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Research Article

Providing an Optimal Model of Affective Attitude in Customers' Purchasing Decisions in Industrial Markets

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Abstract

The present study aimed to provide an optimal model of affective attitude in customers' purchasing decisions in industrial markets. In the present study, the researcher used a mixed approach. For this purpose, in the first study, to identify the components of affective attitude in customer purchasing decisions in industrial markets, grounded approach was used. In the second study, the model was tested using a quantitative method. The data collection tools in the first study included protocol and in-depth interviews with fifteen sales managers and CEOs of producers and university professors. In the next step, the required data were distributed among 320 customers and the results were analyzed in AMOS software. The present study was conducted by performing fifteen interviews to reach theoretical saturation and finally 100 open codes were extracted. Based on the theoretical literature, axial and selective coding was done and the results were presented in the form of six main dimensions and twenty-eight sub-dimensions. The present study model included main dimensions including satisfaction with industrial brand, decision making process, satisfaction with industrial marketing channel, strengthening relationship marketing, heuristics and price and twenty-eight sub-dimensions. The results show that the researcher's paradigm model has a good fit for generalizing its results to a larger population.

***Keywords*:** Mixed Approach; Industrial Marketing; Affective Attitude; Purchasing Decisions; Heuristics

1. Introduction

Studies have revealed that effective marketing strategies have nowadays a strong impact on customer perceptions of the brand and consumer attitudes (Elizabeth et al., 2021). The customer attitude describes the customer's general assessment of an object (Almquist et al, 2018). Based on the studies, attitude consists of three components: affective, cognitive and behavioral. Affective attitude includes feelings or emotions of consumers towards a product (Kevser & İpek 2021). It is related to the general customer tendency for a product. Understanding how customers evaluate products has a particular importance to marketers, since it is the foundation of successful targeting programs (Charles 2016). People are usually driven by affects to purchase consumer products. However, organizational purchasing behavior has often been treated as a rational activity (Kemp et al. 2018).

Since early structures overemphasized the logical technical and economic aspects of industrial purchasing behavior, a redefinition is being presented that the "human element in industrial purchasing" has a significant importance (Swani et al., 2014)

Kemp et al. (2018) state that people play a key role in decision-making, and people's decision-making often involves a set of affects and rationality. Thus, corporate purchasers deal not only with logic and experimentation but also with affects. These affects are inherently hidden in the communications created through customer and brand relationships (MacInnis, 2011). By shifting the approach from transactional marketing to relational marketing, marketing studies focused on individual influences. Thus, the role of affects, the subconscious processes of the customer's mind, and the heuristics slowly opened their door into the world of industrial marketing. There are several reasons for the hypothesis that affective attitude influences decision making. Affective attitudes in decision making can be processed even when the person is unaware of the stimulus (Zeelandand & Henseler 2018). Pfoertsch et al. (2007) believe that trained managers and professionals make rational decisions. In most industries and situations, there is not just one right answer to a purchasing decision, but there are many plausible options that can all be rationalized if necessary (Pfoertsch et al., 2007). Given what was stated above, the aim of this study is to answer the following questions:

1-What are the dimensions, components and indicators of the concept of affective attitude model in customer purchasing decisions in industrial markets, with a mixed approach?

2- What is the priority of dimensions, components and indicators of affective attitude model in customer purchasing decisions in industrial markets with a mixed approach?

3-What is the model of affective attitude in customer purchasing decisions in industrial markets with a mixed approach?

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2.Theoretical Foundations of Research

2.1. Affective reaction and purchasing behavior

Researchers have developed a set of models and frameworks to explain the factors that influence organizational purchasing behavior. There is a common sense at the heart of many of these findings, which sees organizational purchasing as a rational, cognitive, and highly objective process that is largely driven by logic rather than affect. The complexity, duration, cost, and scale of organizational purchases tend to validate this reasoning that purchasers are rational thinkers. Unlike individual purchases in consumer markets, corporate purchases tend to be larger purchases, with higher cost ratios, longer negotiations, customized products, contractual complexities, and more involvement of stakeholders.

Researchers and authorities often believe that the difficulties of scope, size, and cost of purchasing make it a serious issue that requires the development of rational decisions and the implementation of thoughtful planning, which is efficiently profitable for a company. (Pfoertsch, et al,.2007) However, recent studies which challenge this hypothesis and debates about the role of affects in the B2B relationship are emerging. Purchaser-seller relationships affect commercial markets (Kemp et al, 2018). Interestingly, the organization's support of affects in the organization's marketing has been achieved through marketing communications (Hutchins et al. 2017). Fleming, 2018 argues that affects are not just for impulsive purchases. We naturally associate affective brand positions with impulsive purchasing decisions: purchasing the options that people make either quickly or based on a few facts with little conscious attention. For this reason, emotional brands are mainly associated with B2C marketing, attractive to people who have the power to make individual decisions, and do not have to consider those decisions for as long as they want.

