Int. J. Nonlinear Anal. Appl. 15 (2024) 3, 337–350
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2023.30728.4476

Designing a mental model of date export barriers

Naser Sharifi[a], Fereydoun Omidi[a,*], Reza Yosefi Hajiabad[b]

[a]Department of Business Management, Khoramshahr International Branch, Islamic Azad University, Khoramshahr, Iran
[b]Department of Economics, Payam Noor University, Tehran, Iran

(Communicated by Asadollah Aghajani)

Abstract

The present research aims to investigate the important and fundamental obstacles to the export of Khuzestan dates; Presented a mental model of date export obstacles in Khuzestan province. This research was a type of exploratory mixed research, with the qualitative part based on the theory derived from the data and the quantitative part based on the descriptive-survey method. The qualitative part of the tool was a semi-structured interview and the quantitative part was based on a questionnaire. The statistical population in the qualitative section included experts, specialists, and date exporters, and saturation was achieved after interviewing 20 people. In this research, the qualitative part was analyzed with Max Kyuda software and the quantitative part was analyzed based on Lisrel software. The results showed the causal factors: thinking; decision-making power; individual understanding; type of behavior; Creativity; Understanding export behavior and simplifying issues. Based on the impact on the central category of the mental model of obstacles to date export, based on the intervening factors, the level of complexity of the issues; Work experience; analyze ; Interaction; mental perceptions; regulations; Decision making; inductive thinking; Deductive thinking; Emotional Intelligence; emotional intelligence and business intelligence and the underlying factors of the organization's strategies; environmental uncertainty; Uncertainty of information; big data; ability to predict; systems performance; the power of market analysis; idea generation in relation to future research strategies; predicting issues; planning; organizational perspective; Communication skills; Information and Communications Technology; administrative bureaucracy; organizational rules; International rights; Organizational concentration or lack of concentration; organizational processes; organizational hierarchy; consequences of interactions between businesses; dynamic changes; greater competitiveness; adapting to environmental changes; logical interpretation of data; Crisis Management; It leads to the change of individual attitudes and beliefs and organizational flexibility.

Keywords: obstacles, mental model, date export, foundation data theory, modeling
2020 MSC: 68T09, 62H11, 62N01

1 Introduction

Dates are one of the most important agricultural products in Iran. So that in 2018, with the production of about 1.23 million tons of dates and a share of 1.5% of the total production of horticultural products in the country, it has the fifth place in the production of these products. More than 97% of dates in the country are produced in the provinces

*Corresponding author
Email addresses: nrsh129@gmail.com (Naser Sharifi), iauomidi@gmail.com (Fereydoun Omidi), youhaj@pnu.ac.ir (Reza Yosefi Hajiabad)

Received: February 2023 *Accepted:* June 2023

of Kerman, Sistan and Baluchistan, Khuzestan, Bushehr, Fars and Hormozgan. The countries of the Middle East are the largest exporters of dates in the world. While Iran is the second producer of dates in the world after Egypt, it ranks fourth among the countries that export this product [9]. The average price rate in the export of dates from Arab countries and competing countries (Iran and Pakistan) has a great impact on its exports to countries that consume date products [13]. One of the effective factors in the development of the date sector is the ease of ways to sell the product in international markets, the support of government departments to small private sectors that produce the product, and the use of modern marketing for the export of dates and its products in the international arena [11].

The most important problems of date export are the lack of raw product quality, the export of stored products from the previous year, the seasonality of exports at certain times of the year, the lack of enough refrigerators to store them while waiting for the export season, and the inefficiency of production operations in local factories in the way that it is suitable for global markets [14]. In order to get out of the dominance of crude oil export, more attention should be paid to the export of agricultural products. Dates are one of the most important products that can help to develop non-oil exports [5]. One of the most important effective factors in the export of agricultural products, especially dates, is the creation of commercial attractions for the product. Among these attractions, it is possible to mention proper trade relations between countries, increasing the export of products, reducing prices and improving quality, paying attention to the exchange rate, etc [4]. Understanding why some companies use strategies that ultimately lead to competitive success for them and other companies are unable to do so is important in strategy research. One of the aspects of this issue is the investigation of the role of managerial cognition and managerial mental models as determining factors in strategic choices. Are managers' mental models a simplified knowledge structure or cognitive representations about how the business environment works? There is remarkable evidence that mental models have an impact on managers' perception of a situation, their decision-making, and the organization's output [16].

Many of the great strategies of companies with a good plan and program face failure. If the managers' mental models as the source of their thinking contradict these plans, these plans will not be successful. Managers can increase the probability of success of strategies by shaping their minds and examining and developing their mental image [10]. Previous researches in the field of export behavior have considered it limited, a sponge and quantitative oriented, and they have emphasized the entry of new ideas and qualitative analyzes into the export platform. The integration of mental models as a theoretical framework can lead to more effectiveness in our efforts to understand the export behavior of companies. In addition, although it has been pointed out in various researches that managerial factors and perceptions have a decisive role in export behavior [3]. Considering that Khuzestan province has a high potential for date export, but date producers face many obstacles for export, among these obstacles is the lack of a date export terminal, which has caused even one dollar of Khuzestan dates. Do not export from the ports of the province. There is no shipping line in Khuzestan so that date exporters can export this product directly from the province. Date exporters are forced to send dates to Hormozgan by land to export their products to other countries, so that they can be exported through Hormozgan ports. Apart from this serious problem, many other problems such as the lack of capital to participate in international exhibitions, the low quality of packaging, insurance, etc., have an impact on the export of Khuzestan dates. In this research, while examining the important and fundamental obstacles to the export of Khuzestan dates, a mental model of the obstacles to the export of dates has been presented based on the data theory of the foundation in Khuzestan province. According to the research problem, the question of the current research is, what are the characteristics of the mental model of date export obstacles?

