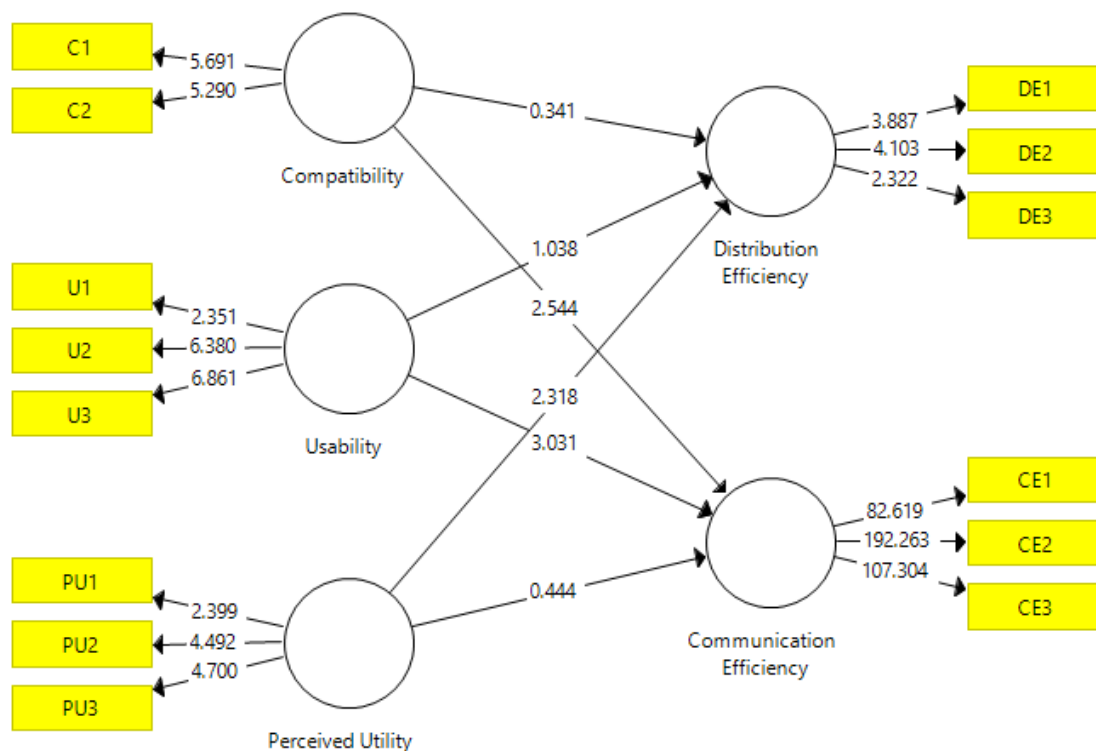


Figure 3 Modeling digital transformation and individual job performance

Of the 6 proposed hypotheses, H2, H4 and H5 are accepted as shown in Table 2.

Table 2 Results of the model structure analysis

Hypotheses	Mean sample	Standard deviation	Beta	p value	Decision
Compatibility -> Distribution Efficiency	-0.056	0.164	0.341	0.733	Denies H1
Compatibility -> Communication Efficiency	0.291	0.113	2.544	0.011	Accept H2
Usability -> Distribution Efficiency	0.131	0.139	1.038	0.299	Denies H3
Usability -> Communication Efficiency	0.276	0.087	3.031	0.002	Accept H4
Perceived Utility -> Distribution Efficiency	0.277	0.119	2.318	0.020	Accept H5
Perceived Utility -> Communication Efficiency	0.057	0.122	0.444	0.657	Denies H6

## 6 Discussion and conclusion

### 6.1 Regarding the impact of e-commerce compatibility on the communication efficiency of agro-exports

The compatibility of electronic commerce has a positive and significant impact on the efficiency of the communication of agro-exports ( $p < 0.05$ ), this is in line with that referred to by [1] who recommend that to continue achieving better communication with customers they should pay close attention to their online sales, improving and implementing a series of fundamental guidelines around information, communication and additional functions that allow fluid and continuous communication with them ; They also highlight that an efficient immersion in the world of electronic commerce will lead to better results for companies. Likewise, it agrees

with what was indicated by [6] who highlight that there are three fundamental factors for the success of a company on the internet and electronic commerce and they are: the organization, the technology and the environment, with the organization being the most important factor, mentioning that if it is committed, involved and operates efficiently, it will have positive results in relations and communications with its current and potential clients, in addition to obtaining the results expected by them. For its part, [5] mentions that the organizational culture and the flexibility to adapt to electronic commerce promote attitudes associated with the innovation of decision makers and that it has a significant impact on the interaction with customers, search for potentials, reduction of intermediaries, a closer and more direct relationship and collaboration with the target audience, thus achieving the goals and objectives of the companies. In conclusion, for

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companies to exploit all the potential that electronic commerce can offer them, the entire organization must be involved, implementing, improving and promoting the interior and exterior of it, thereby achieving a more effective relationship, communication and information exchange. clear and understandable with current and potential customers of companies.

**6.2 Regarding the impact of e-commerce usability on the communication efficiency of agro-exports**

The ease of use of electronic commerce has a positive and significant impact on the efficiency of agro-export communication ( $p < 0.05$ ), this is in line with what is reported by [10], who recommend that for to achieve efficient communication, we should continue to adapt to electronic commerce technologies, since it would increase access to customer information and transparency of information, generating a reduction not only in search costs but also in monitoring and execution costs. The efficiency of communication through electronic commerce also generates a reduction of information asymmetries between buyers and sellers by providing complete information, which would lead to better results for the company. In conclusion, in order for companies to develop optimal communication efficiency, they should develop specialized capabilities in communication and e-commerce promotions, as this would be a clearer and more understandable way to manage buyers' expectations in export markets. Likewise, the development of the adaptation of electronic commerce technology has resulted in efficiencies in logistics on a global scale, and in turn a more effective after-sales service.

**6.3 Regarding the impact of e-commerce perceived usefulness on the distribution efficiency of agro-exports**

The perceived utility of electronic commerce has a positive and significant impact on the efficiency of agro-export distribution ( $p < 0.05$ ), in particular we found that, to achieve distribution efficiency, it was necessary to adopt a manoeuvre to optimize resources and capacities of electronic commerce, managing to perform the specific tasks of the company more quickly. This is in line with what is referred to by [15], who recommends that for companies to continue obtaining a better distribution, they should take advantage of new technologies and at the same time be able to adapt and create capacities to align with the market and achieve better results. Likewise, [13] suggest that the closer the relationship with the distribution, the success of the commercialization materializes and the relationship must be managed with objectives to be achieved in the long term.

Highlight that for distribution efficiency [10] it is necessary to capture a competitive advantage, suggesting that the competitive advantage can be obtained in various

ways: an efficiency advantage, an effectiveness advantage or an efficient advantage of effectiveness and is in turn significantly impacting with customers by which it could operate in a more efficient way and obtain positive results. Efficiency in the delivery time of exported products constitutes a key criterion for selecting foreign suppliers and ensuring success in the market in which they operate. In conclusion, the efficiency of distribution is key to export, also the use of its resources and electronic commerce capabilities provides us with numerous ways to achieve that companies can gain efficiency in logistics processes and improve the performance of exports in the companies.

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**Review process**

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