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Forsighting and Evaluating Iran's Automotive Industry Development Applying a Scenario Planning Approach

APPERCU ET EVALUATION DU DEVELOPPEMENT DE L'INDUSTRIE D'AUTOMOBILE D'IRAN L'APPLICATION D'UNE APPROCHE DE LA PLANIFICATION DES SCENARIOS

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Abstract

In the present world that competition increases every day, creating and maintaining a competitive advantage for the businesses have become a nightmare for senior managers. In this complex and turbulent environment, relying solely on strategic planning cannot guarantee the success of businesses, rather businesses have to prepare themselves to react to a wide range of probable futures. In this paper, a comprehensive and flexible combination of approaches such as Delphi Approach, Cross-Impact Analysis, and Scenario Planning are employed to study forsighting. Mic Mac software is used to analyze data that showed reliable and trustworthy results. The aim of this research is to recognize the development path of Iran's Automotive Industry. To do this, 45 effective factors on automotive production process were recognized using a Delphi Approach. After that, forsighting experts measured the influence of these factors on each other and this resulted in recognizing two key factors. Then, the scenarios ahead of the automotive industry are expressed and strategies and recommendations for preparation and appropriate reaction to each scenario are explained. The four plausible scenarios discovered from two key factors include "Fast boats", "War ships", "Passenger ships", and "Lifeboats". Finally, scenario planning applications and results are described. Results show that pathological changes should be implemented in managerial thinking about development and planning issues in order to have a sustainable development.

Key words: Scenario Planning; Forsighting; Iran's Automotive Industry; Uncertainty; Product Development

Résumé

Dans le monde actuel où la concurrence s'augmente de chaque jour, créer et maintenir un avantage concurrentiel pour les entreprises sont devenus un cauchemar pour les cadres supérieurs. Dans cet environnement complexe et turbulent, se fondant uniquement sur la planification stratégique ne peut pas garantir le succès des entreprises, plutôt les entreprises doivent se préparer à réagir à un large éventail d'avenirs probables. Dans ce papier, une combinaison complète et souple d'approches telles que l'approche Delphi, Croix-étude d'impact, et de la planification de scénarios sont utilisés pour étudier forsighting. Mic Mac du logiciel est utilisé pour analyser les données qui ont montré des résultats fiables et dignes de confiance. L'objectif de cette recherche est de reconnaître la voie du développement de l'industrie automobile de l'Iran. Pour ce faire, 45 facteurs efficaces sur le processus de la production automobile ont été comptabilisés, en utilisant une approche Delphi. Après cela, les experts forsighting mesuré l'influence de ces facteurs sur l'autre et cela s'est traduit par la reconnaissance de deux facteurs principaux. Puis, les scénarios à venir de l'industrie automobile sont exprimés et des stratégies et des recommandations pour la préparation et la réaction appropriée à chaque scénario sont expliqués. Les quatre scénarios plausibles découverts à partir de deux facteurs clés comprennent «bateaux rapides», «navires de guerre», «les navires à passagers», et «embarcations de sauvetage». Enfin, les applications de planification de scénarios et les résultats sont décrits. Les résultats montrent que les changements pathologiques devraient être mis en œuvre dans la pensée managériale sur les questions de développement et de planification afin d'avoir un développement durable.

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Mots-clés: Planification de scénarios; Appercevoir; L'industrie d'automobile de l'Iran; L'incertitude; Le développement du produit

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INTRODUCTION

In the present business world that the rate of changes and invironmental factors has tremendous influences on organizations' decisions, relying solely on forcasting and having just a specific plan for future do not gaurranty the continuity of the organizations' existance in the changing future. In this paper, it is tried to offer a new method of planning and to explain this planning systematically by presenting a case study. Scenario planning was formed in U.S. Army during the Second World War in order to deal with probable attacks of enemies. After the second World War, Pier Walk and Herman Cain used Scenario planning in Royal Dutch Company in order to influence the decision makers of the company which resulted in remarkable achievements.

Scenario Planning is applicable in complicated environments in which the rates of change and uncertainty are very high. Three principles should be considered in applying scenario planning: having a broad viewpoint, having multiple viewpoints, and thinking from outside to inside. Organizations will be more successful in a business world if they improve their understanding of the changes forming the future and employ them to create strategies that are more powerful. Some people think that scenarios are complex and theoretical which do not tell how the future would be. They ask this question: Is the sole strategic decision making (based on some market views and traditional forecasts) enough to satisfy business needs?

Historically, all of the efforts to remove the gap between the present and the future have been unsuccessful and none of them has given the needed accuracy. Another reality that exists is that despite the improvements in forecasting tools, forecasting the future is getting more difficult and this is because there is a change inside the nature of change itself; as with each passing year, the rate of change is increased and it will be more complicated. Generally, when the viewpoint horizons are broader, more alternatives exist (Ralston, 2006). For example, in our personal life, there are not many alternatives in one week; but if five, ten, or more weeks are considered, there will be more alternatives to choose. Some possible futures seem more probable and more desirable from the current perspective; indeed, the desirable future can be completely different from the most probable future. The most desirable future is actually the perspective of the desirable life that everybody likes to have; even this cannot be in the ranges of possible futures. Both people and organizations utilize scenarios, perspectives, and forecasts in order to plan. When conditions are constant and a time range is short, forecasting is a necessary and a powerful instrument for planning, as low risk and high certainty are needed for a good decision-making. This is actually the reason why forecasting should be applied. If a time range is long and the complexity of the system, that is desired to be forecasted, is high, the value of forecasting will be decreased. If uncertainty increases, the need for other tools of planning to discover the future of a business, determine the possible risks and opportunities, and prepare for one or more possible futures will increase. As decreased complexity is needed to create capabilities in order to manage each possible future, considering all of the possible futures at the same time is not feasible; and here is the time when scenario planning is applicable. Using suitable scenarios, it would be possible to decrease uncertainties in order to manage reasonable alternatives of decision making. A future division and a position of

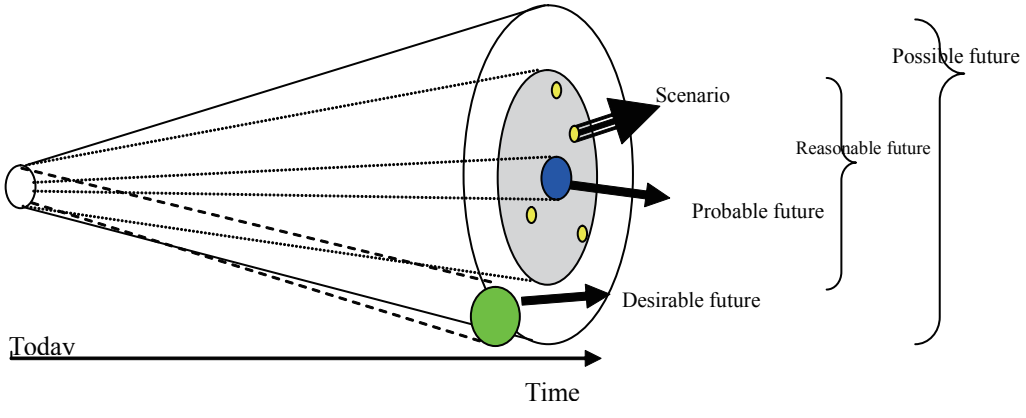

Figure 1
A Future Division (Lindgren, 2003)

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scenario planning are illustrated in figure 1. It should be noted that scenarios are hypotheses of future. Scenarios are not theories, rather they are descriptive stories of future. Scenarios are not convergent; they are divergent and each one describes a different future. The main purpose of scenarios is to help people and organizations change their thinking and plans about how events happen and enable them to react to uncertainties of short-term and long-term futures appropriately (Wollenberg, 2000).

