

DYNAMIC EVOLUTIONS IN THE SWOT DIAGRAM

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SUMMARY

The commercial feasibilities of most of the business projects highly depend on the trust factor, which can be analyzed as the combination of two almost fundamental conditions for it being carried out. These are the environment in which they will develop their activities, considering as such, the industry and the industrial segment corresponding to the activity to be done and the characteristics of the enterprise itself, group or institution that it will carry them out. For this reason when one wants to carry out a business project, with an important probability of success, it is vital to begin it, knowing the industry in which it will be immersed, as the strengths and weaknesses of the enterprise, (institution or group) that will make it effective. In a previous work (Otero Gache,2005), these variables have been analyzed establishing a practical and at the same time simple matrix of scenarios that put at Small and Medium Sized Enterprise managers' disposal, tries to make it a little simpler to venture into the fascinating world of business. Now, deepening the analysis carried out in this work, we will make an exhaustive analysis of the "**enterprise**" and of its "**environment**", so as to be able to determine how the variables evolve, with more probabilities of making said project suffer great variations, and therefore difficult to control.

KEY WORDS: Small and Medium Sized Enterprises, SWOT (Strengths, Weaknesses, Opportunities and Threats), Trust, Dynamic Evolution

SOME HISTORY

From immemorial time man has tried to know or to predict the future to reduce the uncertainty that this generates in him. In the special case of people that develop their activities in the business field, this concern has taken different forms and structures depending on "who" needs or need to generate even partially, the trust in the decisions that they will adopt with their property. According to what expressed by Rafael Echeverría (Echeverría, 2000), *Trust will be a key element in the construction of the enterprise of the future*", further on he comments *"one speaks of the importance of trust in wider and wider circles. We see it mentioned in a greater number of publications on enterprises However, one is surprised what little is known about it ... Less still with clear indications than allow one to deduce how it is build, how it is managed, how it is destroyed and how it is possible to restore it, once it has been injured."*

Robert S. Kaplan and David P. Norton (Kaplan & Norton, 1992) outline that when making decisions in the business world it is fundamental to determine correctly the consequences of the actions taken by the enterprise, and which is the state in which the environment finds itself, in function of what they will do to make the next decisions. They establish that "What you measure is what you get". As a solution to this problem, they outline the concept of "Balanced Scoreboard" which results being a group of measurements that give the manager a quick but comprehensive vision of the business. This control board is likened to an airplane cockpit controls, which at all times is giving us the state of the engine and its environment. The answers obtained by applying this matrix aim fundamentally to the visions that the clients, the Stakeholders

(or financial perspective), have of the enterprise, the internal vision of the enterprise, and the corresponding learning and innovation. According to what they say, "*The balance scoreboard can only translate a company's strategy into specific measurable objectives*". In other words this work is a very good complement to the one which we are carrying out, because using the airplane analogy, our work consists on what to do, to make that engine run in an optimal way and that the *balanced scoreboard* would allow us to know the state of the flight.

Regarding the SWOT (Strengths, Weaknesses, Opportunities and Threats) as they are known today, they had their origin in the 60's (Humphrey, 2004). At that time, the University of Stanford's (SRI), Research Institute designated the group made up by Marion Doshier, Dr. Otis Benepe, Albert Humphrey, Robert Stewart and Birger Lie, so that, with the funds provided by Fortune Magazine enterprises, they try to determine the reasons why the enterprises' corporate planning failed. The matrix made to carry this out, was based on what Dr. Otis Benepe called "Logic Chain" of events, which, were destined to achieve the commitment looked for, by means of work on the different survey variables which as a result of the survey. This matrix consisted in "the internal as well as the external evaluation of the enterprise", defining in this way four variables that could be modified and which were called, SOFT (Satisfactory, Opportunity, Fault and Threat). But this name was modified arriving to the one by which it is known today, when in 1964 Uric and Orr's matrix was presented in the long term planning seminar held in the Dolder Grand Hotel in Zurich, Switzerland. They changed its name for SWOT and they took it to England in 1964 where they outlined it as an exercise, but as this was not the objective looked for, they appealed to the test and error method to obtain the desired planning. After modifying it, the first prototype was at the managers' disposal in 1966, by means of the publication "Erie Technological Corp" in Erie Pennsylvania, and in 1970 W. H. Smith & Sons plc, introduced it into Great Britain. It is necessary to highlight that the operational matrix was concluded in 1973 and used for the first time to achieve the merger of the molidp y homeado of the enterprises CWS

and J W French Ltd. In accordance with what was said by Albert Humphrey (Humphrey, 2004), from then on the matrix has been used successfully, making it easier for the diverse companies to successfully plan their activities.

