

Full Length Research Paper

The role of supply and demand analysis in substantiating the company's business policies

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This paper develops the concept that we called the theory of markets polarity, as a central element of business approach. As a theory, markets polarity proves that market develop in a unitary way irrespective of their analysis and approach level, whether it is the extent level (their capacity), the level of structure, functionality or the level of markets evolution and dynamics. In other words, any alteration of the characteristic parameters of the market at a certain level results in a correspondent adjustment of the characteristic parameters of the market specific to its other levels of expression. Any structure alteration requires an adjustment of their functionality and any pronounced evolution or dynamics results in a volume adjustment of that market. The growth of development rate of the specific operations of a business fields results in productivity is an indicator which in turn is the base for the growth of production factors output rate and for general economic growth (volume growth of the field).

Key words: Strategic analysis, functional analysis, market, supply, demand, business portfolio.

INTRODUCTION

Supply and demand are the most analyzed concepts and the most mentioned notions in current economic expression. These two notions are part of the approximately 100 key words included in economic speeches. Nonetheless, there is not a current applicability of economic analyses made on supply and demand, in fields like management and strategic marketing.

The supply and demand theory is the starting point for this study which tries to develop some correlations between the two concepts and the strategic and policy choices of companies.

Companies develop approaches (strategic visions), corporative strategies, business policies, strategic and operational plans, activity programs, process design (Miles and Snow, 1978; David et al., 1997; Neamtu, 2008). All these have to be developed in an integrated way in a strategic system that is oriented towards directing objectives, in other words, towards a polarized strategic system. Any alteration at a level of this polarized strategic system results in adjustments at all the other levels whether they are super or subordinated.

A permanent connection is made between the two parts of the business environment: market environment and internal environment of the company. Both are systems characterized by the same development levels: sizes, structure, functional relations, functional interactions (evolutive), dynamic processes and development phenomena (factors), all these levels having certain state parameters (Keats and Hitt, 1988; Baum and Wally, 2003). In an ideal company-market group there is a perfect correlation between every level taken separately of the two entities of the business environment.

A market analysis at one of its levels can theoretically design the road to follow for the company and its management-marketing levels. Nonetheless, an accurate analysis has to be made at all the levels of the market, this analysis having both a complex explorative role and a check-up and control role (Walker and Ruekert, 1987; Eriksen, 2008; Foley and Fahy, 2009). We think that companies generally make analyses on 12 market characterization levels. This is why the supply and demand analysis has never been a complex and complete one. An analysis made at several levels is necessary in order to determine the company's action directions, as described in Figure 1. (Neamtu, 2009) If an exhaustive analysis of the market cannot be made, the safest way to accurately estimate the parameters of the market is

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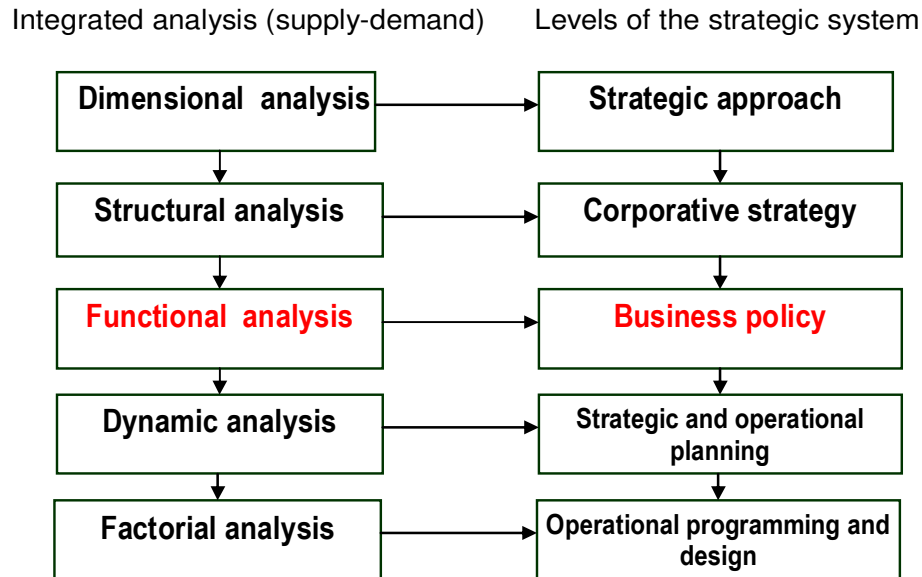


Figure 1. Model of complex analysis of supply and demand.

functional analysis, the level of functional interactions being the balance level of any system. This study tries to certify the way in which the functional analysis of the market can substantiate the aspects related to the company's business policy and at the same time, due to market polarity, estimate the capacity, structure, dynamics and development parameters. Functional analysis tries to show the relations that govern supply and demand at the market level (Porter, 1980; Jusoh, 2010). The operation of supply and demand together is of course related to the size and structure of the market or of its dynamics and the influence factors of the market which requires that along with this type of functional analysis, the dimensional, structural, dynamic and factorial analysis be also made at the level of supply and demand. Nonetheless, a good relational analysis can certify the state of the market at all the other levels and can establish the measures to be taken at strategic and operational level in accordance with the functional level (Narver and Slater, 1990; Carson et al., 2001) In conclusion, market research and business functional substantiation (along with strategic and operational substantiation) require an analysis able to accurately describe the sensitivity of the market, which expresses and determines the way exchange processes in the market operate.