1. WHY SCENARIO PLANNING

In this world that managing risks is taking the main stage of focus for the uncertainty caused by rapid changes, using scenarios allows organizations to make strategic decisions and to foresight what that uncertainty could look like in the future (Kathleen, 2011). Scenarios are generally built upon a dynamic sequence of interacting events, conditions, and changes that are necessary to reach a particular outcome. Thus, scenarios focus attention on causal processes and crucial decision points. Scenarios serve multiple functions. First of all, they present a background for the design and selection of strategies. Since no single strategy can be performed best in each scenario, special selection criteria, such as "bet on the most probable scenario" or "preserve flexibility" are needed (Porter, 1985). Scenario analysis is a method that tries to describe logical and internally consistent sequences of events to explore how the future might, could or should evolve from the past and the present. The future is inherently uncertain. Through scenario analysis, different alternative futures can be explored and thus uncertainties can be addressed. As such, scenario analysis is also a tool to deal explicitly with different assumptions about the future (Sluijs, 2004).

A very popular approach to planning is creation of scenarios to represent the forecast of what occurs in the future (Turoff, 2005). Since the early 1970s, scenario planning has been a valuable tool of strategic planning for companies that face uncertain futures (Wack 1985, Schwartz 1991, Van der Heijden 2000a, & Schoemaker 2002). The reason for its continued popularity is ''its ability to capture a whole range of possibilities in rich detail'' (Schoemaker, 1995) that traditional quantitative forecasting methods are often unable to capture (Van der Heijden, 2000b). Rather than looking for better forecasting techniques or hiring more or better forecasters, Shell developed scenario planning with its roots usually attributed to the pioneering works by Kahn and Wiener at the Hudson Institute (Helmut Kahn, 1967).

Whereas forecasting techniques try to abandon any uncertainty by providing managers with only one forecast, multiple scenario analysis deliberately confronts decision makers with environmental uncertainties through supplying them with several, fundamentally different, outlooks on the future (Bood, 1997). While forecasts can be reasonably accurate, there is a fundamental problem. Pierre Wack, one of the founders of Shell scenario planning, observed that forecasts tend to be wrong when they are needed most—namely, "in anticipating major shifts in the business environment that make the whole strategies obsolete (Cornelius, 2005). Forecasts are usually constructed on the assumption that tomorrow's world will be much like today's. As long as this is the case and there are no critical discontinuities, forecasts perform reasonably well. However, the world does change in a major way sooner or later, which render forecasts wrong when it hurts most (Wack, 1985). Unfortunately, forecasts—which are usually constructed on the assumption that tomorrow's world will be much like today's—provide an inappropriate tool to anticipate shifts in the business environment. In fact, forecasts may even be dangerous, as they are typically wrong when they are needed most (Wack, 1985). The choices firms make are actually depended on their assumptions about what the future might bring. While they know that anticipating and shaping the future is critically important for their success, there is an increasing uncertainty in the medium-term to long-term horizons. Significant efforts have been made to improve forecasting techniques. Econometric methods have become increasingly sophisticated, new tools such as neural networks have been developed, and powerful computers and software have made it possible to work with huge amounts of data. Despite the progress in all these areas, firms' success has been limited, especially over longer forecast horizons (Galbraith, 1996). Figure 2 shows the difference between forecasts and scenarios.

Over the years, hundreds of books, newspapers, and articles have been written on the process that decision-makers should go through in order to construct these various narratives or stories about the future. Regardless of the specifics of the process involved in scenario construction, it is possible to identify two fundamentally different qualitative approaches that are used to determine the basic premises for the various scenarios.

These are classified either as inductive or deductive approaches. According to Ogilvy and Schwartz (Ogilvy et al, 2006), the inductive approach is largely an unstructured approach that develops theories of different futures by brainstorming different events that typify the various scenarios. In contrast, the deductive approach is a more structured approach that develops theories of different futures by listing and prioritizing the most critical uncertainties. Typically, a 2*2 scenario matrix is then constructed to depict the alternative future scenarios (Graham, 2009).

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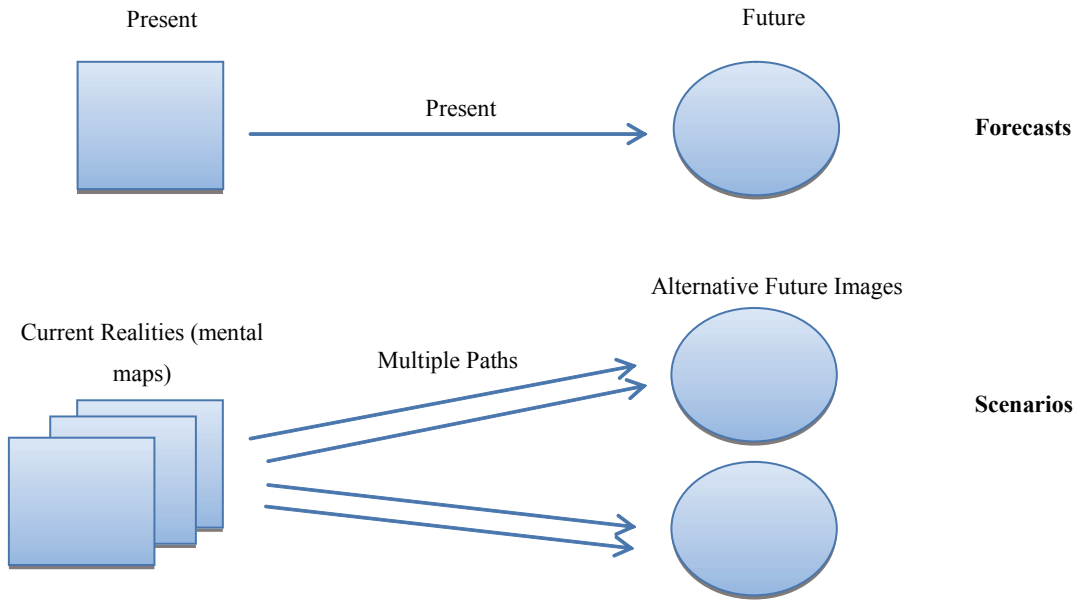

Figure 2
Scenarios vs. Forecasts

2. RESEARCH METHODOLOGY AND MODEL

Scenario planning is a simple, a dynamic, and a flexible process (Scearce, 2004). In this paper, the model of scenario planning is explained primarily. Then, the steps of applying this model are explained practically according to Iran's automotive industry. This model, which is illustrated as figure 3, has five steps: orientation, exploration, synthesizing, implementation, and evaluation.

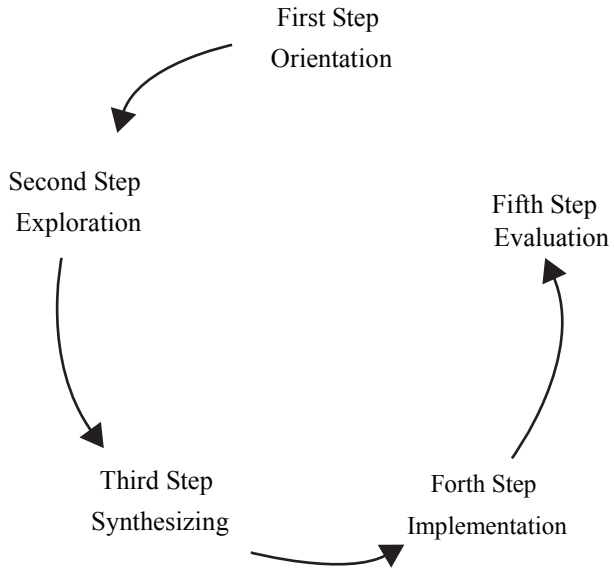

Figure 3
A Scenario Planning Model

2.1 First Step: Orientation

In the orientation step, the organization should determine its scenario planning goals. It should also estimate the required resources for applying scenarios. The purpose of this step is to specify the problem clearly in order to orient well in four subsequent steps. The orientation step starts with a discussion about the most important challenges the organization faces and continues with specifying a hypothesis about the detected challenges and their role in future. The most effective way in this step is to ask key questions through structural interviews from the organization's decision makers, senior managers, and stakeholders. It is possible to ask the same questions from other influential people such as a market leader, a government, representatives, etc. It is also possible to determine the timeframe of scenarios both before performing interviews and based on interviews' findings. Most of businesses consider the time of describing their scenarios between 5 and 10 years. The timeframe should be specified according to the rate of key problem changes. For example, the timeframe of scenarios in technological industry is lower and may reach to even six months; this is because of the high rate of changes. After performing interviews, making the issues clear, and finding the key problems, the range of the key problems should be specified in order to determine the ones that form the scenario planning process. To perform this step, some tools such as structural interviews, a Delphi technique, and a panel method are recommended.

