

ANALYSIS OF MARKETING STRATEGIC PLANNING IN THE HOME FURNITURE INDUSTRY BY APPLYING ANP: A CASE STUDY OF THE IRANIAN HOME FURNITURE INDUSTRY

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ABSTRACT

This study was carried out because of the lack of research on strategic planning in Iran's home furniture market. Accordingly, in this study, we developed a decision-making model to select the best solution for strategic planning in the industry. After determining the strategic criteria or factors affecting the developed model, the control criteria of four merits or subsets of competencies were identified. To determine all the effective factors in the model, the sub-criteria of four control criteria and their connections were identified. The following four possibilities were considered as potential solutions: entrance to a foreign market (S1), increase portfolio (S2), emphasis on scientific management of mixing elements of marketing (S3), and generate research and development units (S4). The Analytic Network Process (ANP) and the Super Decisions software were used to synthesize and analyze the model. It was found that all calculated decisions were influenced by the strategic criteria. A value-weighted competency model was calculated in the first stage with the influence of strategic criteria on the competency model. Hierarchical design decisions were made for each of the competencies and their subsets (144 sub-criteria and 22 middle indices). Paired comparison matrices associated with the degree of the importance of each of the competencies were achieved in the second stage. In the final stage, subsets of the competency weights and their sub-options were identified with the combination of the competencies and the best solution was obtained.

Keywords: Analytic Network Process; strategic criteria; control criteria; benefits; opportunities; costs; risks; home furniture; marketing; sensitivity analysis

1. Introduction

Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services. Marketing strategy is a long-term, forward-looking approach and part of the overall plan of any organization or business with the fundamental goal of achieving sustainability by understanding the needs and wants of

customers (Baker 2008). Marketing strategy highlights the role of marketing as a link between the organization and its customers. Strategic marketing planning demands that the organization recognize the challenges they face and their effect on its potential for future success. An organization must learn to focus on customers and their needs at all times and explore every avenue that may provide a differential advantage over its competitors (McDonald, 2006).

One of the most vital factors in running a successful business is the strength of the strategic marketing plan. Conducting market research, distilling the findings, and acting on recommendations in the marketing plan helps a business define what it will sell, to whom it will sell, how it will communicate to the buyers, and when to communicate (Ahmed, 2019).

The process of creating a plan facilitates a common understanding among all stakeholders in an organization. The plan informs management decisions, the behavior of the employees towards institutional goals, and also the response among current and potential clients. The plan is also subjected to changes over time to meet changing demands. Overall, the strategic marketing planning process connects the production engine to consumption (Lake, 2019).

Effective marketing starts with a considered, well-informed marketing strategy. A good marketing strategy helps the industry define the vision, mission, and business goals, and outlines the steps it needs to take to achieve these goals. The marketing strategy of the industry affects the way managers run their entire business, and therefore, should be planned and developed in consultation with their team. It is a wide-reaching and comprehensive strategic planning tool that describes the business and its products and services; explains the position and role of the products and services in the market; profiles customers and competition; identifies the marketing tactics that the industry will use; and allows managers to build a marketing plan and measure its effectiveness (www.business.qld.gov.au).

Strategic marketing is a method through which an organization differentiates itself from its competition by focusing on its strengths to provide better service and value to its customers. In summary, the goal of strategic marketing is to make the most of an organization's positive differentiation over its competition through the consumers' perspective (Mehta, 2019).

In the current business landscape, marketing strategies are very important for each company. The business world is changing constantly, and to decrease environmental pressures, successful companies have to pay careful attention to three important subjects including the expansion of globalization, the development of modern technologies, and economic turmoil (Petersen, 2015). A review of the major prescriptive literature about marketing strategic planning (Anderson, 1982; Aaker, 2010; Cravens, 2006; Perreault, 2011) shows that the following marketing factors influence marketing strategic planning either implicitly or explicitly: identifying and selecting the target market; marketing mix; and marketing plan. A target market is a particular group of consumers at which a product or service is aimed (Levy, 2012). The marketing mix is a combination of factors that can be controlled by a company to influence consumers to purchase its products

(Huang, 2014). A marketing plan is a business's operational document for outreach and advertising to generate leads and reach its target market (Westwood, 2013). Segmentation, targeting, and positioning help in strategic planning (Patil, 2017) and are also an antecedent of the marketing mix and the marketing plan (Londhe, 2014). Good marketing strategic planning should be based on the marketing plan.

During the last two decades, the furniture industry has grown rapidly and surpassed the clothing and footwear industries, ranking first in the world of light industries as a fast-growing, high-value-added, and employment-generating industry. The furniture industry is more important than other sectors of the wood industry because the furniture industry accounts for 80% of its total production centers, 4% of its labor force, and 72% of the value-added of the entire wood industry in Iran (Zolghadr, 2009). The furniture industry has about a 2% (\$ 350 billion) share of the global market and is growing every year. Meanwhile, Iran's share of the global furniture trade is only 0.02 percent (\$6 million). (Home and Office Furniture Exporters Union 2009; Ghofrani et al. 2014).

A bigger market share would bring in more customers and thus more profit. A wider range of choices would help satisfy more desires and needs from the customers' point of view. Future sales turnover will be affected by pricing policies, competitor actions, and advertising campaigns as well as by the level of customer satisfaction achieved (Petukhov, 2015).

Furniture is a global product in national and international trade with abundant export and import capacities. These effects are evident in the well-being of individuals and communities, as well as in revenue and outcomes for consumers, manufacturers, retailers, and marketers.

The Analytical Network Process (ANP) is a flexible method that can demonstrate the mutual interactions between all factors in decision-making procedures. This method is an independent decision support model, belonging to the family of multi-criteria analyses, which was developed by Saaty (2005) and Saaty and Vargas (2006a).

2. Literature review

Kao et al. (2015) developed the ANP with the following four criteria: control device, product design, product reliability, and market environment. Each criterion consisted of multiple sub-criteria, and the result showed that portable control devices, user-friendly interface, aesthetic product design, personal information protection, and product compatibility affect consumer adoption of smart home applications were the most important. This research contributes to the literature by understanding consumer adoption in the area of communication activities and by extending the ANP to marketing research.

The ANP was also used to determine the best alternative for investment and development of construction panels. The results of this study showed that wood cement product has the highest priority. Furthermore, concerning the influence of the overall factors on the merits of benefits, costs, opportunities, and risks, opportunities are the most important factor in decision-making. Also, costs and risks were more sensitive than benefits and opportunities in this study (Azizi & Modarres, 2011).

Azizi and Ray (2015) presented a decision-making model developed to select the best solution for raw material supply to the wood cellulosic industry. The ANP and AHP were used to synthesize and analyze the model. This research indicated that alternative C, long-term contracts with suppliers, was the most appropriate solution to provide raw material to the cellulosic industries of Iran under the assumptions and value judgments of the experts surveyed in the study. Alternative C minimized costs and risks, and therefore created less costly and less risky conditions for the existing cellulosic product manufacturers and potential investors due to a more reliable, higher quality raw material supply.

Azizi and Mehdikhanloo (2018) applied the ANP to determine the best solution for the role of design in the furniture industry. The result of the study showed that using a combination of fashion and engineering designs in furniture production is a proper solution to apply to the role of design in the furniture industry. Research results show that the most effective indicators for optimization of wood consumption in the construction of classical furniture were ergonomic, style, skill training and inlays in the classical furniture industry, and the use of specialized labor was a priority solution (Ghofrani et al., 2017).

Taliscali and Ercan (2006) and Alves et al. (2008) demonstrated the “user-friendly” nature and the application of qualitative and quantitative factors in the evaluation as fundamental advantages of the AHP/ANP, in comparison with other MCDM methods. The basic difference is that ANP has a network structure that allows the analysis of dependence among elements of the model. This makes the ANP more powerful in situations with complex levels of uncertainty, and allows the analysis to more closely model reality.

Azizi and Ray (2016) developed a model for privatization of the newsprint paper industry by applying the ANP and BOCR structure. The study showed the option of encouragement for investment as an appropriate solution to privatize the Iranian newsprint paper industry. The highest priority was encouragement for investment returns in each of the benefits and opportunities criteria. Encouragement for investment would create increased domestic and foreign investment in the Iranian newsprint paper industry. This option provides plenty of opportunities for privatization and economic activities. After implementation, the resulting investment in private ventures opens doors to the opportunity of reducing administrative costs through methods such as limiting rules and heavy taxes, as regulators are presented with tangible proof of increased profits and state revenue, made possible by the increased efficiencies of private sector management.

This research asks the following questions:

What are the strategic criteria or factors affecting this study?

What are the control criteria in this study?

Which of the identified solutions is the most important solution for marketing strategic planning in the home furniture industry?

In the Iranian home furniture industry, up-to-date information is not available to determine a marketing strategy; therefore, manufacturers cannot determine the best way

to sell their products more successfully. This research gap suggests the need for a strategic plan to solve the problem of producers. This study was conducted to help solve the problem.

This study aimed to develop a decision network model to find the best solution for marketing strategic planning in Iran's home furniture production. In the network model, the merits are divided into four sub-sections as benefits, opportunities, costs, and risks (BOCR). These merits are influenced by the strategic criteria (political, legal, development, and technological, cultural and social, and economic factors) to obtain the weighted values for each factor. This process follows the ANP.

3. Methodology

3.1 The Analytic Network Process (ANP)

We will review the ANP in this section because it is the most suitable technique for our study. The ANP can be considered a general form of the AHP and is more concerned with the network structure. One of its advantages is that it allows for dependence and includes independence (Saaty, 2006b).

The ANP can prioritize groups or clusters of elements; it handles interdependencies better than the AHP and can support complex, network decision-making with various intangible criteria (Tsai, Leu, Liu, Lin & Shaw, 2010). The advantage of this theory is its ability to be used with cases involving dependence and feedback and the generalization of the super-matrix approach. It allows interactions and feedback within clusters (inner dependence) and between clusters (outer dependence). The ANP couples two parts that consist of a control hierarchy or network of criteria and sub-criteria that control the interactions in the system being studied, and a network of influences among the elements and clusters. The network varies from criterion to criterion and a super-matrix of limiting influence is computed for each control criterion.

