

Designing a Causal Model of Buyers' Orientation in the Decision-Making Process According to Ethical Factors

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Abstract

Introduction: Due to the limited resources and facilities that organizations face, we must first identify and prioritize the factors that are of higher importance to customers and will lead to their satisfaction, and then based on priority and importance. Agents took the necessary measures to provide goods and services that meet the highest degree of customer satisfaction. Therefore, the purpose of this study is to rank the criteria and sub-criteria affecting the decision to buy steel ingots customers and, in this regard, the role of ethical factors has been considered.

Material and Methods: The method used in this research is DANP method. The statistical population was experts, business managers and CEOs of companies buying steel ingots, 19 of which were selected by purposive sampling. The analysis tool was an interview and a questionnaire. The data analysis method was Dematel method and drawing their causal diagrams and ranking the factors influencing the decision-making process of steel ingots using ANP method.

Results: The results showed that the criterion of economic factors of purchase with a weight of 0.2208 ranked first, the criterion of specific factors of seller with a weight of 0.1998 second, the criterion of ethical factors with a weight of 0.1952 third, the criterion of specific factors of product with a weight of 0.1923 fourth and finally Buying conditions factors with a weight of 0.1919 are ranked fifth.

Conclusions: The present study showed that the main factors in customers' purchasing decision include economic factors, seller-related factors, ethical relationship, product-related factors and factors related to purchase conditions.

Keywords: *Purchasing Decision, Ethics, Causal Model*

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INTRODUCTION

An enterprise needs different assets to operate, but the most important asset of any organization is the customer. Customer trust, respect for the customer's rights, respect for the customer and constant communication with the customer are the most important factors that should be considered. Given the limited resources and facilities that organizations face, they must first identify and prioritize the factors that are more important to customers and will lead to their satisfaction, and then according to the resources and the facilities of the organization and based on the priority and importance of the factors, to consider the necessary measures to provide goods and services that attract the highest degree of customer satisfaction [1, 2].

Since consumers are the turning point of all marketing activities, successful marketing begins with

understanding why and how consumers behave. Marketers will only be able to offer a product that better meets the needs and wants of consumers if they are aware of this information [3-5]. When a product is purchased, the consumer uses a decision-making process that includes the following steps:

Recognizing the problem

Collecting information

Evaluating options

Purchase

Post-purchase evaluation

These 5 steps represent a general process that the consumer goes through from identifying a required product or service to evaluating and purchasing it [6].

There are several types of buying decisions:

Complex decision-making: The decisions that are made to solve complex problems are very much in line with traditional decision-making perspectives [7].

Limited decision-making: Limited decision-making is easier and more understandable. Buyers are not motivated to gather information and are not strict about evaluating options.

Normal decision making: Many purchasing decisions are made on a daily basis when the product is seen on the store shelf.

It can also be said that the purchase decision process is influenced by two categories of controllable and uncontrollable factors:

Cultural - social and group factors including: family - culture and subculture, moral and interactive components - age - life stage - group - reference characters and idea leaders - social class

Internal and individual factors such as: perception - attitude - learning [8].

Thus, as can be seen, various factors play a role in purchasing decisions that firms are required to recognize and prioritize in order to succeed. This is important in different industries. One of the industries that is considered here is the steel ingot industry.

The Islamic Republic of Iran is the 14th largest steelmaker in the world. According to Vision 1404, the country's steel production capacity will reach 55 million tons. By increasing the production capacity of 55 million tons of crude steel per year, Iran's position in the steel industry will increase from the current fourteenth to seventh in the world.