2.2 Second Step: Exploration

In this step, the key factors that form the focal problem

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would be specified. The key factors can be internal or external which can form the future of an organization both in predictable paths and in unpredictable paths. The key factors can be as predictable factors or as uncertainty factors. The predictable factors, such as political changes and income changes (of people or government), are changing forces that can affect the future. Uncertainty factors are unpredictable forces that can affect different locations such as changes in values of a society, changes in public comments, and changes in government roles.

Tools which are applicable in this step include brainstorming techniques, thinking the impossible, trend analysis, PEST analysis, SWOT matrix, and COCD Ideas Matrix.

2.3 Third Step: Synthesizing

In the third step, the effective forces discovered in previous steps will be combined and integrated in order to form scenarios. Many factors might be identified in previous steps which have a meaningful difference from each other. Although all of these factors can be important, their importances are not the same. In this step, the identified factors should be separated. In order to do this, the effective forces are prioritized based on two factors:

- Their importance degrees and their effect on focal problems or questions.
- The uncertainty degrees of key factors.

The aim of prioritizing effective forces is to identify two or three ones that are the most important and have the most influence on focal problem or question. These factors are critical uncertainties and form the infrastructure of scenarios. Omitting some factors might be considered as the value of the work is decreased; but in subsequent steps, there still would be a chance to return to the factors obtained in previous steps. The easiest and the most reliable way to create scenarios are to illustrate them on a horizontal diagram. For example, uncertainty about a political situation is illustrated as the axis as figure 4:

Figure 4
A Horizontal Diagram of Uncertainty about a Political Situation

On the other hand, uncertainty about an economic situation is illustrated as the axis in figure 5:

Figure 5
A Horizontal Diagram of Uncertainty about an Economic Situation

Then these two axes will be intersected with each other and a 2*2 matrix is formed as figure 6. This matrix can be used to describe four reasonable scenarios

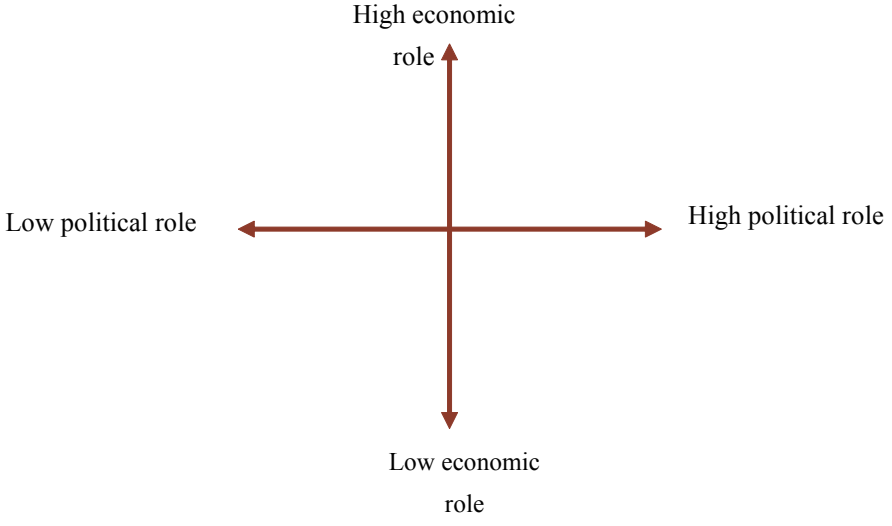

Figure 6
A 2*2 Matrix for Describing Scenarios

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Now, the framework of scenarios should be determined and each area in the 2*2 matrix should be described by asking "What if" questions. During description of scenarios, it should be asked if the combination of vital uncertainties expresses useful and acceptable stories about the future. Scenarios not only must show the best future, the worst future, and the most probable future, but also they must show a spectrum of these different futures. Stabilizing the framework of a scenario is a trial and error process which should test different combinations of critical uncertainties in order to find a framework that provides the strongest form of strategic dialogues. The eventual goal is to improve a group of reasonable scenarios that describe completely different stories about future. Each of these scenarios is able to give the necessary hypotheses and strategies to face the future. Improving scenario stories starts in present and ends in future. Scenario stories are very important for the audience who do not have any role in the improvement process.

Recommended tools to perform this step include Boston Consulting Group Matrix and Uncertainty Principle Matrix.

2.4 Fourth Step: Implementation

In the fourth step, scenarios are used to inform and encourage the activities. Testing a group of scenarios does not mean that it would bring about accurate results of future; rather it would enable the organization to learn, match, and choose activities that are more effective. After improving each scenario, some questions should be asked such as: what will happen if this scenario occurs in future? Alternatively, what proceedings should be done today for preparation? Answering these questions is actually the organization's reaction to scenarios. Then, the reactions

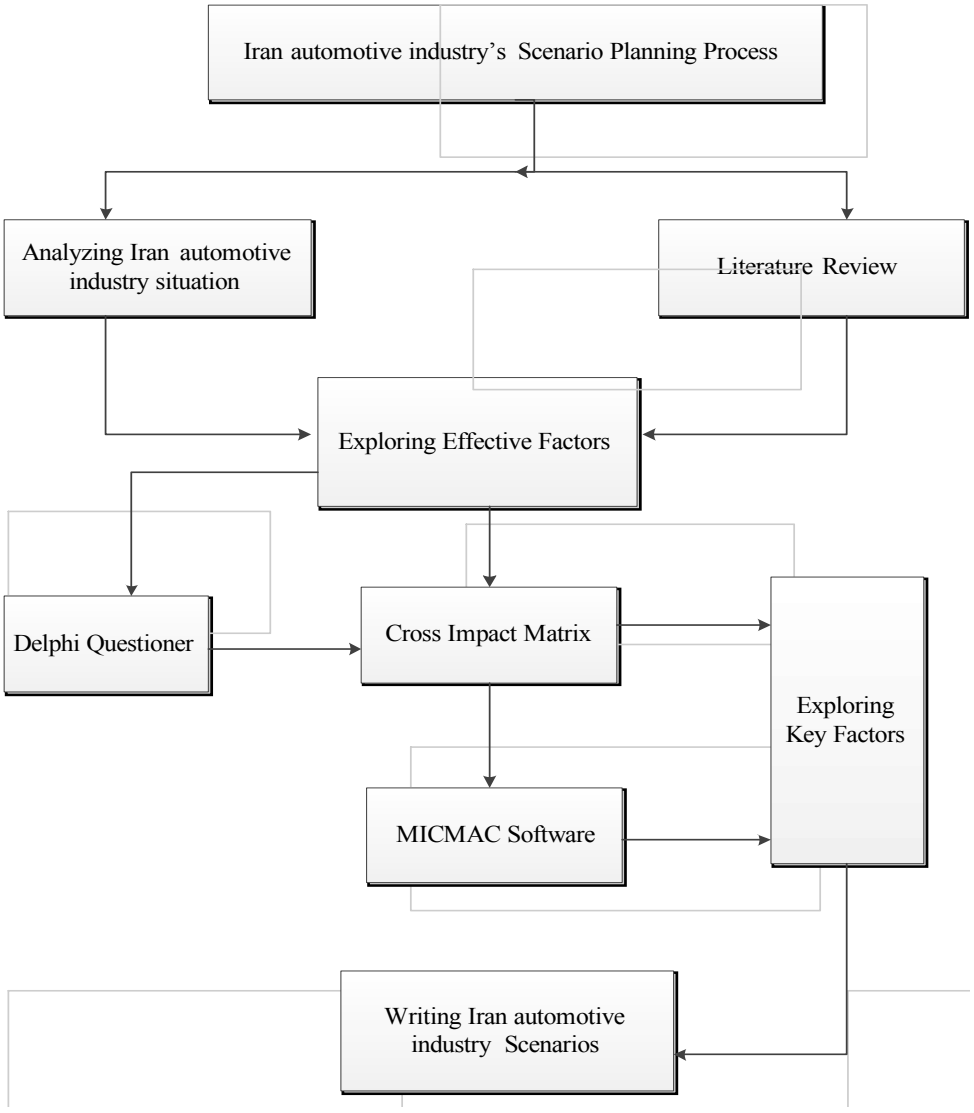

Figure 7
The Research Process

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to each scenario should be analyzed: Are the reactions effective? Are the reactions to each scenario efficiently different from each other? Is it possible to pick any of these different scenarios up as a strategy?

