Applying Godet’s Scenario Methodology to the Turkish Apparel Industry

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Abstract
The value of Turkish textile and apparel trade has shown steady growth since the 1980s, making this one of the indispensable sectors for the Turkish economy. However, after 2000, the dramatic effects of globalisation and liberalisation began to be felt in world textile and apparel trade, subsequently changing the dynamics. Companies working in the textile business were compelled to make strategic adjustments in order to determine their future opportunities. Scenario planning enables managers to better analyse the future environment than when using other techniques. In this study, Godet’s scenario planning methodology was applied to the Turkish apparel industry in order to determine future perspectives the industry would face.

Key words: Turkish apparel industry, scenario, scenario planning, Godet.

Introduction
The apparel industry is one of the most important sectors in Turkey. It has been the recipient of funds from both the government and private investors because of the availability of raw materials in Turkey for the production of natural and synthetic fibres [1]. The sector developed rapidly after the 1980s when Turkey put liberal economic policies into operation. Having both textile and apparel production, Turkey became a full package supplier country especially for the European market. After the 1990s, Turkish firms had to meet a range of requirements regarding price, quality, delivery, and labor standards [1]. With the establishment of the Customs Union with the EU in 1996, Turkey strengthened its market position in Europe.

After the accession of China to the WTO, the share of Turkish textile and apparel exports to the European countries and the world began to decrease gradually with the elimination of quotas since cheaper products began to enter the market. Besides the threat from China, there was also a global shift in the textile and apparel industry which brought the newly developing and undeveloped countries to greater prominence in this industry. Consequently Turkey began to feel the impact of this new fierce competition. All these factors combined with the global economic crisis took their toll on the industry and resulted in a decrease in the value of exports. Even the share of apparel exports in the total exports decreased to 14.5% in 2007; whereas it was 26.1% in 2000 [2, 3]. Despite all the turmoil which the industry faced, the value of the total textile and apparel exports became 21.1 billion dollar in 2010, where 14.6 billion dollars belonged to the apparel industry, continuing to be significant for Turkish economy [3].

However, it is necessary for the industry to better forecast and prepare for the future by the implementation of well thought-out strategies. In fact, there are various studies from academia and industry with the aim of strategy development for the industry using environmental scanning and forecasting methods for future prediction. Nonetheless, separating the future prediction and strategy development stages from each other enhances objectivity, thereby eliminating prejudices.

In this regard, forecasting and scenario development can be employed to better determine the future image. Forecasting tells exactly how some variables can change in the future, usually by extrapolation of the future from past events [4], whereas scenario planning is based on foresight i.e. the ability to see the future [5] and has a larger view of different aspects of events [6]. Therefore scenarios can develop the overall picture for future perception.

The aim of this study is to develop future images for the Turkish apparel industry with an approach based on scenarios. To achieve this, the scenario planning approach developed by Godet was applied to the Turkish apparel industry to develop a future image for the industry, which has begun to feel pressure from its competitors, especially after the abolition of quotas. Since Europe is the major importer of Turkish textile and apparel products, the European perspective was taken into consideration as an outer environment indicator. A time horizon of 10 to 15 years was selected for the predictions. The study was carried out by conducting systematic data gathering and the evaluation steps described in Godet’s method, which presents a systematic way of predicting events, thereby maintaining objectives provided on a mathematical basis. Finally four scenarios with different probability values were established from six main hypotheses depicting the conditions the industry would face in the near future.

Literature review
Turkish textile and apparel has always drawn the attention of researchers due to its contribution to the Turkish economy and its recent downturn after the constant growth trend in previous years.
In many studies, the industry and business environment were reviewed, supported by statistical data and analysis. Future forecasting was, on the other hand, established as a part of the strategy development process in various studies. The government prepared reports for the textile, leather and apparel industries as part of a specialized commission within the framework of 9th Development Plan [7]. The Ministry of Industry and Trade coordinated the establishment of urgent measures and a medium to long term strategy document with participants both from the private and public sectors [8]. A series of studies were conducted by the Turkish ready-to-wear clothing association called ‘Horizon’ with the aim of determining a road map for the industry [9]. Many reports were prepared and papers published regarding an analysis of the competitiveness of the Turkish textile and apparel industry [8, 10-14] with the proposition of a systematic strategic assessment model for the Turkish apparel industry [15]. All the studies made a broad overview of the system and included many details. The procedure for developing strategies and future forecasting was strongly related to each other and usually included the positioning of the sector by identifying the strengths and weaknesses of the industry, after a global overview. In some studies, scenarios took place as the outcome of trend extrapolations but not as a specific course of the future image.