However, it is wrong to assume that a longer period of study takes the affects out of selecting options. They can give deeper affects more time to make an impact. The more we measure our options for decisions with important outcomes, the more we need our feelings, instincts, and memories to help us make choices. (Hawaldar,2003) For this reason, research on the role of affects in the purchase of the organization is increasingly growing (Fleming 2018). D'Antone, state that today's business models of B2B and B2C are increasingly more similar to each other due to digitalization of the economy through the Internet, growing number of small industrial businesses that have behavioral patterns closer to individual customers, and the availability and use of media that has made similar advertising strategies increasingly possible. Moreover, many industrial products are purchased online through design websites (D'Antone, 2012). Therefore, marketers nowadays are more concerned than ever about knowing how attitudes are formed and maintained. Are they the result of a logical, sequential and propositional combination? Or are they affective and intuitive? Do the customers define specific and logical reasons for an attitude? What is the role of affects and intellect in the development and formation of such an attitude? The answers to these questions have also a particular importance to those working in the area of advertising. The results and effects of an affective attitude are important in industrial purchasing decisions and can influence other areas of marketing related to the product, and make it necessary to address this issue (Chaudhuri, 2006).

2.2. The relationship between affects and cognition

Researchers now know that empirical thinking and analytical thinking are constantly active. Although people may be able to do the right thing without analysis, it is unlikely that they will be able to use analytical thinking rationally without guidance of affects in this regard (Diba et al. 2019). Gyro, argues that there really is no separate system of affects and cognition because complex cognitive-affective behavior results from the rich and dynamic interaction between brain networks. In fact, they suggest that affects and cognition interact strongly in the brain and they are often integrated, and jointly play a role in creating behavior (Gyro, 2018).

Several theoretical approaches have been proposed to explain how affects interact with the decision-making process. One of the first approaches was the framework of affects as information proposed by Phelps, He argues that affective states, such as positive or negative moods, provide information about evaluation judgments, and suggests that complex evaluations are solved by individuals using affective information to shape judgments.(Phelps, 2006) Research conducted in this regard has generally shown that participants in a good mood perform better than those in a bad mood. This type of approaches assumes that what is very important about affects when making decisions is positive and negative orientation. (Kevser & İpek 2021) A negative mood leads to more pessimistic or negative evaluations or judgments, and a positive mood leads to positive attitudes or positive judgments. It is especially highlighted when the mood cannot be attributed to an unrelated causal event (Laplaca, 2016).

Unlike the framework of affects as information, which focuses mainly on incidental affects, Matias theory of decision-making affects is based on predicted or expected affects, that is, feelings of pleasure or dissatisfaction that stem directly from the desired consequences. (Matias, 2018) Decision affect theory, a modification of theories of hopelessness and regret, assumes that decision makers calculate the weight of the expected affects that they believe will result from the possible outcome of a decision, and then select the option that they believe is most pleasurable.(Leone,2005) Affect heuristic, proposed by Steward et al., 2019, is a related approach to describe the importance of affects in guiding judgments and

decisions. Affect heuristic is a quick and easy process of evaluating a risky option based on a person's immediate feelings of liking or disliking. It refers to the affects derived from the options, but the affective response may be due to unknown effects of unrelated incidents or memories. Affects can be a factor in many important (including probabilistic) decisions. Using a general affective impact, which is readily available, can be simpler and more efficient than weighing the negative and positive aspects of various reasons or retrieving relevant examples from memory, especially when the judgment or decision required is complex, or psychological resources are limited (Paul, 2011).

2.3. Grounded theory

Grounded theory is an "inductive" methodology of discovery theory that allows the researcher to develop a theoretical report of "general properties of the subject" while simultaneously strengthen the base of this report in experimental observations. Strauss and Corbin, proposed three coding methods by developing the procedures in the book entitled “Discovery of grounded theory”, including open coding, axial coding, and selective coding. They are used as a part of the theory making process (Li, 2001).

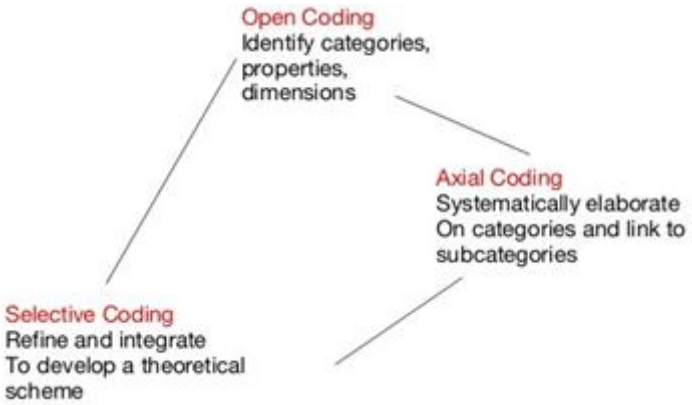

Fig.1.Types of coding

2.3.1. Coding

2.3.1.1.Open coding

Open coding is an analytical process through which concepts are identified and their properties and dimensions are discovered in data (Li, 2001, p.49). At this stage, the theorizing of grounded theory forms the primary categories of information about the study phenomenon by segmenting the information. The researcher bases the categories on all the collected data, such as interviews, observations, and events (Krisol, 2005, p. 397).