Patterns and insights of reactions to scenarios are formats to form strategies. It is also possible to utilize the predictable factors, which were discovered in previous steps, to determine the strategies. The list of strategies should be a combination of factors' portfolio with low risk, moderate risk, and high risk.

2.5 Fifth Step: Evaluation

The aim of this step is to determine the principal indexes in order to evaluate the accuracy and validity of scenarios during the occurrence of events in the real world. In this step, a mechanism will be formed to relocate the organization in its environment and match the organization's strategies. After defining the strategies in each scenario, it is possible to implement them confidently. Some proceedings might exist, however, that should be selected contingently. In addition, some effective factors might also exist that have the potential of more influence over time and should be identified as leading indexes.

The research process is illustrated as figure 7. First, theoretical base of automotive industry situation is examined according to upstream documents, national conditions, and international situations. Then, the factors influencing the automotive industry trend is extracted according to experts' viewpoints and open interviews. Considering the identified factors, a questionnaire is designed and experts' viewpoints are collected using a Delphi Technique. Then a cross impact matrix, MicMac software, and the key factors are utilized to write scenarios.

3. SCENARIO PLANNING FOR IRAN'S AUTOMOTIVE INDUSTRY

With regard to the 5-step model, future scenarios for Iran's Automotive Industry are as the following:

3.1 First Step: Orientation

In this step, the aim of scenario planning in automotive industry was determined according to the experts' viewpoints. Then, the types of products were specified. After that, profitability, focal problems, and value increases in the automotive products' brand were addressed.

3.2 Second Step: Exploration

After holding different meetings with experts, surveying the upstream factors, determining the focal problems, and specifying the aims of scenario planning, factors which can influence the future of the automotive industry (as predictable or as uncertainty) were identified (Jacques, 2009). Table 1 shows 45 factors which were identified in this step.

Table 1
Discovered Factors in the Exploration Step

Row	Factor	Row	Factor
1	Role of Government	26	Legislation placed
2	Jobs	27	Environment
3	Tariff	28	Population composition
4	Environment	29	Road network
5	Ingredients	30	Advertise
6	Transportation	31	Consumption pattern
7	Tax	32	Market Demand
8	Car Security	33	Income families
9	Car Price	34	GDP
10	Services	35	Competitiveness
11	Customer	36	Capital withdrawal
12	Export	37	Production infrastructure
13	Import	38	Production rules
14	Profitability	39	Alternative Energy
15	Gasoline prices	40	Iran's geo-economic position
16	Beauty	41	Iran's geopolitical position
17	Supply Chain	42	Consumption trend
18	Insecurity in the region	43	Why Buy
19	Investment	44	Regional policy
20	Intl Business	45	Sanctions
21	Product variety		
22	Homeland Security		
23	Technology Management		
24	Research and Development		
25	Symbol Technologies		

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3.2.2 Key Factors Influencing the Development of Iran's Automotive Industry

As mentioned before, 45 factors were identified as key factors influencing the development of Iran's automotive industry. MicMac software was used to identify these key factors. Using this software, the cross impact matrix was analyzed in 6 steps. These steps are respectively introduced in the following:

- Perceiving and observing the system's stability or instability systematically.
- Identifying direct and indirect influences of variables that have high degrees of effectiveness.
- Identifying the main factors and using them in scenario planning.
- Perceiving the whole system and abstinence from trivial analysis.
- Identifying the factors that cause instability of the system (factors that must be controlled).
- Identifying the environment through an impact analysis.

Extracting 45 factors, a 45*45 matrix was formed in Mic-Mac Software. The fill rate of the matrix is 89.03704% (table 2); this shows that the selected factors have high and diffused influences on each other and the system is instable. From 1803 assessable relations in this matrix, 222 relations were zero (12%); this means that the factors do not have any influence on each other. Based on the statistical indexes with two data rotation, the matrix has 100% desirability which shows a high reliability of both the questionnaire and the responses.

Table 2
Characteristics of Factors

Indicators	Value
Matrix size	45
Number of iterations	2
Number of zeros	222
Number of ones	656
Number of twos	840
Number of threes	307
Number of P	0
Total	1803
Fill rate	89.03704%

3.2.3 Evaluating the Influence and Dependence of Variables

In a cross impact matrix, sum of the numbers in rows of each variable shows its influence and sum of the numbers in columns of each variable shows its dependence from other variables. According to the analytical results of this matrix, the government factor and the customer factor have the highest degree of influence and dependence. Rank of variables and their degree of influence and dependence are shown in table 3.

The direct influence/dependence map of these variables, their indirect influence/dependence map, their direct influence graph, their indirect influence graph, and their direct/indirect displacement map that have been achieved from Mic Mac software are illustrated in figure 8, figure 9, figure 10, figure 11, and figure 12 respectively.

Table 3
Ranks of Variables

	Label	Direct influence	Label	Direct Dependence	Label	Indirect Influence	Label	Indirect Dependence
1	Customer	322	Profitable	257	Customer	321	Tech Mgt	258
2	Gove Role	294	Tech Mgt	257	Gove Role	292	Profitable	257
3	Tariff	285	Supply Cha	245	Tariff	286	Supply Cha	245
4	Sanction	270	Income families	245	Why Buy	266	Income families	245
5	Why Buy	267	Populate Co	239	Sanction	265	Populate Co	239
6	Profitable	254	Gasoline P	236	Profitable	253	Gasoline P	237
7	Adv	245	Investment	236	Adv	247	Product	236
8	Services	242	Product	236	Populate Co	243	Iran's geo-economics position	235
9	Gasoline P	242	Iran's geo-economics position	236	Gasoline P	242	Investment	235
10	Populate Co	242	Transport	233	Services	240	Symbol Technologies	234
11	Car Security	239	Symbol Technologies	233	Competitive	239	Transport	233
12	Competitive	239	Consumption pattern	233	Capital Wi	239	Consumption pattern	231
13	Homeland S	236	R&D	230	Car Security	238	R&D	231
14	Capital Wi	236	Prod Infra	230	Homeland S	236	Alternative Energy	230
15	Iran Geopolitics	236	Alternative Energy	230	Iran Geopolitics	234	Prod Infra	230
16	Beauty	227	Iran Geopolitics	230	Beauty	228	Iran Geopolitics	229
17	Product	227	Beauty	227	Product	227	Environment	227
18	Ingredient	224	Intl Buss	227	Environment	225	Beauty	227
19	Environment	224	Environment	227	Ingredient	223	Intl Buss	227
20	Consumption pattern	224	Capital Wi	227	Prod Infra	223	GDP	225
21	Prod Infra	224	Car Security	224	Alternative Energy	223	Customer	225
22	Car Price	221	Customer	224	Consumption pattern	222	Capital Wi	225
23	Alternative Energy	221	GDP	224	Insecurity in the region	221	Services	222