RESEARCH METHODOLOGY

Functional analysis of the market

Supply and demand law – combined model

The fundamental indicator that reveals the mutual relations between supply and demand as well as their relations to the other

functional elements of the market (income, price and cost) is elasticity. In relation to these indicator parameters, there is a certain law in the supply and demand operation.

Supply and demand laws have had numerous approaches in discussion and have experienced many improvements in time. Therefore, the general law of demand, the substitution effect and the income effect Giffen, Veblen and Rugină paradoxes in the case of demand study as well as supply law, King and Rugină paradoxes are defining elements in the conceptualization of the notions of supply and demand (Mas-Colell et al., 1995; Case and Fair, 1999; Parkin et al., 2002; Perloff, 2008). This conceptualization has been made in time by the general economic (microeconomics) and very little by marketing, as the science of market (Schumpeter and Schumpeter, 1994).

The explanations on the supply and demand paradoxes can be rather explained by marketing and management analyses on demand and clients' sensitivity as well as on supply and business policies developed by companies on a competition market. In the model we are drawing-up and will start initially from the analysis of demand. The theoretical model used by economists considers that demand develops based on the function of demand, generally following the formula (Samuelson and Nordhaus, 2001):

$$C_x = a - bp_x$$

Where: C_x is demand and p_x , price. The function that characterizes demand is therefore a linear one, a result of combining the two vectors.

In this way, theoretically, the demand function, even in the conditions of oscillations, remains a linear one, evolving from a perfectly inelastic one to a perfectly elastic one and vice versa.

The same theoretical model applies also for the supply of goods and services. But, practice has proved that the supply and demand of a product on the market during a longer period, in which an operating cycle (economic) is included for a certain industry, follow characteristic evolutions of various functions, like the linear function, exponential function, logarithmic function or geometric function (Wall and Griffiths, 2008). From the point of view of evolution in relation to price, demand evolution is rather governed by the model of geometric function which requires its higher

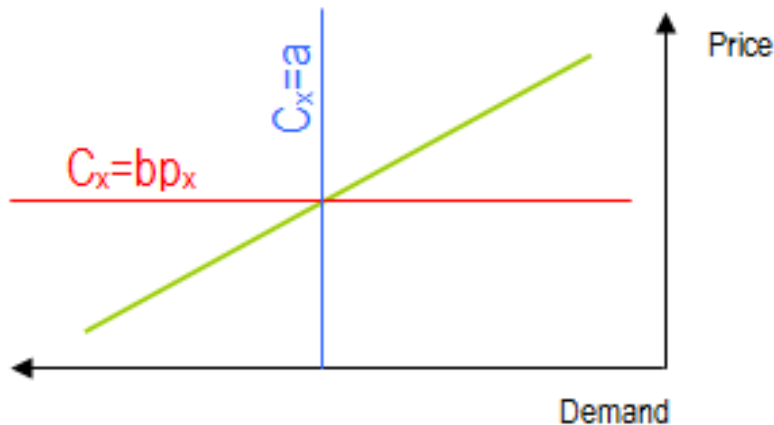


Figure 2. Demand function.

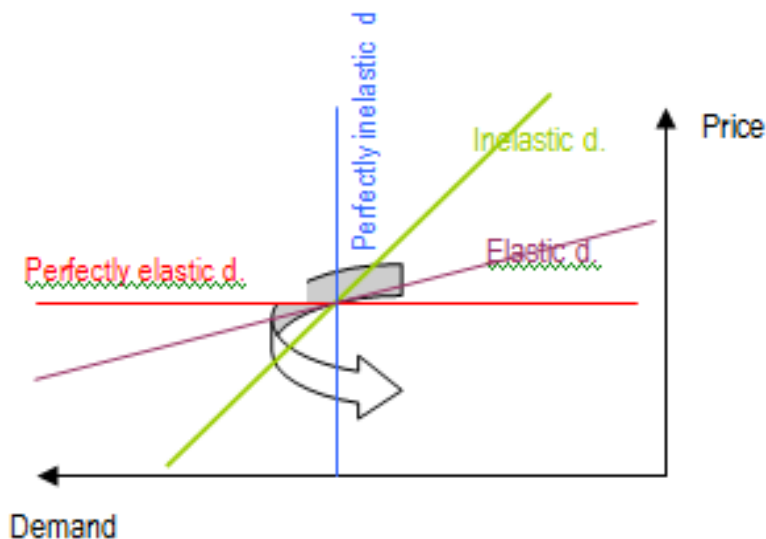


Figure 3. Theoretical models of demand evolution.