Ingot product produced by steel mills is the raw material of rolling mills and after rolling is used in the construction of residential buildings, factories, communication roads, fluid transfer. Among the most important problems of the steel industry can be: market recession, dumping China in global markets, high production costs, high manpower against low productivity, old production technology and lack of modernization, low energy efficiency and the need to save on consumption. Not entering the field of production of special alloy steels, state of liquidity supply channels, inadequacy of steel production chains, high bank profits to provide liquidity and excessive expectation from the government to solve problems, due to the limitations of steel mills It is of special importance for marketing and purchasing customers of steel ingots for steel mills, especially start-ups that have entered the field of competition in recent years. Therefore, in the present study, the criteria and sub-criteria affecting the decision to purchase steel ingot customers have been

ranked and, in this regard, the role of ethical factors has been considered.

MATERIAL AND METHODS

In terms of data type, this research is qualitative research in the stage of identifying criteria and sub-criteria through interviews with bullion purchasing experts, considering the textual nature of the data, and in the stage of using Dematel technique and DANP process, considering that the data type is numerical. It is a little research. The research is of applied type. In terms of time data, it is a cross-sectional study in that information data is collected once during a period in order to answer research questions. And in terms of location, it is field research. In terms of data collection method, it is survey research because in all three stages, identifying factors by interviewing and determining the type of relationship between factors with Dematel technique and prioritizing factors with DANP process will be surveyed by experts.

The statistical population of the study includes key decision makers to buy steel ingots, including experts, business managers and CEOs of companies purchasing this product, which is estimated to be about 30 companies.

The method used in this research is DANP method, which is an expert-centered method, and sampling in non-random multi-criteria decision-making methods is targeted, we are looking for people who are considered experts in the subject, if in Statistical Methods Using the sample size formula, we first calculate the number of samples. The sample size was 19 people.

The demographic characteristics of the sample are presented in Table 1.

The most obvious tool for collecting data in social science research is a questionnaire. This tool consists of 3 main parts of the accompanying letter, instructions and items. After compiling the questionnaire, to ensure the quality of the questions, the level of interest of the respondent, the appropriateness of the scales, the validity and reliability of the questionnaire, estimation of variance, etc. should be evaluated, for which a preliminary test of the questionnaire is performed. The tool used in this research is a questionnaire. In the pairwise comparison method, all factors are measured with each other, thus all the possibilities related to not considering a criterion or question are eliminated. In addition, to identify the criteria and sub-criteria, the opinions of experts have been used and the questionnaire has been approved by experts. An indicator called "reliability coefficient" is used to measure reliability. In this study, with the help of incompatibility rate index, the reliability of the

questionnaires has been investigated. If the incompatibility rate is less than 0.05 (95% reliability above), it indicates that the comparisons are highly reliable. Validity of data collection tool: According to the dimensions of the problem, 256 comparisons were made in the first part of each questionnaire to compare the sub-criteria and 25 comparisons were made in the second part of each questionnaire to compare the criteria. Also, the opinions of experts have been used to identify the criteria and sub-criteria and the questionnaire has been approved by the experts.

Reliability of data collection tools: In this research, the opinions of 19 experts have been used. First, we calculate the direct correlation matrix of criteria and sub-criteria for 19 experts and 18 experts, then we calculate the incompatibility rate using Equation 1 and reliability using Equation 2. If the incompatibility rate is less than 0.05 (95% reliability above), it indicates that the comparisons are highly reliable. The research incompatibility rate is 0.0236 and because it is less than 0.05, it indicates high compatibility and also has a reliability of 97.64%.

Table1. Demographic Characteristics

Factors / Sub factors	Frequency	Percentage
Gender		
Male	4	21%
Female	15	79%
Work experience		
Less than 5ys	0	0
5- 10 ys	7	36.84%
10-15ys	8	42.11%
More than 15ys	4	21.05%
Education		
Junior	0	0
B.A	12	63.16%
M.A	7	36.84%