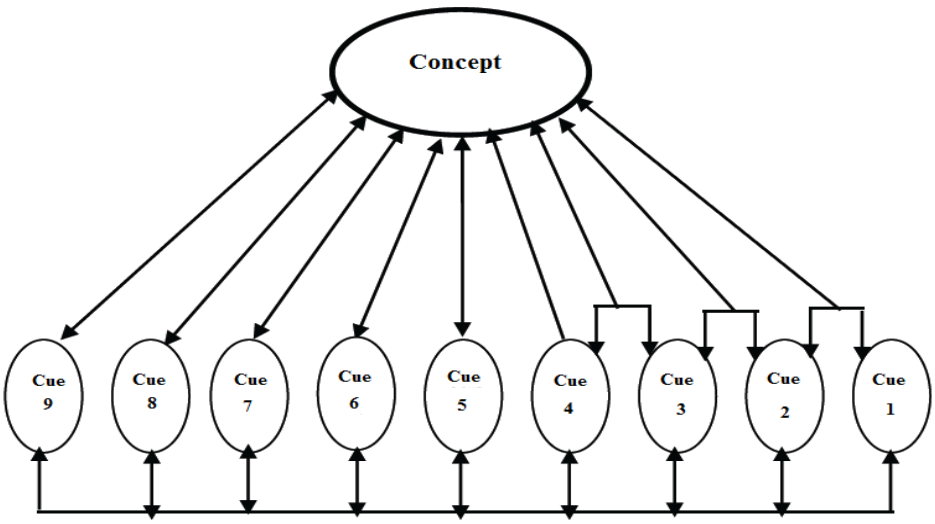

Fig. 2. Concept-Cue model (Glaser, 1978; Fernandez, 2004)

2.3.1.2.Axial coding

Axial coding is the process of linking categories to subcategories, and linking categories at the level of properties and dimensions. This coding is called "axial" because the coding takes place around the "axis" of a category. At this stage, the categories, properties, and

dimensions of open coding are developed and put in their place to create the growing knowledge on the relationships (Li, 2001). In the axial coding phase, Strauss discusses some of the key steps shown in the list below (Strauss and corbin, 1990). This is a list of key axial coding actions.

1. Stating the properties of a category and their dimensions, and an action that was initiated during open coding.

2. Identifying different conditions, different actions or interactions and different implications related to a phenomenon.

3-Relating a category to its subcategories, through propositions that explain how they relate to each other

4-Searching for clues in the data that indicate how the main categories may be related to each other

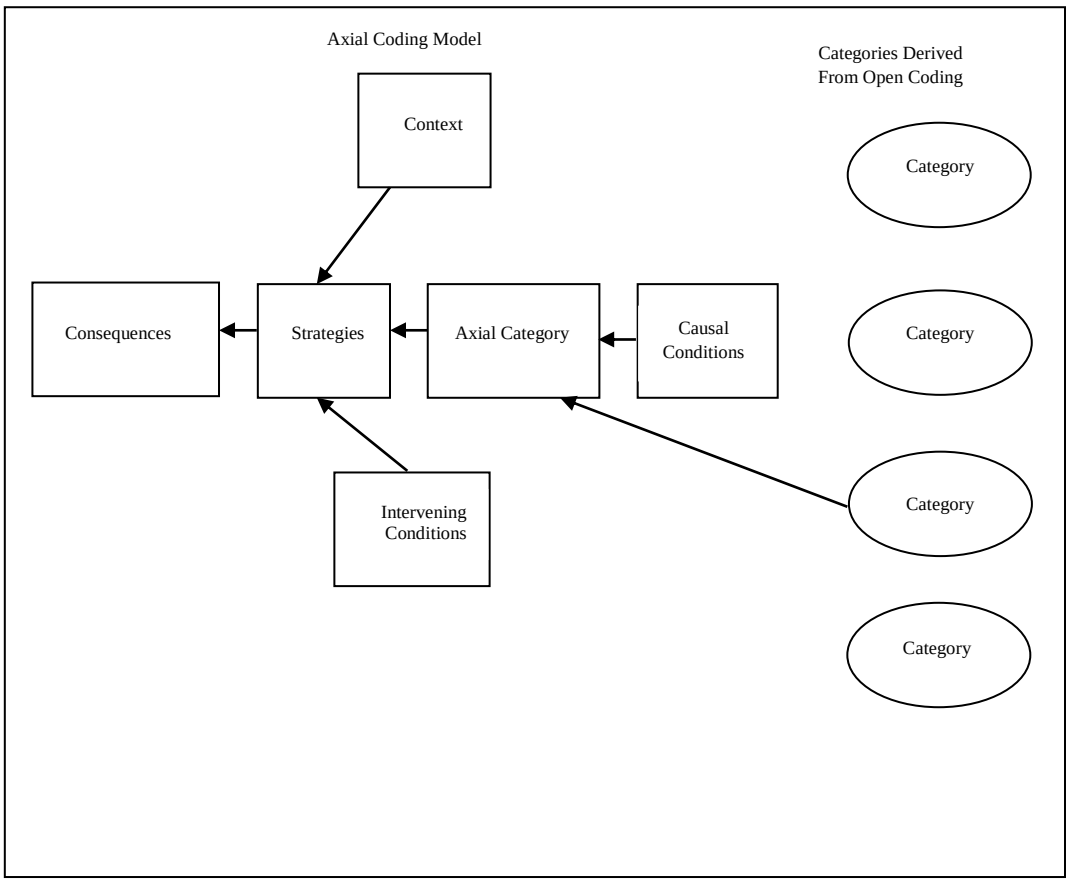

Fig. 3.Grounded theory coding: from open coding to axial coding. (Creswell, 2005)