decrease to constantly growing price values. On the other hand, demand evolution in relation to income the logic of logarithmic function with progressive adjustment, resulting in a higher growth of demand in relation to the constantly growing evolution of the available income (Figure 4). This combined model reveals a balance point where demand can transit under the influence of prices to the evolution in relation to the available income. This explains the paradoxes specific to the demand evolution which is possible if demand elasticity in relation to price is decreasing and demand elasticity in relation to income is increasing. The balance point is the one in which demand elasticity value reaches the value of 0,5 in relation to both elements of influence. The same logarithmic evolution model would also be displayed by market supply if it were only under the influence of costs, supply decreasing progressively in faster and faster rhythm to their constant growth. The fourth component of the relational system, is the relation between supply and prices which is exponential with a slow growth of the supply in the conditions of a constant growth of prices. Just like in the case of demand, the combined supply model explains specific paradoxes identifying a balance point in which, due to prices

increases on the market, it starts to decrease tending to enter under the influence of production and trading costs or opportunity costs. This point of inflexion is the one in which supply elasticity has the value of 0,5 in relation to price and also in relation to costs. For a complete analysis of the market, demand analysis does not have to be made in the absence of supply analysis and a common analysis is necessary in order to provide a general evolution framework of demand in relation to price, income, substituted products and their price, as well as supply trends for the discussed industry.

General function of the market

The general function of the market is a complex one illustrated by a multiple evolution chart consisting of a group of diagrams of demand evolution in relation to price and available income and allotted income as well as by the supply evolutions in relation to costs and price. A graphic evolution model is therefore achieved consisting of several functional diagrams related to supply and demand evolution (Figure 6).

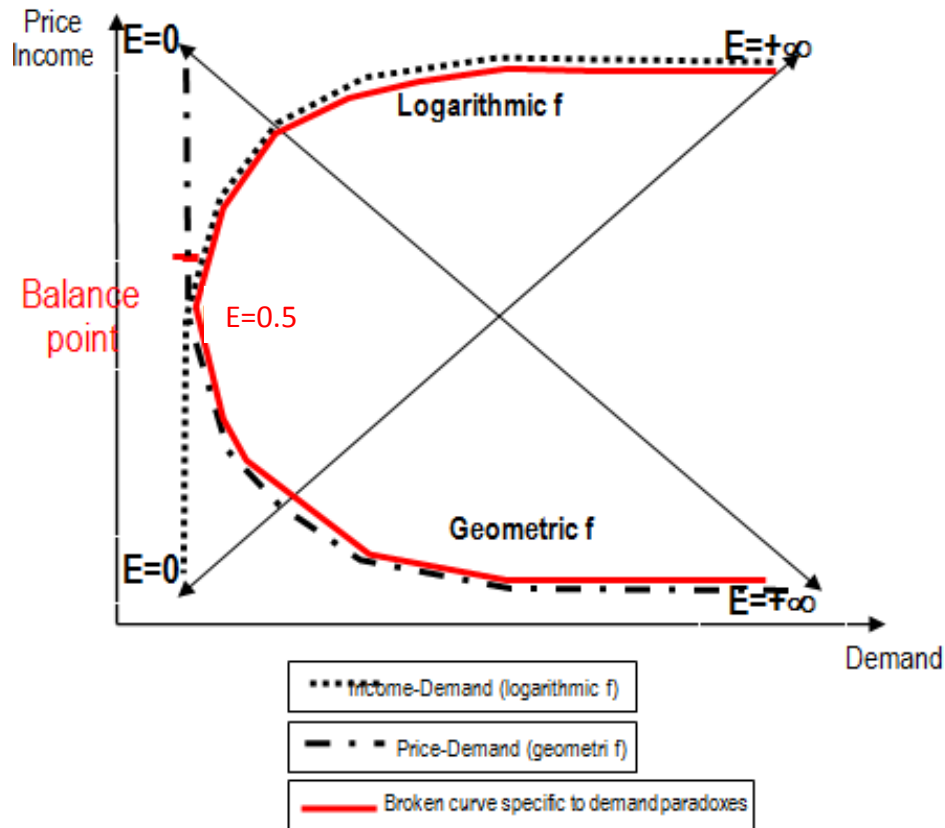


Figure 4. Combined model of demand evolution.

This model of market evolution certifies also that demand develops in stages, under the influence of several factors including under the direct influence of supply contradicting the general model of demand approach and bringing more arguments for the paradoxes that govern the laws of demand. The evolution of a product, industry or even technology during its operation cycle describes a closed circuit of the demand level on the market, with four stages of evolution. The same evolution applies also for supply.

The combined model of demand and supply functions helps to explain the short-term evolution of these components of the market, providing a connection with companies' business policies. Therefore, demand develops clockwise while supply develops anticlockwise.

Demand tendency to develop clockwise and supply tendency to develop anticlockwise can lead to certain major unbalances found in certain economies or historic stages, as there is a time when demand is maximum and supply is minimum (hyperinflation) and a time when supply is maximum and demand is minimum (overproduction economic crisis). This is why it is necessary that supply follows the logics of market demand in order to follow a dynamic balance, but there are cases when demand is manipulated on the market and causes weird expressions as it follows more the logics of supply.

Demand and supply manage to reach in the natural evolution of the market, only as an exception, a maximum level (+∞) or a minimum level (0) of elasticity. In this evolution of the two market components, there are natural breaking points which determine their adjustment. In the case of a natural evolution, without artificial interventions on the market, the market finds these balance and adjustment points. We will note these points with A1, A2, B1 and

B2.