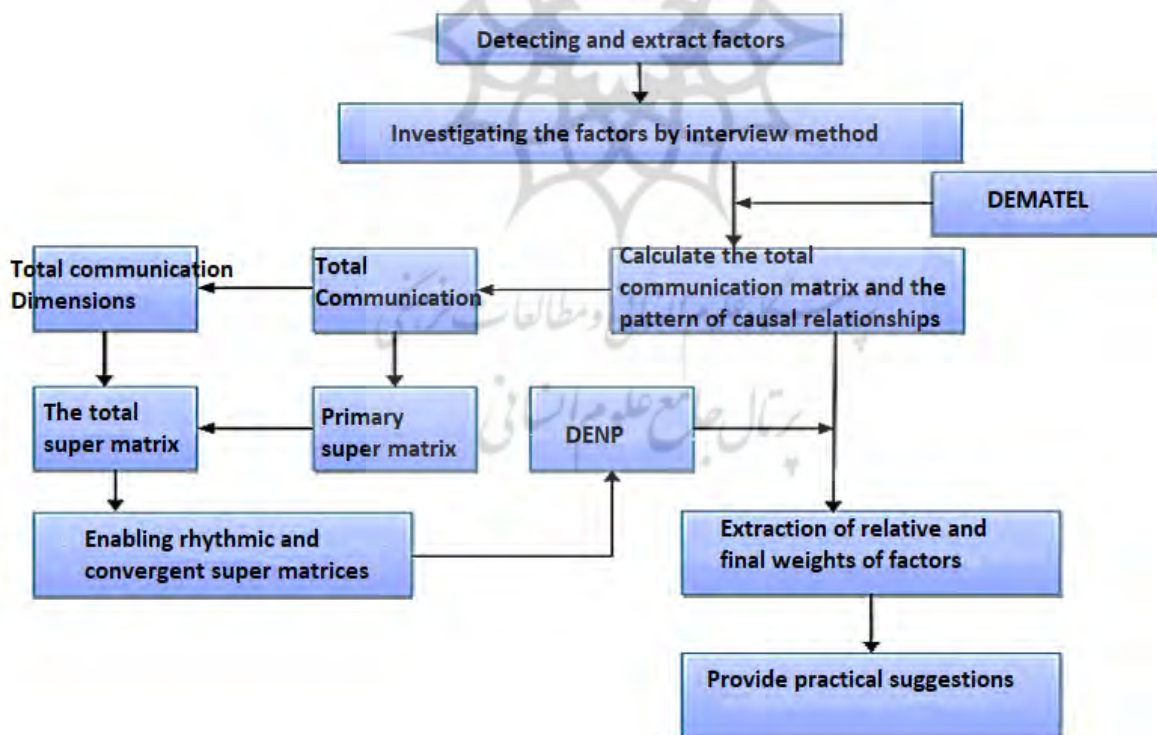


Figure 1. Research process

The method of data analysis in the first stage of the research, which is the interview, is content analysis and in the next stage, the use of DANP technique to analyze quantitative data. Therefore, in this study, the

DEMATEL combined method and the ANP network analysis process called DANP have been used to rank the criteria and sub-criteria affecting purchasing decision after forming a decision hierarchy diagram. This

technique is suitable for real-world problems compared to traditional methods and considers the dependence between criteria. Finally, Dematel combines with ANP method to form DANP to determine the effective weights of each dimension and criterion.

RESULTS

In this section, first the criteria and sub-criteria affecting the decision of steel ingots buyers were extracted, which includes 16 sub-criteria in 5 main criteria categories. At the first level, the goal is to determine and rank the

factors affecting the decision to buy steel ingots customers.

At the second level, the main factors influencing the decision to purchase steel ingots are extracted from library sources as well as interviews with purchasing experts and include 5 factors.

