Logistics as a Determining Competitiveness Factor in Special Coffee Producers

1. Introduction

This research aims to demonstrate how logistics is a determining factor of competitiveness in special coffee producers, for competitiveness somehow depends on efficiency in processes linked to logistics, as well as to formulate a strategic plan to increase competitiveness in...
these companies. Taking this into account and to be able to present the body of this investigation, the article was structured in four (4) sessions:

Session I refers to the approach of the problem and its formulation. The objectives, justification and delimitation of the study guided its execution. The empirical assumptions of the observed situation allowed to unveil the business reality addressed.

Session II offers the theoretical framework, which developed the foundation and proposed the theoretical perspective of the research. Previous investigations were reviewed in order to establish the state of the art or knowledge about the studied variable and its context, as well as the reflections generated from the review of theories, which allowed identifying the components or dimensions of the variable.

Session III corresponded to the epistemological approach that determined the method and techniques used to develop the research, according to the objectives and scope, which allowed to generate valid and reliable results, generalized to the population studied.

Session IV includes the analysis and interpretation of the results of the investigation. Considering the theoretical foundation, this analysis yielded the conclusions with respect to the variables studied. Relevant recommendations are also given in this session.

1.1. Problem Statement

According to Cuatrecasas (2003), the logistics in the company has as objective that the clients can dispose of their merchandise in an efficient time, that expectations and demands are fulfilled at a reduced cost. For this, an organization will need an efficient logistics that is in charge of planning, controlling of the movements and storage of the merchandise, from its possession, transfer, storage and to the final consumption of the product.

In agreement with the aforementioned author, logistics becomes a competitive advantage for any organization. But it must be considered that the logistics issue must be treated in an integral manner and not as an island within the company, that is, it must be treated as an information facilitator area and integrator of processes and resources that allow to properly dispose of the product that is to be introduced in the right market, in the right place and time, as expected by the client.

The European Union manages everything related to international operations with a degree of technology far superior to that of some Latin American countries, such as Colombia, Peru, Ecuador, among others. However, countries like Chile appear, which presents free trade agreements with more than 50 countries and is characterized by presenting quality systems and good practices in manufacturing, packaging and traceability, and transportation, which qualifies this country as the first in terms of competitiveness and is the one that makes the difference in South America.

In Colombia, the national government is striving to carry out free trade agreements with the largest number of countries possible. There is currently an agreement with 34 countries, including the free trade agreement with the European Union. There are also those of New Zealand and South Korea, which are in the negotiation phase, among others, planned to be carried out before the end of 2014.

Currently, countries such as the United States, Canada, Japan and Mexico, are one of the many potential markets that have the special coffee producers of the Department of Cesar, which through the Federation of Coffee Growers of Colombia are exporting their products to these destinations.

Consequently, logistics in Colombia began to be addressed in the 80s, but as a business concept in the mid-90s. Today, it is practically a business culture, which has led to the success of companies such as Familia Sancela, Servientrega, Coomeva, Federation of Coffee Growers (Juan Valdés), Sofasa, among others, which acquire their added value through the integral application of logistics and demonstrating an approximate increase of 80% in competitiveness levels, both nationally and internationally.

According to Castellanos (2010), logistics is a strategic area to achieve competitive advantages, taking into account key concepts for the development of the project such as
logistics chain, logistics plan, value chain, national and global supply chain, procurement management, provisioning, storage, distribution logistics and technologies.

In the rural area of Valledupar, specifically the Municipality of Pueblo Bello located in the foothills of the Sierra Nevada de Santa Marta, there are associations and farmers producing coffee in the villages of the Municipality of Pueblo Bello, among which are the gentlemen Flemy Estupiñan, William Ardila, Orlando Hernández, Ceñir Clavijo, Gustavo Vargas, outstanding coffee producers, with their plots located in the towns of Costa Rica 1, San Quintín and Costa Plata, respectively, standing out in the municipality for their vast production of coffee, belonging to the group of members of the cooperative of coffee growers of the Caribbean coast, (CafiCosta) and the new organic coffee associations created in the municipality Café KIA - Café Aney and Asoprocasines (coffee Nacer).

According to the previous approach, the following question can be formulated: How is logistics established as a determining factor for competitiveness in companies producing special coffee?

1.2. Objectives of the Investigation

1.2.1. General Objective
Analyze logistics as a determining factor of competitiveness in special coffee producers of the Municipality of Valledupar.