2 Research literature

Considering the potential capabilities of the agricultural sector, among non-oil exports, the export of agricultural products plays an important role in securing and guaranteeing the political independence of the country and the continuation of the development process. The export of agricultural products can play a significant role in increasing the production capacity and growth of the agricultural sector. Since the agricultural sector is a strategic sector and due to its production facilities and capacity and the relative superiority of its products, this sector can significantly contribute to increasing the volume of non-oil exports; Therefore, it is very necessary to strengthen it, both internally to ensure political and economic independence and reduce imports, and externally to implement policies to expand non-oil exports in order to obtain part of the country's foreign exchange resources [12]. Therefore, researching and examining the issues of marketing and export of agricultural products will help us to become familiar with the country's potentials and capacities and to produce products that will increase the country's exports and generate more currency for the country's economy. Considering the conditions and the privileged position of Khuzestan province in terms of cultivated area and date production in the world, it has not yet been able to gain its export position in the world market as it should, which indicates that a suitable marketing system for There is no Iranian date that can seek to develop these markets and increase its market share in international markets, or the form and manner of date export in Khuzestan

province has not been able to adapt to the conditions of the world market [8]. There are 75 date varieties in Khuzestan, of which the highest production variety from 1989 to 1995 was Otamaran dates. Date production in Khuzestan is 190 thousand tons, of which 60 thousand tons are for domestic consumption, 20 thousand tons for industrial consumption, 40 thousand tons for export to other provinces and 70 thousand tons for export abroad. The amount of date export was 12% in the past, and by solving the storage problems, now 20% of the 1.1 million tons of date production is exported and the rest is domestic consumption. Unfortunately, problems such as fine dust and some unfavorable weather conditions that lead to a decrease in the product have caused an increase in the price, which reduces the exporter's power in the markets. The increase in date exports will not only affect the country's income and foreign exchange, but it will create employment for many people in the production and conversion industries. Considering the importance of various agricultural sectors and its impact on the country's economy, the Khuzestan date export sector, which provides employment for a large part of the villagers in Khuzestan province, is of particular importance. The research conducted regarding the obstacles of date export in Khuzestan province has been very few and limited and not academically, so it seems necessary to provide a model that can include the opinion of all specialists and experts in this field and cover the issue. In this context, we refer to a number of researches conducted in the field of factors affecting non-oil exports. Adineh Far et al. [1]. the aim of this research is to "design a model of factors affecting the export of handmade carpets from the perspective of dynamic capabilities and marketing capabilities with an emphasis on the attitude of target customers". The findings showed that the model of factors affecting the handmade carpets export of includes economic factors, political factors, product quality, marketing capability, up-to-date knowledge in the field of activity, legal protection, job security, and Communication is marketing and the variables of job security and up-to-date knowledge are among the most important factors in this field. Ewada RU [6]. The study aimed to identify the current situation of Egypt's exports of dates, assess its economic stability, and identify the factors affecting it during the period (2000-2020 .(It was found from the estimation of the instability coefficients for the quantity of total exports of dates that they are unstable, as the instability coefficient for the average period was about 37.88 and the value of total exports of dates unstable, as the instability coefficient for the average period was about 57.08. The study also aimed to apply the gravity model to Egypt's exports of dates to identify the most important variables that affect it. It was found from the results of the model that there is a positive relationship between each of Egypt's exports of dates, the total Egyptian Gross domestic product (GDP) and the distance variable between Egypt and the most important countries importing dates from Egypt. While there was an inverse relationship between the variable of the quantity of Egypt's exports of dates and each of these variables, the total national product of the importing countries, export price and date production volume. Siswanto & Dewi [15] The results showed that the Exchange Rate variable has a positive but insignificant effect on Indonesian Batik Exports. The GDP variable has a negative and significant effect on Indonesian Batik Exports. The Inflation variable has a positive and significant effect on Indonesian Batik Exports for the period 2010-2020. Exchange Rate, GDP, and Inflation simultaneously have a significant effect on Indonesian Batik Exports. The coefficient of determination is 0.551197, which means that the independent variables exchange rate, GDP, and inflation affect 55.11% of the dependent variable Batik exports in Indonesia. Mehrjerdi et al [12] The present study evaluated factors affecting pistachio export earnings instability and its effect on agricultural export during the studied period. For this purpose, export earnings instability index was calculated using "average absolute difference between export earnings and its trend". The results indicated that pistachio commodity concentration index had negative effect, but pistachio product instability and gaps of exchange rate had direct relationship with pistachio export earnings instability. Also, the results of the estimation of agricultural export function indicated that pistachio export earnings instability had negative and significant impact on export agriculture. Faraghian et al [7] This study aimed at designing a model for factors affecting the packaging of agricultural products for export. In order to present a new and comprehensive research in the export and packaging field, qualitative method and qualitative content analysis approach were used. In qualitative content analysis method, experts in the field of packaging and export, businessmen, and top managers of companies that work in fruits and vegetables export were interviewed to identify factors affecting export agricultural goods packaging. The obtained results indicated that factors affecting the packaging include seven categories: environmental factors, physical characteristics, shipping terms, rules and regulations, export destination features, product information, and product type.

3 Research methodology

Considering that the purpose of this research is to design a mental model of date export barriers, it is necessary to use mixed research methods. In this research, in the first stage, with the interpretative approach of theme analysis, the main and sub-themes of the research in the field of date export obstacles were identified, and after identifying the indicators, the quantitative method of confirmatory factor analysis was used to validate it, so the method Exploratory mixed research was used. The statistical population in the qualitative part of this research are experts, experts and

date exporters; who were selected based on Cochran's sampling formula, their opinions (20 interviews - 10 experts and 10 exporters) were used to prepare the questionnaire. Information was collected from them through open interviews and saturation was obtained by conducting 20 interviews with these experts. The statistical population of the research in the quantitative part consists of all elites and experts (88 people) and Khuzestan date exporters (16 units) who responded to the prepared questionnaire. Non-random sampling method is available from the second group. Due to the exploratory nature of qualitative research, interview protocols with open questions were also used in this research. Due to the fact that the first part of this research is qualitative, it follows the grounded theory method. Therefore, the steps of the research include the following in order:

1- The first stage of research questions

2- The second stage of note-taking and data collection

3- The third stage of analysis

4- The fourth stage of theoretical sampling and theoretical saturation

In order to collect data, interviews and questionnaires were used. The interview was used to collect the opinions of experts in order to measure and confirm "barriers affecting the export of dates" and to prepare a questionnaire. A researcher-made questionnaire with 25 items was compiled in order to collect data in the statistical population and test the designed model; Its items were adjusted based on a 5-point Likert scale (from completely agree to completely disagree). The questionnaire was given to a preliminary sample of 20 experts in a simple random manner.

Cronbach's alpha coefficients calculated using SPSS statistical software for the preliminary sample showed the appropriate reliability of the measure and its components. Explaining that Cronbach's alpha is used to evaluate the internal consistency of the scale, and generally speaking, a value greater than 0.7 is considered appropriate. After verifying the content validity and reliability of the scale, 82 questionnaires were distributed. Due to the geographical spread of the statistical population, after contacting and coordinating with the experts via WhatsApp, fax or email, and after completion, the questionnaires were returned to the researcher via WhatsApp, fax or email. Finally, 82 questionnaires were collected and prepared for statistical analysis. In order to analyze the collected data, firstly, the descriptive statistics that examine the demographic variables of the research, including gender, level of education, etc., are examined. After that, according to the considered assumptions, SPSS 20 and LESREL software were used to check the compilation of structural-interpretive equation tests, but before that, Kolmogorov-Smirnov test was used to explain the distribution of the sample population.