Finally, each of these super-matrices is weighted by the priority of its control criterion and the results are synthesized through addition for all the control criteria. To determine the effective criteria and sub-criteria as well as solutions for the role of design, the following steps were performed. After reviewing the internal and external resources and interviewing the producers and academicians, a comprehensive list of effective criteria was developed to enable us to understand all the important criteria for decision-making concerning the role of design. To do this, the views of 22 wood and furniture industry experts were used. To identify the indicators, we coordinated with experts in the home furniture market and industry. The content of the networks and the factors involved were previously discussed with the respondents. The number of questions was based on the number of comparisons of criteria and alternatives individually. After gathering these responses from the experts, it was possible to synthesize and analyze the model. Three types of questionnaires were prepared. The first questionnaire was used to determine the weight value of the indicators and sub-indicators (8 people, including 5 experts and members of the Home Furniture Union and 3 university professors). The second questionnaire was used to compare a pair of subnets and their nodes to the solutions and feedback within the networks (14 people, including 7 home furniture manufacturers, 4 economics and marketing experts, 3 university professors in the wood industry and

management). The third questionnaire was used to determine the weight value of the strategic criteria that affect marketing (4 macro experts in the field of economics, market and production of Iranian home furniture). The questionnaires were prepared using Super Decisions software. A sample of the questionnaire was printed and distributed among the experts. For example, the questionnaire included a comparison to determine which criterion is more important, economic and marketing or social, cultural or political? Another comparison concerning export under the subnetwork economic and market control criteria was performed to determine which one of the solutions is more important, entrance to a foreign market (S1) or increase portfolio (S2)? The research pattern is as follows (Figure 1):

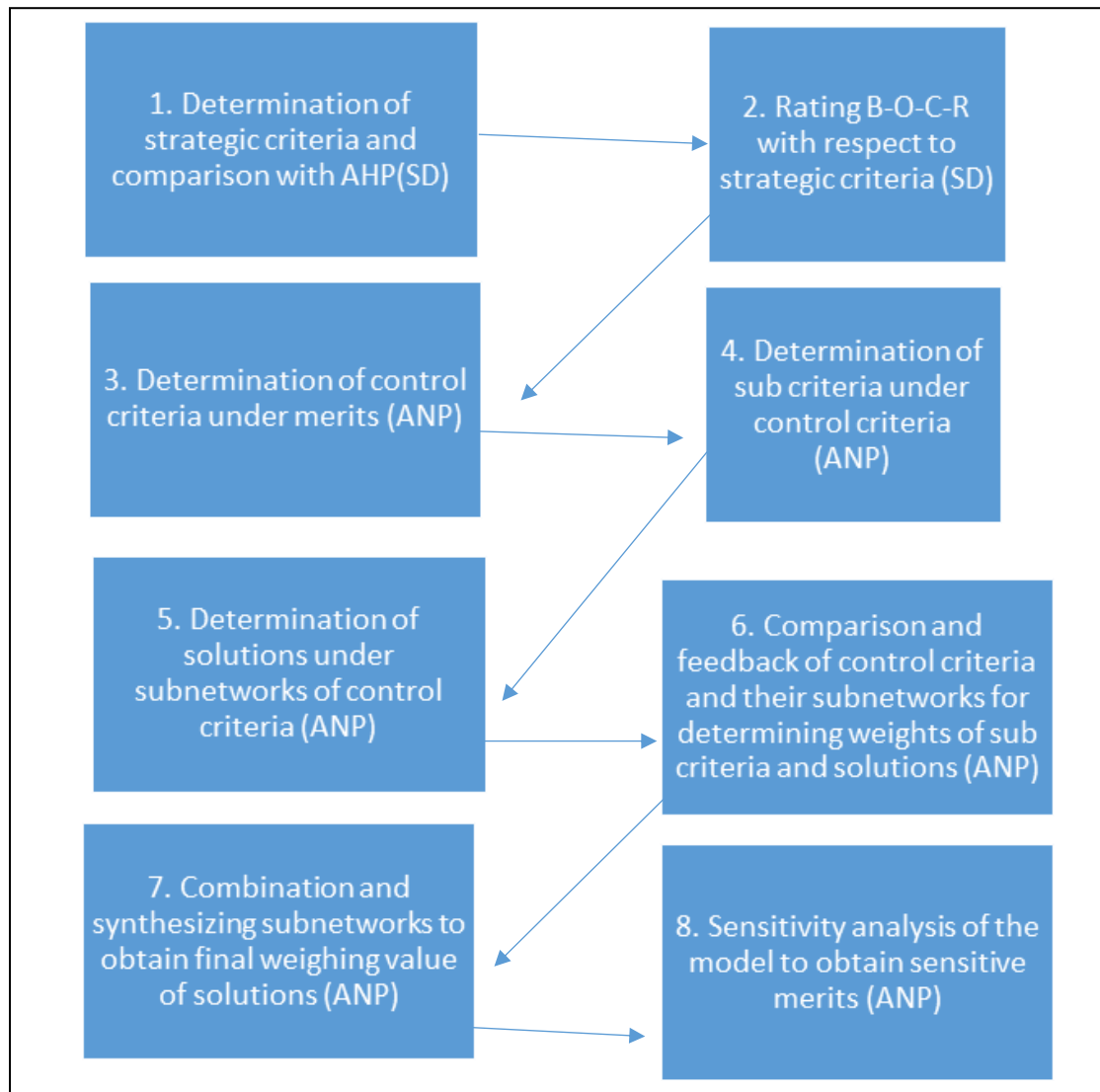


Figure 1 Research pattern

There are 144 sub-criteria in 22 middle criteria and four main groups (economic and market, technical and human, supply and production, and social, cultural, political) (See

Tables 1-4). Weighting values of criteria and sub-criteria are obtained by pairwise comparisons and feedback between the criteria, sub-criteria, and the four solutions.

Table 1
Control criteria and sub-criteria of benefits

Main criteria of benefits	Sub-criteria
Economic and market/brand	Emergence and development of regional national brands
	Possibility of receiving certification (strengthening the brand)
Economic and market/advertisements	Helping effective and targeted product advertisements
	The possibility of using the appropriate headline in advertisements
Economic and market/export	Tax exemption in exchange for exports
	Benefiting from export awards
	Currency resulting from non-oil exports
Economic and market/investment	Production of joint products under license
Economic and market/marketing	Attracting, retaining, and increasing # of customers
	Selecting profitable markets
	Design and implementation of internal marketing
Economic and market/competitiveness	Increasing the share of foreign markets
	Stabilization of domestic markets
Economic and market/sales and after-sales services	Increasing profitability
	Increasing turnover
	Customer satisfaction
Economic and market/infrastructure	Utilizing the scientific and technological infrastructures of universities
	Utilizing the capacity of furniture clusters
Supply and production/quality control	Increasing the quality and accuracy of production
	Possibility of product grading
Supply and production/packaging	The need for beautiful and economical packaging

Supply and production/ R&D	Moving within the boundaries of marketing knowledge
	Improving product quality
Supply and production/production process	Increasing production speed
	Reducing production costs
Supply and production/raw material	Using local raw materials
Technical and human/technology	Using the maximum power of machines
	Using raw materials with high efficiency
Technical and human/educational (industry-university relationship)	Consulting services of university professors to industry
	Providing technical manpower for industries
Technical and human/human resources	Activating the market of related academic disciplines
	Increasing creativity and innovation
Technical and human/managerial	Proper management of human resources
	Increasing customer satisfaction
	Increasing employee satisfaction
Technical and human/design and ergonomics	Observing standards
Technical and human/creativity and innovation	Promoting the position of innovation in the company's marketing strategy
Social cultural-political/cultural	Reviving the reputation of Iranian furniture
Social cultural-political/political	Increasing political influence
	Increasing political relations
Social cultural-political/social	Responding to customer needs

Table 2
Control criteria and sub-criteria of opportunities

Main criteria of opportunities	Sub-criteria
Economic and market/advertisements	Possibility of receiving a certificate (advertising development)
	Influencing the attitude and behavior of consumers
	Finding a customer for products and services
Economic and market/sales and after-sales services	Knowing the future markets
	Creating demand and increasing market share
	Product warranty
Economic and market/export	Weakening foreign brands active in the market
	Moving in the direction of resistance economy
	Participating in domestic and foreign exhibitions
Economic and market/competitiveness	Creating a competitive environment in the industry
Economic and market/marketing	Possibility of segmenting the target market
	Helping the product pricing strategy
	Helping to market products
	Recognizing marketing opportunities
Economic and market/investment	The joint production of export product
	The possibility of creating a common brand in the domestic market
Economic and market/infrastructure	Using the capacity of graduates
	Using the capacity of research centers
Economic and market/brand	Branding of Iranian furniture
	Correcting the weaknesses of previous brands
Supply and production/raw material	Shortening the material supply chain
	Using new raw materials
Supply and production/quality control	Receiving quality certificates
Supply and production/packaging	Help reduce the volume of packaging

Supply and production/production process	Development of mass production approach
	Timely delivery of the product
Supply and production/ R&D	The possibility of creating and developing research and development units in companies
	Process optimization
	New product design
	Transfer and absorption of new technologies
Technical and human/technology	Use of new machines
	The possibility of using new technical knowledge
Technical and human/educational (industry-university relationship)	The possibility of establishing marketing companies by graduates
Technical and human/human resources	Increasing the level of employment
	Increasing the specialization and skills of the labor force
Technical and human/managerial	Possibility of using outsourcing opportunities
	Improving the thoughts, beliefs, and motivations of customers
Technical and human/creativity and innovation	The possibility of innovation in the process, product, and service
	The possibility of innovation in marketing
	The possibility of encouraging people to innovate
Technical and human/design and ergonomics	Design and ergonomics
	Differentiate the product from the products of competitors
	Creating innovation and creativity in products
Social, cultural and political/cultural	Production with the culture and needs of the society
	Changing and developing consumption patterns
Social, cultural and political/political	Strengthening political and economic diplomacy

Social, cultural and political/social	Improving the quality of life
	Growth of furniture consumption
	Increasing trust in the national brand

Table 3
Control criteria and sub-criteria of costs

Main criteria of costs	Sub-criteria
Economic and market/advertisements	The cost of various advertisements
Economic and market/sales and after-sales services	The cost of creating a store in the target countries
	The possibility of increasing the cost of the product
Economic and market/export	The cost of analyzing export target markets
	Lack of sufficient knowledge of export target markets
Economic and market/marketing	The cost of participating in the exhibition
	The cost of marketing a new product
	Lack of awareness of market needs
Economic and market/competitiveness	Reduce profit margins of products
Economic and market/brand	Brand registration fee
Supply and production/raw material	Increasing the cost of raw material supply
Supply and production/quality control	Purchasing machines for the quality control unit
Supply and production/packaging	The cost of designing a new package to fit the product
Supply and production/ production process	Creating separate production lines
Supply and production/ R&D	The cost of creating and developing research and development units
	Research costs

Technical and human/creativity and innovation	The cost of employees' failures and mistakes in the field of innovation
Technical and human/educational (industry-university relationship)	The cost of training marketing forces
Technical and human/ technology	The cost of purchasing new technology and machinery
Technical and human/human resources	The cost of providing specialized and skilled manpower human resources
	The cost of holding training courses
Technical and human/design and ergonomics	Spending time and money to design a new product
	The cost of testing furniture
Social, cultural and political/cultural	The cost of analyzing the type of culture, ideas and attitudes of the target market
Social, cultural and political/political	The cost of analyzing and examining political constraints
Social, cultural and political/social	The cost of studying and classifying social groups

Table 4
Control criteria and sub-criteria of risks

Main criteria of risks	Sub-criteria
Economic and market/advertisements	Limited financial resources
Economic and market/marketing	Failure of marketing goals
	Lack of sufficient information about target markets
Economic and market/competitiveness	The possibility of intensifying competition between domestic producers
	The weakness of rules and regulations regarding competition
Economic and market/infrastructures	Existence of redundant laws and regulations
Economic and market/investment	Risk of guaranteeing the return and security of foreign investment
Economic and market/sales and after-sales services	The possibility of losing the domestic market
	The possibility of losing the popularity of the main brand
	Decrease in sales due to recession
Economic and market/export	The possibility of increasing the final price
	The possibility of customs tariff fluctuations in target markets
	Currency price fluctuations
Economic and market/brand	The possibility of stimulating competitors to increase the brand
Supply and production/ R & D	Weak knowledge and research and development skills
Supply and production/raw materials	Probability of declining quality of raw material supply
	The need to use imported raw materials
Technical and human/educational (industry-university relationship)	Lack of training and experience of graduates in the field of professional marketing and sales
	Non-compliance of industry needs with university education

Technical and human/human workforce	Instability of skilled workforces
Technical and human/managerial	Lack of flexibility of managers
Technical and human/technology	Machinery is not up to date
Technical and human/design and ergonomics	Lack of familiarity with furniture design and testing software
Social, cultural and political/social	Possibility of changing nuclear values (beliefs)
	Changes in customs and habits
Social, cultural and political/cultural	Possibility of promoting the consumption of furniture with a foreign brand
Social, cultural and political/political	Restrictive economic sanctions
	Political and regional tensions

3.2 Data/model analysis

The overall structure of the decision making is shown in Figure 2.