1.2.1.1. Specific objectives
- Identify logistic macroprocesses in companies producing special coffee
- Determine the logistics microprocesses in companies producing special coffee
- Characterize the levels of competitiveness in companies producing special coffee
- Explain the determinants of competitiveness in companies producing special coffee

1.3. Justification

The present investigation can be justified from different perspectives since it deals with different aspects: from the theoretical aspect, the development of the investigation implies relating approaches, from a systemic and strategic perspective of logistics with the theory of the internationalization of small companies and of the social welfare of its workers. Throughout this research, we will work with the companies that produce special coffee, which are concerned with the integration of each of the actors that are in the production system through different logistics aspects that become the transversal axis of the actions of companies.

The information on aspects related to logistics operations was reviewed among a certain number of companies that work in the rural area of the Municipality of Valledupar and that need the optimization of resources and constant communication to achieve the satisfaction of the final consumers in their supply chain.

The National Council of Economic and Social Policy (CONPES, 3527) of 2008, states that "In 2032 Colombia will be one of the three most competitive countries in Latin America and will have a high level of income per person, equivalent to that of a country of high average income, through an export economy of goods and services with high added value and innovation, with a business environment that encourages local and foreign investment". This national policy goes hand in hand with what is investigated in this project to determine if the improvement of the logistic processes generates a better competitiveness index in the business segment of the special coffee producers located in the department of Cesar.

With regard to the practical approach, the result of this research is to generate production and marketing strategies that integrate all the associations of the special coffee producers of the region so that logistic processes are strengthened and can reach more international destinations in the form of clusters or blocks of companies, which would result in a series of possible solutions to meet the objective set by the Ministry of Commerce, Industry and
Tourism, on the business development of Colombia internationally.

The way to obtain such results will be through the analysis of management indicators, macroprocesses and logistic microprocesses, diagnosis of the competitive level of the associations and the generation of a strategic plan in which possible solutions to the producers of special coffee are generated, according to Mora (2008).

The social approach of the project reflects in the productive sector. Even though it has great potential, it has always been characterized by the informality and lack of professionalism of those responsible for the Associations subject of this study, (unit of observation). Since most of the leaders and producers of the companies do not have a professional title, they have not formalized the companies before the government entities of the department, nor do they work based on strategic plans of commercialization, purchases, sales, rendering of services, customer loyalty and much less the application of logistic processes in the commercialization of the products (Gordon, 2013).

It also offers aspects that highlight the importance and necessity of the study, whose actors should improve their standard of living, because it is to reduce the performance of intermediaries in the processes of international physical distribution, reducing the risk of loss of utilities in the application of logistic processes and therefore generating strategies that improve the competitiveness of special coffee producers.

Likewise, the information collected will allow updating the statistical figures of the region in terms of the special coffee sector, which are not presented clearly or updated in the reports of the National Planning and Statistics Department (DANE), which the latest information of statistics is presented with one or two years of delay.

From the methodological approach, the project corresponds to a process of its own construction, which is new to evaluations of social benefit programs and, in this case where the coffee sector is one of those that the national government always takes into account in the event of an adverse event occurring that could cause problems in the production of the grain. The elaborated instrument may also be applied to other similar programs.

Finally, this work is intended to serve as a reference for future research, both Colombian and Venezuelan, which seek to evaluate competitive logistics processes of companies whose objective is to internationalize their products and achieve international competitiveness.

1.4. Theoretical Framework

1.4.1. Antecedents

In relation to the logistics variables and competitiveness, under the context of the Colombian coffee companies, various investigations have been developed, in which important contributions have been derived that enrich the theoretical and empirical nature of the subject. The most relevant authors who presented some type of relationship with the topic of logistics and competitiveness, which served as the basis for this research, are presented.

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moran (2005)</td>
<td>Distribution logistics of non-alcoholic beverages warehouses for customer satisfaction</td>
<td>Diagnosing shortcomings in the analysis of logistics processes in customer service</td>
</tr>
<tr>
<td>Morales (2006)</td>
<td>Logistics management in the companies of the fruit pulp</td>
<td>Analysing the logistics management of purchases and sales</td>
</tr>
</tbody>
</table>
processing sector in the municipality of Maracaibo
inventory, lack of procedures for measuring inventory levels of raw material and products

Borrego (2009)
Innovation and value chain in electricity distribution companies in the state of Zulia
Establish a relationship between innovation and the logistic of entry, operations and logistics of departure

Chacón (2010)
Management of innovation and logistics in manufacturing companies.
Manufacturing companies tend to manage innovation and integrate logistics functions.

