

“THE SPANISH GLASS CONTAINER MARKET. A MODEL OF STRATEGIC PLANNING IN A FIRM”

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ABSTRACT

This paper aims a training tool which permitting different simulated situations would increase the degree of motivation and learning which could be achieved starting from a purely theoretical position. Most interactive modelling tools can be employed in gaming situations and provide a contribution to training by simulating the real world environment. Our model was developed from glass container Spanish market, and it is possible running different simulations to discover the best prices policies. Market interactions are so complex that they cannot be intuitively appreciated.

We studied the market composition, the demand evolution and the prices searching the market structure for the model. The simulated results for a company are: market share, quality, return, costs and benefits, inventory level, and installed capacity. So, we can simulate for a period in different scenarios the best price, capacity and inventory strategic policies.

KEYWORDS: Strategic Planning, Dynamic Systems, Glass Market.

1. A MODEL TO STRATEGIC PLANNING.

We built a model with a simulation tool as System Dynamics which can help managers in strategic decision making process as final purpose. We propose a model for a spanish company in the glass container market and we intend to show the applicability and the success of this modelisation. There are a little number of Spanish companies applying these techniques (e.g.: Iberia, Telefónica de España) in strategic planning. The software support is POWERSIM.

The main idea of a strategic planning model is the integration into an alone procedure of different aspects constituting the planning process. There are many tools a manager can use for strategic planning and scenario planning stands out for its ability to capture a whole range of possibilities in rich detail (see Schoemaker, 1995).

Most interactive modelling tools can be employed in gaming situations and provide a contribution to training, by simulating the real-world environment. A manager must have a concept of feedback system structure for organizing his knowledge about the system. In our model different scenarios are represented as different possible demand evolution. Markets interaction are so complex that they cannot be intuitively appreciated, and a manager can essay according the escenarios the best policies according the objectives of the company: benefits, market share, capacity, inventory (see figure at the end of the paper).

According to Milling (1995): "...” To be used as a strategy support tool, relevant managerial variables have to be included. The core model is expanded through sectors defining (i) market development and technological substitution, (ii) product pricing and its impact on operating results, (iii) capital investment and the resulting cost structure, and (iv) production volume and quality control.” Our model has considered these variables from empirical data in the sector.

2. DEVELOPMENT OF THE MODEL.

In general, once started, the modular approach to model construction can be developed to explore the system and its environment. It is often useful to begin the process of diagram conceptualisation using one or two major resources and a small number of levels at a high degree of aggregation and with a clear time horizon in mind (Wolstenholme et al, 1993).

So, we started our study with the conceptualization of the market, and the manufacturing process. The article "Market Growth as influenced by capital investment", by Forrester (1968), is a necessary reference for beginning. In this way, the first conceptualisation was adapted from Pérez Ríos & Del Olmo, 1992.

We based the model (see next figure) in the main company in the Spanish glass container Market. It is an oligopolistic market, and this company is the leader with a 50% market share. The other companies in the market have market shares between 7% and 25%. The environment scan according to Porter's analysis:

- ☞ Entry Barriers: 1. Minimum market share of approximately 7% (efficiency oven requirements); 2. Very low differentiation (a few products requiring a high quality); 3. The market shows a growth near of zero; 4. The financial structure of companies in the sector is consolidated and the machinery specialization suppose a high capital investment and an exit barrier because actifs especialization.
- ☞ Sustitutive products: In the last years there was recession times because the sustitutives (bricks, tin and plastics containers).
- ☞ The bargaining power of supplier: a fundamental supplier is Solvay, a monopolistic firm, and in Spain the energy (with a high percentage of total fixed costs) market is regulated by the government.
- ☞ The bargaining power of clients: They can execute their threats changing the container for their goods. In other way the major clients are the greatest companies in the Food and Drink Markets (wines and refreshments) representing a high percentage of total sales.
- ☞ Competitive Rivalry: There is a high rivalry, because the high costs of stocks and the exceeded production capacity. So, there is occasionally reductions in prices to reduce the stockage.