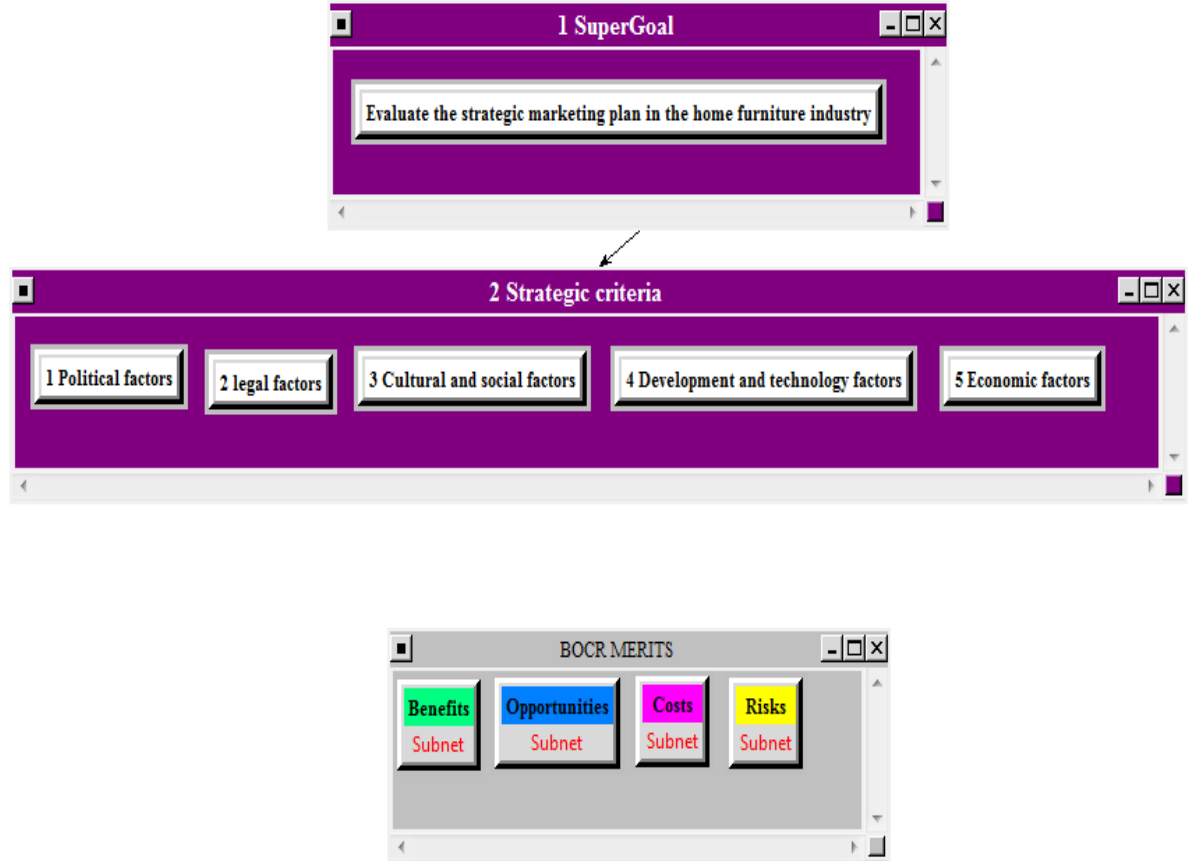


Figure 2 Overall structure of decision making

In the current research, the ANP model is described by the above elements. The sub-networks are shown in Figures A1-A5 in the Appendix.

3.3 Alternatives

1) Entrance to a foreign market (S1)

This alternative includes the following four solutions: (1) identifying competitive target markets; (2) identifying competitors' capacity and plan for their strengths and weaknesses; (3) identifying future market opportunities; and (4) identifying the position and size of target markets.

2) Increase portfolio (S2)

Brand portfolio refers to all brands offered by a company. By introducing various products and services, a company closes off the pathway for other brands to enter into the customers' lives. Today, many companies market their products under several brands which increases the variety of their products and brands so that they are associated with different groups of customers. Therefore, it becomes possible to increase brand diversity

by using information technology for professional branding and diversity in production by creating attractive designs.

3) Emphasis on the scientific management of mixing elements (4P) of marketing (S3)
Integrated marketing elements are a set of controllable marketing tools that the company combines to attempt to meet the target market. In other words, the marketing mix includes all the activities that the company can do to affect the demand for its products. The four Ps of marketing are the key factors involved in the marketing of goods and services. They are the product, price, place, and promotion of a good or service.

4) Generate research and development units (S4)
This involves establishing research and development units (R&D) in the field of marketing and sales of home furniture. The alternative include the following solutions: supporting creativity and innovation, product quality development, designing new products based on high technology, increasing productivity and orientation of consumers' interests, motivations, and behavior.

The ANP and Super Decisions software were used to synthesize and analyze the model.

3.4 Strategic criteria

In this research, the merits of benefits, costs, opportunities, and risks are weighted by five general factors that fit into one of the following broad categories: development and technological (0.193), cultural and social (0.105), economic (0.299), political (0.246), and legal (0.154). An example of these comparative questions is shown in Appendix Figure A0. Ratings of general factors are done by pairwise comparison of the lower level factors and summation of the main factors at the top level. The final weight of the strategic criteria shows that the economic criteria with the weight of 0.299 have the highest priority. The economic criteria have the highest impact on decision-making for marketing strategic planning in the furniture industry.

3.5 Prioritizing BOCR

The process of decision making requires us to analyze a decision according to Benefits (B), the good things that would result from making the decision; Opportunities (O), the potentially good things that could result in the future from making the decision; Costs (C), the pains and disappointments that could result from making the decision; and Risks (R), the potential pains and disappointments that could result in the future from making the decision. There are four vectors, one of the merits is obtained by forming the ratio $B_i/O_i/C_i/R_i$ for alternatives i from each of the four vectors. The synthesized ideals for all the control criteria under each merit may result in an ideal whose priority is less than one for that merit. Only an alternative that is ideal for all the control criteria under a merit receives the value one after synthesis for that merit. The alternative with the largest ratio is chosen for some decisions. Companies and individuals with limited resources often prefer this type of synthesis (Saaty and Vargas, 2011).

To categorize the criteria which have been used in the current research, we divided them into favorable and unfavorable categories. The decision-maker considers the favorable criteria as benefits and the unfavorable criteria as costs. The possible events are also divided into opportunities and risks depending on whether they are considered to be

positive or negative (Saaty, 2001a). Since BOCR are not equally important, it is necessary to prioritize them by using five possible ratings ranging from “very high” to “very low”. The results of the influence of the strategic criteria on the merits of benefits, costs, opportunities, risks, and the priority of the above-mentioned merits are reported in Table 5.

Table 5
Rating of the model to obtain BOCR weighing values very high (1), high (0.51), medium (0.256), low (0.163), very low (0.057)

	Benefits	Costs	Opportunities	Risks
Economics (0.299)	very high	high	very high	high
Development (0.193)	high	medium	medium	medium
Political (0.246)	very high	High	very high	high
Cultural (0.105)	medium	Low	medium	medium
Legal (0.154)	high	High	high	high
Overall normalized priorities	0.325	0.183	0.304	0.188

3.6 Control criteria network

The network of control criteria under benefits, costs, opportunities, and risks are as follows: economics and marketing; technical and human; supply and production; social, cultural, and political. The structure of the framework for benefits, merits, and the control criteria and sub-criteria are extracted from Super Decisions software as illustrated in Appendix Figures A1-A5. The framework for costs, opportunities, and risks can be developed similarly. To apply the ANP, the Super Decisions software was used. In the BOCR structure the following formula is used in calculations (Saaty, 2001a):

$$(\text{Benefits}) * (\text{Opportunities}) / (\text{Costs}) * (\text{Risks}) \quad (1)$$

4. Results and discussion

After the hierarchy is drawn up for the criteria and sub-criteria that influence the selection of the appropriate alternative, the questionnaire was prepared to gather the opinions of the experts. The criteria and sub-criteria were evaluated based on pairwise comparisons. An example of these comparison questions is shown in Appendix Figure A6. Then, the priority rate of each criterion and sub-criteria were compared. First, the geometric mean was calculated for each one of the matrix cells by the following formula (Saaty, 2000). The BOCR was ranked with the same method concerning overall factors in the previous section (Table 1).

$$\text{Group judgments } a_{ij} = (a_{ij1} \times a_{ij2} \times \dots \times a_{ijN})^{1/N} \quad i, j = 1, 2, \dots, N \quad (2)$$

where a_{ij} represents the comparison ratios between the element i th row and element j th column in the pairwise comparison matrices and N is the number of decision-makers.

After the geometric means of all matrix cells were calculated, the results were normalized and the weights of the criterion and sub-criterion were obtained through the integration of the weight of the low-level elements into the weight of the related upper-level elements. The results for the geometric mean matrices and weighted supermatrix for benefits, costs, opportunities, and risks criteria and sub-criteria were extracted from Super Decisions software and the standard formula is the multiplicative formula.

The results of the control criterion, economic and market, had the highest priority concerning benefits (0.325), costs (0.183), opportunities (0.304), and risks (0.188) for marketing strategic planning in the country's furniture industry. From the perspective of professors and activists in the home furniture industry, the factor of economic attractiveness motivates people to economic activity.

4.1. Results of economic and market and control criteria of benefits

The results show economic and market under benefits had a higher priority (0.311) in comparison to other control criteria (Figure 3). In the sub-network of economic and market under benefits, exports (0.182) had the highest priority. The weighted values of the other criteria are as follows: marketing (0.176), branding (0.135), and infrastructure (0.122) (Figure 4). If we export, we will obtain financial and political benefits in the form of currency in the country, and this is possible with marketing support.