Within the applications that have been carried out taking as a base the matrix generated in the SRI is the work presented by Tony Proctor (Proctor, 1999), in which he outlines that the environment of the business can be thought as being composed by three levels, the intern, the micro environment and the macro environment. The same one was based on Henry's works Mintzberg (Mintzberg, 1994) which suggests that the SWOT is really effective because it is based on the roots of the enterprise and therefore in its current perceptions and that it is still considered as a powerful planning tool in all kinds of businesses. D. Mercer (Mercer, 1996) has in turn outlined the importance of SWOT as a powerful management tool. Other authors that have studied the subject and have written on it, have done so from different optics, as for example "The Marketing Audit" (McDonald and Leppard, 1991) who outline a method by means of which they analyze the four variables and they relation them with different analysis and starting off from there they try to identify the success factors, although it is necessary to highlight that in practice it is simple to identify the important points, but it is not so much for, what to do with the generated data. Who comes closer to the work that we are carrying out, is what is proposed in three works presented by Heinz Wehrich, two of them (Wehrich, 1982-1999) to give a solution to strategic problems. And in 1993 he uses the SWOT matrix to determine four competitive strategies for Daimler-Benz (Wehrich, 1993). The great difference that exists among all these works and the one that we are facing is that up to now the strengths, weaknesses, opportunities and threats, have been considered as independent entities, one from the other, and in our case we outline that there exists a very deep relationship among all them, besides a logical precedence that disables the analysis, in the event of not being continued. We refer concretely that, in precedence order the first objective that the Small and Medium Sized Enterprise wants to fulfil, is that which determines the

strengths and weaknesses that it presents for that objective, and then, after that and in function of the chosen environment, the opportunities and threats will appear as a logical consequence of the previous decisions. This way of outlining the SWOT analysis, leads us to the fact which, in principle and until there does not exist a clear objective, the enterprise does not possess neither strengths nor weaknesses and (of course neither opportunities nor threats). Also if these are not sufficiently stable, it will not be possible to communicate trust in the market. On the other hand, this market is in permanent ebullition and its variables are changing constantly, resulting in the fact that the enterprises should be adapting themselves continuously so as not to lose their market share.

We have already pointed out that a very important topic to be highlighted is the one referred to the role, trust plays in business. As to the way in which you can measure this trust, there are different ways for doing so. For example, public and private organizations that nowadays are carrying on the task of giving a trust index, use the surveys method. Let us consider the case of the "Euro barometer" that in order to obtain the grade of trust in the future and the conformity of belonging or not to the European Union of the countries to be included, carried out in 2003 a series of surveys among the interested parties.

Surveyors such as "Conference Borrada" are constantly doing double the work surveying and generating tendencies to determine the level that the different variables, is such a study present at a certain moment and as a consequence of that, they will have in the short and medium term. It is necessary to highlight that, of this work only the results are obtained, as there is no register of the methodology used.

Summing up we can express that businesses and trust have a point in common. This point is the attitude that the different business actors assume and the way in which they communicate it, so as to achieve trust. The attitude and its corresponding communication will have origin in the fixed objective, which will determine the strengths and weaknesses of the enterprise (as the sum of individualities), which when in contact

with the environment will show up the opportunities and threats which said environment will present to the business.

As one is sailing in the business world, it is trust which will be the link by means of which a good business relationship is established. It is important to highlight that in the globalized world in which we live, the most important actor is the client and therefore the satisfaction of his necessities and wishes, is the key to retain his trust in the enterprise and the one which will definitely determine the commercial feasibility or not of the enterprise.