The points in series A certify breakage in relation to price and income for the demand, respectively in relation to price and cost for the supply. They were previously analyzed (Figures 4 and 5). The points from B series show the mutual breaking of demand in relation to the supply and reversely. In point B1 demand adjustment occurs due to supply domination, which develops more stably than the demand, while in point B2 demand evolution is a market engine again. In the case of demand, in point A1, it is the moment in which, due to prices increases, the income effect occurs, demand being oriented towards investment goods or substituted goods. In B1 point demand tends to become perfectly elastic in relation to the allotted income, new segments of clients allotting incomes for the new acquisition. Along with demand increase scale economies occur which allow costs decrease and hence product's entrance on new segments with smaller purchasing power. At the same time, prices being high companies have to decrease their prices. During this process market prices also tend to decrease and the demand continues to increase following supply growth and diversification process and costs decrease. In point A2 supply is in the maximum extension point and due to costs and prices decrease, it starts the contraction process developed through the selection of the best products portfolios requested. It is the time when big companies and corporations manage to eliminate smaller companies from the market through a war of prices. At the same time, a part of the demand which is not met due to the supply regression and products standardization along with prices decrease begins consumption decrease or reorientation. In this sense, demand follows the logics of supply, depending on its evolution in the absence of real substituted products. In the end, in point B2 a final breaking of demand occurs, and negatively develops due to renunciation to the product.

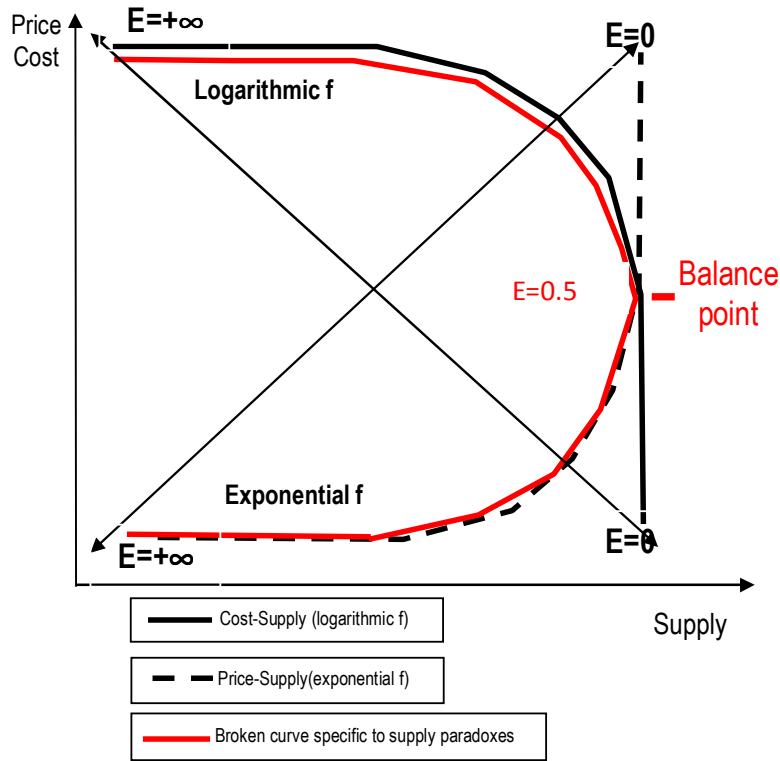


Figure 5. Combined model of supply evolution.

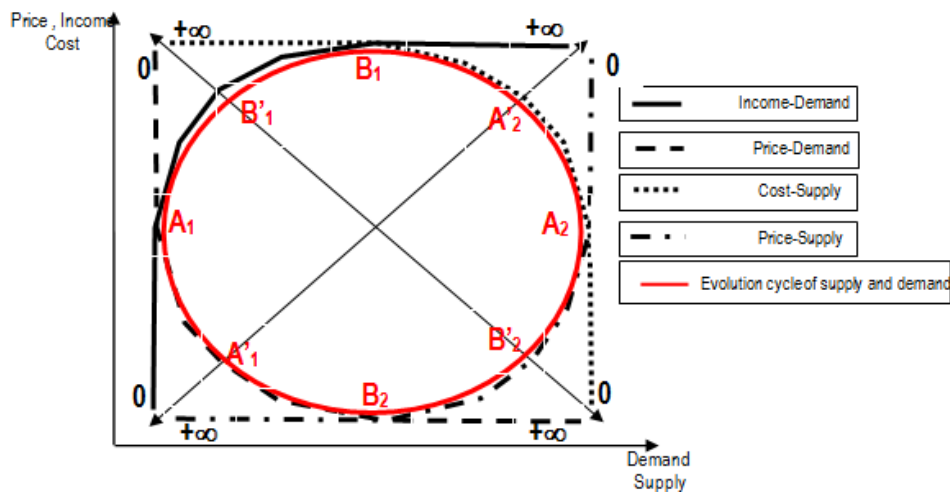


Figure 6. Combined model of demand and supply functions.