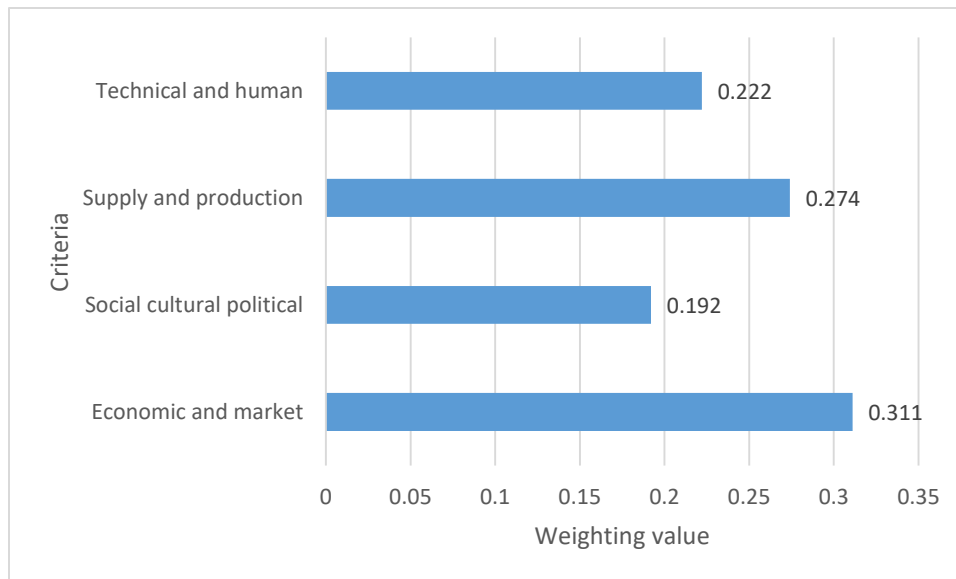


Figure 3 Results of control criteria under benefits

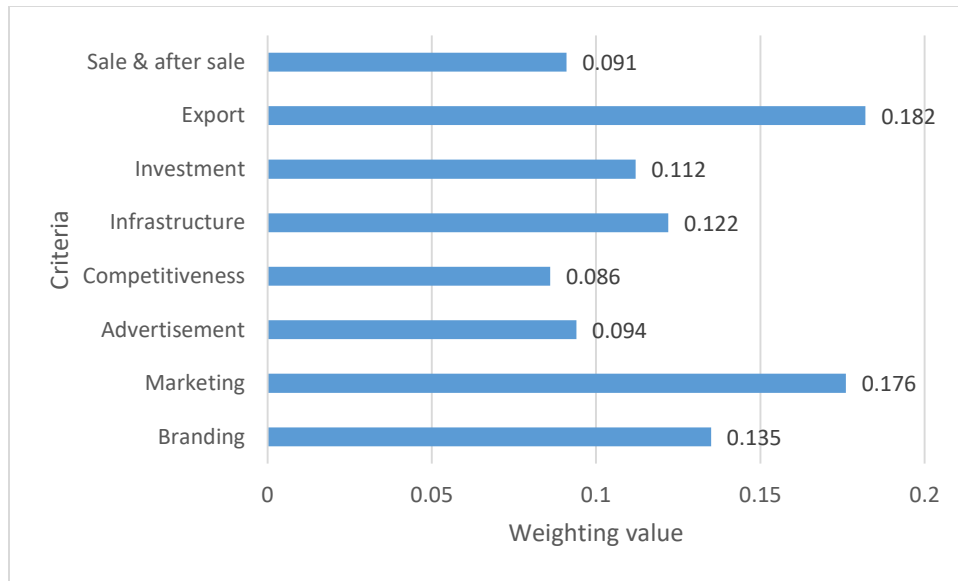


Figure 4 Results of subnetwork under the economic and market of benefits

3.2. Result of economic and market and control criteria of opportunities

The results show economic and market under opportunities had a higher priority in comparison to other control criteria (Figure 5). In the sub-network of the economy and market, exports (0.166) had the highest priority. Marketing (0.154), infrastructure (0.124), branding (0.123), advertisements (0.109) and investment (0.096) are other leading factors (Figure 6). By focusing on exports, we can enter the target markets, and with the help of marketing, we can achieve the highest sales. Branding gives rise to a product that can differentiate itself from competitors with the help of advertising, providing after-sales service, and a product warranty.

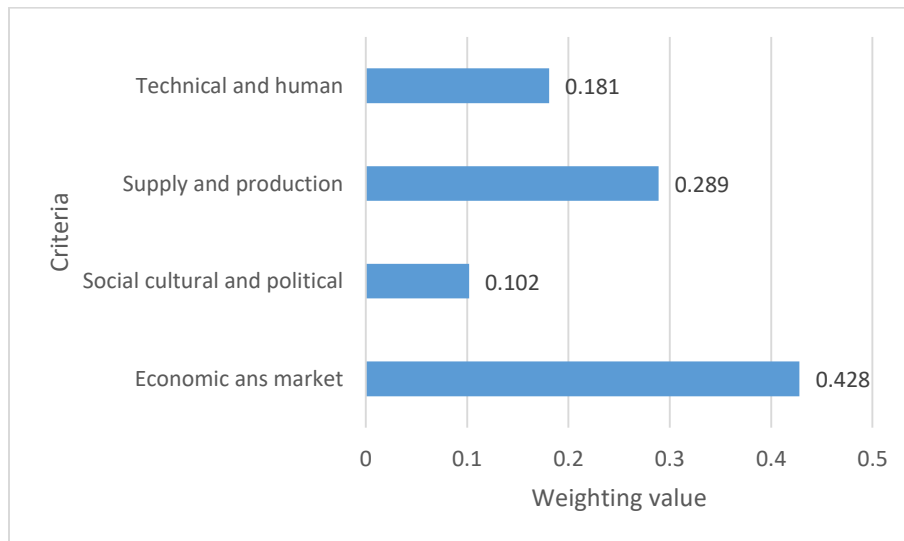


Figure 5 Results of control criteria under opportunities

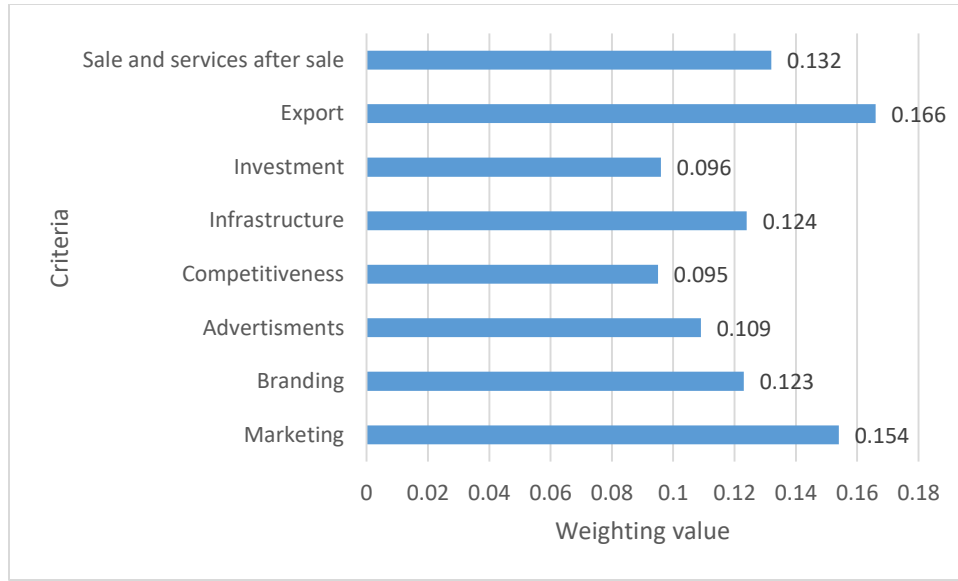


Figure 6 Results of subnetwork under economic and market of opportunities

4.3. Results of economic and market and control criteria of costs

The results indicate economic and market under costs had a higher priority in comparison with other control criteria (Figure 7). In the economic and market sub-network, marketing (0.231) had the highest priority when compared with other criteria (Figure 8). The reason that marketing had priority over other criteria is the role of its sub-factors (costs of participating in the exhibition, marketing of a new product, and lack of knowledge of market needs) because marketing operations and product introduction are costly. Therefore, from the experts' perspective, this is logically justified and causes this criterion to be selected as the most effective criterion when compared to other criteria.

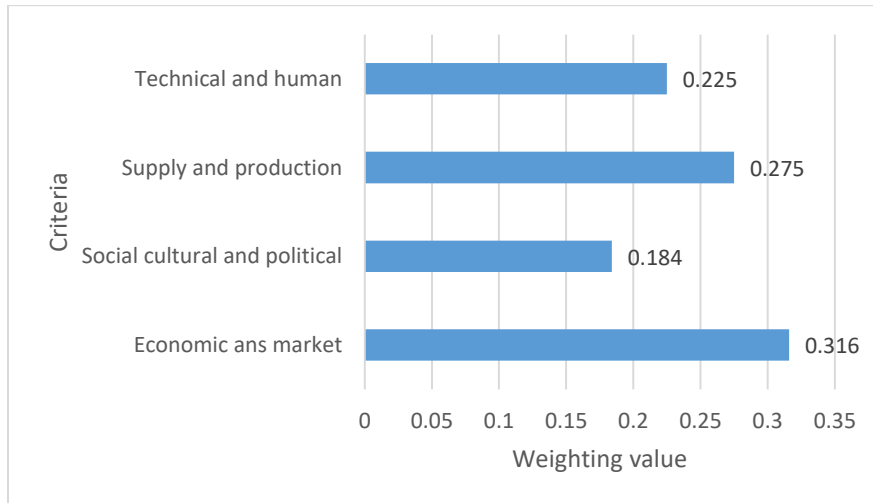


Figure 7 Results of control criteria under costs

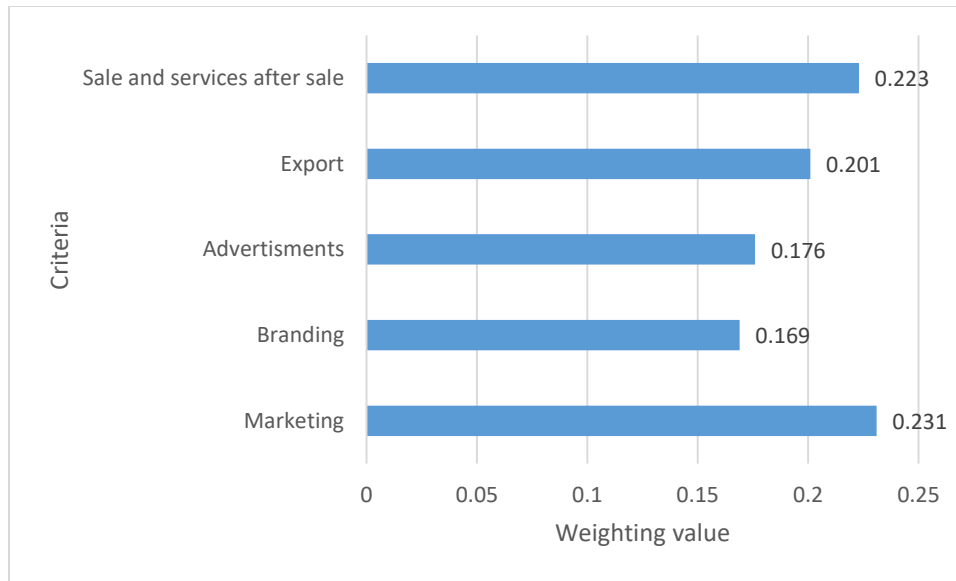


Figure 8 Results of subnetwork under economic and market of costs

4.4. Results of economic and market and control criteria of risks

Economic and market under risks (0.39) had the highest priority when compared with other control criteria (Figure 9). In the economics and market sub-network, export (0.152) had the highest priority (Figure 10) followed by investment (0.132) and infrastructure (0.129). Export criteria risks are higher than other criteria because there is a high risk that the cost of the product will increase and investors will not invest in the home furniture market due to unclear competition rules and regulations. On the other hand, the danger of having an information privilege in the home furniture market has made it impossible for an investor to encourage profitable production and export of his product. From the experts' perspective, the export criterion had a higher priority in decision-making for investment and competition in Iran and is therefore considered the most effective criterion when compared to other economic and market sub-criteria under the risks network.