Source: Own elaboration

Table 2
Antecedents of the competitiveness variable with greater relevance in the investigation

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Cruz (2010)</td>
<td>Logistics as a tool for competitiveness in companies in the agro-industrial sector</td>
<td>Problems with information systems for the control and management of the supply chain, recycling and the environment.</td>
</tr>
<tr>
<td>David (2011)</td>
<td>Chain of value in Pygas processing plant Petrochemical Complex</td>
<td>The pygas processing plant has a high presence of competitive advantages, with service, operations and purchasing activities being the most relevant</td>
</tr>
<tr>
<td>Terán (2009)</td>
<td>Culture of innovation as a support for competitiveness in small and medium enterprises</td>
<td>SMEs under study do not have the competitiveness to maintain a competitive advantage, even when they have the potential to do so.</td>
</tr>
<tr>
<td>Emanuels (2001)</td>
<td>Design of a strategic marketing plan to improve the positioning of Peyless Shoes stores in the City of Maracaibo</td>
<td>Design a strategic marketing plan</td>
</tr>
</tbody>
</table>

Source: Own elaboration

1.4.2. Theoretical bases
In every research, it is essential to gather information that allows to disagree between the different approaches proposed and that in some way will help to give foundation to the study in process. Therefore, the theoretical basis can be considered as the collection of concepts and propositions typical of the problem or variables under study. The following are the most
relevant theoretical foundations on which the research was developed: author, type of product and its contribution to the development of the project.

**Table 3**
Theoretical bases with greater relevance in the development of research

<table>
<thead>
<tr>
<th>Theoretical Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author</strong></td>
</tr>
<tr>
<td>Tejero (2011)</td>
</tr>
<tr>
<td>Ramírez (2010)</td>
</tr>
<tr>
<td>Mora (2008)</td>
</tr>
<tr>
<td>Rojas y col (2011)</td>
</tr>
<tr>
<td>Porter (1998)</td>
</tr>
<tr>
<td>Villamizar (2011)</td>
</tr>
</tbody>
</table>

Source: Own elaboration

**1.4.3. Variable system**

1.4.3.1. Nominal definition Variable 1: Logistics.

1.4.3.1.1. Conceptual definition
For the purposes of this research, the conceptual definition established by the Council of Logistics Management (CLM) (2015, p.15) is assumed, which states that "Logistics is the process of planning, implementing and controlling efficient flow and storage at an effective cost of raw materials, inventories in process, of finished product and related information from points of origin to consumption, in order to meet the needs of customers."

1.4.3.1.2. Operational definition

Logistics is the process of planning, controlling and managing the supply and distribution chain from the supplier of special coffee producing companies to the final customer, and it is operationalized based on the following dimensions: Logistic macroprocesses, Logistic microprocesses, with their respective subdimensions and indicators. In this sense, the variable will be measured operationally through the score obtained in the application of the data collection instrument designed by the author.

1.4.3.2. Nominal definition variable 2: Competitiveness

1.4.3.2.1. Conceptual definition

According to Villamizar and Villamizar (2011), competitiveness is understood as the capacity of a public or private organization, lucrative or not, to systematically maintain comparative advantages that allow it to reach, sustain and improve a certain position in the socioeconomic environment. The term competitiveness is widely used in business, political and socio-economic environments in general. This is due to the broadening of the frame of reference of economic agents that have gone from a self-protective attitude to a more open, expansive and proactive approach.

1.4.3.2.2. Operational definition

The competitiveness variable is conceived as the capacity of the Colombian companies producing special coffee to compete in national and international markets. It is operationalized from the dimensions, levels of systemic competitiveness and determinants of competitiveness, with its generic subdimensions and indicators. The same will be measured operationally through the score obtained with the application of the data collection instrument designed by the author and constructed based on the dimensions, with their respective indicators, generating the summary in a table operationalization of the variable.

2. Methodology

2.1. Population and Sample

According Tamayo and Tamayo (2009), the population is the total set of individuals, objects or measures that have some common characteristics observable in a place and at a given time. When carrying out some research, some essential characteristics must be taken into account when selecting the population under study.