3.1 Nonlinear structural equation model

The traditional linear structural equation model is typically made up of two parts: the measurement model describing the relationships between the observed and latent variables and the structural model describing the relationships between the latent variables. Given a vector of p observed variables Z_i for the ith individual in a sample of size n and a vector of q latent variables f_i, the linear structural equation model system can be written:

$$Z_i = \mu + \Lambda f_i + \varepsilon_i, \tag{3.1}$$

$$b_0 + B_0 f_i = \delta_{0i}, \tag{3.2}$$

where in the measurement model, the matrices $\mu(p \times 1)$ and $\Lambda(p \times q)$ contain fixed or unknown scalars describing the linear relation between the observations Z_i and the common latent factors f_i, and ε_i represents the $(p \times 1)$ vector of random measurement error independent of f_i such that $E(\varepsilon_i) = 0$ and $Var(\varepsilon_i) = \Psi$ with fixed and unknown scalars in Ψ; and in the structural model, the matrices $b_0(d \times 1)$ and $B_0(d \times q)$ contain fixed or unknown scalars defining d different additive linear simultaneous structural equations relating the factors to one another plus the $(d \times 1)$ vector of random equation errorδ_{0i}, where $E(\delta_{0i}) = 0$ and $Var(\delta_{0i}) = \Delta_0$ with fixed and unknown scalars in Δ_0.
The simultaneous linear structural model as written in (3.2) is very general. For many practical research questions which can be addressed by simultaneous structural models, it is useful to model specific variables in terms of the rest of the variables, i.e., it is useful to consider some of the latent variables as endogenous and others as exogenous, where endogenous variables are those that are functions of other endogenous and endogenous variables . Let $f_i = (\eta_i', \xi_i')'$ where η_i are the d endogenous latent variables and ξ_i are the $q - d$ structural model (3.2) becomes:

$$\eta_i = b + B_{\eta_i} + Y\xi_i + \delta_i, \tag{3.3}$$

where it is assumed the equation errorsδ_i have $E(\delta_i) = 0$, $\mathrm{Var}(\delta_i) = \Delta$ and are independent of the ξ_i as well as independent of ε_i in (3.1), and the matrices $b(d \times 1), \mathbf{B}(d \times d), \gamma(d \times (q-d))$, and $\Delta(d \times d)$ are fixed or unknown scalars. The structural model (3.3) is said to be in implicit form, implicit because it has endogenous variables on both sides of the equations, i.e., it is not "solved" for the endogenous variables. it is assumed that the diagonal of B is zero so that no element of η_i is a function of itself. A sufficient condition for solving (3.3) is that $(1-B)$ is invertible, then (3.3) can be solved for the endogenous variables and written as

$$\eta_i = b^* + \Gamma^* \xi_i + \delta_i^*, \tag{3.4}$$

Where $b^* = (1-B)^{-1}b, Y^* = (1-B)^{-1}Y$, and $Var(\delta_i^*) = (1-B)^{-1}\delta(1-B)^{-1'}$.
The structural model (3.4) is said to be in reduced form as the η_i now appears only on the left-hand side of the equation. it is important to note the assumption that the equation errors δ_i were additive and independent of the ξ_i inthe implicit form (3.3) results in the equation independent of the η_i.
Given p, q and d, additional restrictions must be placed on $\mu, \Lambda, \Psi, b_0, B_0$, and Δ_0 in (3.1)-(3.2) in order to make all the unknown parameters identifiable. The assumption that (3.2) can be written in reduced form (3.4) is the typical restriction placed on the structural model.
Additionally, a common restriction placed on the measurement model (3.1) is the errors-in-variables parametrization where q of the observed variables are each fixed to be equal to one of the q different latent variables plus measurement error. For a thorough discussion of identifiability in linear structural equation models see, e.g.. Finally, it should be noted that there is no inherent distributional assumptions needed for $\varepsilon_i, \delta_{0i}$, nor f_i at this point of model specification although distributional assumptions may be added eventually to perform estimation.

A mixture SEMs for a $p \times 1$ random vector y_i is defined as follows:

$$f(y_i) = \sum_{k=1}^{K} \pi_k f_k(y_i|\mu_k, \sum_k), \quad i = 1, \cdots, n, \tag{3.5}$$

where K is the number of components which can be unknown, $\mu_k' s$ are component probabilities which are nonnegative and sum to 1.0, $f_k(y|\mu_k, \sum_k)$ is a multivariate normal density function with an unknown mean vector μ_k and a covariance matrix $\sum_k$. Conditional on the kth component, suppose that y satisfies the following measurement model:

$$y = \mu_k + \Lambda_k \omega_k + \varepsilon_k, \tag{3.6}$$

where μ_k is an $p \times 1$ intercept vector, Y_k is a $p \times q$ factor loading matrix, ω_k is a $q \times 1$ random vector of latent variables, and ε_i is a $p \times 1$ random vector of error measurements with distribution $N(0, \Psi_k)$, which is independent of ω_k, and Ψ_k is a diagonal matrix. Let Ψ_k be partitioned into $((\eta_n^T, \xi_k^T)^T$, where η_k is a $q1 \times 1$ vector, ξ_k is a $q2 \times 1$ vector, and $q1 + q2 = q$. The structural equation is defined as

$$\eta_k = B_k \eta_k + \Gamma_k \xi_k + \delta_k, \tag{3.7}$$

where B_k and Y_k are $q1 \times q1$ and $q1 \times q2$ matrices of unknown parameters: and random vectors $\xi_k \Lambda_k$ are independently distributed as $N(0, \Phi_k$ and $N(0, \Phi_{\Lambda k}$, respectively: and Φ_k is a diagonal matrix. We assume that $B_{0k} = (I_{q1} - B_k)$ is nonsingular and (I_{q1} is independent of any elements in B_k. One specific form of B_k that satisfies this assumption is the lower or upper triangular matrix.

As the mixture model defined in (3.5) is invariant with respect to permutation of labels $k = 1, \cdots, k$, adoption of an unique labeling for identifiability is important. Roeder and Wasserman (1997), and Zhu and Lee (2001) proposed to impose the ordering $\mu_{1,1} < \cdots < \mu_{k,1}$ for eliminating the label switching (jumping between the various labeling subspace), where $\mu_{k,1}$ is the first element of the mean vector μ_k. This method works fine if $\mu_{1,1}, \cdots, \mu_{k,1}$ are well separated. However, if $\mu_{1,1}, \cdots, \mu_{k,1}$ are close to each other, it may not be able to eliminate the label switching, and may introduce incorrect results. Hence, it is necessary to find a sensible identifiability constraint. In this chapter, the random permutation sampler developed by Früwirth-Schnatter (2001) will be applied for finding the suitable identifiability constraints. See the following sections for more details.