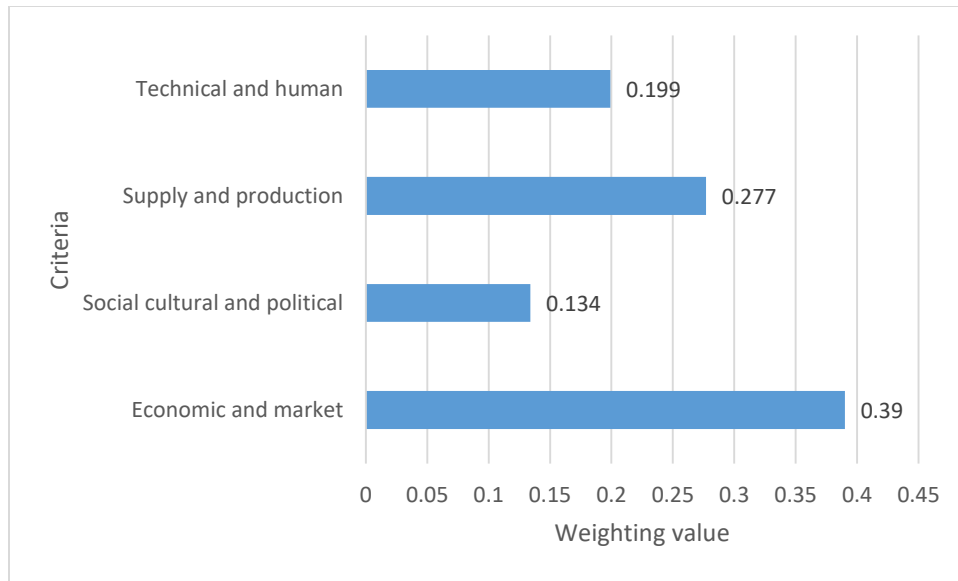


Figure 9 Results of control criteria under risks

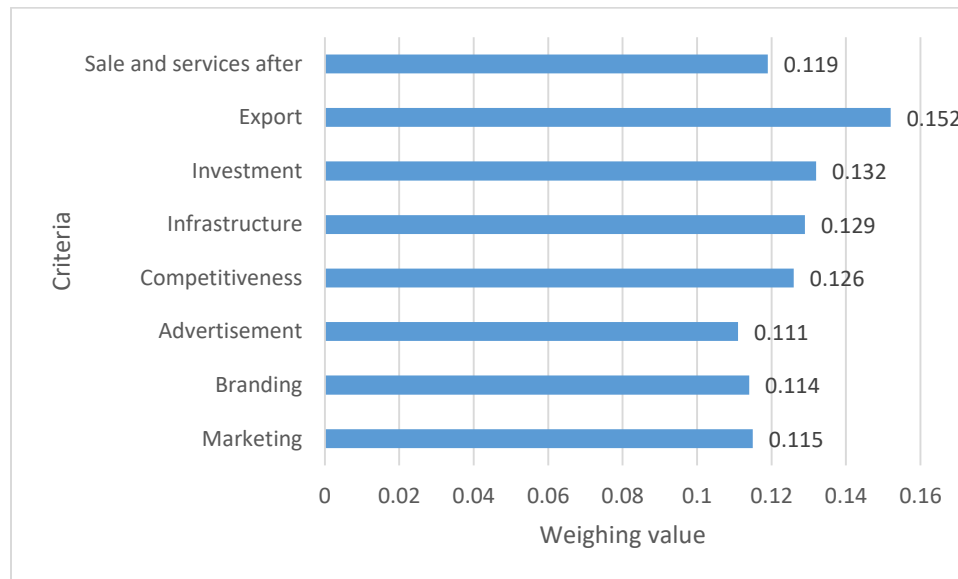


Figure 10 Results of subnetwork under the economic and market of risks

4.5. Solutions

4.5.1 Results of solutions concerning export under sub-network of economic and market control criteria of benefits

The results indicate that emphasis on scientific management of mixing elements (4P) of marketing (S3) (0.307) had the highest priority concerning export under benefits (Figure 11). Generate research and development units (S4) (0.257), entrance into a foreign

market (S1) (0.226), and increase portfolio (S2) (0.209) are other leading solutions. If the company delivers the right product to the right customer at the right place at the right time at the right price (4p), it will make it easier for the customer to choose the product or service provided. As a result, these factors lead to customer satisfaction with the product or service provided, which in the long term increases the number of customers, while exporting the product leads to profitability.

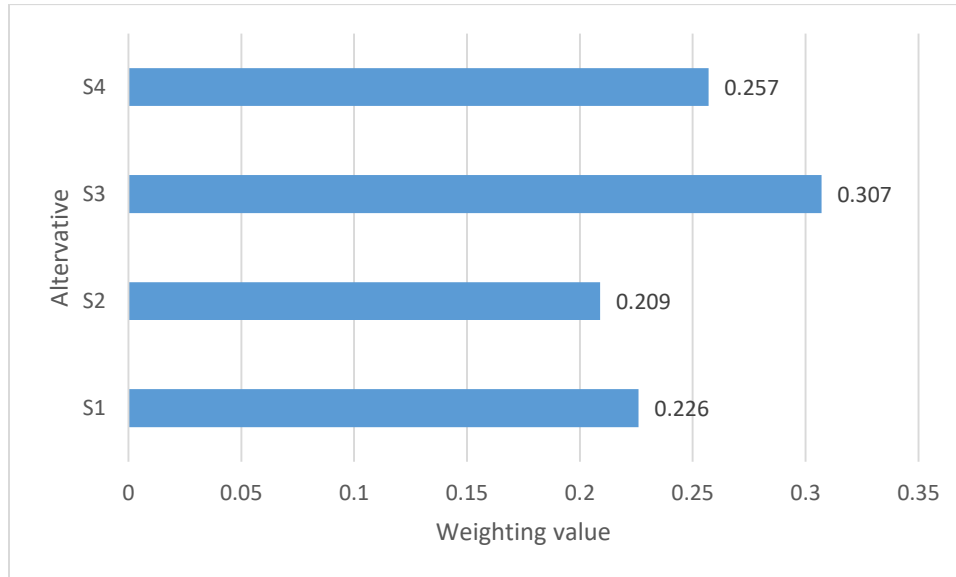


Figure 11 Results of solutions concerning export under sub-network of economic and market control criteria of benefits

4.5.2. Results of solutions concerning export under sub-network of economic and market control criteria of opportunities

Increase portfolio (S2) (0.332) had the highest priority for export under opportunities (Figure 12). Entrance to a foreign market (S1) (0.257), emphasis on scientific management of mixing elements (4P) of marketing (S3) (0.231), and generate research and development units (S4) (0.179) are other leading solutions. By increasing the variety of goods and brands, it is possible to communicate with more groups of customers, and by attracting customers from abroad, the conditions for exporting the product in the future are provided.

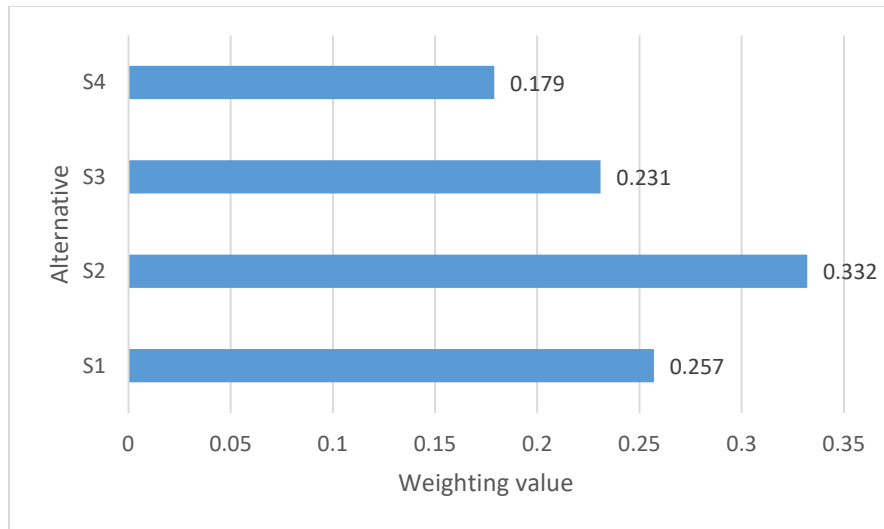


Figure 12 Results of solutions concerning export under sub-network of economic and market control criteria of opportunities

3.5.3. Results of solutions concerning marketing under sub-network of economic and market control criteria of costs

Concerning marketing under costs, increase portfolio (S2) (0.273) had the highest priority followed by emphasis on scientific management of mixing elements (4P) of marketing (S3) (0.259), entrance to a foreign market (S1) (0.241) and generate research and development units (S4) (0.226) (Figure 13). A growth portfolio can take place over both the short and long term, but substantial growth in the short term generally carries a higher cost.

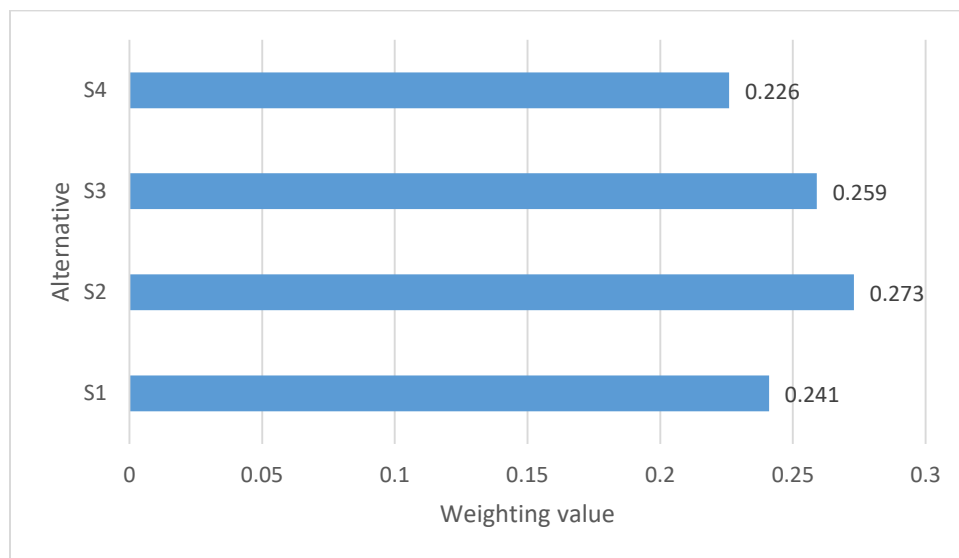


Figure 13 Results of solutions concerning marketing under sub-network of economic and market control criteria of costs

4.5.4. Results of solutions concerning export under sub-network of economic and market control criteria of risks

The results show that entrance to a foreign market (S1) (0.315) had the highest priority concerning export under risks (Figure 14). Increase portfolio (S2) (0.24), emphasis on scientific management of mixing elements (4P) of marketing (S3) (0.233), and generate research and development units (S4) (0.211) are other leading solutions. Entrance into foreign markets (S1) requires an additional commitment on the investor's part. This two-fold investment style, i.e., money only vs. money plus varying amounts of dedication, makes up the magnitude of the risk involved. Money plus commitment entails traditional modes of foreign market entry which includes high risks for investors.