THE SWOT STRATEGIC MATRIX OF COMPETITIVE ANALYSIS

It is for such a reason that the first step toward a successful business consists on building a solid base that is integrated by the best elements that the organization has. To achieve said statement, and in function of the fixed objective, a detailed analysis will be carried out, of the intrinsic characteristics (or endogenous variables) of the enterprise, beginning with people which will conform the enterprise. Once deeply known the well-known abilities which the group has (such as the sum of abilities of all its members), which of those abilities are the most important for the achievement of the proposed objectives, will be identified. Because it is known that of all the available abilities, only some will be on-line with said objectives.

By now, it is important to highlight in this study that, so as to find the effects of a competitive advantage that has the virtue of reflecting the virtues of the enterprise and therefore of its members, as corner stone for its construction the fact that each human being possesses "**characteristics or abilities**", will be used, which are unique and not repeatable and therefore, one will not find two people exactly the same in the entire world. So as to continue with the analysis and after having determined which of the total of the characteristics of the organization, are the most appropriate or "**creative**" to achieve the fixed objectives, they should be grouped in two variables or groups, the

Strengths and Weaknesses. Really this group of variables thus defined is the best representation of the possibilities that the organization has to obtain its competitive advantage by virtue of the proposed objectives. Therefore if at the moment to put them into practice one glimpsed that an appropriate structure of Strengths and Weaknesses has not been achieved two things can be done, or reformulate the Objectives in such a way that maximizes said structure or to modify the variables in a such way that success in the achievement of the Objectives is guaranteed. Once defined the characteristics of **Strengths and Weaknesses**, with which the enterprise intends to reach the fixed objectives, it is important to make use of the analysis of the variables of the macro environment, in which the project will be developed, because from it itself, will arise, the **Opportunities and Threats** that will, in the end, make the project possible or not.

It is important to point out that the opportunities and threats are only those conditions or situations in which one does not have any possibility of influencing. In this case which we are considering, it is not completely true since, in the business world, it turns out to be a complex system where all the elements that compose it, interact with all, resulting in the fact that any action that is carried out within the environment goes, (in some way) to modify its conditions. Therefore it will be considered as a restriction that limits firstly the possibilities of interaction of the participant enterprises, defining that the proposed matrix will be applied to the Small and Medium Sized Enterprises, which due to their structure and force, cannot influence the environment. It is for this reason that in principle, tools will be developed for the analysis of strategies that take into account, the organizations that do not modify the environment, determining a static equilibrium.

PORTERIZED SWOT MATRIX

Now, there arises the necessity of using the SWOT Strategic Analysis Matrix, which relates the four variables defined up to now as **Strengths, Weaknesses,**

Opportunities and Threats, but keeping in mind that the pursued objective resides in establishing the so desired Competitive Advantage, it is going to be "Porterized" or relate it with the analysis that Michael Porter does in his book Competitive Advantage (Porter,1985).

Next the concept of Competitive Level is introduced, presented in the master thesis "A Study on obtaining a competitive advantage sustained through computer nexuses between research and development institutions and Small and Medium Sized Enterprises " (Gache F., 2002), for which one takes as a base the SWOT matrix already known and it is appropriately related with Michael Porter's work obtaining four new variables **Competitive Advantage, Competitive Disadvantage, Control Variables and External or not controlled Variables** which are function of the Strengths, Weaknesses, Opportunities and Threats.

From their combination arises the competitive level of the group or enterprise being analyzed, and therefore it is defined:

Competitive advantage (Strengths - Opportunities)

The or the competitive advantages arise when, thanks to the acquired strengths fundamentally with the personal effort, one can potential or is able to take better advantage than the rest of the market competitors. This is the key for which it is difficult for two or more people or companies can present, in the market, the same competitive advantages, since although they are based on the same environment variables, if each one of them learns how to recognize which are their true strengths, it will determine a competitive advantage different to that of the other ones and whose comparative value will depend on the way in which opportunities are potentialized within the market.