Moreover, for each $k = 1, \cdots, K$ structural parameters in the covariance matrix $\sum_k$ corresponding to the model defined by (3.6) and (3.7) are not identified. A common method in structural equation modeling for identifying the model is to fix appropriate elements in A_k, B_k and/or Y_k at preassigned values. The positions of the preassigned values of the fixed elements in these matrices of regression coefficients can be chosen on a problem-by-problem basis, as long as each $\sum_k$ is identified. In practice, most manifest variables are usually clear indicators of their corresponding latent variables. This give rather clear prior information to specify the zero values to appropriate elements in these parameter matrices. See the illustrative example in Section **??** for a more concrete example. For clear discussion of the proposed method, we let $\pi = (\pi_1, \cdots, \pi_k)$, and θ be the vector which contains all unknown parameters in the covariance matrices that defines an identified model.

4 Data analysis

In the present study, the interviews taken after the implementation were analyzed line by line using the content analysis method, conceptualization, categorization and then, based on similarity, conceptual connection and common characteristics between open codes, concepts and categories (a class of concepts) were determined. Open codes of sub-categories and categories related to causal, contextual, mediating (intervening) conditions, central phenomenon and related strategies and consequences were presented. In the next step, similar and symmetrical categories were tried to be placed in the main categories. Based on the commonality of the sub-categories (open coding) with each other, the main categories were extracted in the form of more abstract concepts. After preparing and adjusting the table of basic concepts and categories as the first step of qualitative analysis, the resulting concepts were grouped at a higher and abstract level in order to reach the main categories. At this stage, the categories presented for analysis were defined and revised, then the data were analyzed within them. By defining and reviewing the nature of what a major category is discussing, it was determined which aspects of information each major category contained.

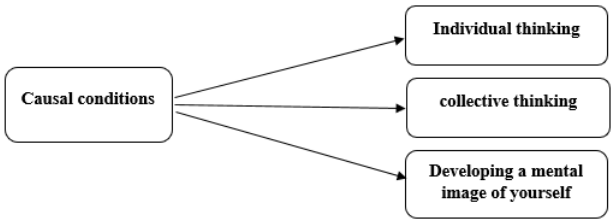

Figure 1: The model of causal conditions resulting from the analysis of the qualitative part of the research

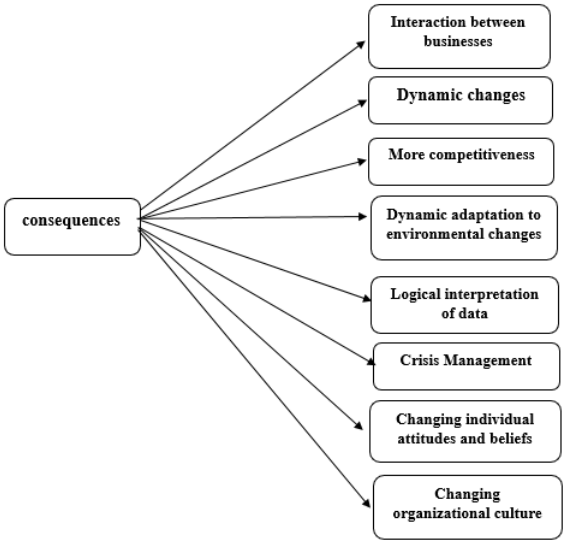

Figure 2: Consequence model resulting from the analysis of the qualitative part of the research

5 Axial and selective coding of data (theorizing stage)

In the central coding phase, the categories extracted in the open coding section were placed under the axes of causal conditions, central phenomenon, background conditions, strategy and consequences. What is the appropriate conceptual model of the mental model of date export barriers in Khuzestan province based on the Foundation's data theory? In response to the mentioned question, after studying the existing theoretical foundations and interviewing experts in the field of mental model, the main and subcategories related to the phenomenon of date export barriers and the final conceptual model were compiled as follows:

In the current research, two methods of reviewing participants and reviewing non-participating experts were used by 5 faculty members of Ahvaz Islamic Azad University and 3 professors of Ahvaz State University. And the final model was presented.

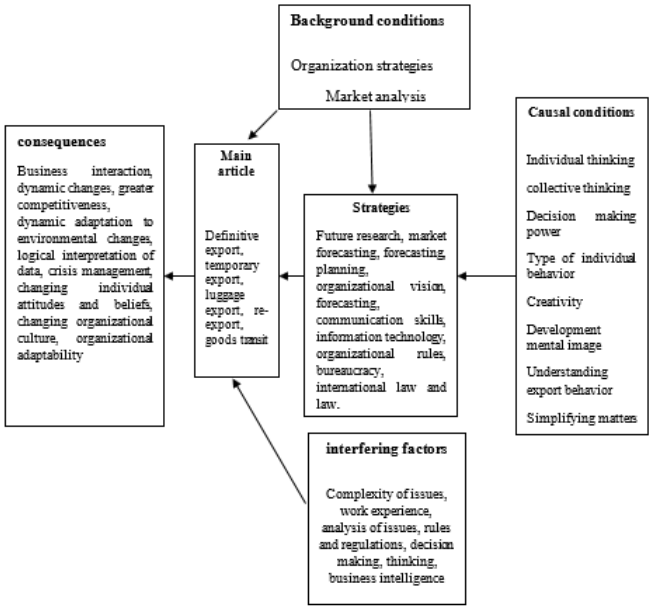

Figure 3: Mental paradigm model of date export barriers in Khuzestan province according to axial and selective (selective) coding based on the foundation's data theory

Descriptive research findings: The statistical analysis carried out in the fourth chapter includes descriptive and inferential analysis which were explained respectively.

Table 1: Frequency distribution of respondents according to gender

gender	Abundance	Percent
Man	177	75.6
Female	57	24.4
Total	234	100

Table 2: Frequency distribution of respondents according to work experience

Work Experience	Abundance	Parcen
Senior expert of Khuzestan Province Industry, Mining and Trade Organization	13	5.6
Senior expert in goods export	34	14.5
Senior expert of Khuzestan Chamber of Commerce	9	3.8
Specialist in date export	49	20.9
University professor in the field of marketing management	26	11.1
University professor in the field of business management	10	4.3
University professor in the field of international law	43	18.4
University professor in international business	23	9.8
Exporter of date samples in the country	11	4.7
Expert in date export	16	6.8
Total	234	100

Exploratory factor analysis of date export barriers: According to the research literature, 64 identified items were tested in the form of 7 factors for the date export barriers model. For this purpose, an exploratory factor analysis has been done for each factor, and at this stage, factors that are irrelevant and have low correlation are removed. For this purpose, KMO and Bartlett tests were used to check the adequacy of the data to perform exploratory factor analysis. The value of KMO always fluctuates between 0 and 1. If the value of KMO is less than 0.5, the data will not be suitable for factor analysis, and if its value is between 0.5 and 0.7, factor analysis can be done. But if its value is greater than 0.7, the correlations between the data will be suitable for factor analysis.