To be continued

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Continued

Rank	Label	Direct influence	Label	Direct Dependence	Label	Indirect Influence	Label	Indirect Dependence
24	Insecurity in the region	217	Services	221	R&D	217	Road Net	222
25	Investment	217	Import	221	Car Price	217	Car Security	222
26	Symbol Technologies	217	Road Net	221	Investment	216	Import	219
27	R&D	214	Consumption trend	221	Symbol Technologies	215	Consumption trend	219
28	GDP	214	Export	214	GDP	214	Adv	215
29	Consumption trend	214	Legislation placed	214	Consumption trend	213	Export	214
30	Income families	208	Adv	214	Income families	209	Legislation placed	213
31	Production rules	208	Jobs	211	Tax	208	Production rules	212
32	Tax	205	Car Price	211	Production rules	206	Car Price	211
33	Jobs	202	Insecurity in the region	211	Legislation placed	206	Insecurity in the region	211
34	Legislation placed	202	Production rules	211	Regional policy	204	Jobs	211
35	Regional policy	202	Tax	208	Jobs	201	Tax	209
36	Supply Cha	199	Homeland S	208	Iran's geo-economic position	201	Homeland S	207
37	Iran's geo-economic position	199	Regional policy	208	Supply Cha	199	Regional policy	207
38	Import	187	Why Buy	205	Tech Mgt	188	Sanction	206
39	Tech Mgt	187	Sanction	205	Import	188	Why Buy	204
40	Intl Buss	184	Tariff	202	Intl Buss	185	Tariff	204
41	Market Demand	184	Competitive	202	Transport	182	Competitive	203
42	Transport	178	Ingredient	199	Market Demand	181	Ingredient	199
43	Export	178	Market Demand	199	Export	179	Market Demand	199
44	Road Net	162	Environment rules	196	Road Net	160	Environment rules	197
45	Environment rules	159	Gove Role	190	Environment rules	157	Gove Role	192

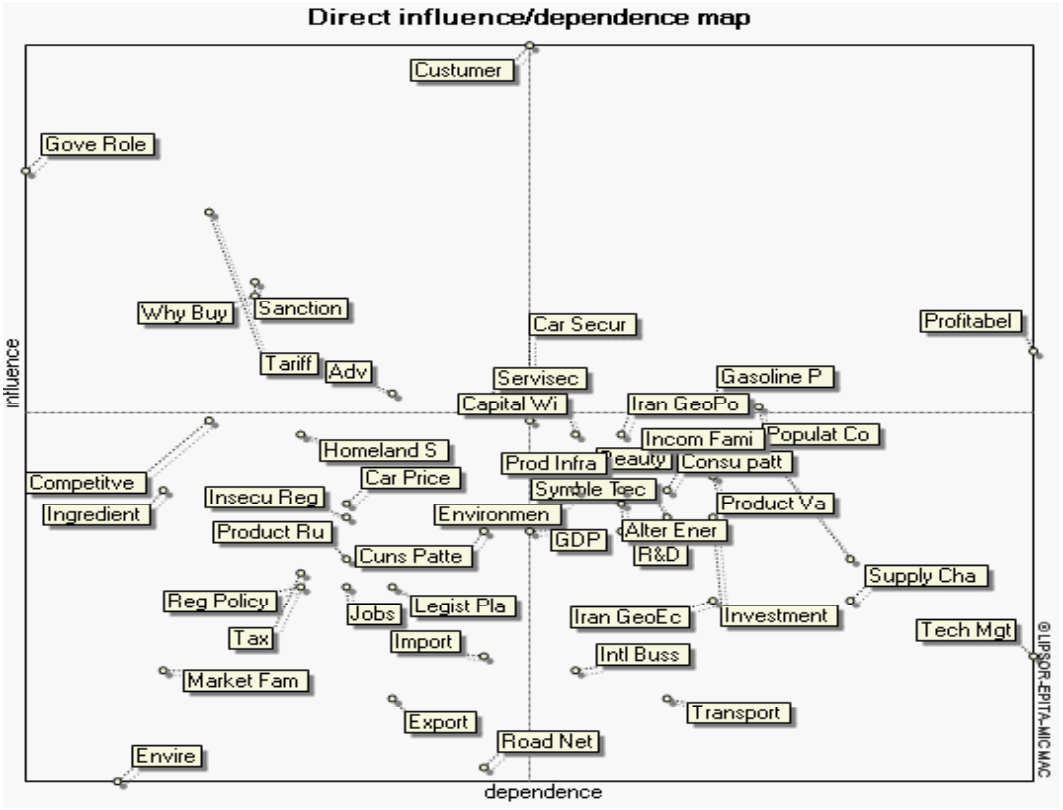

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Figure 8
Direct Influence/Dependence Map of Variables