In fact, scenarios can be defined as a description of a possible set of events that might reasonably take place [16]. They have the ability to give a story of how many elements might interact with each other under certain conditions [17]. Embracing qualitative perspective as well as quantitative data [5], scenarios are flexible enough to be used for a specific situation [5]. Therefore scenario planning has been applied by many industrial organisations in the world after firstly being used in the military [18]. Different techniques were developed for the construction of scenarios based on the application steps, the degree of quantitative and qualitative data they were based on, and the consideration of relationships between the variables. They were gathered under three main groups, which were intuitive logic, trend impact and cross impact schools [25]. Bradfield et al. included another school called La Prospective [18], which uses qualitative characteristics of intuitive logic and a combination of trends and cross impact models [18]. Scenarios have been used in many fields from the military and marketing, to management in different sectors like the electrical industry [19], forestry [20], advertising [17], the power industry [21], e-commerce [22], and the security equipment sector [23]. Scenario planning was found to have prominence over the other forecasting techniques due to its special emphasis on causal connections, internal consistency and concreteness [24], and has the advantage of prioritising the information requirement [20].

### Methodology

In this study, a future projection for the Turkish apparel industry was determined based on situation analysis of the outer environment, specifically the European textile and apparel market. To achieve this, Godet’s scenario planning methodology, which was included in the La Prospective school by Bradfield, was selected as it could provide the mathematical base, benefiting intuitive logic, which is dependent on the judgments of experts.

The Godet’s scenario method comprises two stages: “the construction of a database” and “the setting out of scenarios leading to the generation of forecasts”.

In the first stage of base construction, a detailed image of the present state of the system, which has economical, technological, political and sociological aspects, is drawn by identifying firstly all the variables and relationships between them. The system is delimited and its complexity is reduced to key variables in order to discover the relationship structure characterising the system using the MICMAC method. Then the leading actors and their decision mechanisms are defined and analysed with the MACTOR method suggested. In the second stage, many possible hypotheses are developed and a selection is made on the basis of the likelihood that they may occur. In Godet’s approach, a kind of cross impact analysis called SMIC is used at this step, which allows to construct a hierarchy among the scenarios based on their probabilities.

As there are not any data or statistical information about the future, the only data is personal judgment about the future [26]. In this regard, Godet’s scenario planning method is based on the judgments of experts. Although there is no specific technique of the selection of experts, it is advised to study with foresighted and open-minded experts that have convenient backgrounds.

For this study, the experts were selected based on their backgrounds and considering their experience and knowledge of the different stages of textile and apparel production and marketing. Four of them were businessmen who had companies at different levels of the textile and apparel complex, three of which were from the marketing and logistics areas of the industry and the remaining two were academics specialised in the production and marketing of textiles. The working procedure involved four stages of interviews held with experts matching the requirements of the method. The results were checked for further corrections to be made at each step. In the end, four scenarios were derived from six hypotheses with greater probabilities verified by cross checking with results from a larger population.

### Application and results

#### First stage: The construction of a database

The construction of the base comprised two steps: the determination of variables and the relationships between them, and the determination of actors and the relationships between them, and objectives, whose results are as follows:

**First step: Determination of variables and the relationship between them**

In the first interview, the experts were asked about the variables that could affect the textile and apparel industry. The brainstorming technique was used in order to clarify the variables and discover the more important hidden ones. All the variables were listed and clearly defined, with the elimination of coincidences. Using this process, 29 variables were identified and selected for further use. After this step, a structural matrix involving these variables was developed in order to determine the impact of the variables on each other. For this aim, the experts were asked to fill in the matrix by using the symbol 1, which indicated that the variables in the rows had a positive effect on those in the columns by symbol 0, which indicated that the variables in the rows could not affect directly the variables in the columns. The MICMAC method,
a system of multiplication of matrices [26], was applied to classify the variables according to the influence they had. The multiplication of the matrix by itself was continued until reaching a step of stability in terms of the hierarchy of the total values of rows and columns. From the chart derived from the final matrix, the total influence and dependency values of the variables were obtained, and the figure was separated into quarters, as suggested by Godet. The total influence dependency chart obtained is shown in Figure 1.