On the other hand, to ensure the suitability of the data for factor analysis, that the matrix of correlations that is the basis of factor analysis in the community is not equal to zero, Bartlett's test should be used, based on which if the corresponding Sig number is smaller If it is 0.05, it can be stated that the correlation matrix is against zero and the data are sufficient to perform exploratory factor analysis.

Table 3: KMO and Bartlett test of date export barriers

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.900
Bartlett's Test of Sphericity	Approx. Chi-Square	10301.343
	df	2016
	Sig.	0/001

K.M.O sampling adequacy measure is a test of the amount of variance in the data that can be explained by the factors. As a measure of factorial ability, a KMO value of 0.5 is poor, 0.6 is acceptable, and the closer the KMO value is to one, the better, according to Keyser, a KMO greater than 0.9 is excellent, a range of 0.8 is decent, in the range of 0.7 is better than average. in the range of 0.6 average, in the range of 0.5 bad and below that is unacceptable. As shown According to table 3. KMO number is equal to (0.900) and Sig of Bartlett's test is equal to (0.000). Therefore, the data are sufficient to perform exploratory factor analysis.

What are the dimensions and components of the mental model of date export obstacles in Khuzestan province?

As can be seen in Figure 4 and Figure 5 all the factors of dimensions and components of the mental model of date export obstacles include causal factors, background factors, intervening factors, strategic factors and consequential factors except the effective factors in the mental model. Obstacles to the export of dates. The impact of mental model factors on date export barriers has been calculated as -76%. Also, for these parameters, the T-value of -6.92 has been estimated. Therefore, it can be stated that the dimensions and components of the mental model identified in this research are among the effective factors in the obstacles of date export.

As can be seen in Figure 4, due to the negative effect coefficient of the dimensions and components of the mental model of date export obstacles, if the dimensions and components of the mental model of date export obstacles increase in the optimal direction, this effect will be weaker and if the dimensions and components If the mental models of date export obstacles are weakened, naturally this relationship will be strengthened.

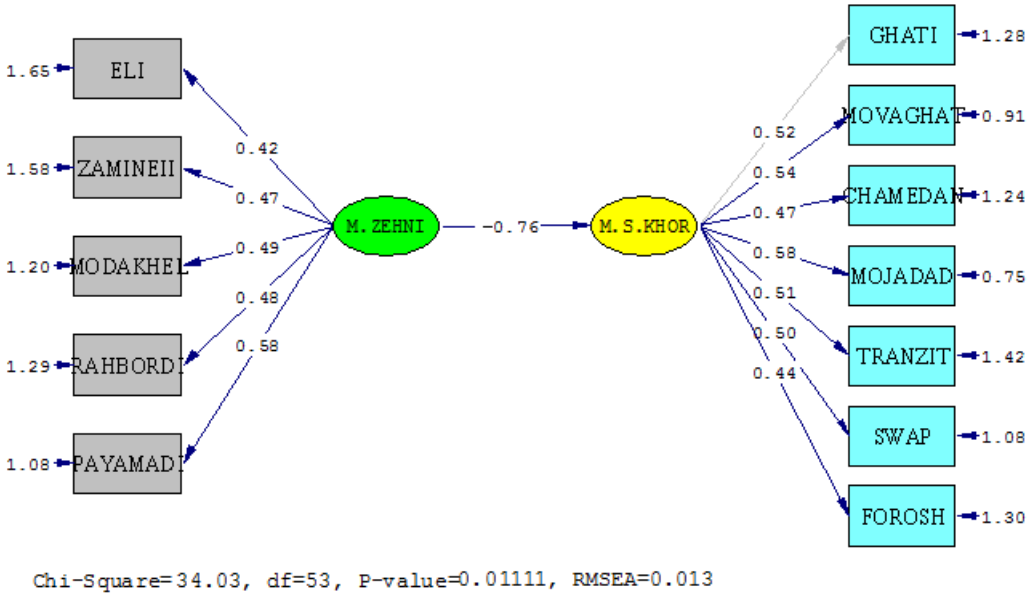

Figure 4: The amount of factor loadings related to structural equation modeling

As shown in figure 5 the results obtained from the research showed that all the relationships between the research constructs are established.

According to the results, the fit indices in the structural equation model of the research question, the research tools can be said to be quantitative in the structural equation model of the research question at the 5% error level. Also, the

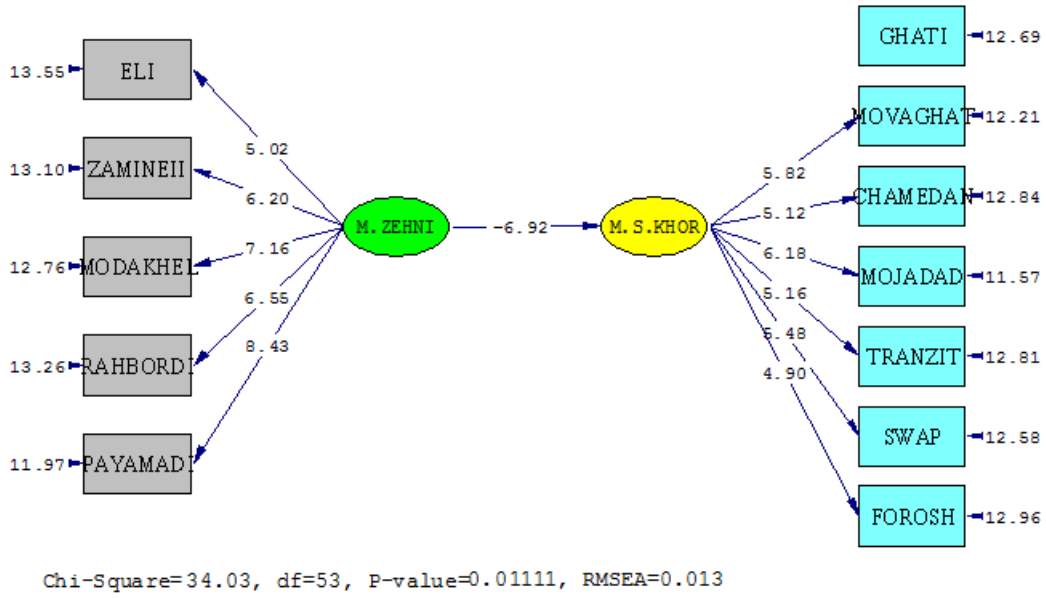

Figure 5: t value to check the significance of structural equation modeling coefficients