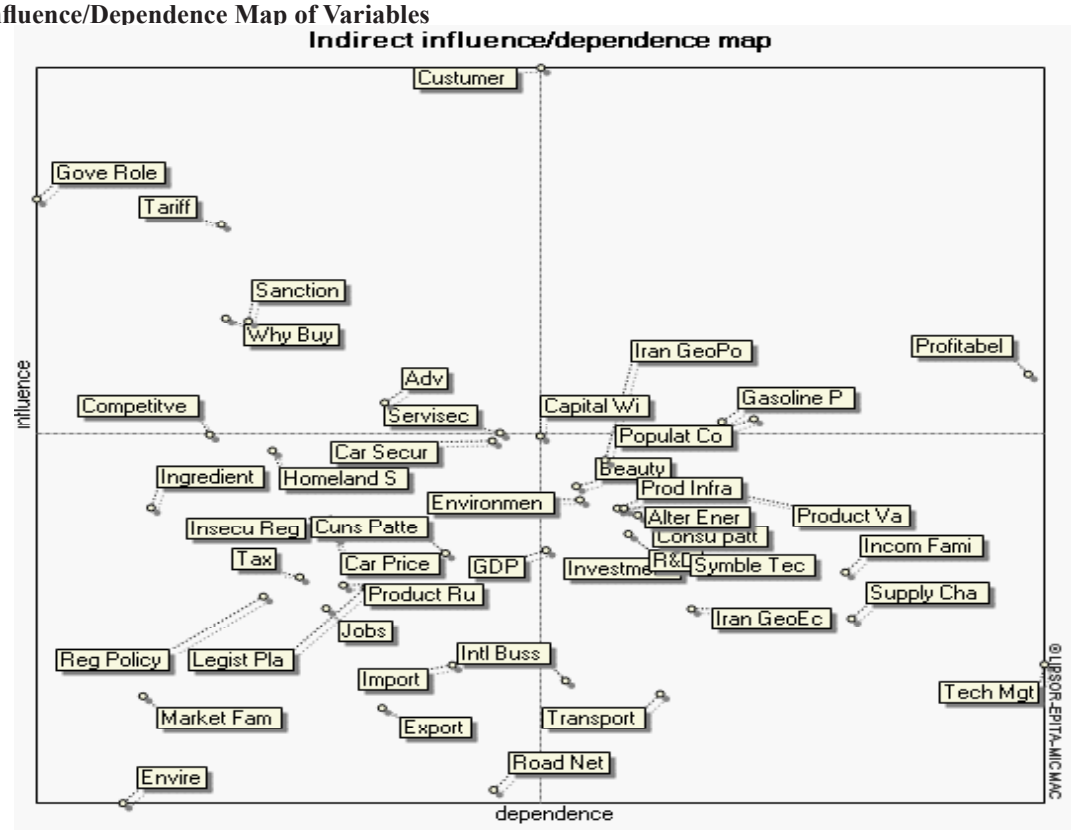

Figure 9
Indirect Influence/Dependence Map of Variables

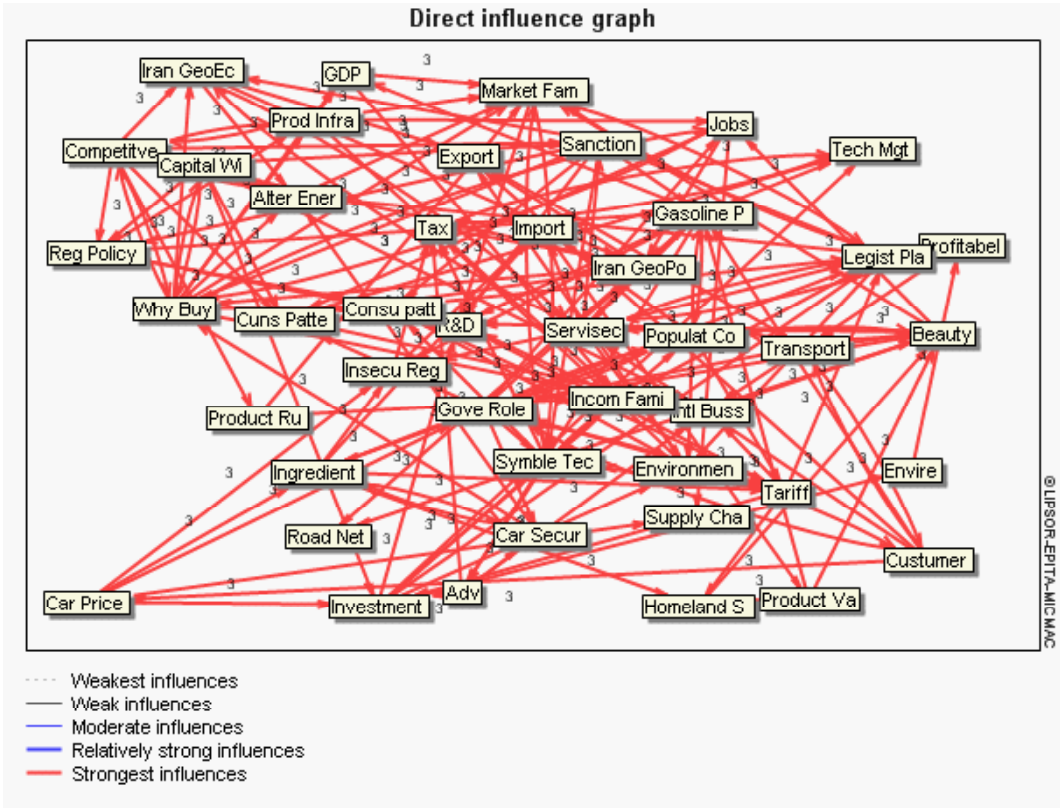

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Figure 10
Direct Influence Graph of Variables

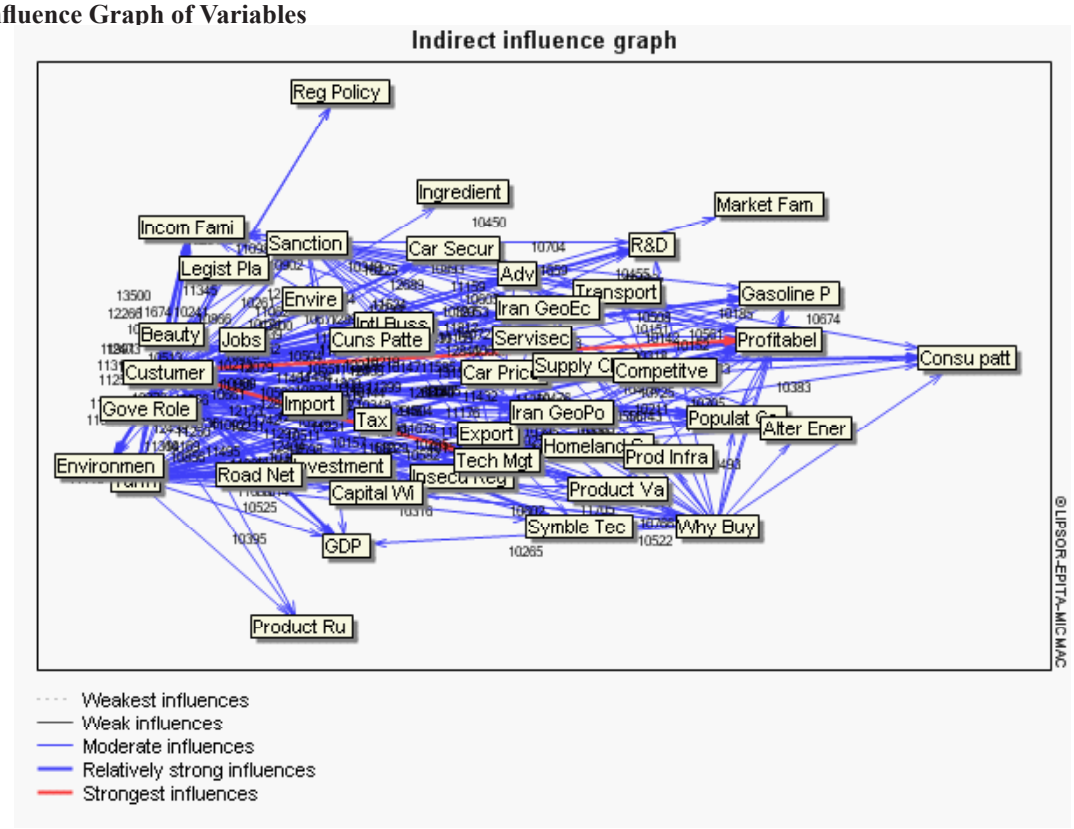

Figure 11
Indirect Influence Graph of variables

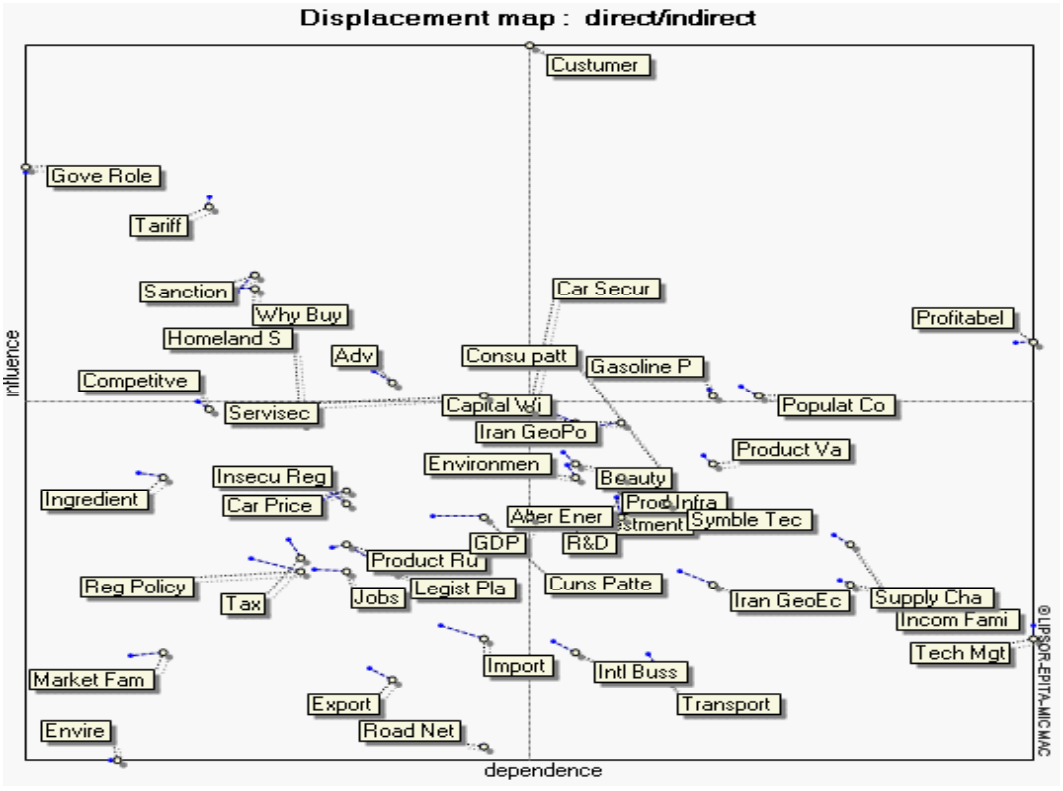

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Figure 12
Direct and Indirect Displacement Map of Variables

3. 3 Third Step: Synthesizing in Iran's Automotive Industry

In this step, two key factors should be selected from the total 45 factors in order to record scenarios. According to table 4, the government factor and the customer factor have the highest degrees of influence and dependence. Since the selected factors are general and contain many other factors inside, the accuracy of their selection is confirmed.