At the same time, monopolies appeared as a consequence of eliminating small and middle companies result in an increase of prices which influence in turn the exponential decrease of demand until final renunciation and demand circuit resuming. Therefore, the process is cyclic and is subordinated to: the laws of short-term economic cycles in case of products, medium-term economic cycles for technologies and long-term economic cycles for industries. Schematically, the process can be described as shown in Table 1. Complete cycle of the business - demand evolution mode.

Supply evolution model, which tries to force the logics of

demand, is reverse. Therefore, a supply that already exists on the market in point A1 will tend to develop the correspondent demand by decreasing prices. In order to avoid going into the prices war zone (perfect elasticity in relation to price), where clients frequently tend to migrate between various types of products, in point B2 supply will try to focus on groups of clients that do not want cheap goods but rather available goods and offer distribution forms adapted to purchasing habits. At time A2 focalization costs on target groups tend to become high, reason why companies decide to reduce target groups, and keep those clients and those products

Table 1. Complete cycle of the business - demand evolution model

Stage	Dominant function	Phenomenon
I. A1-B1	(+) - (-) Income - Demand	Substitute supply Innovation demand
II. B1-A2	(-) - (+) Cost - Supply	Products diversification and placement
III. A2-B2	(-) - (-) Price - Supply	Oligopolies development Social consumption
IV. B2-A1	(+) - (-) Price - Demand	Decline Monopoles and captive demand

that cover operating costs. Usually, large volume or value products are made and sold, profits resulting less from the large amounts sold and more from the profit rate. In the end, in point B1 supply, due to constant decrease of demand and due to the dependence on the available income, supply will tend towards those luxury consumption classes where incomes allocation can be big. At this point supply is minimal and future demand is based on a new opening of the product towards general consumption and at the same time prices cut due to consumption increase, resulting in a new supply circuit resuming. Schematically, supply circuit can be described according to Table 2. Complete cycle of the business - supply evolution model

These evolution cycles justify once again the paradoxes of demand and supply approached by economists.

Correlations between functional analysis and dynamic analysis of the market

Demand and supply evolution transposing in time can be described in stages. This transposition allows to correlate the two models of analysis (functional and dynamic), certifying a fundamental and permanent connection between market functionality and dynamics.

The chart of Figure 7 includes all the four evolution stages identified in the aforementioned functional analysis. On this chart we can identify points A_1 and A_2 in which the demand and supply are under the predominant influence of price as a factor developing on the market. On the other hand, the chart also includes the balance level of the market, a level reached especially in B_1 and B_2 where the demand and supply are under the influence of cost and income and price has not notable influence. On the chart we can identify all the stages of the operation cycle, as follows:

- 1). In the case of demand: A'_1 - B'_1 – launching stage; B'_1 - A'_2 – growth stage; A'_2 - B'_2 – maturity stage; B'_2 - A'_1 – decline stage;
- 2). In the case of supply: A_1 - B_2 – launching stage; B_2 - A_2 – growth stage; A_2 - B_1 – maturity stage; B_1 - A_1 – decline stage.

It is obvious that during demand and supply evolution it is necessary to adjust prices at the level of the balance price in order to avoid major unbalances between demand and supply.

RESULTS AND DISCUSSION

Market sensitivity, a major market indicator

What is market sensitivity? It is natural to ask ourselves this in relation to a new notion. Starting from the functional

analysis of the market, we have previously revealed that both demand and supply have weaknesses that can be used. In this way, the reaction of the market is often unpredictable and has sensitivities to the influence of certain factors, resulting in companies and their management - marketing evolutions on unwanted directions. Market sensitivity should designate the functional specificity of the market by identifying the influence factors and especially by establishing the way market reacts at the action of these factors present on the market. We will begin explaining this concept from the non-specific evolutions of demand, respectively the broken curve of demand which indicates that under prices increase, demand has a point in which it changes the decrease trend with an increase trend Figure 7.

Following this model, we identify four evolution quadrants. Analyzing the evolution of the market that follows the demand logics in the four quadrants, we can highlight its sensitivity trends during its operation cycle, as follows (Table 1 and 2):

1st quadrant – launching stage, passing from price sensitivity to product use value sensitivity (income influence). It is obvious that from the point of view of demand reaction to the use value (time 1), it is very sensitive to the displayed needs and to the way in which the product can be used for fulfilling these needs;

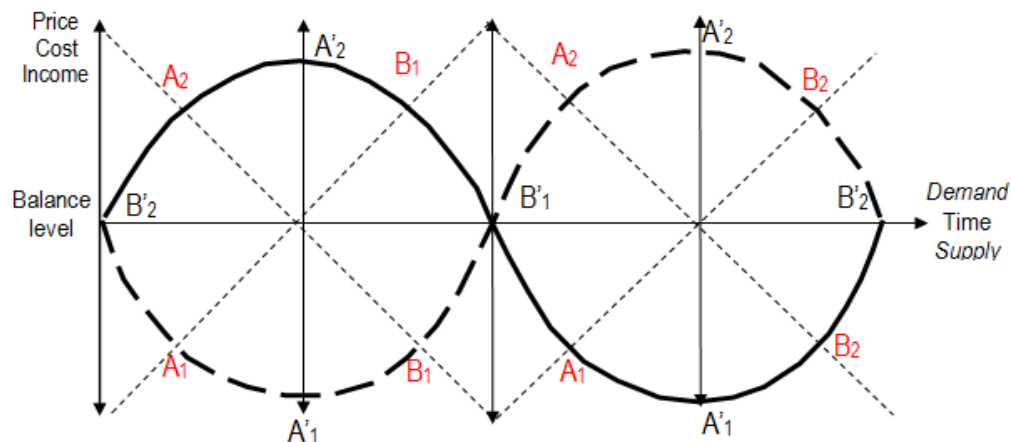
2nd quadrant – growth stage, passing from product use value sensitivity to its owning value (supply influence). When the use value is decisive (time 2) we can speak of maximum sensitivity of demand to desires (as personal forms of identifying the needs fulfilment solutions);