Table 4: Model fitting results

Model fit criteria	Indicator	The numbers obtained	allowed amount	Result
Chi-square ratio to degrees of freedom	K^2/df	0.64	Less than 3	proper fit
root mean square	RMSEA	0.013	Less than1	proper fit
The square root of the remainder	RMR	0.06	near zero	proper fit
Normalized fit index	NFI	0.92	Above 0.9	proper fit
Soft index of fitness	NNFI	0.90	Above 0.9	proper fit
Comparative fit index	CFI	0.96	Above 0.9	proper fit
Additional fit index	IFI	0.96	Above 0.9	proper fit
Relative fit index	RFI	0.95	Above 0.9	proper fit
Fitness index	GFI	0.98	Above 0.9	proper fit
Adjusted fitness index	AGFI	0.92	Above 0.9	proper fit

ratio of chi-square to the degree of freedom in the structural equation model of the research question, according to the considered criterion, indicates the appropriate fit of the model. The value of the RMSEA index is in the acceptable range, and this also indicates the acceptable error value in the structural equation model of the research question. The values of CFI, GFI, AGFI, NFI and NNFI indices in the structural equation model of the research question were also evaluated according to the desired criterion, which indicates the appropriate fit of the structural equation model of the research question. Therefore, according to the results of the structural equation model of the research question, it can be said that all the research tools have a suitable and acceptable fit.

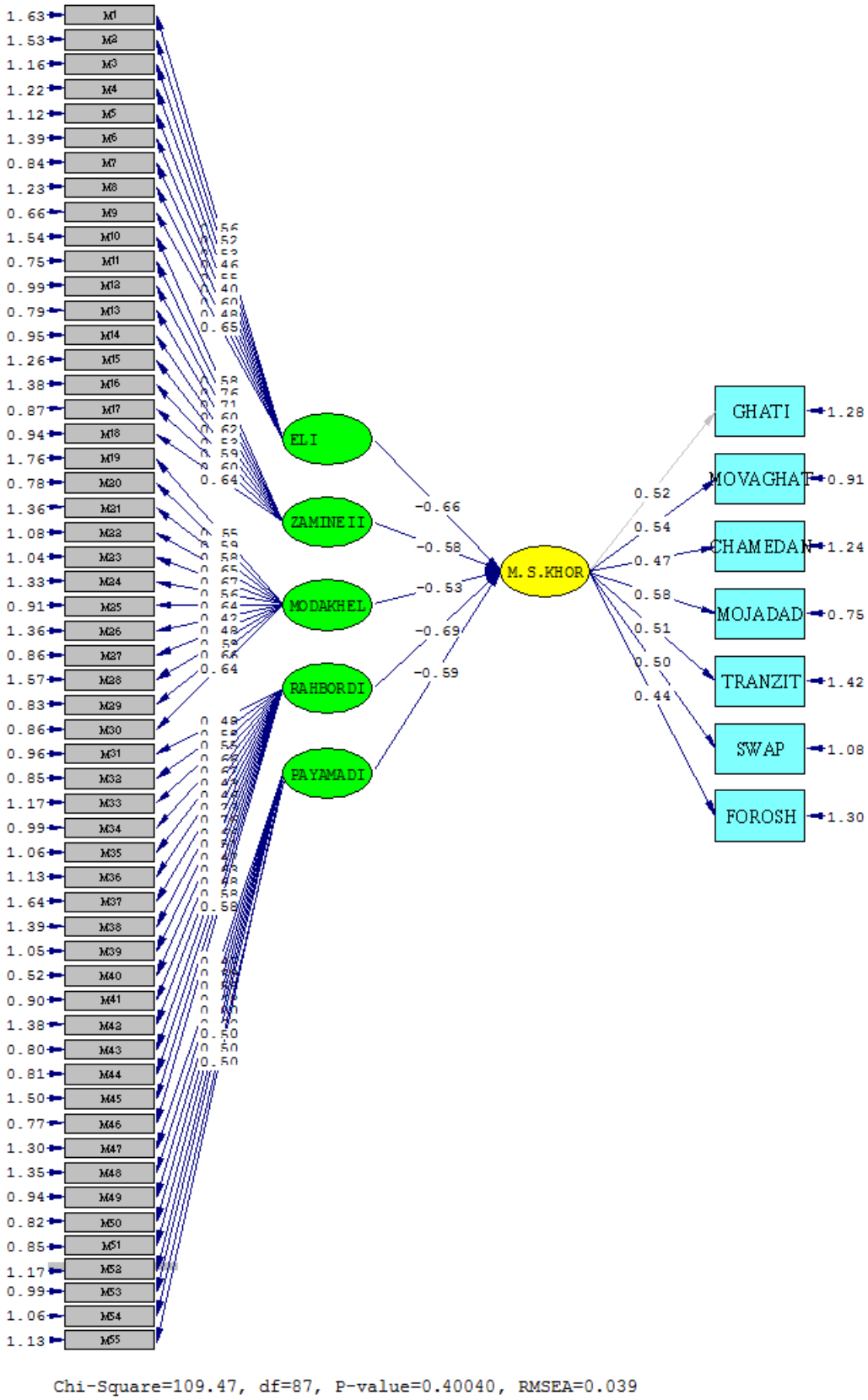

Figure 6: The amount of factor loadings related to the modeling of the structural equations of the sub-questions of the research