2.3.1.3.Selective coding

Selective coding is a process of integrating and improving categories (Strauss, 1987). At this stage of coding, the grounded theory forms a theory of the relationships between the categories in the axial coding model. At a basic level, this abstract explanatory theory is presented for the process studied in the research. The process of integrating and improving theory in selective coding (Strauss, 1987) is through techniques such as storyline writing that connects categories to each other, and the process of categorization through personal notes on theoretical ideas. In a storyline, the researcher examines how specific factors affect the phenomenon and lead to the use of specific strategies with specific outputs (Kristol, 2005, p. 398). In other words, selective coding takes the findings of the previous coding process, selects the axial category, systematically relates it to other categories, proves relationships, and completes the categories that need further improvement and development. Thus, category-orientation is a very important part of integrating and improving categories (Li, 2001).

3. Research Methods

In the present study, the researcher used the grounded approach in the qualitative stage to achieve the conceptual model. Based on the final model of the researcher in Figure 1, after the initial model was extracted from the qualitative method, to answer the question to what extent the model developed by the researcher can correspond to reality, structural equations and regression were used. In other words, at this stage, using field data collected and using AMOS software, the conceptual model obtained from the strategy of grounded theory was evaluated. The statistical population in the qualitative section of the study consists of two sections. In the qualitative section, suppliers or purchasers who have experienced the process of selling or purchasing industrial equipment are

considered as a statistical population. The researcher started coding after conducting each interview with experts. Since qualitative research is exploratory in nature and requires the participation of a small number of respondents, the sampling strategy in this research and in the qualitative section was snowball (chain).

The criterion for the sample size was to achieve theoretical saturation in the qualitative section, meaning that in the interviews with the statistical population, no new indicator or structure was identified. In this study, the researcher has conducted 15 interviews to achieve theoretical saturation and finally extracted 100 open codes were extracted, and then, based on the theoretical literature axial and selective coding was done. In the qualitative section of the study, the researcher measured the reliability of the interviews. He used the test-retest reliability and inter-rater agreement method. The results showed that the test-retest reliability was 81% and the inter-rater agreement index was 79%. It can be stated that the reliability of coding was confirmed. Also, the validity of qualitative research, according to the naturalistic and pluralistic approach, depends on the researcher's abilities to implement it. Validity in the qualitative stage, especially qualitative interviews, is related to two issues of reality and knowledge.

For this purpose, in the seven proposed stages of qualitative research, which include determining the subject, design, position and conditions of the interview, taking notes of the interviews, analyzing, confirming and reporting the validity, this validity has been checked and confirmed step by step. Quantitative research method in this section was descriptive-survey type. A convenience sampling strategy was used in this section. The statistical population of this section included customers of industrial products. Accordingly, 320 questionnaires were the basis for analyzing the research data in the quantitative section and model testing. These data were first sorted in SPSS software and then analyzed using AMOS software. Also, Cronbach's alpha was used to evaluate the reliability of the study, which was obtained at 0.886 in this study. Since the calculated Cronbach's alpha coefficient is more than 0.667, it can be said that reliability is at the acceptable level. The construct validity of the researcher's conceptual model was also investigated using the confirmatory factor analysis approach. The results of this test are given in Table 1.

Table 1
KMO and Bartlett test results

Test parameters		Test values
KMO for sampling adequacy		0.79
Bartlett test outputs	X2 value	0.615
	Df	0.18
	Sig	0.000

In this study, the value of the index calculated for this study is 0.812, which is more than the acceptable minimum (KMO>0.6). In fact, the closer the value of the index is to 1, the better the data for analysis. Also, the total cumulative variance explained for the factors and dimensions of the research model is 0.801, indicating high power of the model to explain the changes in research findings.

4. Results

4.1. Open coding

In this study, the researcher started open coding with each interview. Using this method, at each stage, the codes extracted from the interviews were given appropriate concepts and labels to identify the basic concepts and key categories of the research. These categories should be abstract enough to integrate the defined concepts and codes well for their wider theoretical inclusion and examination. Hence, more than 100 significant or essential points were obtained from qualitative interviews.

4.2. Axial coding

In the axial coding stage, the categories and subcategories obtained from open coding are related to each other according to their dimensions and properties.

- **Causal conditions**

There are events that create situations and issues related to a phenomenon and explain why individuals and groups respond in specific ways (Table 2)

Table 2
Categories related to causal conditions

General category	Subcategory	f
Industrial brand satisfaction	Expected brand value	19
	product performance satisfaction	11
	Positive advertising	16

- **Contextual conditions**

They represent a specific set of properties related to phenomena that generally refer to the location of relevant events and can provide the specific conditions in which strategies for managing, controlling, and responding to the phenomenon occur (Table 3).