3rd quadrant – maturity stage, passing from product use value sensitivity to owning costs sensitivity (cost influence). When the demand is strongly sensitive to owning costs (time 3), we are speaking of a greater sensitivity to purchase and consumption ways, the client following to minimize all the costs that may result from a product purchase and owning;

4th quadrant – decline stage, passing from sensitivity to product owning costs to price sensitivity (price influence).

Table 2. Complete cycle of the business - supply evolution model

Stage	Dominant function	Phenomenon
I. A1-B2	(-) - (+) Price - Demand	Prices competition Mass consumption
II. B2-A2	(+) - (+) Price - Supply	Identifying target groups Distribution and adapted consumption
III. A2-B1	(+) - (-) Cost - Supply	Selecting profitable portfolios Personalized consumption
IV. B1-A1	(+) - (-) Price - Demand	Individualized supply Luxury consumption

**Figure 7.** Dynamic model of demand and supply functions.

Price sensitivity (time 4) actually marks the complete – sensitivity to financial purchasing possibilities and solutions.

In other words we can speak of demand sensitivity which differs from one time to the other during the evolution of a business field in an operating cycle:

Time 1 – the demand is very sensitive to the characteristics of the product;

Time 2 – the demand is very sensitive to the image of the product resulted from promotion;

Time 3 – the demand is very sensitive to product availability provided by supply systems;

Time 4 – the demand is very sensitive to product price.

Nonetheless, we do not absolutely exclude the influence of the product on demand at times 2, 3 and 4. From the point of view of the product and following the complete cycle of demand (Table 1) we can say that the market, at the level of demand, is very sensitive to the following types of products:

1st quadrant – launching stage, passing from the sensitivity to independent products (time 4) to the sensitivity to substituted products (time 1);

2nd quadrant – growth stage, passing from the sensitivity to substituted products (time 1) to the sensitivity to derived products (time 2);

3rd quadrant – maturity stage, passing from the sensitivity to derived products (time 2) to the sensitivity to complementary products (time 3);

4th quadrant – decline stage, passing from sensitivity to complementary products (time 3) to the sensitivity to independent products (time 4).

Establishing business policies in relation to the functional state of the market

Business policy is the managerial orientation of all actions in order to manage a certain type of business from the strategic portfolio of a company (whether it is a company, corporation or group) and get a competition advantage on the market.

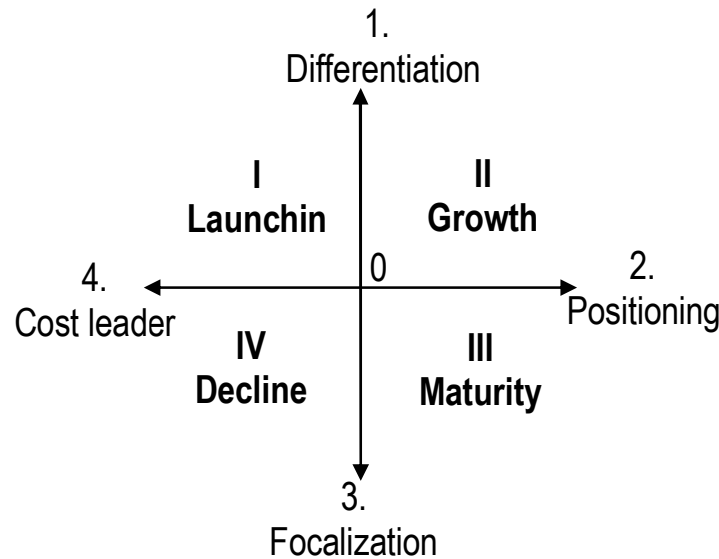


Figure 8. Simplified explicative model of market sensitivity.

Under this concept, the policy deals with the following aspects:

1. The way in which the company intends to compete in the business field;
2. Which will be the contribution of every functional field to the business success;
3. Answer solutions to the changes in the way rival companies compete;
4. The ways resources are allocated at the level of functional departments.

Policies limit the area in which a decision can be made and provide the agreement of the decision with the company's objectives.

They do not establish the actions that have to be taken in order to solve a problem, but define the limitations within which decisions have to be made and these actions have to be taken. I. Ansoff said that "policies are pre-established answers to repetitive problems" (1).