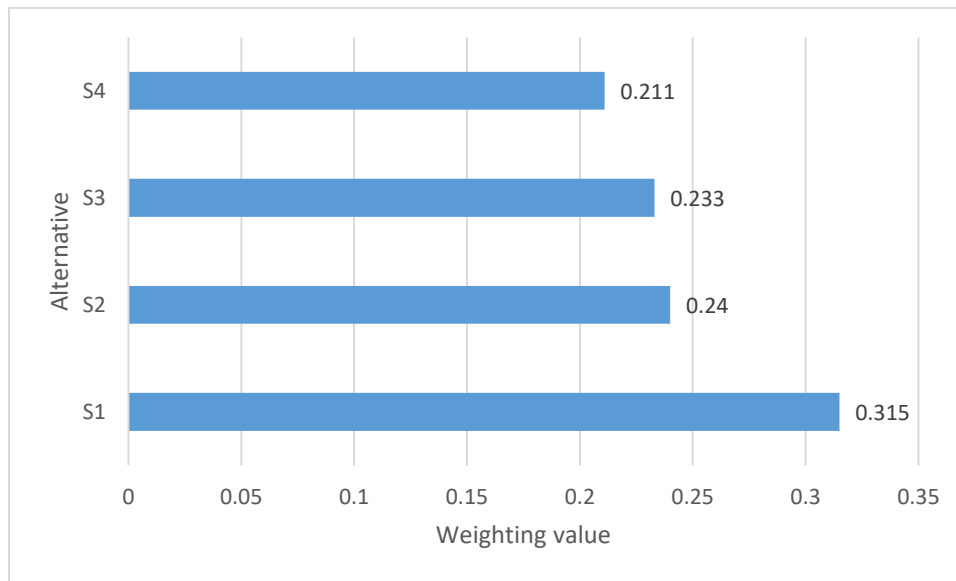


Figure 14 Results of solutions concerning export under sub-network of economic and market control criteria of risks

4.6. Final outcome

The final result of the strategic criteria shows that economic factors are the most important with a weight of 0.299. For managers and employers of the country's home furniture industry, these factors are more effective than other factors in influencing people's decision-making. Also, BOCR indicates that benefits have higher significance than other competencies regarding the marketing strategy planning of the home furniture industry. In terms of selection, the third solution (S3) or emphasis on scientific management of mixing elements (4P) of marketing is considered the best solution. By integrating the weights of the merits of benefits, costs, opportunities, and risks and the weights of choices against the above-mentioned merits, the final scores are reported in Table 6.

Table 6
Final outcome for priorities of the alternatives

Merits Alternatives	Benefits (0.325)	Opportunities (0.304)	Costs (0.183)	Risks (0.188)	Final Outcome additive	Ranking
S1	0.261	0.255	0.242	0.258	0.265	2
S2	0.234	0.247	0.261	0.252	0.219	3
S3	0.284	0.281	0.261	0.250	0.304	1
S4	0.219	0.215	0.235	0.238	0.210	4

As Table 6 shows, emphasis on scientific management of mixing elements (4P) of marketing (S3) had the highest priority and is the most suitable solution for marketing strategic planning in the country's furniture industry followed by entrance to a foreign market (S1), increase portfolio (S2), and generate research and development units (S4).

Accordingly, we can list the following concerning the control criteria:

4.6.1. Economic and market index

In the field of economics and market, S3 the capacity of graduates, can be used to design and implement internal marketing in the field of home furniture. On the other hand, effective and targeted advertising helps influence consumer's attitudes and behavior. These conditions create demand and increase market share and stabilize domestic markets. The result is attracting, retaining, and increasing customers and increasing sales and company's profitability. Thus, by planning and applying this solution, it is possible to identify marketing opportunities and help market products. Finally, with a proper pricing strategy and product warranty, customer satisfaction is achieved and sales and profitability of companies is increased in the long term.

4.6.2. Supply and production index

In the field of supply and production, by applying the S3 solution, the supply chain for materials is shortened and more local raw materials are used. Increasing the quality and accuracy of production and process optimization can lead to a reduction in production costs and an increase in production speed. Naturally, it results in timely delivery of the product to customers which creates customer satisfaction, and can help increase profits in the long run. By emphasizing the third solution, it is possible to improve the quality of the product by moving within the boundaries of marketing knowledge and receiving quality certificates, which builds trust with customers.

4.6.3. Technical and human index

In the technical and human field, by emphasizing the S3 solution, it is possible to produce beautiful and distinctive products compared to those offered by competitors, which satisfies customers through proper management of human resources and

innovation and creativity in the production process. By applying S3, it is possible to promote the position of innovation in the marketing strategy of companies by using new technical knowledge and innovation in marketing. Establishing marketing companies by graduates activates the market for related academic disciplines.

4.6.4. Social, cultural, and political index

In the social, cultural, and political spheres, the use of the S3 solution causes the change and development of consumption patterns, and production of home furniture in line with the culture and needs of society. In this case, the needs of the target customers will be met while increasing trust in the national brand, which can lead to growth in consumption of home furniture in the country.

4.7. Sensitivity analysis

Since there may be different judgments about the comparison of priority rates of benefits, opportunities, costs, and risks or their sub-criteria, Saaty (2001b) suggests that a sensitivity analysis of the results be performed. To perform a sensitivity analysis, we applied software developed by Saaty (2001b). The results are illustrated in Table 7. From Table 6, the solution emphasis on scientific management of mixing elements (4P) of marketing (S3) had the highest priority and is the most suitable solution for the marketing strategy planning of the furniture industry followed by entrance to a foreign market (S1), increase portfolio (S2), and generate research and development units (S4). After changing the weights of one criterion, the priorities also change as shown in Table 7.

Table 7
Results of the sensitivity analysis
S3>S1>S2>S4

Merits	Basic weight	New weight	Number of changes	New priorities
Benefits	0.325	-	-	-
Costs	0.183	0.268 0.339 0.463 0.631	4	S3>S1>S4>S2 S1>S3>S4>S2 S1>S4>S3>S2 S4>S1>S3>S2
Opportunities	0.304	0.103	1	S3>S1>S4>S2
Risks	0.188	0.328 0.415 0.565 0.631	4	S3>S1>S4>S2 S3>S4>S1>S2 S3>S4>S2>S1 S4>S3>S2>S1

Costs and risks are more sensitive than benefits and opportunities because the sensitivity analysis of costs and risks shows (Table 7) that there are four changes in the priority of

the alternatives, while the sensitivity analysis of the opportunities shows that there is only one change in the priority, and there are not any changes in the priorities regarding benefits. Figures A7 and A8 in the Appendix show a sensitivity analysis of benefits, costs, opportunities, and risks which has been done in Super Decisions software. A sensitivity analysis is based on the change in the weight of the indicators relative to their base weight, provided that the priority of the option changes in the new weight of the index. Like the cost index, the priorities of the solutions have changed four times due to weight changes. The choice of sensitive indicators depends on the number of changes in the prioritization of options so that more sensitive indicators cause the most change in the prioritization of solutions.

5. Conclusion

To present the best approach for the marketing strategy planning of the home furniture industry, the four following options were analyzed through a combination of multi-criteria decision techniques: entrance to a foreign market (S1); increase portfolio (S2); emphasis on scientific management of mixing elements (4P) of marketing (S3); generate research and development units (S4).

In the first stage, the strategic criteria were identified and based on these criteria, the weighted values of BOCR (benefits, opportunities, costs, and risks) were determined. The weighted values of the merits were derived from the influence of the strategic criteria on benefits, costs, opportunities, and risks in the second stage. In the third stage, the weighted values of the alternatives derived in the prior stages were synthesized using the ANP and Super Decisions software. We concluded that the ANP with a specific emphasis on scientific management of mixing elements (4P) of marketing (S3) is the proper solution to apply to the marketing strategy planning of the furniture industry. Emphasis on scientific management of mixing elements (4P) of marketing had the highest priority in parts of benefits, opportunities, and costs. There were four main control criteria in the research. Concerning the economics and market index, S3 the capacity of graduates, can be used to design and implement internal marketing in the field of home furniture. Regarding the supply and production index, by applying S3, the supply chain of materials is shortened and more local raw materials are used. In terms of the technical and human index, by applying S3, it is possible to produce beautiful and distinctive products compared to competitors that satisfy customers through proper management of human resources and innovation and creativity in the production process. From the social, cultural, and political point of view, the use of the S3 solution results in a change and development of consumption patterns and production of home furniture in line with the culture and needs of society. The results of the sensitivity analysis revealed that the costs and risks are more sensitive than opportunities and risks. The results can be used since there may be different judgments about the comparison of priority rates.

Based on the investigation, a suitable solution was obtained to sell the products of the home furniture industry, which can effectively help find a market for the sale of these products. At the same time, this strategy is very dynamic because it determines how it is possible to change the prioritization of solutions according to changing conditions in the social, economic, and political environments of the decision-makers. This issue is also

very important for decision-makers and managers who are familiar with the different decision-making methods because the ANP can provide modeling, and this method is very flexible for this type of program. A limitation in this study was some home furniture experts' unfamiliarity with the criteria defined in this model. Therefore, more time was required to justify the criteria and help the experts become familiar with this model which was necessary in order to obtain their opinions. Meanwhile, a new strategy was developed for the manufacturers; therefore, more information about the characteristics of the method should be given to this group.

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APPENDIX

Comparisons for Super Decisions Main Window: mansouri.EN.sdmode.sdmod: formulaic: ratings

1. Choose | 2. Node comparisons with respect to Evaluate the strateg~ | 3. Results

Node Cluster | Graphical Verbal Matrix Questionnaire Direct

Choose Node | Evaluate the s~ | Cluster: 1 SuperGoal | Choose Cluster | 2 Strategic cr~ | Restore

Comparisons wrt "Evaluate the strategic marketing plan in the home furniture industry" node in "2 Strategic criteria" cluster

1.	1 Political fac~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	2 legal factors	
2.	1 Political fac~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	3 Cultural and ~	
3.	1 Political fac~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	4 Development a~
4.	1 Political fac~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	5 Economic fact~	
5.	2 legal factors	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	3 Cultural and ~
6.	2 legal factors	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	4 Development a~
7.	2 legal factors	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	5 Economic fact~	
8.	3 Cultural and ~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	4 Development a~	
9.	3 Cultural and ~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	5 Economic fact~	
10.	4 Development a~	>=9.5	9	8	7	6	5	4	3	2	2	3	4	5	6	7	8	9	>=9.5	No comp.	5 Economic fact~	