In Figure 1, it was observed that the whole chart was not filled homogeneously as some parts of the figure were concentrated with variables, meaning that the system showed neither a stable nor an unstable character, having mixed behaviour instead. For further interpretations, the chart was divided into segments, as depicted. Based on the degree of stability of the system, the key variables were selected basically from the most influential and highly influential low dependent variables i.e. relay variables which had unstable characters. Besides this, variables close to the boundaries of this segment were taken into account. Finally the variables selected were classified as 1st, 2nd and 3rd groups of variables.

The 1st group of variables were used as relay variables in the second segment, as proposed by Godet. The primary key variables were the usage of new technological materials, consumption preferences, the amount of potential customers, product cost, brand and design activities. The key variables were seen to be basically related to the consumer preferences regarding differentiation.

The 2nd group of variables were the ones that were closely positioned to the 2nd segment, which belonged to relay variables. They were related to the customers’ continual expectations and the adaptation of the company itself to meet these demands, which were added value in production, production speed and flexibility, providing services to consumers other than products, quality and efficiency, technological infrastructure, specialisation and automation, network externalities and the number of rival companies. Finally the variables in the upper left segment were selected as the 3rd group of key variables, which were the cost of material, economy and local and global trade alliances, as well as economical and social characteristics.

Second step: Determination of actors and the relationship between actors and objectives

In the second step of the first stage, the relationship of the actors and their decision mechanisms was established. The actors were the people, institutions, governments or customers which could have an impact on the variables. For this study, consumers, technology developers, design creators, brand owners, raw material suppliers, logistic companies, firm managers and governments having free trade agreements were selected, respectively, as the actors based on the key variables in the previous steps. Moreover an Actor×Strategy table was established in which the actors were in rows and columns, whereas the cells were filled according to their plans, motivations and means of action in order to find out the conflict areas and objectives. The objectives were as follows:

- O1 Selling products at lower prices
- O2 Giving less harm to the environment
- O3 Increasing the number of seasons and variety
- O4 Giving services other than products
- O5 Expansion of e-commerce applications
- O6 Employing high qualified labour
- O7 Using technological raw materials
- O8 Expanding the consumer base and market
- O9 Using IT technologies
- O10 Sharing know-how with companions
- O11 Building a supply chain
- O12 Decreasing the labour cost
- O13 Doing design activities together with partners

After the strategic issues and objectives were identified within the conflict areas, an explanatory analysis was applied in order to better clarify the points of divergences and convergences using the Mactor method.

Mactor was established based on two matrices filled by the experts: Actor×Objectives and Actor×Actor. The Actor×Objectives matrix had actors in rows and objectives in columns. The experts were required to assess the attitudes of the actors toward objectives by making a simple comparison using a scale of -1, 0, 1 expressing negative, neutral and positive attitudes. The experts also filled in the matrix of 2MAO with a scale of 3, 2, 1, 0, -1, -2, -3 to make a hierarchy pending on their ability to impose priority on others. Priorities were grown out of relationships and strengths. For this aim, the experts filled in an Actor×Actor matrix. The initial matrices were as given in Figure 2 (see page 10).

The following matrices were obtained by deriving the matrices from each other. The power coefficient was evaluated and added into the system for further matrices to be developed. The procedure applied is shown in Figure 3 (see page 10),
At the end of the Mactor analysis, it was found that the most favorable objectives were “usage of IT technologies”, “building supply chain activities”, “increasing the number of seasons and variability”, “employing qualified labour”, “giving less harm to the environment”, and “usage of technological raw materials”.

The most influential actor was found to be the governments that have FTA. The raw material suppliers and company managers opposed these objectives as they gained from differentiation. Similarly the raw material suppliers supported the sharing of knowledge, while the company managers and technology developers were opponents.