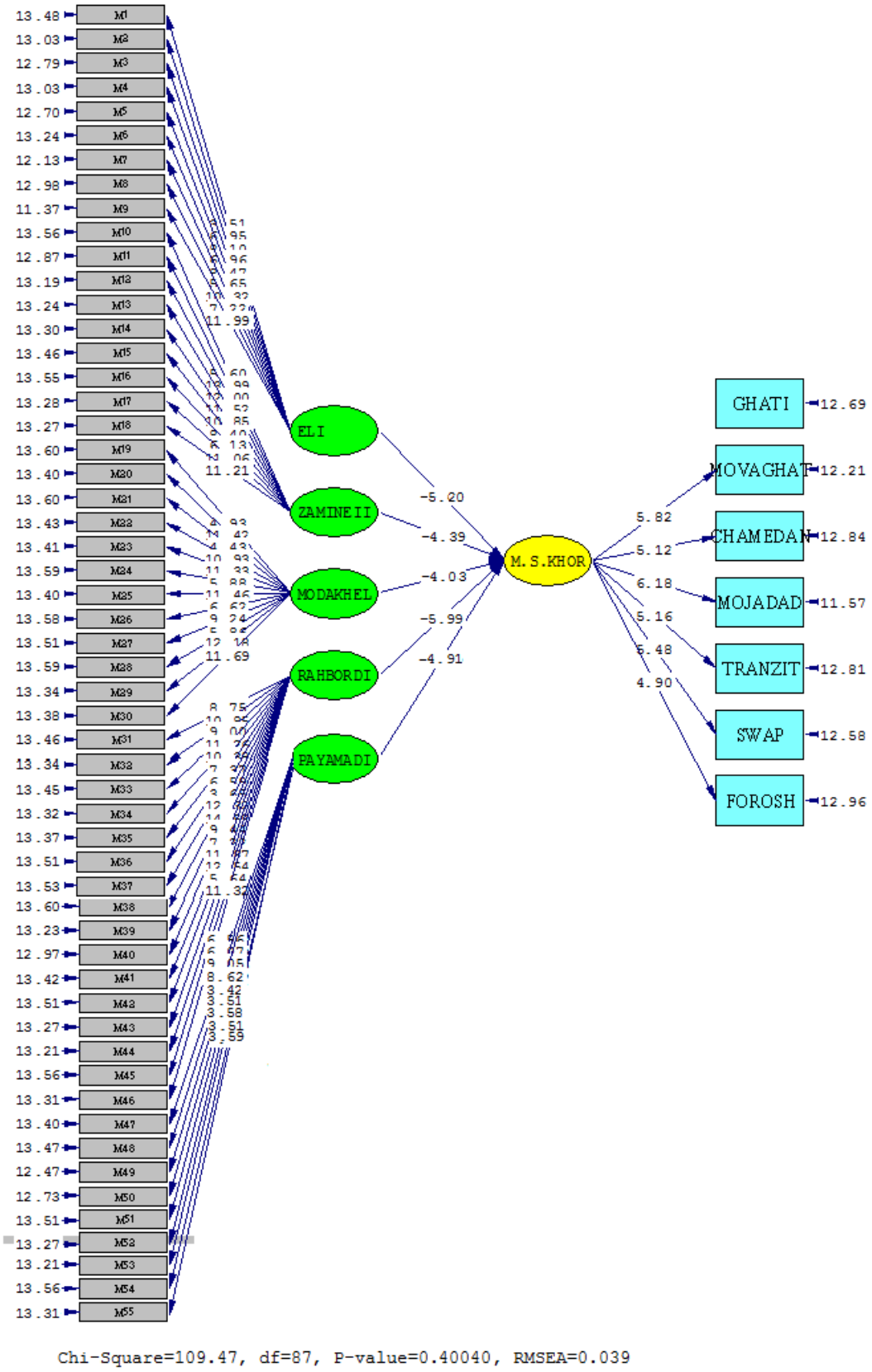

Figure 7: The value of t to evaluate the significance of the modeling coefficients of the structural equations of the sub-questions

6 Structural equation modeling of research sub-questions:

The first sub-question: What are the effective factors behind the mental model of date export obstacles in Khuzestan province?

All the causal factors of the mental model of date export obstacles include individual thinking factors; collective thinking; decision-making power; direct individual understanding; type of individual behavior; Creativity; developing a mental image of oneself; Understanding the export behavior and simplifying complex issues are among the effective factors of the mental model of date export obstacles. The impact of the causal factors of the mental model on date export barriers has been calculated as -66%. Also, for this parameter, the value of t is estimated to be -5.20. Therefore, it can be stated that all the effective factors of the mental model identified in this research are among the effective factors in the barriers of date export.

The second sub-question: What are the factors influencing the background of the mental model of the obstacles to the export of dates in Khuzestan province?

All the relevant factors of the mental model of date export barriers include the factors of the organization's strategies; environmental uncertainty; Uncertainty of information; big data; ability to predict events; systems performance; Power of market analysis; Creative thinking and ideation are among the effective factors in the background of the mental model of date export barriers. The impact of the background effective factors of the mental model on the barriers of date export has been calculated as -58%. Also, for this parameter, the value of t is estimated to be -4.39. Therefore, it can be stated that all the effective factors in the context of the mental model identified in this research are among the effective factors in the barriers of date export.

The third sub-question: What are the effective factors interfering with the mental model of the obstacles to date export in Khuzestan province?

All the effective factors intervening in the mental model of date export obstacles include the factors of the complexity of the issues; Work experience; analysis of issues; interactions between businesses; mental perceptions; Terms and Conditions; Decision making; inductive thinking; Deductive thinking; Emotional Intelligence; Emotional intelligence and business intelligence are among the effective factors that intervene in the mental model of the obstacles of date export. The impact of the effective factors of the mental model intervention on date export barriers has been calculated as -53%. Also, for this parameter, the value of t is estimated to be -4.03. Therefore, it can be stated that all the effective factors interfering with the mental model identified in this research are among the effective factors in the barriers of date export.

The fourth sub-question: What are the effective strategic factors of the mental model of the obstacles to the export of dates in Khuzestan province?

All the effective strategic factors of the mental model of date export obstacles, including future research factors; predicting issues; Prophecy; planning; organizational perspective; market forecasting; Communication skills; Information and Communications Technology; administrative bureaucracy; organizational rules and regulations; International rights; Organizational concentration or lack of concentration; organizational processes; organizational hierarchy; Organizational policies and group dynamics are effective strategic factors of the mental model of date export barriers. The impact of the strategic factors of the mental model on the barriers of date export has been calculated as -69%. Also, for this parameter, the value of t is estimated to be -5.99. Therefore, it can be stated that all the effective strategic factors of the mental model identified in this research are among the effective factors in the barriers of date export.

The fifth sub-question: What are the effective factors of the mental model of the obstacles to the export of dates in Khuzestan province?

All the effective factors resulting from the mental model of date export barriers, including the factors of interactions between businesses; dynamic changes; greater competitiveness; adapting to environmental changes; logical interpretation of data; Crisis Management; Changing individual attitudes and beliefs and organizational flexibility are among the effective factors resulting from the mental model of date export barriers. The impact of the effective factors resulting from the mental model on date export barriers has been calculated as -59%. Also, for this parameter, the value of t has been estimated as -4.91. Therefore, it can be stated that all the effective factors resulting from the mental model identified in this research are among the effective factors in the obstacles of date export.