Table 3
Categories and concepts related to contextual conditions

General category	Subcategory	f
Heuristics	Availability	14
	Complexity	12
	First impression	12
	Persistence	13

- **Intervening conditions**

They include more general conditions such as time, atmosphere, and culture that act as facilitating or limiting strategies. These factors are shown in Table 4.

Table 4

Categories and concepts related to the intervening conditions

General category	Subcategory	f
Industrial products price	Competitors prices	8
	Government role	10
	Purpose of pricing	13

- **Axial category**

The desired phenomenon must be axial, so that all other main categories can be related to it. These factors (Table 5) show the axial category.

Table5
Categories and concepts related to the axial phenomenon

General category	Subcategory	F
Decision to purchase industrial product	Satisfaction with industrial products	8
	Diversity of industrial products	8
	Pleasant experience of an industrial brand	8
	Long-term relationship with the brand	8
	Customer trust	8
	Advertising	9
	Industrial product quality	8
	Industrial product information	6
	Industrial brand reputation	7

- **Strategies**

They are schemes and actions that are the output of the axial category of the model and end in the implications (Table 6). They show the categories and concepts related to strategies.

Table 6
Categories and concepts related to strategies

General category	Subcategory	f
Satisfaction with industrial marketing channel	Direct selling	8
	Online selling	8
	Direct Channel	7
	Indirect Channel	9

- **Implications**

They are the same outputs or results of actions and reactions (Table 7). They deal with the categories and concepts related to outcomes.

Table 7
Categories and concepts related to implications

General category	Subcategory	f
Relationship marketing	Interest in industrial brand	8
	More purchasing	10
	Recommend the industrial brand to others	15
	Product satisfaction	12
	Industrial brand credibility	14

4.3. Selective coding

In selective coding, the researcher selects the main categories, relates them systematically to other categories, validates the relationships, and expands the categories that need further development. At this stage, the axial and selective coding process leads to the key and basic dimensions and categories of the research and the extraction of the conceptual model of the research. By combining key points and extracted codes, six main categories of the research model were extracted, the results of which can be seen in the conceptual model of the research Figure 4.