Table 4
Methodological Framework

<table>
<thead>
<tr>
<th>Epistemological Approach</th>
<th>Type of Research</th>
<th>Research Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivist: The facts are described as they manifest themselves in reality and transcend them, allowing the generation of contributions from the analysis of the results obtained. Hernández, Fernández &amp; Baptista (2010)</td>
<td>Explanatory: explains why a phenomenon occurs and under what conditions it manifests, or why two or more variables are related Hernández, Fernández &amp; Baptista (2010)</td>
<td>Non-experimental: according to Hernández, Fernandez and Baptist (2010), non-experimental research is one that is carried out without deliberately manipulating variables. Field: includes the systematic analysis of problems in reality, with the purpose either of describing them, interpreting them,</td>
</tr>
</tbody>
</table>
understanding their nature and constituent factors, explaining their causes and effects.

Transectional: the variable is measured in a single moment.

Hernández, Fernández & Baptista (2010)

Hernandez and others (2010) say that the population is a set of elements or related things in one or more characteristics, like a totality or universe on which the conclusions of the investigation are generalized. The population of the present study is made up of the general managers, of costs as well as purchasing, logistics and storage managers and marketing managers of the companies ASOPROKIA and ASOPROCASINES. It should be noted that these reporting units work and operate within the institution, and are accessible, for which sampling procedures are not required. In addition the population census assumed, according to the Veliz criterion (2004), it consists of the complete enumeration of the population, that is, the analysis of the universe in study. In this sense, the entire population is assumed and applied to the research sample, as identified in the following table:

<table>
<thead>
<tr>
<th>Informant Units</th>
<th>ASOPROKIA</th>
<th>ASOPROCASINES</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Financial Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Purchasing Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Storage Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dispatchers</td>
<td>15</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>Logistics Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Marketing Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Logistics Operators</td>
<td>5</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Distributor</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Transport Manager</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>53</strong></td>
<td><strong>83</strong></td>
</tr>
</tbody>
</table>

Source: Own elaboration from data taken from Asoprokia y Asoprocasines (2014)

2.1.1. Techniques and instruments for data collection

For the collection of information, the Likert questionnaire was used as an instrument, which


2.1.2. Validity and reliability of the instruments

The validity of an instrument for Balestrini (2006) is defined as the degree to which a test measures what is proposed in an investigation. Tamayo and Tamayo (2009) add that validity is the degree to which an instrument reflects a specific domain of the content to be measured, the degree to which the measurement represents the concept or variable. Thus, the validity of a measurement instrument is evaluated on the basis of the evidence of content and represents the variable it intends to measure.

In this context, the validity of the content of the instruments was obtained through the judgment of experts in the area, who were in charge of evaluating the correspondence of the items with the established objectives, dimensions and indicators, determined the pertinence and coherence of the research in function of its purpose.

To carry out this procedure, a format was created, which presents a set of instructions that guided the experts in the evaluation of the instruments, thus obtaining their opinions and assessment of the different aspects of interest. The suggestions of the experts were considered in order to make the necessary adjustments to present the final version of the instruments addressed to the population under study that work in the aforementioned companies.

Regarding reliability, Hernández and others (2010) state that it represents the degree to which an instrument in its application repeated to subjects under similar conditions produces the same results. Likewise, Balestrini (2006) adds that the reliability of the instruments is determined according to the structure of the instrument, estimating the reliability of the instruments using the Alpha Cronbach formula, which, according to Pelekais et al. (2014), is used when instruments have several response alternatives:

\[
\alpha = \left[ \frac{k}{k-1} \right] \left[ 1 - \frac{\sum_{i=1}^{k} S_i^2}{S_t^2} \right]
\]

Where:

- \( K \) = number of items
- \( S_i^2 \) = score variance of each item
- \( S_t^2 \) = total score variance

In this sense, to calculate the reliability of the instruments, a pilot test was applied to a population of twenty (20) individuals that possess the same characteristics common to the population under study, in an organization with similar characteristics to the companies addressed. The data obtained from the pilot test were recorded and organized in a double entry matrix, through the statistical program SPSS, version 21.0, and EXCEL 2010 version, where the index showed 0.83, showing that it is a reliable instrument.