According to the results, fit indices in the structural equation model of the research question, research tools, it can be said that the chi-square value in the structural equation model of the research question is significant at the 5% error level. Also, the ratio of chi-square to the degree of freedom in the structural equation model of the research question, according to the considered criterion, indicates the appropriate fit of the model. The value of the RMSEA index is in the acceptable range, and this also indicates the acceptable error value in the structural equation model

Table 5: Model fitting results

Model fit criteria	Indicator	The numbers obtained	allowed amount	Result
Chi-square ratio to degrees of freedom	K^2/df	0.25	Less than 3	proper fit
root mean square	RMSEA	0.03	Less than1	proper fit
The square root of the remainder	RMR	0.020	near zero	proper fit
Normalized fit index	NFI	0.94	Above 0.9	proper fit
Soft index of fitness	NNFI	0.98	Above 0.9	proper fit
Comparative fit index	CFI	0.99	Above 0.9	proper fit
Additional fit index	IFI	0.99	Above 0.9	proper fit
Relative fit index	RFI	0.93	Above 0.9	proper fit
Fitness index	GFI	0.92	Above 0.9	proper fit
Adjusted fitness index	AGFI	0.90	Above 0.9	proper fit

of the research question. The values of CFI, GFI, AGFI, NFI and NNFI indices in the structural equation model of the research question were also evaluated according to the desired criterion, which indicates the appropriate fit of the structural equation model of the research question. Therefore, according to the results of the structural equation model of the research question, it can be said that all the research tools have a suitable and acceptable fit.

7 Conclusion

Research questions related to developing a mental model of date export obstacles in the country; Identification and prioritization of the effective factors regarding the presentation of the model were investigated and analyzed. In this research, the minimum amount for the consensus of experts and experts was considered to be 80%. After reviewing the answers, the items that reached a consensus among the experts were recorded. In the quantitative part of the research, structural-interpretive modeling method was used. This model is an interpretive model, because it was the judgment and opinions of the group that determined which of the elements are related and what is their relationship? This means that the decision was made based on group judgments and the central and main question of the research was whether there is a relationship between the elements. And if the answer is positive, how is their relationship? On the other hand, the obtained model is structural in the sense that based on the relationships of the overall structure of the complex set of elements, it is adapted and finally modeled, that is, the relationships of the elements and the overall structure in a graphic model as a "mental model of export barriers" Dates have been embodied in the country. In this chapter, to the interpretation of the model and the effective factors in the obtained model; and necessary conclusions were presented.

After drawing the model, in order to determine the degree of suitability of the proposed model to present the final model, experts in this field were consulted through the model questionnaire. For this purpose, the t-statistic was calculated, which showed that the obtained values were normal, and as a result, the research model has high credibility from the experts' point of view, and it was confirmed with 99% confidence. In a research using phenomenological approach [6] identified the mental models of company managers in relation to export obstacles, and the results of their research showed that lack of competitive advantage and weak market position in Iranian companies are important obstacles to export development. It is in the trans-regional markets which is similar to the findings and results of the present research.

The results of the research indicate that there is a positive and significant relationship between the components of the managers' mental model and the obstacles to exporting dates in Khuzestan province. According to the research results; It can be said: when we enter all the factors affecting the mental model of date export barriers into the model at the same time, the high importance of the variables (causal, contextual, interventional, strategic and consequential) is revealed; Therefore, it can be acknowledged that, in general, the indicators: (individual thinking, collective thinking, development of mental self-image) are effective. It is also suggested that researchers in future researches should deal with the issue of presenting a knowledge-based mental analytical model of date export barriers in the country with a phenomenological approach.

References

[1] A.R. Adineh Far, E. Mahmoodi and A. Mehrabi, *Providing a model of effective factors on the export of handmade carpets from the perspective of dynamic capabilities and marketing capabilities with emphasis on the attitude of*

target customers, Consum. Behav. Stud. J. **10** (2023), no. 1, 10.

[2] H. Akbarpour, S.S. Mirbagheri and H. Rafiee, *Investigating factors affecting export price volatility of Iran's date*, J. Agricul. Econ. Res. **10** (2018), no. 1.

[3] T. Chitauro and R. Khumalo, *Factors affecting the export performance of the food and beverage manufacturing firms in Zimbabwe*, Acad. Market. Stud. J. **24** (2020), no. 1, 1–20.

[4] L. Ciechanowski, A. Przegalinska, M. Magnuski and P. Gloor, *In the shades of the uncanny valley: An experimental study of human–chatbot interaction*, Future Gen. Comput. Syst. **92** (2019), 539–548.

[5] C.R. de Lima, S.B. Barbosa, R. de Castro Sobrosa Neto, D.G. Bazil and J.B. de Andrade Guerra, *Corporate financial performance: a study based on the carbon efficient index (ICO2) of Brazil Stock Exchange*, Envir. Dev. Sustain. **1** (2022), 1–32.

[6] R.U. Ewada, *Econometric analysis of Egyptian exports of dates: Gravity model approach*, Sinai J. Appl. Sci. **11** (2022), no. 3, 535–552.

[7] H. Faraghian, H.R. Dolatabadi and M. Esmaelian, *Model design for factors affecting the packaging of Iranian fruit and vegetables for export*, Int.J. Serv. Oper. Manag.**42** (2022), no. 3, 339–352.

[8] M. Ghorbani, S. Kulshreshtha and M. Aminizadeh, *Assessing effective factors for export of Iranian dates to European Union using a gravity model*, Bulgar. J. Agricult. Sci. **27** (2021), no. 1, 59–64.

[9] S. Karimifard, A. Abdshahi and R. Moghdisi, *Investigation of dates marketing and export issues in Khuzestan Province*, Agricul. Econ. Res. **3** (2017), no. 12, 151–167.

[10] L. Khalighi and M.S. Fadaei, *A study on the effects of exchange rate and foreign policies on Iranians dates export*, J. Saudi Soc. Agricul. Sci. **16** (2017), no. 2, 112–118.

[11] M.Á. López-Cabarcos, P. Vázquez-Rodríguez and L.M. Quiñoá-Piñeiro, *An approach to employees' job performance through work environmental variables and leadership behaviours*, J. Bus. Res.**140** (2022), 361–369.

[12] M.Z. Mehrjerdi, A. Azizi and Z. Korooni, *Factors affecting pistachio export earnings instability and its effect on agricultural exports*, Int. J. Agricul. Manag. Dev. **6** (2016), no. 1047-2017-1674, 281–289.

[13] M. Neubert and A. Van der Krogt, *Impact of business intelligence solutions on export performance of software firms in emerging economies*, Technol. Innov. Manag. Rev. **9** (2018), 39–49.

[14] K. Pyper, A.M. Doherty, S. Gounaris and A. Wilson, *A contingency-based approach to the nexus between international strategic brand management and export performance*, J. Bus. Res. **148** (2022), 472–488.

[15] D.J. Siswanto, E.S. Dewi, I. Wahyudi and T.Y. Syah, *Analysis of Factors Affecting the Export of Batik in Indonesia*, J. Soc. Sci. **3** (2022), no. 6, 2081–2089.

[16] T. Wu, Y.J. Wu, H. Tsai and Y. Li, *Top management teams' characteristics and strategic decision-making: A mediation of risk perceptions and mental models*, Sustainability **9** (2017), no. 12, 2265.