Product specific factors - Seller specific factors - Communication factors - Economic factors of purchase - Factors of purchase conditions

At the third level, there are also criteria related to these factors. (Picture 2)

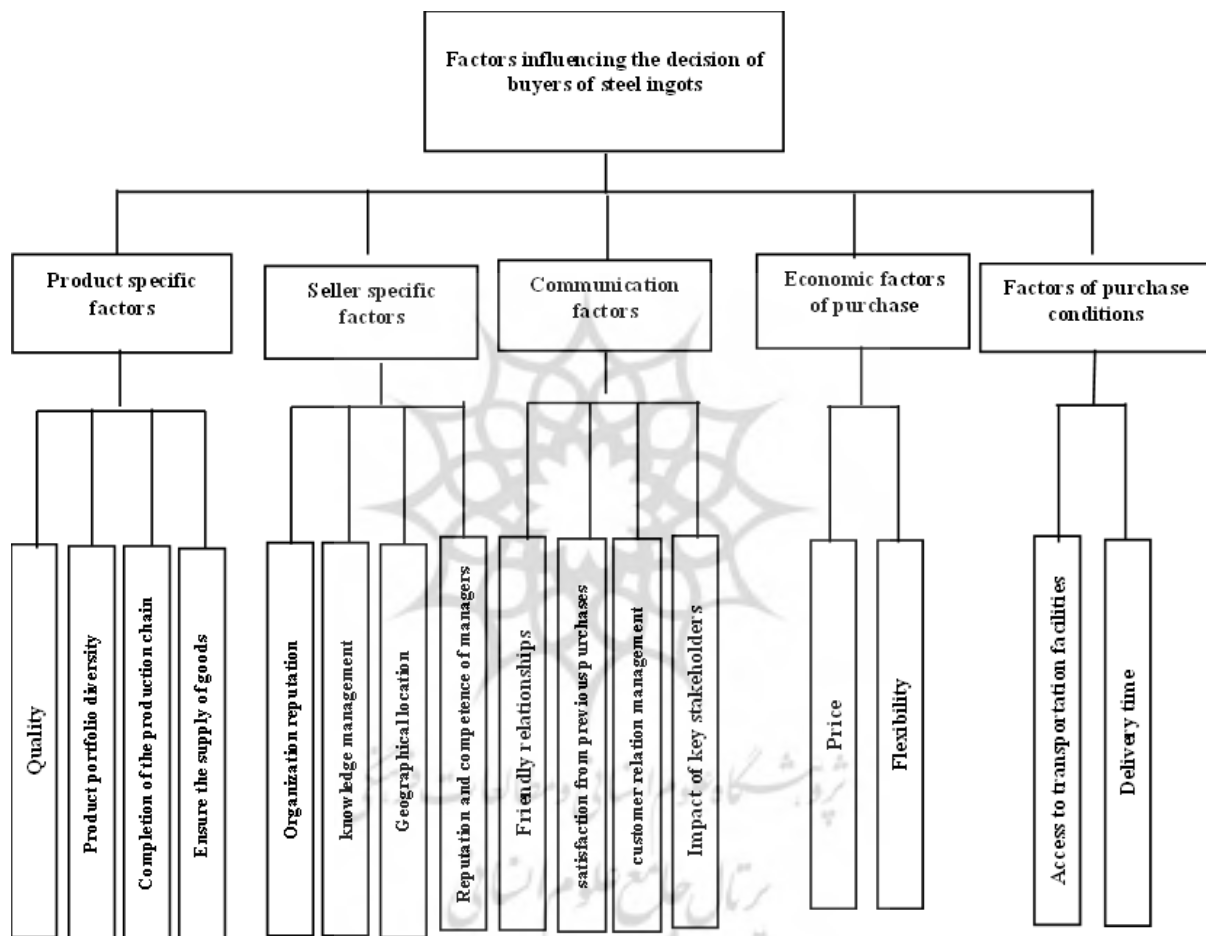


Figure 2. Chart of factors affecting the decision of steel ingots buyers

Analyze information and determine the relationships between sub-criteria with Dematel technique

In this section, data analysis has been done by Dematel method to answer the following questions.

- 1- What is the relationship between the criteria affecting the decision to buy steel ingots customers?
2. What is the relationship between the sub-criteria affecting the decision to buy steel ingots customers?