Table 4
Lists of Variables Ranked by Their Influence and Dependence

Classify variables according to their influences

Rank	Variable	Variable
1	11 - Custumer	11 - Custumer
2	1 - Gove Role	1 - Gove Role
3	3 - Tariff	3 - Tariff
4	45 - Sanction	43 - Why Buy
5	43 - Why Buy	45 - Sanction
6	14 - Profitabel	14 - Profitabel
7	30 - Adv	30 - Adv
8	10 - Servisec	28 - Populat Co
9	15 - Gasoline P	15 - Gasoline P
10	28 - Populat Co	10 - Servisec
11	8 - Car Secur	35 - Competitve
12	35 - Competitve	36 - Capital Wi
13	22 - Homeland S	8 - Car Secur
14	36 - Capital Wi	22 - Homeland S
15	41 - Iran GeoPo	41 - Iran GeoPo
16	16 - Beauty	16 - Beauty
17	21 - Product Va	21 - Product Va
18	5 - Ingredient	27 - Environmen
19	27 - Environmen	5 - Ingredient
20	31 - Consu patt	37 - Prod Infra
21	37 - Prod Infra	39 - Alter Ener
22	9 - Car Price	31 - Consu patt
23	39 - Alter Ener	18 - Insecu Reg
24	18 - Insecu Reg	24 - R&D
25	19 - Investment	9 - Car Price
26	25 - Symble Tec	19 - Investment
27	24 - R&D	25 - Symble Tec
28	34 - GDP	34 - GDP
29	42 - Cuns Patte	42 - Cuns Patte
30	33 - Incom Fami	33 - Incom Fami
31	38 - Product Ru	7 - Tax
32	7 - Tax	38 - Product Ru
33	2 - Jobs	26 - Legist Pla
34	26 - Legist Pla	44 - Reg Policy
35	44 - Reg Policy	2 - Jobs
36	17 - Supply Cha	40 - Iran GeoEc
37	40 - Iran GeoEc	17 - Supply Cha
38	13 - Import	23 - Tech Mgt
39	23 - Tech Mgt	13 - Import
40	20 - Intl Buss	20 - Intl Buss
41	32 - Market Fam	6 - Transport
42	6 - Transport	32 - Market Fam
43	12 - Export	12 - Export
44	29 - Road Net	29 - Road Net
45	4 - Envire	4 - Envire

Classement par dépendance

Rank	Variable	Variable
1	14 - Profitabel	23 - Tech Mgt
2	23 - Tech Mgt	14 - Profitabel
3	17 - Supply Cha	17 - Supply Cha
4	33 - Incom Fami	33 - Incom Fami
5	28 - Populat Co	28 - Populat Co
6	15 - Gasoline P	15 - Gasoline P
7	19 - Investment	21 - Product Va
8	21 - Product Va	40 - Iran GeoEc
9	40 - Iran GeoEc	19 - Investment
10	6 - Transport	25 - Symble Tec
11	25 - Symble Tec	6 - Transport
12	31 - Consu patt	31 - Consu patt
13	24 - R&D	24 - R&D
14	37 - Prod Infra	39 - Alter Ener
15	39 - Alter Ener	37 - Prod Infra
16	41 - Iran GeoPo	41 - Iran GeoPo
17	16 - Beauty	27 - Environmen
18	20 - Intl Buss	16 - Beauty
19	27 - Environmen	20 - Intl Buss
20	36 - Capital Wi	34 - GDP
21	8 - Car Secur	11 - Custumer
22	11 - Custumer	36 - Capital Wi
23	34 - GDP	10 - Servisec
24	10 - Servisec	29 - Road Net
25	13 - Import	8 - Car Secur
26	29 - Road Net	13 - Import
27	42 - Cuns Patte	42 - Cuns Patte
28	12 - Export	30 - Adv
29	26 - Legist Pla	12 - Export
30	30 - Adv	26 - Legist Pla
31	2 - Jobs	38 - Product Ru
32	9 - Car Price	9 - Car Price
33	18 - Insecu Reg	18 - Insecu Reg
34	38 - Product Ru	2 - Jobs
35	7 - Tax	7 - Tax
36	22 - Homeland S	22 - Homeland S
37	44 - Reg Policy	44 - Reg Policy
38	43 - Why Buy	45 - Sanction
39	45 - Sanction	43 - Why Buy
40	3 - Tariff	3 - Tariff
41	35 - Competitve	35 - Competitve
42	5 - Ingredient	5 - Ingredient
43	32 - Market Fam	32 - Market Fam
44	4 - Envire	4 - Envire
45	1 - Gove Role	1 - Gove Role

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With regard to classification of the factors in the matrix, an interaction analysis, and viewpoints of experts and senior managers, government and customer forces were selected as key factors for describing scenarios. The roles of these two forces are shown as figure 13. According to this figure, if the government decreases its role in industry as well as its support of the producers over the next 20 years, Iran's automotive industry will proceed to be competitive. But if the government maintains its role and continues its support of producers, a supportive industry will exist.

The second key factor is the customer that over the next 20 years, along with the income trend, the value trend, and the environmental trend (such as a

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public transport improvement), can be in the spectrum of consumer-oriented customers, diversity-oriented customers, and the customers who have a low interest to use their personal automobile and a high interest to use the public transport in an automotive industry demand.

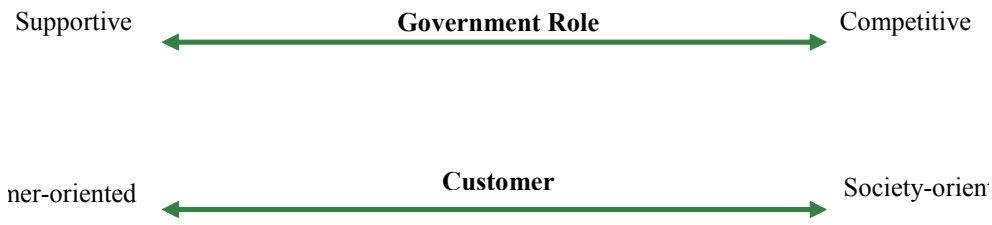

Figure 13
Key Forces that Form a 2*2 Matrix

After identifying the key factors (government and customer), a 2*2 matrix was formed as figure 14. Each area of the matrix was named, and four scenarios facing Iran's automotive industry was specified. Accordingly, the first area in which the market is competitive and customers are society-oriented was named fast boats; the second area was named war ships; the third area in which the industry is supported by the government and the customers are consumer-oriented was named passenger ships; and the forth area was named lifeboats.