### Second Stage: The setting out of scenarios leading to the generation of forecasts

In the second part, scenarios were built based on the morphological space of the hypothesis which was derived basically using the outcomes of the previous structural and explanatory analysis established, printed papers and statistics. In this regard, 22 hypotheses were developed under 8 main titles, and then the morphological space was reduced to 6 considering their probabilities to occur. The select hypotheses became:

1. Low cost countries will lose their advantages as wages increase
2. The demand for technologically improved garments will increase
3. The number of brands will increase; the customer base will decrease to an extent
4. Environment friendly products will gain popularity
5. Trade partnership activities within the trading blocs will increase
6. The product portfolio will enlarge; the variability and number of seasons will increase

After the hypothesis had been selected, scenarios representing the possible combination of the hypothesis were determined. This was done by the application of cross impact analysis, in which the possibility of the hypothesis to come together was analysed using independent and conditional probabilities. For this aim, experts were required to determine independent and conditional probabilities of these hypotheses in cases of other hypotheses to have occurred or not to have occurred. The results were analysed using the SMIC-PROB-EXPERT program with an algorithm solving a quadratic minimisation problem using the rules of probability. The probabilities of all scenarios with different combinations were evaluated and 4 scenarios with the highest probabilities were determined, as seen in Table 1.
Explanations for the scenarios are given below

_Fashionable green products_
Environment friendly products were seen to gain popularity by increasing the production costs as the customers would prefer to buy more environment friendly products. All the producers in the value chain would be required to pay the same attention to the rules. On the other hand, in this scenario it was implied that the product portfolio would enlarge and the variability and number of seasons would increase.

_Regional fast fashion brands_
This scenario implied that the number of product types would increase and the products would change in design with some fashionable modifications to them. The brand producers would develop different collections and fast fashion brands. In this scenario, low cost countries were found to continue producing at competitive prices and, trading activities within the blocs would develop fast fashion brands, causing the number of full package suppliers to increase.

_Technological brands with a shift in production patterns_
According to this scenario, the demand for smaller consumer bases would increase for the technologically improved products. On the other hand, low cost producing countries would lose their low cost advantage as the production of technologically intensive products would require more skilled and qualified labour.

_All in one_
This scenario involved all hypotheses at the same time. People would prefer environmentally friendly but technologically intensive products at the same time. New brands with a smaller consumer base would present highly variable, large portfolios. Regionalisation activities would probably increase because of fast fashion production on demand.

It was seen that the scenario “All in one” got the lowest probability value of 0.116, which meant that it is less probable that all the hypotheses occur at the same time. Three hypotheses were selected to have occurred three times among four scenarios, which were “Low cost countries will lose their advantages as wages increase”, “The number of brands will increase, the customer base will decrease to an extent”, and “The product portfolio will enlarge; the variability and number of seasons will increase”. In fact two of the hypotheses took place in the third scenario, entitled “Regional fast fashion brands”, with the hypothesis “Trade partnership activities within the trading blocs will increase”. This meant that design and marketing activities will be indispensable for the market. On the other hand, the scenario entitled “Fashionable green products” got the highest probability among the four scenarios, which was followed by “Technological brands with shifts in production patterns”. It was interesting to see that the scenario “Fashionable green products” included the hypothesis about variability in the product portfolio, whereas the scenario “Technological brands with shifts in production patterns” included the hypothesis concerning the development of brands, while the hypothesis “Low cost countries will lose their advantages as wages increase” was common for both scenarios. Therefore it can be concluded differentiated, high value added product types would be in demand, thereby increasing labor wages and requiring skilled labour.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Scenario-1</th>
<th>Scenario-2</th>
<th>Scenario-3</th>
<th>Scenario-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low cost countries will lose their advantages as wages increase</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>The demand for technologically improved garments will increase</td>
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<td>✓</td>
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<tr>
<td>The number of brands will increase, the customer base will decrease to an extent</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Trade partnership activities within the trading blocs will increase</td>
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<tr>
<td>The product portfolio will enlarge, the variability and number of seasons will increase</td>
<td>✓</td>
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<tr>
<td>Probabilities evaluated</td>
<td>0.116</td>
<td>0.304</td>
<td>0.259</td>
<td>0.291</td>
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</table>


### Conclusions

The apparel industry has been one of the most important industries for the Turkish economy and growth. However, it has begun to feel pressure from its competitors recently. This study was carried out in order to draw a future image of the Turkish apparel industry in the European market, which has been the major market for years.