2.1.3. Data analysis technique

Once the data has been cataloged, transferred to a matrix, placed in a file and freed of errors, the researcher started the analysis. Regarding the statistical treatment of the data collected, Tamayo and Tamayo (2009, p. 187) state that "tabulation of data is a technique that the researcher uses to process the information collected, which enables the organization of the data related to a variable, dimension, indicators and items. It requires a systematic and careful process". These techniques are intended to obtain information from subjects in depth, using the same words, definitions or terms of the subjects in their context.

Accordingly, Hernández and others (2010, p. 278) point out that "the analysis of the data is carried out on the data matrix using a computer program". In this investigation, for the analysis of the data collected through the questionnaires, the statistical package SPSS, version 21.0, was used through an inferential statistical analysis.
Framed in this operational sequence, the results obtained after the application of the questionnaires corresponding to the variables logistics and competitiveness, were analyzed from the variance analysis technique (ANOVA) and Tukey's Post Hoc test, for the study of the positioning, and of the subsets established from the significant differences between each of the indicators, denoting the high means in contrast with the lowest ones. In this way, tables were drawn up to concentrate the results, using linear graphs or frequency polygons, in order to highlight the averages achieved, thus allowing to observe the behavior of the population under investigation.

Likewise, for the purpose of the analysis and interpretation of results, explanatory parameters were established. As indicated by Kerlinger and Lee (2002), a numerical value lacks quantitative meaning, unless a meaning is assigned to it. These allocation rules must have correspondence and be linked to reality.

In this regard, the scale developed for the interpretation of the results was established based on the number of alternatives on the scale, taking into account five (5) categories, which will guide the calculation of the intervals using the following formula: \( IB = (v - v) / \text{no categories} \), where \( IB \) interval of the scale, greater value that was five (5) and the lowest one (1), resulting in 0.80. (See Figure 6)

### Table 6
Scale for the interpretation of results

<table>
<thead>
<tr>
<th>Range</th>
<th>Interpretation categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 1,00 \leq X \leq 1,80 )</td>
<td>Absent</td>
</tr>
<tr>
<td>( 1,81 \leq X \leq 2,60 )</td>
<td>Scarcely present</td>
</tr>
<tr>
<td>( 2,61 \leq X \leq 3,40 )</td>
<td>Moderately present</td>
</tr>
<tr>
<td>( 3,41 \leq X \leq 4,20 )</td>
<td>Present</td>
</tr>
<tr>
<td>( 4,21 \leq X \leq 5,00 )</td>
<td>Very present</td>
</tr>
</tbody>
</table>

Source: Own elaboration (2016)

### 3. Results

#### 3.1. First specific objective

**Table 7**
Analysis and discussion of the results of the first objective

<table>
<thead>
<tr>
<th>Dimension: Macroprocesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Variance Analysis technique (ANOVA) and the Tukey Post Hoc Test were applied in order to appreciate the differences of means by dimension, in contrast to the lower ones.</td>
</tr>
</tbody>
</table>

**Anova**

<table>
<thead>
<tr>
<th></th>
<th>Sum</th>
<th>Gl</th>
<th>Quadratic mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-groups</td>
<td>4769</td>
<td>3</td>
<td>1.590</td>
<td>3.372</td>
<td>0.19</td>
</tr>
<tr>
<td>Intra-groups</td>
<td>154.648</td>
<td>328</td>
<td>.471</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis of the Variance (ANOVA): Accurate significance in the comparison of the averages of the indicators of the dimension.
Level of significance: (0.019 < 0.05, level of referential significance).
There are no significant differences between the compared indicators.

**Tukey's Test of Homogeneous subsets**

<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Subset for alpha * 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logistics of Use</td>
<td>83</td>
<td>1.5301</td>
</tr>
<tr>
<td>Inventory Logistics</td>
<td>83</td>
<td>1.5984</td>
</tr>
<tr>
<td>Logistics Costs Management</td>
<td>83</td>
<td>1.7349</td>
</tr>
<tr>
<td>Distribution and Serving to the Client</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td>.221</td>
</tr>
</tbody>
</table>

Three first indicators: 1.53, 1.59 and 1.73 pts: (1.0 < 1.8): Absent
Last indicator: 1.83 pts: (1.81 < 2.60): Scarcely present, greater preference

Source: Own elaboration (2016)

### 3.2. Second Specific Objective

**Table 8**
Analysis and discussion of the results of the second objective

**Dimension: Macroprocesses:**
The Variance Analysis technique (ANOVA) and the Tukey Post Hoc Test were applied in order to appreciate the differences of means by dimension, in contrast with the lowest ones.