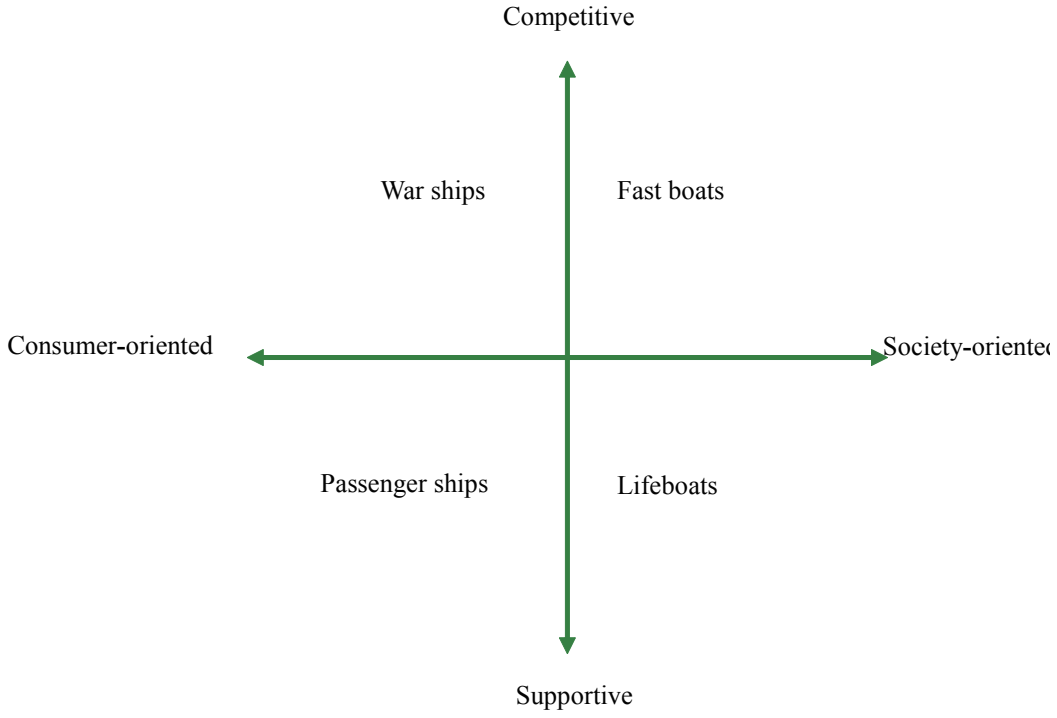

Figure 14
The 2*2 Matrix of Iran's Automotive Industry

3. 3. 1 Fast Boats Scenario

Signs of this scenario's occurrence include decrease in demands of lower-class automobiles due to the government's large investment in public transport as well as people's interest in using public transport due to welfare issues such as traffic, stress, and air pollution. During the occurrence of this scenario, there would be a risk of bankruptcy for manufacturers of middle-class and lower-class automobiles and this could be because the demands for these kinds of automobiles are decreased and there isn't any support from the government. A competitive advantage in this environment includes a customized manufacturing of automobiles; however this leads to unemployment increase. Because the market in highly competitive, automotive ma-

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nufacturers have to pay necessary attentions to environmental issues and corporate social responsibilities (CSR) in order to exist, grow, and gain a competitive advantage in this competitive market. During the occurrence of these scenarios, manufacturers should move toward being agile organizations. In this turbulent sea of competition, they should be able to attract customers like fast boats.

3.3.2 Warships Scenario

This is the most dangerous scenario in which the corporations should fight with each other to hunt the chances and gain higher market shares. The customers are the winners of these fights as all of the corporations have to satisfy them in order to success.

In warships scenario, people's demand, their diversity of taste, and their change of value to consumerism will raise due to their increased income. In this competitive environment, different unique markets are emerged due to customers' consumerism, their diversity of taste, their increased interest to change and buy new automobiles, and reduced life of using automobiles. As a result, the need for an advanced technology and modern manufacturing systems (well-timed manufacturing, agile manufacturing, online sales, etc), innovation, creativity, and detection of hidden demands in order to satisfy customers' needs are increased. Agile newcomers' entrance to this market would be a great threat and even fatal for the giant automakers. Therefore, corporations have to fight with each other in order to maintain and grow both their market share and their customer share like war ships.

3.3.3 Passenger Ships Scenario

This is the most desirable scenario for most of automakers. In this scenario, due to some reasons such as isolation of automotive industry from international markets (because of sanctions on Iran), reduced competition (because of the government's support of the products), and people's consumerism, the market will be exclusively in hands of local automotive manufacturers. In addition, because the risk of entering the market is very high, the probability of new rivals' entrance to the market is very low. The existence of high demands for the produced automobiles results in reduced incentive of automakers to apply mobility and creativity in their products. The employment rate will be increased, however, because a mass production approach is applying in this industry. Increase in import tariffs, decrease in automotive industry taxes, inattention of the government to infrastructures of public transport due to its inaccurate support of automakers, and increase in environmental pollution and car accidents due to manufacturer's inattention to meet the production standards are other complications of this scenario's occurrence. Therefore, the automakers would always look forward to relocating and attracting more customers even if their quality and service are sacrificed.

3.3.4 Lifeboats Scenario

In this scenario, the government will support the automakers by reducing tariffs and taxes. Large investments of the government in transport infrastructures leads to increase in people's interest to middle-class and high-class automobiles. This results in that automobiles will become luxury goods and people will have an attitude to use them for passing their weekends and holidays. During the occurrence of this scenario, as manufacturers of high quality automobiles should proceed with production of high-class automobiles, the influence of modern technologies on them will increase. These manufacturers can still produce middle-class automobiles, however, due to the government's support; but people's interest in luxury and good quality automobiles threatens the manufacturers of low-class automobiles.

3.4 Forth Step: Implementation

3.4.1 Fast Boats Strategies

The marketing philosophy in the fast boats scenario tends to social marketing. This means that automotive manufacturers seek to match their activities with social responsibilities. In an environment in which the community moves toward socialism and corporations work in a competitive atmosphere, the automotive manufacturers choose social marketing in order to create a balance among demands of target customers, long-term interests of target customers, long-term interests of society, and their own profitability. During the occurrence of this scenario, the government invests suitably in transportation and people have greater interests in using public transports as they are fast, easy to use, and make less air pollution. As a result, people use their personal automobiles as a social prestige to pass their holidays and weekends. Manufacturing strategies of automotive manufacturers in this environment is to manufacture luxury automobiles (automobiles with the price more than fifty thousand dollars- with regard to divisions in 2008) and to invest in luxury brands of automobiles. The manufacturers can also reach their goals by short-term joint venturing with the automotive manufacturers of famous brands and acquire their high technology.

3.4.2 Warships Strategy

During the occurrence of this scenario, market is competitive and people tend to consumerism. Therefore, corporations in this turbulent sea of competition have to fight with each other like warships in order to exist, grow, attract more customers, and satisfy their needs. Corporations should identify the opportunities in the market, invest on them, choose a suitable position that they dominate, and try to maintain it because this is not the right time to retreat or to be defensive. Manufacturers must have a systematic approach in this scenario. Their goal should be to obtain satisfactory yields for company owners and seek to satisfy the needs of their target customers. These manufacturers will utilize the strategy of manufacturing middle-class and high-class automobiles

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(with prices more than 35 thousand dollars) because people tend to consumerism. Automotive manufacturers can utilize the cost leadership strategy via outsourcing in order to gain and maintain the market.

This industry is very attractive in this scenario and although automotive manufacturers of middle-class automobiles can attack the newcomers of the market and prevent them from entering this part of market, newcomers are very interested to enter due to consumerism.

3.4.3 Passenger Ships Strategy

Due to the existence of consumerism in the society, demand elasticity is high in the passenger ships scenario. Comparing with competition in the warships scenario, however, competition in the passenger ships scenario is lower and that is because the government supports automotive manufacturers. Therefore, corporations can work in a calmer environment and move toward their goals in the competition sea like giant passenger ships. In this scenario, the entrance of new rivals is difficult and the reason is actually the government's support of aboriginal automotive manufacturers. Corporations can set their manufacturing strategy to manufacture middle-class and high-class automobiles and attract their target customers via "under license" manufacturing. Corporations can also utilize formal strategic alliances with their principal rivals.

3.4.4 Lifeboats Strategy

When people move toward socialism and the government is supporting the automotive industry, lifeboats scenario will occur. In this scenario, manufacturers start manufacturing middle-class and high-class automobiles while utilizing an outsourced marketing strategy. As the people's interest to buy a personal automobile is very low and the government supports the manufacturers, penetrating the market is very difficult in this scenario. Therefore, corporations should utilize new marketing systems such as a customer relationship management (CRM) and a total relationship management (TRM) in order to identify, attract, maintain, and classify their stakeholders. Automotive manufacturers, which are able to manufacture luxury automobiles, can also utilize this strategy to improve and expand their market share.

4. RESULTS AND RECOMMENDATIONS

Scenario planning is a tool which can be applied in different contexts and different forms to reach different goals. The scenarios' entire occurrence is probable. Although scenarios don't provide the ease and safety that most senior managers seek, subtle and rich scenarios are useful tools to discover alternatives and prepare for the future. In surveying Iran's automotive market, there are considerable risks facing the vision of automotive industry growth such as continuity of economic mismanagement and the possibility of more international sanctions. Sanctions on Iran have negatively influenced the investments on Iran Automotive Industry. Although Iran's automotive industry is not in the list of sanctions, long-term problems related to benefiting international credit markets, the increased risks among potential investors, and wider influences of economic sanctions still exist. With regard to Iran's economic and political turbulences, the opportunity for business alliances, the opportunities to put diversity in models of automobiles, and the complexity of technology in this industry show the necessity of paying more attention to the importance of reasonable scenarios for Iran's automotive industry.

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