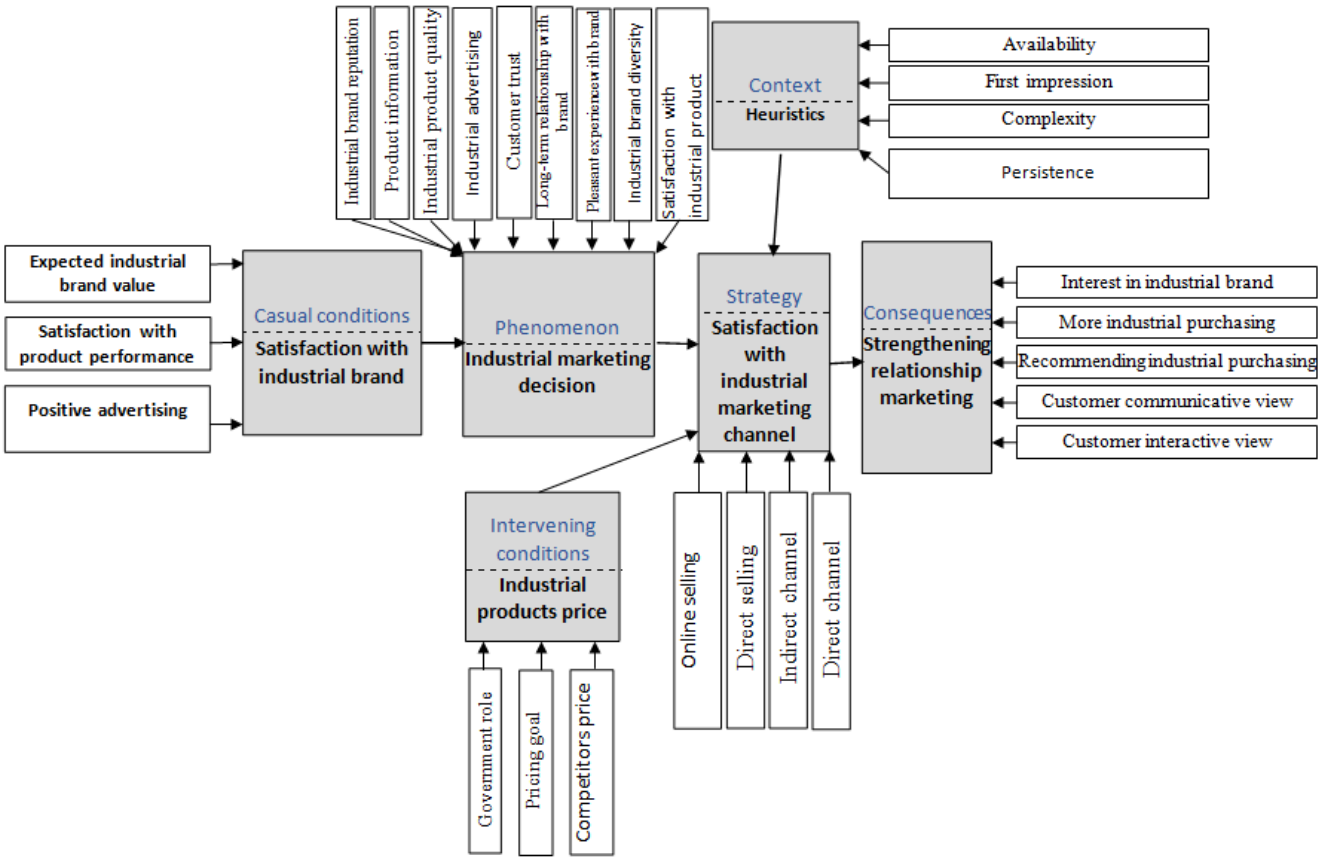

Fig. 4. Conceptual model of research

4.4. Quantitative section

To check the normality of the variables, Kolmogorov-Smirnov test is used (Table 7). The significance level of all variables is less than the error rate of 0.05.

Table 7
Significance level of variables

Variables	K-S	Status
Satisfaction with industrial brand	0501.0	Normal
Purchasing decision	603.0	Normal
Satisfaction with industrial marketing channel	523.0	Normal
Strengthening relationship marketing	511.0	Normal
Heuristics	563.0	Normal
Prices of industrial products	566.0	Normal

Table 8 shows the mean value of answers in the variables to clarify whether the mean their answers differs from 3 (the mid number of the Likert scale).

Table 8
Kolmogorov-Smirnov test

Variable	Mean	SD	Variance
Satisfaction with industrial brand	15.4	79.0	63.0
Purchasing decision	02.4	80.0	73.0
Satisfaction with industrial marketing channel	16.4	72.0	52.0
Strengthening relationship marketing	10.4	74.0	55.0
Heuristics	03.4	80.0	75.0
Prices of industrial products	4.03	063.0	0.74

In this study, as mentioned, after collecting data from the initial samples, the data were entered into SPSS software and Cronbach's alpha coefficient was calculated. It indicated the high reliability of the questionnaire.

Table 9
Reliability of variables

Variable	Factor load	Source of research questions	Cronbach's alpha
Satisfaction with industrial brand	0.790	LaPlaca and da Silva, 2016	0.840
Purchasing decision	0.710	Elizabeth et al., 2021	0.710
Satisfaction with industrial marketing channel	0.730	Almquist et al., 2018	0.910
Strengthening relationship marketing	0.510	Gyro, 2019	0.840
Heuristics	0.730	George et al., 2016	0.890
Prices of industrial products	0.620	Gyro, 2019	0.860

Hypothesis testing and significance coefficients based on structural model: If the relationship between the two variables is higher than the absolute value of 1.96, it means that there is a significant relationship between the two variables and in the case of the model with factor loads, the effect of independent variables on the dependent is analyzed. Based on Figures 3 and 4, since the coefficients t for all paths are greater than 1.96, it can be concluded that this path is significant and the model is approved at a 95% confidence level.

Table 10
Path coefficients

Path	Path coefficients
Purchasing decision → Satisfaction with industrial brand	2.98
Satisfaction with marketing channel → Purchasing decision	4.51
Satisfaction with marketing channel → heuristic	5.03
Strengthening relationship marketing → Satisfaction with marketing channel	4.12
Satisfaction with marketing channel → industrial products price	2.03

4.5. R2 or coefficient of determination criterion

The coefficient of determination is the main criterion for evaluating the endogenous variables of the structural model. The value of the coefficient of determination must be greater than 0.67, otherwise, theoretical foundation of the model is doubted and it is stated that the model fails to describe endogenous latent variables. After implementing it in AMOS software, the results are as follows in Table 11.

Table 11
Endogenous latent variables

Endogenous latent variables	R^2
Satisfaction with industrial brand	0.635
Purchasing decision	0.780
Satisfaction with industrial marketing channel	0.823
Strengthening relational marketing	0.887
Heuristics	0.816
Prices of industrial products	0.863

As shown in the table above, the coefficient of determination for all variables is greater than 0.67, which means that the variables have been correctly identified in this study.

5. Fit the General Model

This index examines the general predictive power of the model and whether the tested model has been successful in predicting endogenous latent variables. The closer the value is to the number one, the better the quality of the structural model.