<table>
<thead>
<tr>
<th>Anova</th>
<th>Sum</th>
<th>GI</th>
<th>Quadratic mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-groups</td>
<td>.988</td>
<td>2</td>
<td>.494</td>
<td>2.078</td>
<td>.127</td>
</tr>
<tr>
<td>Intra-groups</td>
<td>58.485</td>
<td>246</td>
<td>.238</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59.473</td>
<td>248</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the Variance (ANOVA): precise significance in the comparison of the averages of the indicators of the dimension Level of significance: (0.127 > 0.05, level of referential significance)
There are no significant differences between the compared indicators.
### 3.3. Third Specific Objective

**Table 9**

Analysis and discussion of the results of the third objective

**Dimension: Competitiveness Levels**

The Variance Analysis technique (ANOVA) and the Tukey Post Hoc Test were applied in order to appreciate the differences of means by dimension, in contrast with the lowest ones.

<table>
<thead>
<tr>
<th>Anova</th>
<th>Sum</th>
<th>Gl</th>
<th>Quadratic mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-groups</td>
<td>9.660</td>
<td>4</td>
<td>2.490</td>
<td>7.095</td>
<td>.000</td>
</tr>
<tr>
<td>Intra-groups</td>
<td>143.882</td>
<td>410</td>
<td>.351</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>153.842</td>
<td>414</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the Variance (ANOVA): precise significance in the comparison of the averages of the indicators of the dimension. Level of significance: (0.000 <0.05, level of referential significance). There are highly significant differences between the compared indicators.

#### Tukey’s Test of Homogeneous subsets

<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Subset for alpha * 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Three first indicators: 1.53, 1.59 and 1.73 pts: (1.0 <1.8): Absent

Last indicator: 1.83 pts: (1.81 <2.60): scarcely present. greater preference

Source: Own elaboration (2016)
3.4. Fourth Specific Objective

Table 10
Analysis and discussion of the results of the fourth objective

Dimension: Competitiveness Factors
The Variance Analysis technique (ANOVA) and the Tukey Post Hoc Test were applied in order to appreciate the differences of means by dimension, in contrast with the lowest ones.

Anova

<table>
<thead>
<tr>
<th></th>
<th>Sum</th>
<th>Gl</th>
<th>Quadratic Mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-groups</td>
<td>2.017</td>
<td>3</td>
<td>.672</td>
<td>1.663</td>
<td>.175</td>
</tr>
<tr>
<td>Intra-groups</td>
<td>132.613</td>
<td>328</td>
<td>.404</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>134.631</td>
<td>331</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the Variance (ANOVA): precise significance in the comparison of the averages of the indicators of the dimension. Level of significance: (0.175 > 0.05, level of referential significance)

There are highly significant differences between the compared indicators.

Tukey’s Test of Homogeneous subsets

<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Subset for alpha * 0,05</th>
</tr>
</thead>
<tbody>
<tr>
<td>New technologies</td>
<td>83</td>
<td>1.4578</td>
</tr>
<tr>
<td>Buyer’s Changing needs</td>
<td>83</td>
<td>1.6024</td>
</tr>
<tr>
<td>Appearance of a new segment</td>
<td>83</td>
<td>1.6345</td>
</tr>
<tr>
<td>Change in Costs</td>
<td>83</td>
<td>1.6586</td>
</tr>
<tr>
<td>Government Changes</td>
<td></td>
<td>1.7934</td>
</tr>
</tbody>
</table>

Source: Own elaboration (2016)
4. Conclusions

**Table 11**
Conclusions of the first objective

<table>
<thead>
<tr>
<th>Logistic Macroprocesses: Absence of Macrologistics processes in the Special Coffee Companies.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusions: First objective: Identify logistic macroprocesses in companies producing special coffee.</td>
</tr>
<tr>
<td>1. Process development is weakened, with emphasis on those destined to establish and control the goals of the companies.</td>
</tr>
<tr>
<td>2. Evidence of absence of guidelines in all processes, denoting deficiency indicating how and why they should be done, hindering the achievement of the organizational vision.</td>
</tr>
<tr>
<td>3. Impact directly on customer satisfaction and any other aspect of the organization's mission.</td>
</tr>
<tr>
<td>4. It was found that factors, such as inventory management, were absent, even when they support the raison d'etre of the special coffee companies, objects of study.</td>
</tr>
<tr>
<td>5. It was evident that processes such as distribution and customer service are directly linked to the mission of the organization.</td>
</tr>
</tbody>
</table>