Policies require a certain business conduct at all the levels of the company, whether they are compartments, departments or divisions which are involved in the business and strategic business unit. In a company, these policies concern all the activities involved in a certain business being applied by all the persons with management functions and decision responsibilities. Any decision taken within the business, irrespective of the managerial level, will be subordinated to the business policy restrictions, having the fundamental decision criteria of the elements established at the level of policies.

The studies made in time, following various approaches of the strategic management have helped us conclude that there are four great policy orientations in businesses:

Differentiation, positioning, focalization and cost leader.

The differentiation policy establishes the main principle in business approach, which is the creation of a different product from technological and functional point of view and also business differentiation on the market in relation to main competitors.

The positioning policy supposes business approach by identifying demand segments and sub-segments and placing the business and the product on the most favourable segments.

The focalization policy requires the identification of the main consumption groups and of their physical space of expression following a correlation of offered products and these products movement towards the purchase points of the main consumption groups.

The policy of cost leader involves making cost savings in products making, balance prices identification for the main classes of clients and generating an advantageous offer from the price point of view.

Establishing the most adequate business policy

Returning in a way to the functional analysis, it is interesting to see that within the cardinal model described in Figures 7 and 8, in point 0 we have the value of demand and supply elasticity in relation to influence factors equal to 1. In exchange, in the extreme points the value of elasticity tends towards 0 or towards $+\infty$. Cumulatively, every point is characterized by a system of elasticity indicators which explain sensitivity:

$$\begin{aligned} \text{Point 1} - E_{O/c} &= +\infty \\ E_{C/v} &= 1 \\ E_{O/p} &= 1 \\ E_{C/p} &= 0 \end{aligned}$$

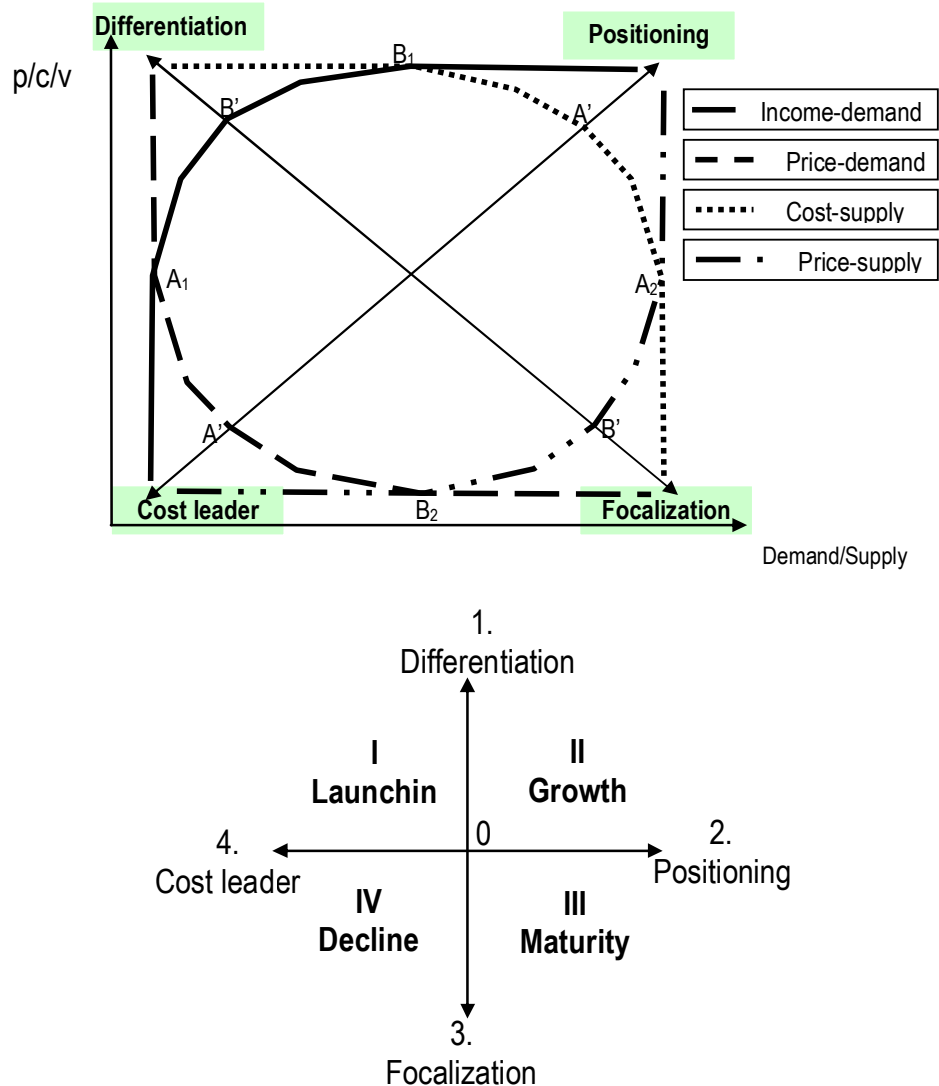


Figure 9. Business policies that apply to various functional circumstances of the market.