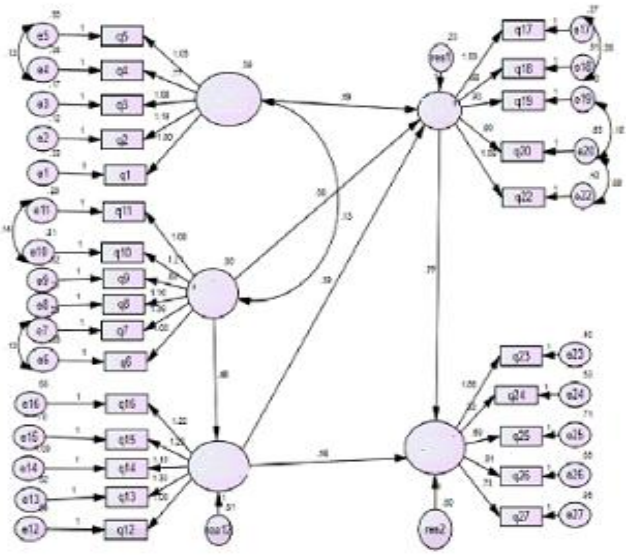

Fig.5. Structural model of the final research model

6. Optimization

Many engineering optimization problems are often very complex and difficult, and cannot be answered with the usual optimization methods without considering many simplifications. Conventional gradient-based optimization methods have many disadvantages, including the initial conjecture that leads to being trapped in local optimal points. In recent years, the use of evolutionary algorithms has been considered by many researchers in various areas of optimization.

Based on Ariminio, evolutionary algorithms is a method of gradual evolution whose general concept is derived from the theory of natural evolution .However, the process of evolution in this algorithm is much simpler than that used in nature. (Arminio,2001)

To optimally design a multi-objective sliding mode controller system, four objective functions have been used. Object functions are defined as follows.

$$J_1 = \int_0^T (e_1^2 + \dot{e}_1^2)dt \tag{1}$$

$$J_4 = \int_0^T (u_1^2 + u_2^2)d \tag{2}$$

$$J_2 = \int_0^T (e_2^2 + \dot{e}_2^2)d \tag{3}$$

$$J_3 = \int_0^T (s_1^2 + s_2^2)d \tag{4}$$

Charts are first sorted for each of the objective functions based on $\left\| J(\bar{\theta}) \right\|_x$, .