Step 1: Calculate the Direct Communication Matrix (X)

In the first step, to evaluate the relationships between sub-criteria (the effect of one sub-criterion on another sub-criterion) using the opinion of experts based on the

spectrum of the table is used. To examine the sub-criteria, the opinion of 19 experts was used, which we take into account to take into account the opinion of all experts.

Step 2: Formation of normal direct connection matrix (X)

In this step, using the direct communication matrix (X) and the formula $N = X / K$, the direct communication matrix is normalized. To normalize, we first obtain the sum of the rows and columns of the direct communication matrix, then select the largest number

from the sum of the numbers, and divide each of the direct communication matrix elements by this number.

Step 3: Complete Communication Matrix (TC)

To calculate the complete correlation matrix, first a single matrix (I_ (16 * 16)) is formed. Then we normalize the same matrix minus the direct connection matrix and invert the resulting matrix. Finally, we multiply the normal direct contact matrix by the resulting inverse matrix. The complete communication matrix or TC is calculated according to the following formula.

$$TC = X (I-X)^{-1}$$

Step 4: Calculate the Dematel indices

In this step, the effectiveness and effectiveness of the sub-criteria are determined. The effective sub-criteria are of the causal criteria type and the affected sub-criteria are of the disabled type. We calculate the sum of the elements of each row (D) and column (R) of the complete communication matrix. The sum of the elements of each row indicates the effect of that factor on other factors,

and the sum of the elements of the column indicates the influence of that factor on other factors. Then the horizontal vector D + R, which is the amount of influence of the desired factor in the system, is calculated. The higher it is, the more the factor interacts with other direct factors. The D-R value, which indicates the influence of each factor, is considered a causal variable if it is positive, and is disabled if it is negative. An index with a larger D is the most influential factor in the system. Therefore, organizational reputation (CR) is the most influential factor. Ethical customer relationship (CRM) and production chain completion (PCC) factors rank second and third, respectively. Also, the index with the largest value of R is the most influential factor. Accordingly, organizational reputation (CR) is the most influential factor and the reputation and competence of senior managers of the organization (RMC) and ethical relationship with the customer (CRM) rank second and third in terms of effectiveness.