Inconsistency: 0.01288

1 Politic~	0.24674
2 legal f~	0.15439
3 Cultura~	0.10573
4 Develop~	0.19330
5 Economi~	0.29984

Completed Comparison | Copy to clipboard

Figure A0 Sample questionnaire of comparison of strategic criteria under goal

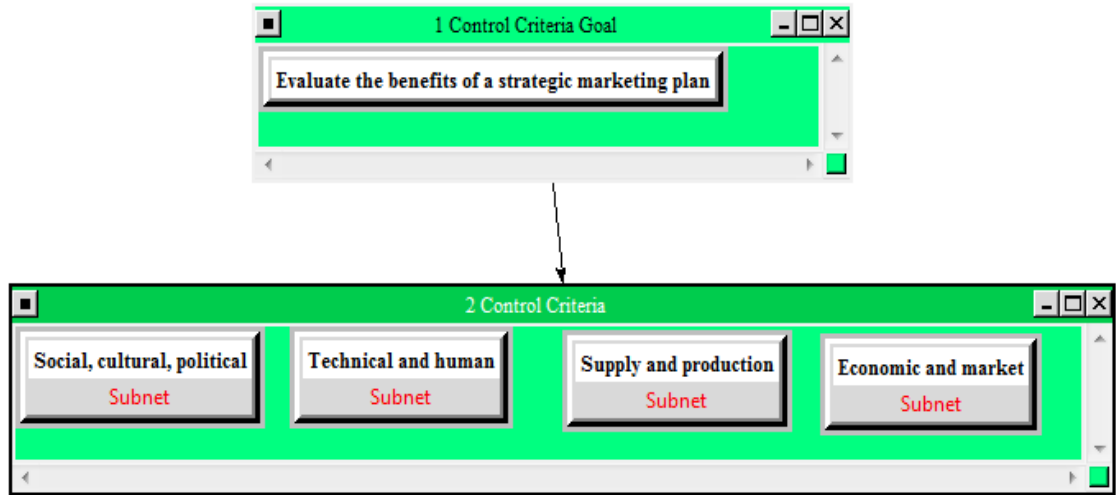


Figure A1 Control criteria network under benefits

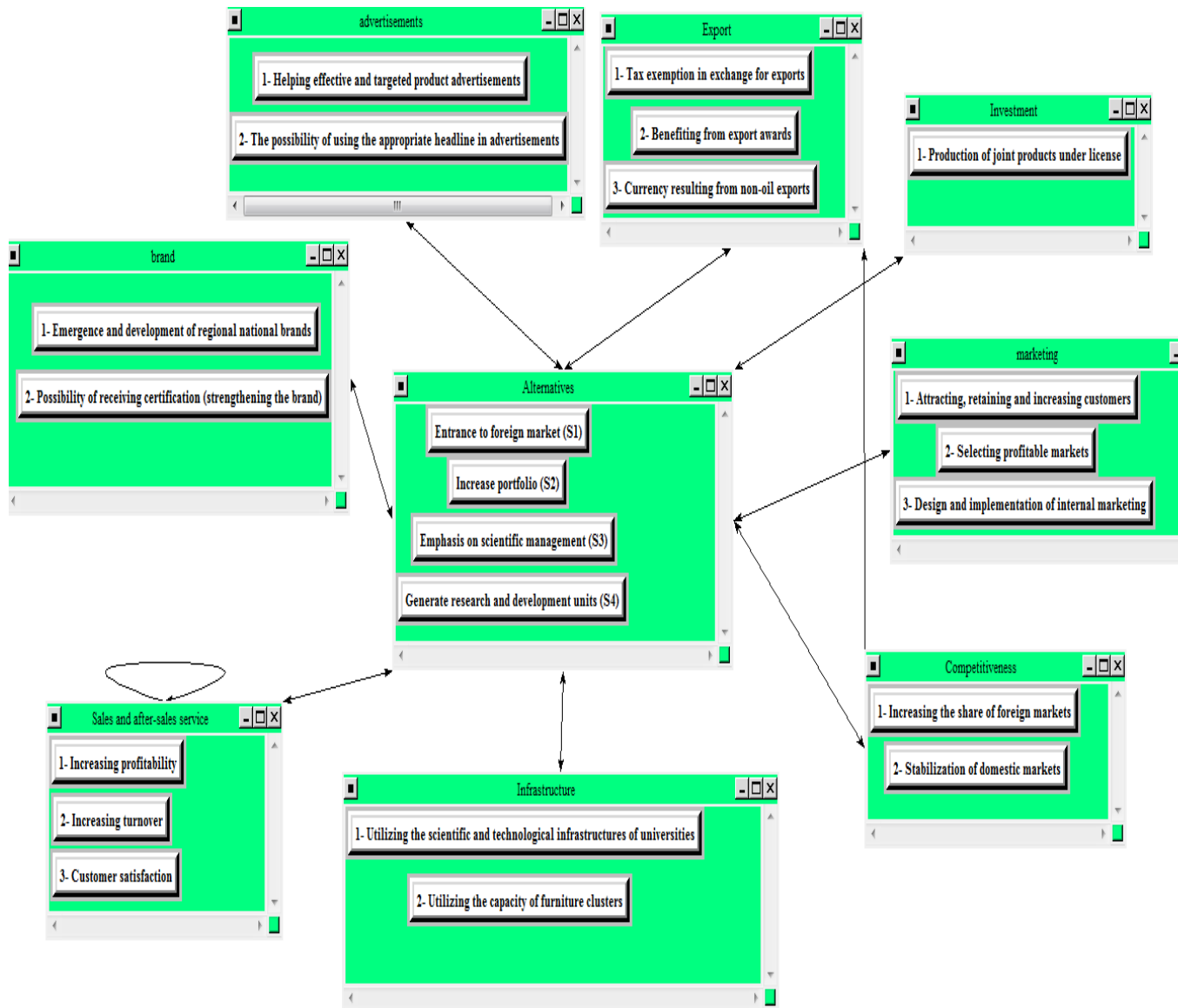


Figure A2 Sub network under benefits/ economics and market

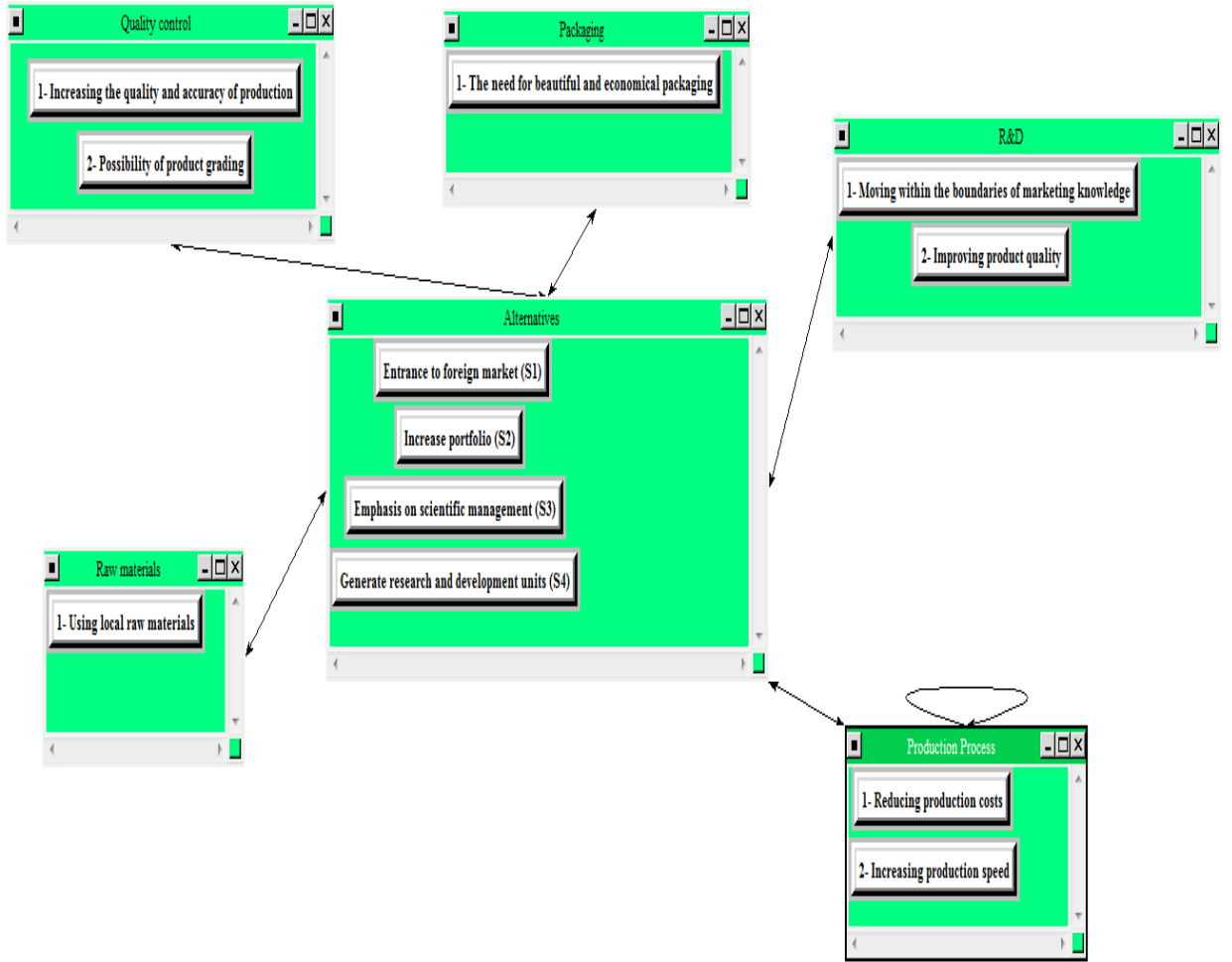


Figure A3 Subnetwork under benefits/supply and production

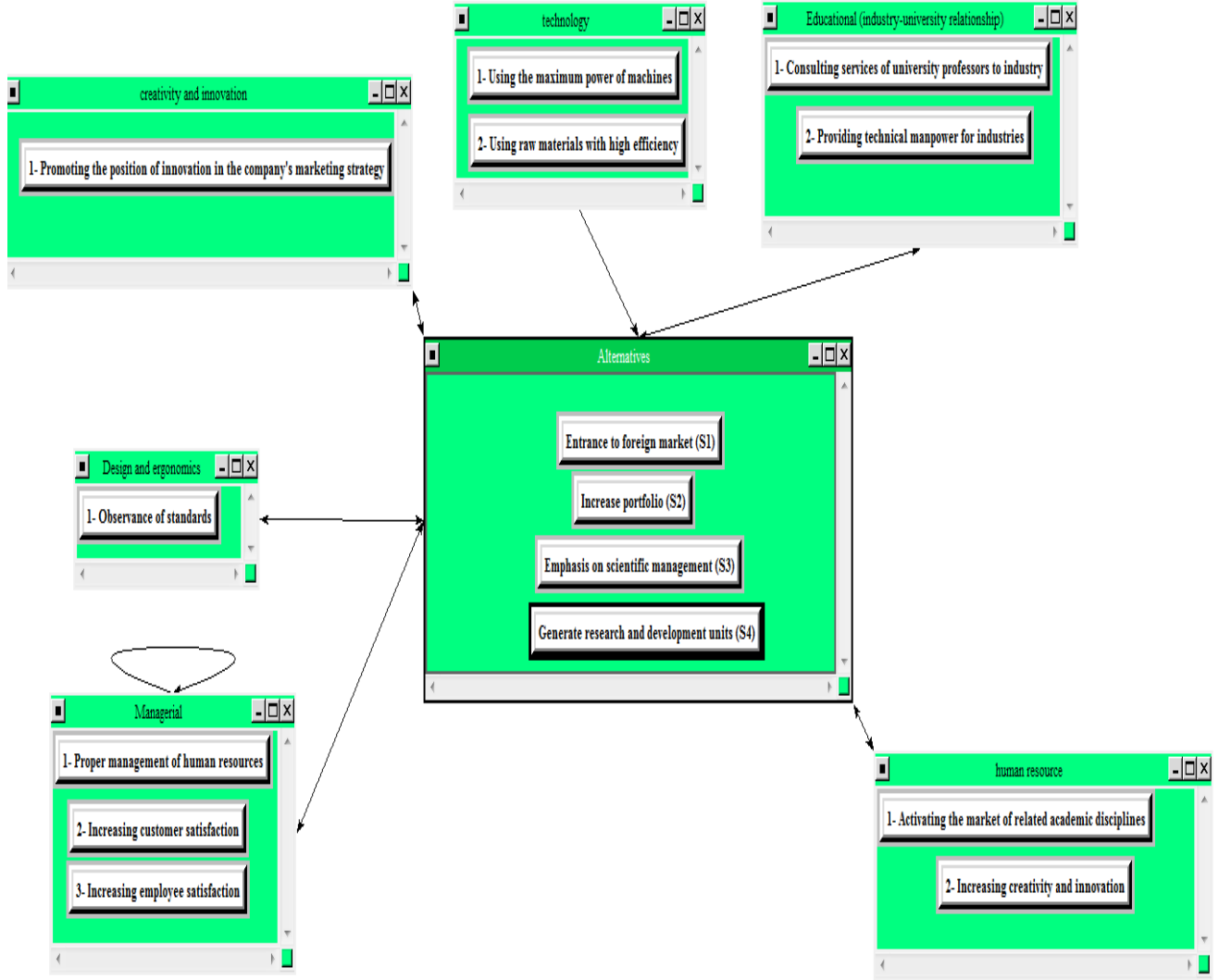


Figure A4 Subnetwork under benefits/technical and human

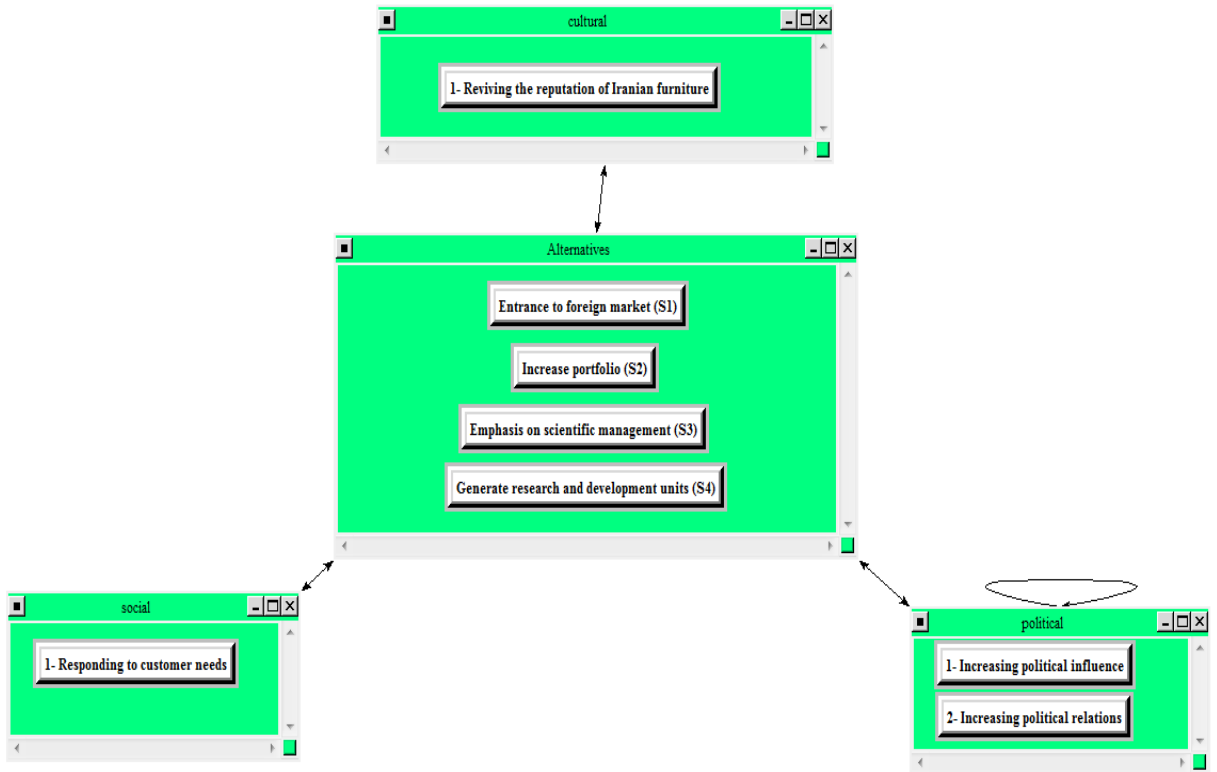


Figure A5 Subnetwork under benefits/social, cultural, and political

	Graphical	Verbal	Matrix	Questionnaire	Direct																		
Comparisons wrt "Evaluate the opportunities of the strategic marketing plan" node in "2 Control Criteria" cluster																							