To achieve this, future perspectives were built using Godet’s scenario methodology. Four scenarios were developed with a probability of 0.304 at most. The scenarios were analysed according to their probabilities and the hypotheses they involved. The combinations of hypotheses which were extremely likely to occur at the same time were established.

According to the results, companies which develop and implement well-established strategies for scenarios involving a combination of certain hypotheses would gain success and maintain their sustainability and competitiveness.

### References

10. Ongut E. Turkish Textile and Clothing Industry’s Adaptation to the Changing Competitive Conditions (in Turkish).
The Programming Board of the 14th International Triennial of Tapestry invited outstanding specialists in textile art from several countries to take part as national consultants with the aim of selecting the best candidates fulfilling the criteria to participate in the triennial. Independently on the basis of the rich archive at the disposal of the Central Museum of Textiles and a wide review of artistic events. The Programming Board additionally invited individual artists from 11 countries, as well as 20 from Poland.

In the end 134 artists from the following 50 countries will participate in the triennial: Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Chile, China, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Island, Israel, Japan, Kazakhstan, Kenya, Latvia, Lithuania, Mexico, Norway, Peru, Poland, Portugal, Puerto Rico, Romania, Russia, Slovakia, Slovenia, South Korea, Spain, Sweden, Taiwan, The Netherlands, Turkey, Ukraine, Uruguay, USA, Venezuela.

Thanks to the cooperation with national consultants and Ms. Pilar Tobon, the president of the World Textile Art Association, it was possible to increase the number of participants from South and Middle America. For the first time artists from Costa Rica and Puerto Rico will participate.

Beginning from January and leading up to December 2013, which means in the year of the 14th edition of the Triennial, over 80 events will be presented at different sites in Poland. Nine of them are great cyclic events, also of an international and all-Polish character, taking place mainly at the greatest textile art centres, such as in the towns or Gdańsk Pomerania and Lower Silesia and, of course, in Łódź. The great Festival of Textile Art in Cracow, for years cooperating with our triennial, will not take place this year only due to the financial difficulties. The same financial reason caused that the number of associated events decreased this year from about 100 commonly taking place in the triennial year, down to 80. The economic crisis has begun to be visible.

The Programming Board invited well known experts of the highest artistic position and experience to take part as members of the International Jury of the 14th International Triennial, and below are listed those who finally agreed to their participation in this honorable, but also responsible and industrious assembly: Ewa Latkowska Żychska (Poland), Professor of the Strzemiński Academy of Fine Art in Łódź, Carol Russel (USA) – artist, art teacher and art critic, Pilar Tobon (Venezuela), President of the World Textile Art Association, iniciator of the Int’l Meeting Women in Textile Art, and Norbert Zawisza (Poland) Director of the Central Museum of Textiles in Łódź.

The International Triennial in Łódź has for years been traditionally associated with the Polish Exhibition of Tapestry (this year already its 12th edition) and the Polish Exhibition of Miniature Textiles, celebrating its 10th anniversary, both organised by the Central Museum of Textiles. At the end of 2012, the Programming Board established a separate selection Jury for these events, and in January 2013 the participants of both exhibitions were selected. At the 12th Polish Exhibition of Tapestry 70 artists will participate, whereas at the 10th Polish Exhibition of Miniature Textiles there were 108 artists.

The Department of Tapestry at the Strzemiński Academy of Fine Art together with the Central Museum of Textiles have initiated a new idea – the organisation of an international exhibition ‘The Young Textile Art Triennial’. This event is also commonly called ‘Tapestry Triennial of the Youth’. This year’s edition is designated for students and graduates of 2012 of university art schools. Participants from the following countries are provided: Bulgaria, China, Czech Republic, Estonia, Finland, France, Germany, Great Britain, Hungary, Poland, Romania, Slovakia and the USA. The works presented at the exhibition, concerning a wide spectrum of textile art, will be evaluated by a separate jury established by the Programming Board of the 14th International Triennial of Tapestry.

The opening ceremonies of the 14th International Triennial of Tapestry, as well as of the 18 international, Polish collective and individual exhibitions associated with the Triennial will be held in Łódź on 6-8 May 2013 (see also page 117).