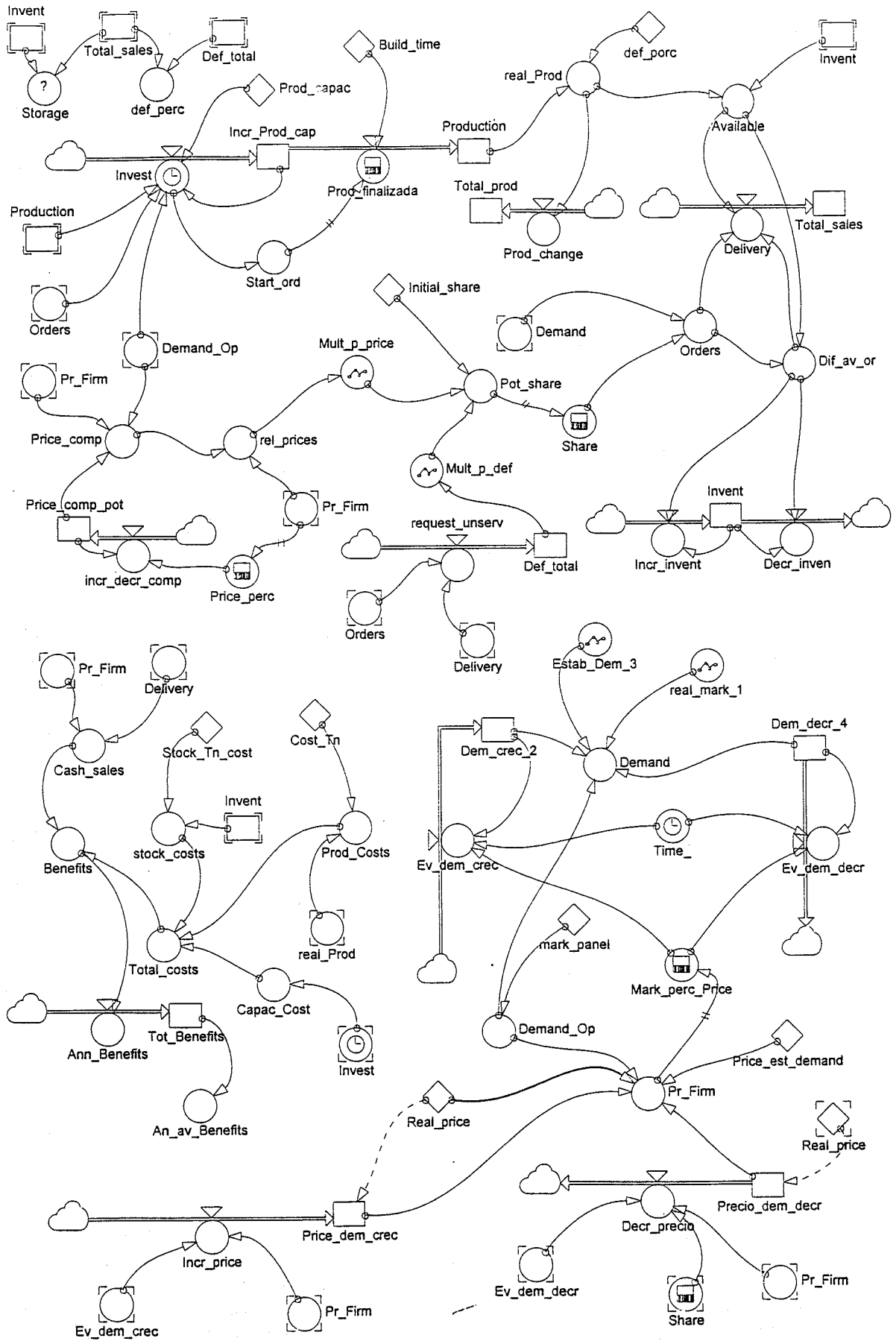
There are specific strategies searching a sostenible growth in the sector (see Marbella, 1994): 1. Clients delay payments; 2. Weight container reduction; 3. Increasing the recycled glass uses; 4. Technology Innovation; 5. Increasing the size of production series; 6. Reducing the energy costs (e.g. cogenerating); 7. Increasing the productivity. We can try the effects of their adoption employing our model but some of them require any changes.