1. Economic and ma~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Social, cultura~		
2. Economic and ma~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Supply and prod~		
3. Economic and ma~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Technical and h~		
4. Social, cultura~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Supply and prod~		
5. Social, cultura~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Technical and h~		
6. Supply and prod~	>=9.5	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	>=9.5	No comp.	Technical and h~		

Figure A6 Sample of the questionnaire

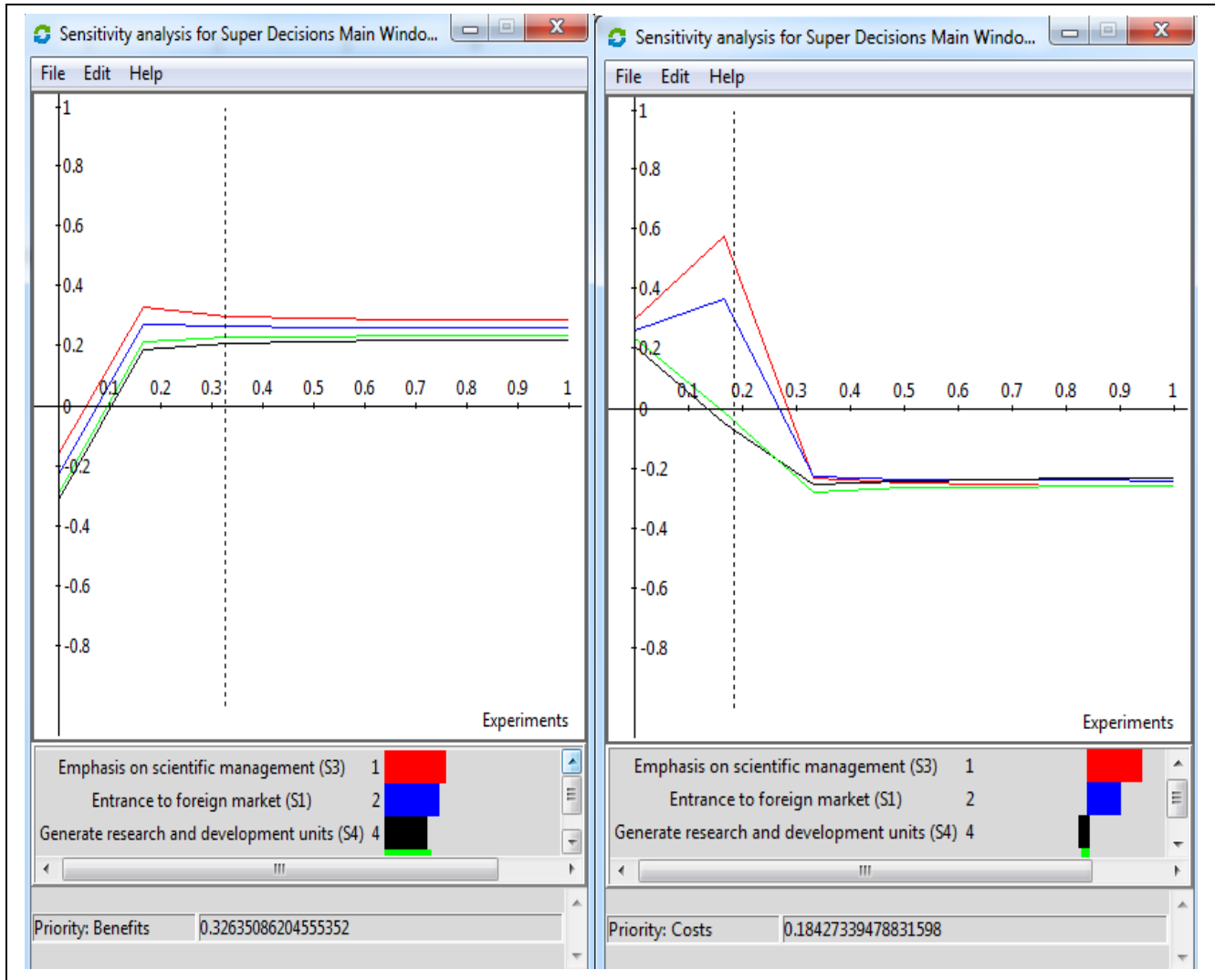


Figure A7 Sensitivity analysis concerning benefits and costs

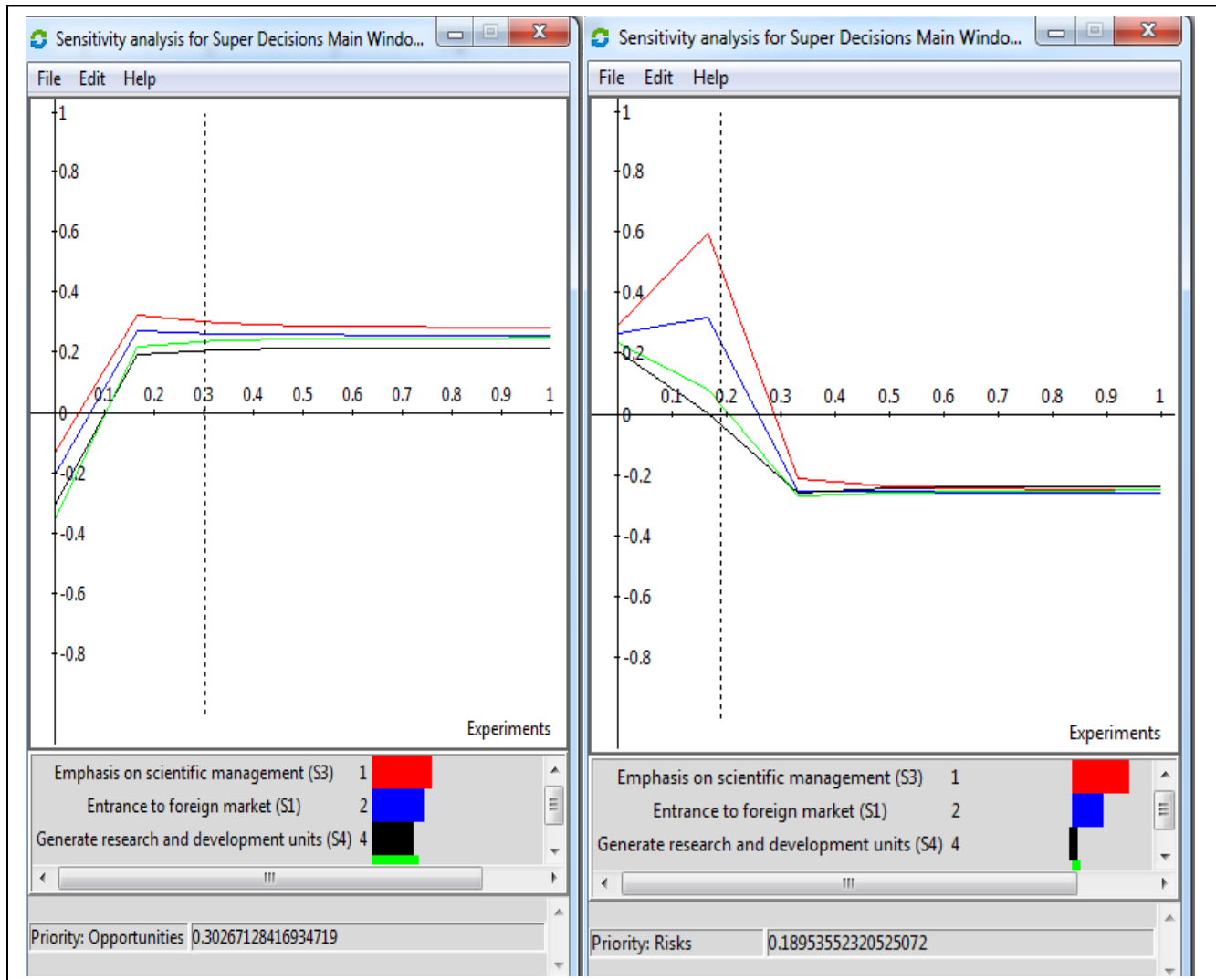


Figure A8 Sensitivity analysis concerning opportunities and risks