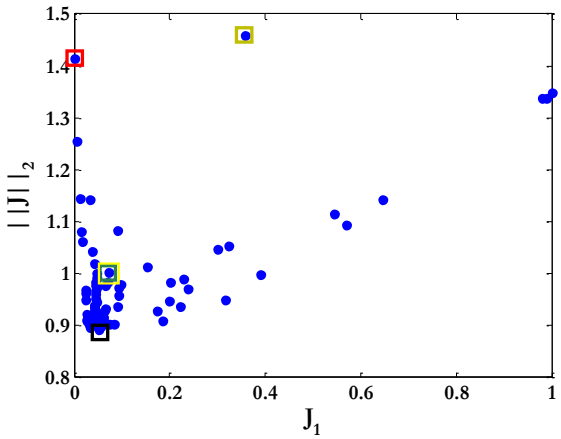

Fig. 5. Pareto chart for the J_1 objective function

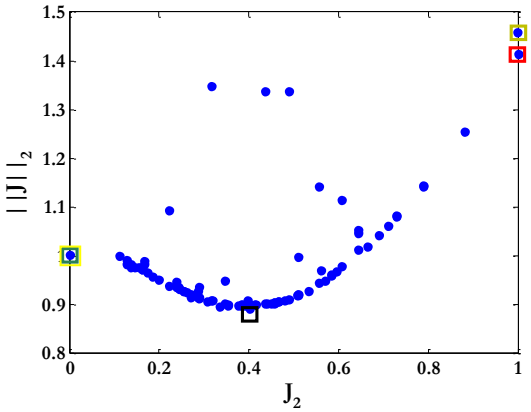

Fig. 6. Pareto chart for the J_2 objective function

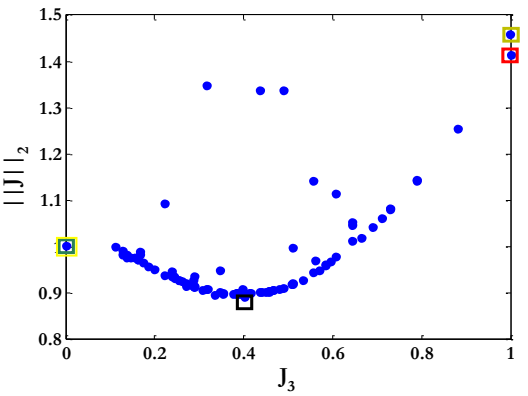

Fig. 7. Pareto chart for the J_3 objective function

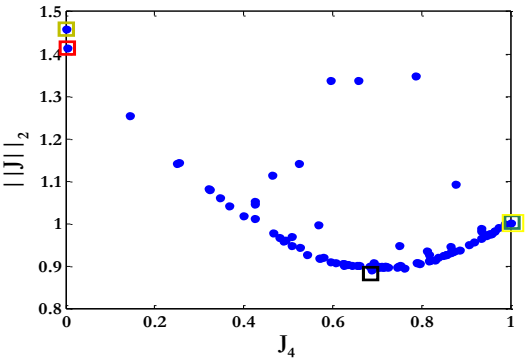

Fig. 8. Pareto chart for the J_4 objective function

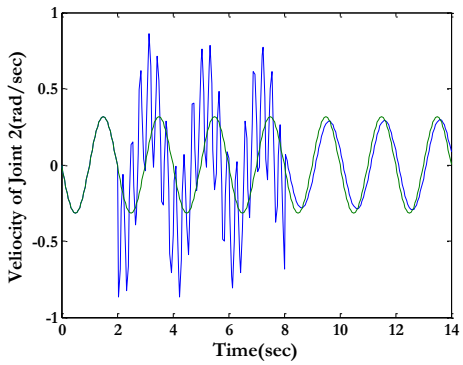

Fig. 9. Pareto chart for the J_1 objective function

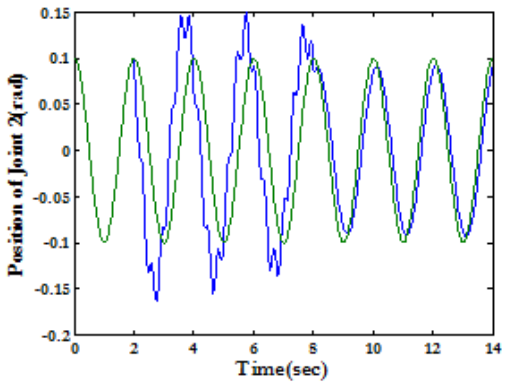

Fig. 10. Pareto chart for the $J2$ objective function

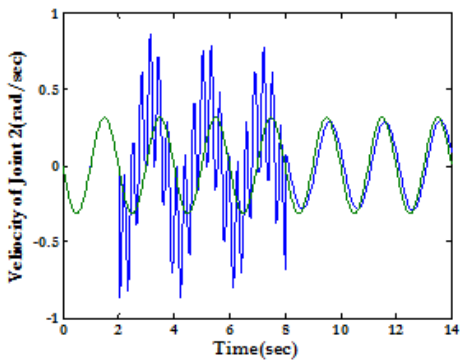

Fig. 11. Pareto chart for the $J3$ objective function

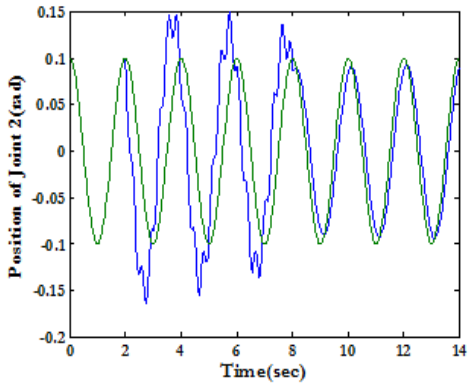

Fig. 12. Pareto chart for the $J4$ objective function

7. Conclusion

The results revealed that research on behavioral decision-making about affect-heuristics is more focused on the implications of judgment based on mental-affective responses. Heuristics enable us to be rational actors in many situations. Based on the "risk as affect" approach, with increasing the unrelated the affective responses and cognitive assessments of the different options, the priority determined by the affective responses will be more. Studies of industrial markets suggest that intangible properties such as satisfaction with marketing channel, satisfaction with industrial brand, and organizational purchasing behavior are more important than tangible properties such as functional value when deciding to purchase industrial products. Since purchasers are social people, not calculators, they react both rationally and affectively. Industrial marketers have recognized that affects play a major role in industrial purchasing decisions.

Based on the results of the present study, it can be concluded that in industrial marketing, satisfaction with the industrial brand and marketing channel are two basic elements in the industrial decision-making process, both of which arise from satisfaction and commitment. Satisfaction with industrial brand is the main foundation of modern marketing philosophy and the key to success and superiority over competitors. Nowadays, having satisfied customers for suppliers creates a competitive situation for them, which increases market share and

profitability, since customers are always looking for suppliers who offer better goods and services. Also, research results on the price variable of industrial products showed that increasing financial benefits for customers in industrial markets is more effective than other variables. Results revealed that in industrial marketing, the role of relationship marketing is to try bringing the company closer to customers to fully meet their needs, and this approach increases market share, profitability and reduces costs for companies. Also, the key to the success of any business is in retaining current customers, which is in line with the results of research conducted by Li (Li et al, 2014).

It was also revealed that customers are always at the focus of industrial marketing activities, but the way companies look at this relationship is changing(Uzonwanne,2016). No attempt has been made so far regarding two interactive and communication perspectives. Thus, company should emphasize the importance of establishing and maintaining relationships between customers and industrial suppliers, which is a complex and dynamic phenomenon. In industrial marketing, the marketing mix variables are constantly changing to achieve a more favorable response. However, in a relational approach, the supplier and the industrial purchaser both play an active role in the interaction and this issue depends on the marketer's perception of the purchasing power of the industrial customer and his or her desire to use the supplier's technical skills and production process. One of the important results of the present study is that in industrial marketing, the difference between the official price and the real price plays a major role. The official price is the price that companies announce and the real price is the price that the customer ultimately pays. The results of this study showed that companies face 5 important and effective factors to determine the price of industrial products in the market, including:

- Product value for the customer
- Competitive price
- Cost considerations
- The company pricing goal
- Government role

This issue is consistent with the results of a study conducted by Fenton. This result is crucial for introducing price in industrial marketing as a strategic variable (Fenton et al. 2011).

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