Chosing model variables, we made attention at the importance of delivery delay in this market. For a company is very important their clients are satisfied with delivery goods date. Penalization by the market when demand is not fully satisfied may cause great variations in the market share.

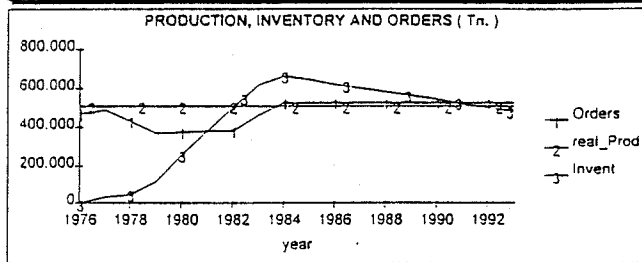
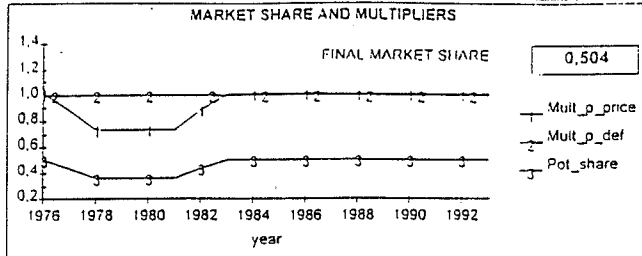
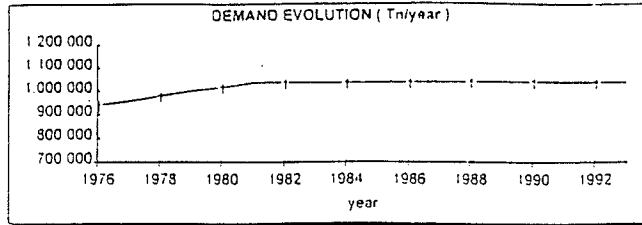
3. CONCLUSIONS

The aims pursued in our project can be summarized as follows: to carry out a practical-empirical study and generate a model using systems dynamics, which would make it possible to establish the validity of scenario analysis for management practices in a specific scenario like the glass container market:

1. We proposed a model not like a black-box game. It is the reason because you can find another non economic benefits: the managers have a good tool for learning and so avoiding fatal errors in their decisions. The scenario analysis is a profitable practice and the theoretic degree in System Dynamics is sufficient to offer managers these tools and so rising the generalizated use.
2. After concluding the model validation stage we went on to check the Nash equilibrium principles in different scenarios. The simulated results with the model were succesfully satisfactories.

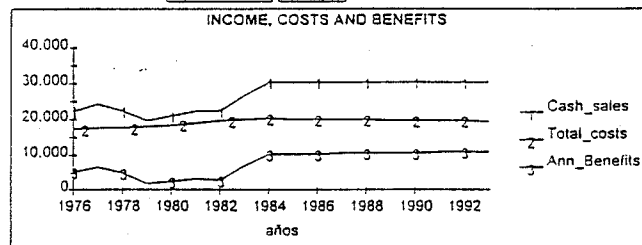


MARKET GROWING 2%. POLICY: PRICES INCREASING 4%



TOTAL PROD 8.568.000 TOTAL SALES (Tn.) 8.086.538

ORDERS IN DEBT 0,00 0,00 %



AVERAGE BENEFIT PER YEAR 7.159,80

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