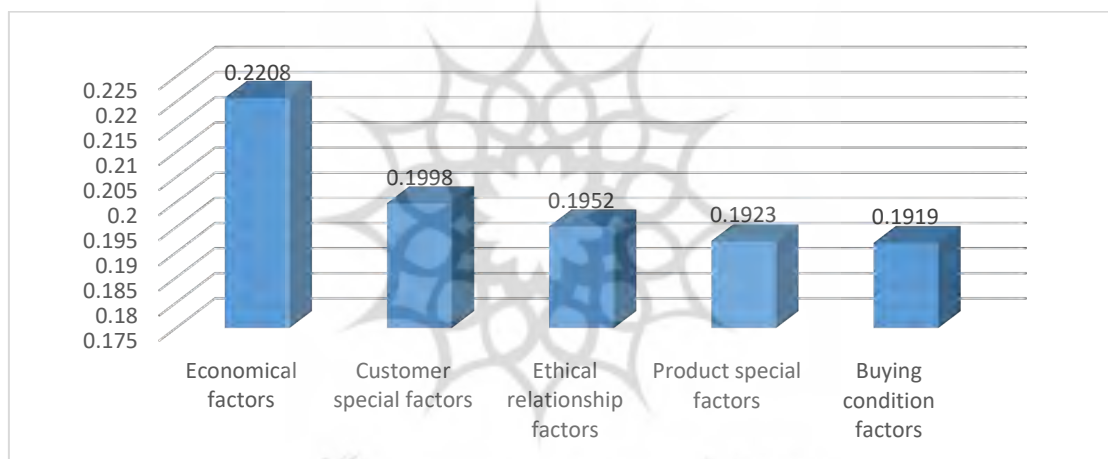


Figure 3. Weight and final rank of the main criteria

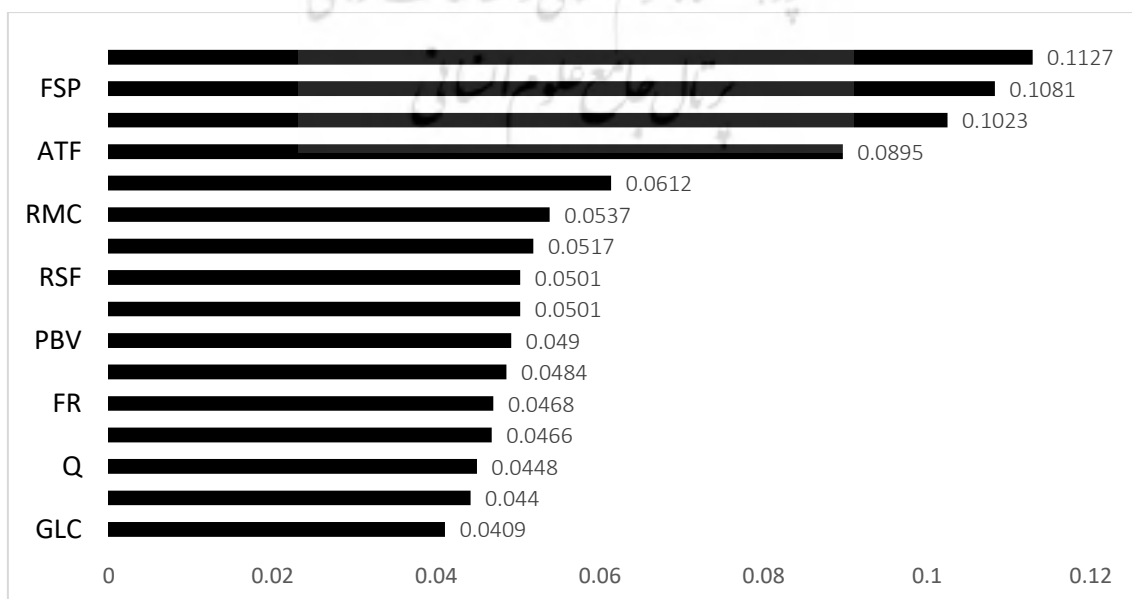


Figure 4. Final weight and rank of sub-criteria

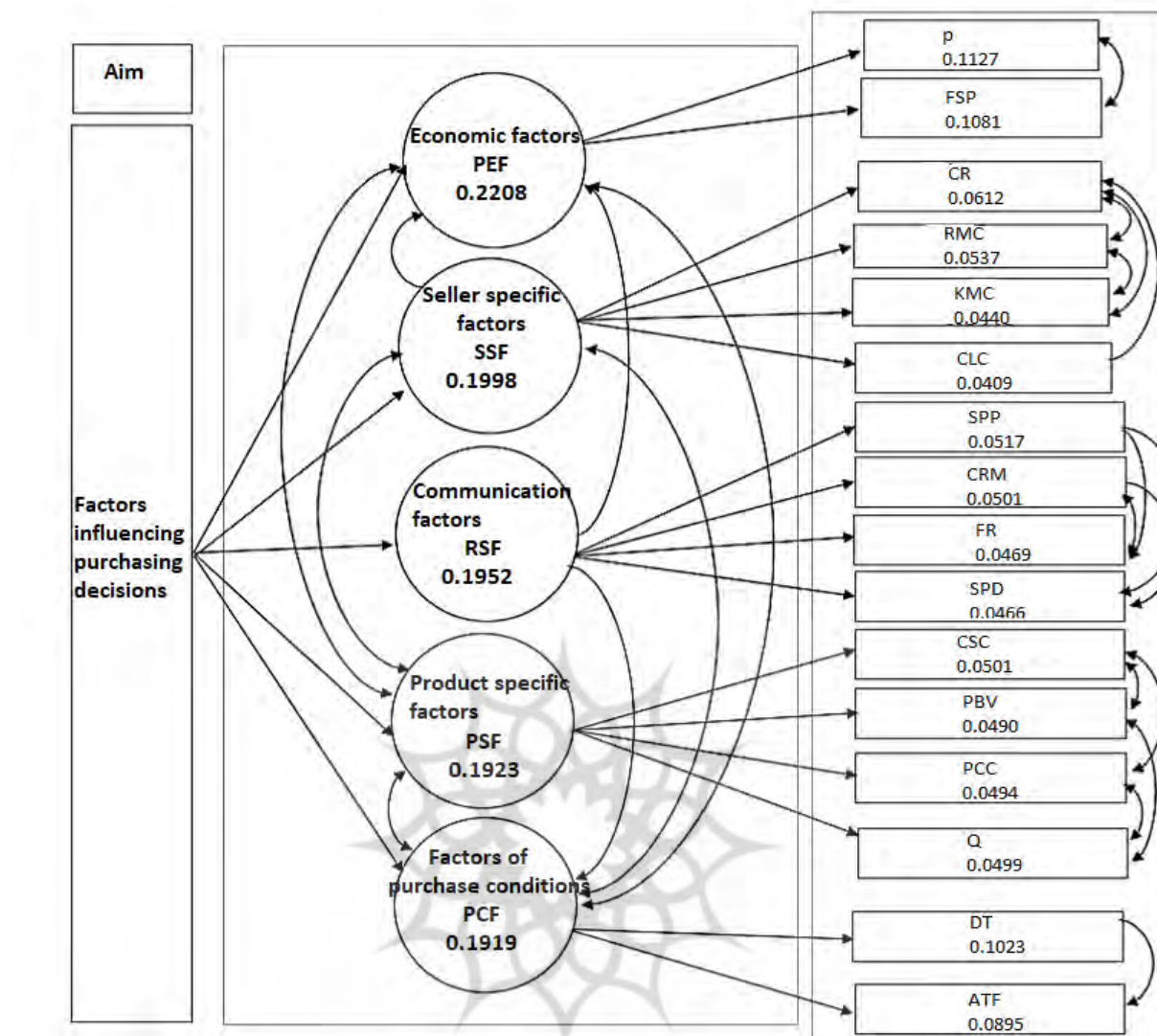


Figure 5. The final research model

Step 5: Determine meaningful relationships based on threshold

This section may or may not be calculated depending on the nature of the research. In fact, the basis for determining meaningful relationships is that based on the values of the complete relationship matrix, all factors may have an effect on each other, but we know that the effect of some factors on other factors is high and the effect of some factors on others is very small. Therefore, in this section, an attempt is made to determine meaningful relationships using a threshold. The threshold value can be determined based on the opinions of experts, the organization under study or the research literature. Based on the significance threshold, we identify only the relationships that are significant and their value is greater than the threshold value. In this study, the mean of all values of the complete correlation matrix has been used as the threshold. First, the mean of

all values of the complete correlation matrix is obtained and this average value is called the threshold of significant relationships. Then we will compare each of the cells of the complete correlation matrix with this value of the threshold, and if it is greater than this threshold, we put the number 1 in that house, ie there is a significant relationship between the factors of that house, otherwise in that house we set the number to zero, which means that the relationship is not significant.

Analyze information and determine relationships between criteria

Similar to the steps of determining the relationships between sub-criteria, the relationships between criteria are calculated based on the following steps.

Step 1: Formation of direct correlation matrix of criteria (X)

Step 2: Normalize the direct relationship matrix

An index with a larger D is the most influential factor in the system. Therefore, vendor-specific factors (SSF) are the most influential factor. Product Specific Factors (PSF) and Purchasing Condition Factors (PCF) rank second and third, respectively. Also, the index with the largest value of R is the most influential factor. Therefore, economic purchasing factors (PEF) are the most influential factor.