Source: Own elaboration (2016)

**Table 12**
Conclusions of the second objective

<table>
<thead>
<tr>
<th>Logistic macroprocesses: They were absent from a technical approach within the companies under study according to the opinion of the managers, logistics operators, dispatchers and distributors; revealing the existence of certain gaps that impede development.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusions: Second objective: Determine the logistics microprocesses in companies producing special coffee.</td>
</tr>
<tr>
<td>1. Companies neglect to fully cover the search for abstractions that correctly model the problem.</td>
</tr>
<tr>
<td>2. The absence of activities inherent in the reverse logistics developed by those with ecological connotations was evidenced.</td>
</tr>
<tr>
<td>3. They neglect the improvements and greater benefits in the productive processes and supply of the markets.</td>
</tr>
<tr>
<td>4. They neglect Customer Service (sales), production planning, service providers (purchases and provisioning), storage, inventory management, transport and reverse logistics.</td>
</tr>
</tbody>
</table>

Source: own elaboration (2016)

**Table 13**
Conclusions of the third objective

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All the indicators: 1.4578, 1.6024, 1.6345, 1.6586 and 1.7934 points: (1.0 < 1.8): Absent Fifth indicator: 1.7934 points: (1.0 < 1.8): Absent, greater preference.

Source: Own elaboration (2016)
Conclusions: Third Objective: Characterize the levels of competitiveness in companies producing special coffee

Levels of competitiveness: absent in the competitiveness processes of special coffee companies

1. There was weakness in the levels reached by the companies producing special coffee, a situation identified as it follows the same pattern of contrasting various factors of competitiveness between companies in the same branch.
2. A distancing is revealed, as it analyzes the conditions presented by the regions for the sustainable development of a specific sector.
3. The results show the absence of elements similar to other competitiveness exercises, which indicates the lack of a relative advantage for coffee cultivation.
4. All the pillars of competitiveness analyzed have low scores, deducing that they lack advantages related to natural resources and technology used for coffee cultivation.
5. They have a robust coffee institutional structure and the best living conditions of coffee houses, which is largely related to the broad coffee tradition.
6. It is necessary to strengthen coffee production emphasizing aspects of quality and differentiation of coffee; indicators that are manifested as absent in the present study.
7. Although there is a labor market that presents excess demand, specifically during harvest periods, new technologies are not generated or adopted that will allow the coffee industry in these departments to solve this difficulty.

Source: own elaboration (2016)

Table 14
Conclusions of the fourth objective

Conclusions: Fourth Objective: Explain the determinants of competitiveness in companies producing special coffee

Determining factors of the competitiveness: determined with clarity and the absence of their application by the special coffee companies is seen

1. Absence of competitive development factors, such as production, optimal natural resources, selection of skilled labor, favorable work rate
2. They neglect the management that the coffee grower gives to the production system of coffee growers.
3. The coffee grower does not know the environmental offer and the optimal production system that allows him to acquire greater productivity and development, adopting technology that generates differentiation, knowledge of the international market, be competent and successfully perform each part of the coffee production process.
4. A better level of competitiveness must be included on the part of the coffee producer. There were high levels of adoption of the coffee technologies investigated.
5. To maintain a competitive advantage in the international arena, it is required to assume processes of catching up in the environment, changing the technical conditions of production.
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1. Faculty of Administrative, Accounting and Economic Sciences. Popular University of Cesar. Doctor in Management Sciences. Master in Business Management, Specialist in International Business Management and Mechanical Engineer. Teacher of International Trade Program. yimygordon@unicesar.edu.co

2. Faculty of Engineering. Popular University of Cesar. Doctor of Educational Sciences, Doctor of Science, Management Mention. Doctor of Educational Sciences. Food Engineer. Teacher of Agroindustrial Engineering Program. carlosvidal@unicesar.edu.co

3. Faculty of Administrative, Accounting and Economic Sciences. Popular University of Cesar. Post-Doctor in Management of Higher Education. Doctor of Educational Sciences. Master in Business Management, Bachelor of Education. Professor of Business Administration Program. geovanniurdaneta@unicesar.edu.co