Point 2 – $E_{C/v} = +\infty$
 $E_{C/p} = 1$
 $E_{O/c} = 1$
 $E_{O/p} = 0$

Point 3 – $E_{C/p} = +\infty$
 $E_{O/p} = 1$
 $E_{C/v} = 1$
 $E_{O/c} = 0$

Point 4 – $E_{O/p} = +\infty$
 $E_{O/c} = 1$
 $E_{C/p} = 1$
 $E_{C/v} = 0$

Where: $E_{C/v}$, demand elasticity in relation to income; $E_{C/p}$, demand elasticity in relation to price; $E_{O/c}$, supply elasticity in relation to cost; $E_{O/p}$, supply elasticity in relation to

price. In conclusion we notice the following essential phenomena (Figures 9 and 10):

1. At time 1 the demand is perfectly inelastic to price which makes a buyer be too less influenced by the price, as it is searching for an innovative and qualitatively superior product. Also, at this time, the supply is perfectly elastic in relation to costs which certifies that the level of costs has exceeded the critical threshold which has made companies orient towards innovation and radical technological solutions. In this way, time 1 is the moment in which the differentiation policy applies perfectly.
2. At time 2 the supply is perfectly elastic in relation to income, this being the moment in which clients purchase in relation to the attraction factors of the product which may convince clients to allocate additional incomes. At the same time, the supply is perfectly inelastic in relation to price, because prices reach high levels, the demand

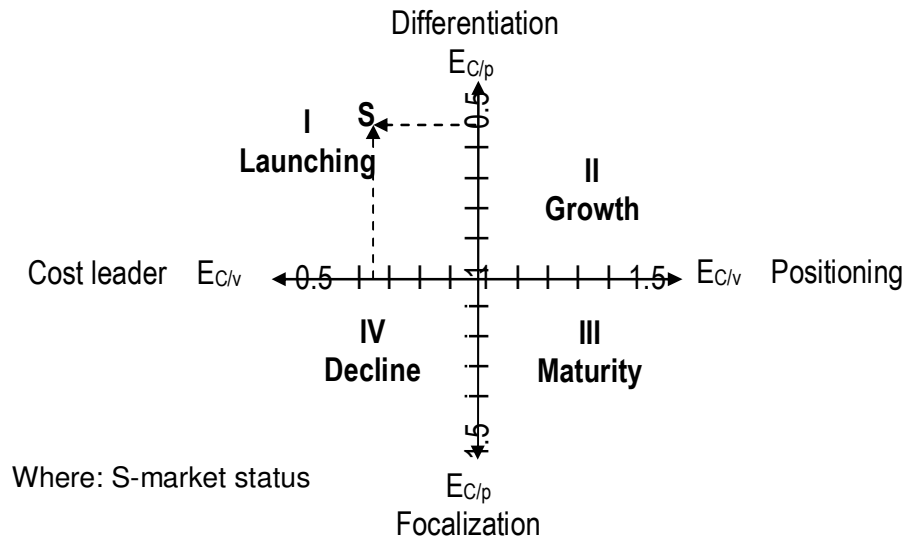


Figure 10. Establishing the market status and formulating the business policy.

has reached its maximum level and the supply tends to go towards areas where competition is relatively weaker. Time 2, due to its functional specificity, the application of a positioning policy becomes unavoidable.

3. At time 3 the demand is perfectly elastic in relation to price which indicates that there are many alternatives on the market, from which they can choose. Clients usually migrate this is the reason why the product that reaches the client fast, is the main competitor on the market. The supply is also perfectly inelastic in relation to cost, if the level of costs is very low, companies being willing to additional expenses for a better placement of the product. At this time it is obvious that in order not to enter a prices war, companies have to choose a focalization policy based on good distribution.

4. At time 4 the demand is perfectly inelastic in relation to income which means that income classes are established on the market among clients involving certain price references for every class of clients. The supply is also perfectly elastic in relation to price, being sensitive to any price decrease, reason why it requires drastic decrease of production costs. At time 4 companies have the main option in the policy of cost leader which refers to costs decrease and identification of the main price levels for the classes of clients on the market.

Nonetheless there are companies that seldom apply a general business policy from the four policies earlier described, because the market is in various circumstances that require a complex approach based on a combination policy.

As discussed previously, demand and supply have inflexion points (called paradoxes by numerous authors). These points are characterized by values of 0.5 respectively 1.5 of demand and supply elasticity in relation to influence factors. Under these circumstances, in which

values are between 0.5 and 1.5, every axis of the cardinal system will have an improper branch with values between 1 and 0.5. The status of market sensitivity will be characterized by a value on the OX axis and by one on the OY axis. The intersection point of the two demand characterization levels is the actual status of the market, indicating also the way in which in every quadrant, the two general approaches of the business policy will combine.

Conclusions

Analyzing the facts described above, it is obvious that a business policy can be established based on coherent analyses of the market and especially based on its functional analysis.

A manager's chances of improving decision processes are enhanced significantly if guided by a coherent functional analysis of market. Every issue presented in this study serves the interest of increasing competitiveness, and of stabilizing and improving the company's position in the market in a highly competitive environment. This study provides for the first time in the marketing-management literature a clear connection between the functioning of a market and managerial decisions for each identified market situations. A correlation of the market situation with company's strategic moves provides insights to improve their competitiveness and increase overall market efficiency.

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