Economic Purchasing Factors (PEF) has the largest amount of $D + R$, so it has the most correlation with other research factors. The criterion of ethical communication factors in this research is the most influential factor on the whole system, the second and third ranks are specific factors of the seller and specific factors of the product.

Final weights of criteria and sub-criteria

The final weight of the criteria and sub-criteria is extracted from the finite super matrix. Economic Purchasing Factors (PEF) with a weight of 0.2208 ranked first and Seller Specific Factors (SSF) with a weight of 0.1998 and Ethical Communication Factors (RSF) with a weight of 0.1952 won the second and third ranks, respectively.

Among the sub-criteria, the price criterion (P) is ranked first among 16 sub-criteria and the flexibility in terms and designs of sales (FSP) and delivery time (DT) are ranked second and third, respectively.

DISCUSSION

Based on the results of the present study, the criterion of purchasing economic factors was recognized as the most important factor influencing the purchasing decision of steel ingots customers. Are aligned [9-13].

The criterion of vendor-related factors was ranked second in this study. This result is in line with the results of other researches in this field [14, 15]. Mahyar Ethical Communication was ranked third, which emphasizes the importance of communication and ethical components in purchasing decisions and is consistent with existing research in this field [16-20].

Now, according to the results of this research, the following executive proposals can be useful and effective in order to succeed in selling the steel ingot product:

The above research shows that the most important factor in increasing the company's sales is the price of the product. The manufacturer of steel ingots must set prices by controlling and reducing the costs of production and supply of raw materials in such a way that while maintaining other factors such as product quality at an acceptable level, it can achieve a competitive advantage. The manufacturer of steel ingots should offer products

that have a lower price than similar products of competitors, but this price reduction should not be so much as to reduce the company's profitability.

Due to the conditions of sanctions, lack of liquidity and stagnation of the market for steel sections, manufacturers must have the necessary flexibility to replace various sales methods, including pure sales and credit sales, according to the customer's track record and good reputation, and satisfaction with past sales.

The ethical behaviors of the seller and the commitment to timely delivery of the product based on the contract between the seller and the buyer is one of the most important factors that cause satisfaction with the purchase and affect the sales of ingot producers. And has an impact on customers' subsequent purchases.

The good reputation of the organization has the greatest impact on other criteria and the effectiveness of the other criteria mentioned, so it is one of the factors that greatly affects the sales of companies producing steel ingots. Manufacturers should try to introduce the organization and increase their sales by fulfilling their obligations and maintaining contact with current and potential customers by attending exhibitions and fulfilling their social responsibilities.

The competence of senior managers of the organization is one of the important factors that affect the sales of producers. It is suggested that when hiring senior managers, organizations should be careful that customers' familiarity with the managers of the sales company, their competence and good reputation affect their purchasing decisions.

CONCLUSION

Companies will gain a reputation for paying attention to their true mission of customer satisfaction and brand loyalty, and to outperform competitors by better satisfying their needs. And be committed to its social responsibilities and take into account the social welfare and the larger interests of its community. The trend of business in today's world is to break monopolies and increase competition. These competitive conditions will sooner or later reach everyone. In a competitive environment, the whole concern of companies is not only to attract new customers but also to retain their old customers. Given the current state of the industry and the competitiveness of businesses, the importance of effective communication with customers, recognizing the needs and trying to meet the needs of customers has become doubly important. More than ever, they need to understand the wants and needs of customers, so that they can better meet their needs and establish long-term

relationships with them. The present study showed that the key factors in customers' purchasing decision include economic factors, seller-related factors, ethical relationship, product-related factors and factors related to purchase conditions, respectively.

Ethical Consideration

Ethical issues (such as plagiarism, conscious satisfaction, misleading, making and or forging data, publishing or

sending to two places, redundancy and etc.) have been fully considered by the writers.

Conflict of Interest

The authors declare that there is no conflict of interests.

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