Competitive disadvantage (Weaknesses - Threats)

In this case there happens something very similar to that expressed in the previous paragraph, only in this case the external variables are the threats which

although they affect all the competitors, in each case they will be potentialized in different measures according with the weaknesses that each person or enterprise possesses. Once again one establishes a variable that although it is composed by a magnitude that is common to all, but neither affects all of them, nor represents the same danger for all those that share the environment.

Control variables (Strengths - Weaknesses)

The combination of the strengths and weaknesses define the group of control variables, on which each person or enterprise will work daily doing his best effort, because in fact they are the only variables with which one can do something concrete so as to improve or to strengthen a position. It is even more; it can resemble the support point that the lever requires to move the big rock.

NON controlled variables (Opportunities - Threats)

The combination of these variables allows the future manager as also the Small and Medium Sized Enterprise to evaluate the aggressiveness condition of the environment and although in principle he cannot do anything to modify them in a direct way, indirectly they allow him to establish strategies, that based on the controlled variables, tend to increase the opportunities and to diminish the threats.

THE SWOT MATRIX OF COMPETITIVE ANALYSIS

Once the profile of the environment is obtained, the characteristics of the enterprise or economic group that will develop the project within it, it will be analyzed in detail, keeping in mind that the obtained data will be **unique and non repeatable**. Since there are not two enterprises that possess the same characteristics. This group of elements which make an enterprise unique and non repeatable, will be concentrated in two endogenous variables that constitute the "**core**" of the Small and Medium Sized

Enterprise and they are their **strengths (s) and weaknesses (w)**. it is important to highlight that to obtain a sustained competitive advantage, the best weapons to compete against the other established enterprises or to establish oneself and to have a great possibility of success, consists in reducing to the minimum the weaknesses and to maximize those internal characteristics that represent **strengths**. In this way the enterprise, economic group, etc., guarantees itself obtaining a highlighted place in the market (Competitive Advantage).

DYNAMIC MATRIXES FOR THE SWOT VARIABLES

To deepen the concept one can say that, from the point of view of their ability to face a certain activity, the total of abilities of any human being can be expressed as a sum of the strengths and weaknesses. So as to be able to work more comfortably the expressions can be normalized

$$\mathbf{s + w = 1} \qquad \qquad \qquad \mathbf{(1)}$$

And therefore the enterprises can also be extrapolated, as they are formed by a certain quantity of people. Each one of them, when entering in contact with the other ones, couples their strengths and weaknesses to those of the rest, establishing a relationship that can derive in a synergic or non synergic effect, depending on the existence or not of a common vision, which is the most important agglutinant for the team work.

This normalization allows one to see that the values of strengths and weaknesses will move on a straight line that represents all the pairs of possible values that can assume the strengths and weaknesses.

In accordance with what seen in the previous section the group of strengths and weaknesses, defines within the environment (industry) chosen by the enterprise to develop its activities, a group of opportunities and threats that will be therefore in total

correspondence with the strengths and threats that gave them origin, so one can express that

$$o_{(s)} + t_{(w)} = 1 \quad (2)$$

That is to say that, any enterprise or person can be represented by their abilities to carry out a specific task, and that these in turn can be grouped in strengths and weaknesses, those that in turn define in the environment the group of Opportunities and Threats. If one represents the recently mentioned matter one obtains:

Figure 1

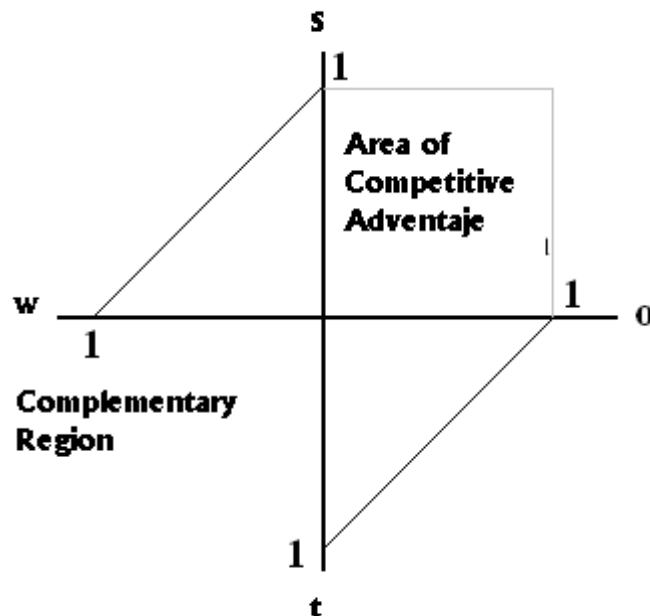


Figure 1: SWOT Normalized Diagram, the values of $\{(s,w); (o,t)\}$ are on the two straight lines at 45°.

Where we propose the upper right quadrant as representative of the region of competitive advantages and the lower left quadrant as complementary of the previous one. Different values of strengths and opportunities should be able to generate equal profitability to the enterprise. We will define the components vector, (s,o) in the

advantages competitive quadrant and its module as a measure of enterprise profitability:

$$\mathbf{P \text{ (profitability)} = (s^2 + o^2)^{1/2} \quad (3)}$$

Now let us see the possible evolutions of the economic variables of the SWOT matrix on the straight line determined by the conditions (1) and (2).

Although the values obtained as consequence of the normalization depend on several strong hypotheses however, the qualitative result agrees with the behaviour expectation of these variables. The weaknesses will never be able to be null and neither will we have 100% of the strengths. It will also be impossible for the threats to disappear or that we have 100% of opportunities. The obtained limits have a certain parallelism with the thermodynamic limits of the yield of a thermal machine. We will call them in consequence the SWOT thermodynamic limits.

To advance a little more we should speculate on some dynamic relationship among the variables. The strengths and opportunities are directly related with the growth of the enterprise although due to what we explained above the evolution of each one of them will follow independent roads. For an enterprise that "works" one expects a growth of these variables until sooner or later reaching non sintonic values. A pictorial vision of what could happen is seen in figure (2):

Figure 2

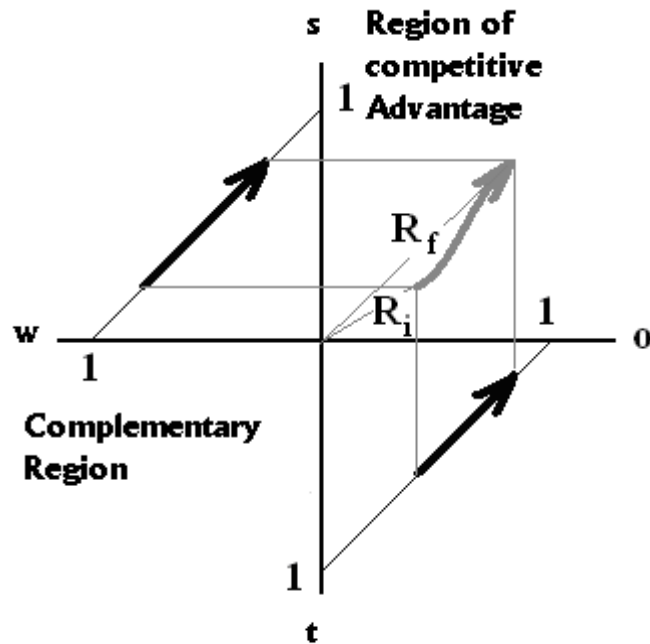


Figure 2: Whatever the equation that dynamically relates the variables (s,w) and (o,t) , the evolution will set off from certain initial conditions and it will end up in a limit value. The representation here is optimistic according to what represented by the Profitability vectors.

Initial (R_i) and final Profitability (R_f) (there has been a progress in the enterprise). As the equations for (s,w) and (o,t) in general will have different evolutions, the trajectory in the quadrant that we define, as of competitive advantage, will not necessarily be a straight line.

The evolution outlined in figure (2) is completely optimistic, the components vectors module, (s,w) is clearly bigger after the evolution among the initial and final values. A completely pessimistic version would be inverse to the one presented and an intermediate evolution could be the one represented in figure 3:

Figure 3

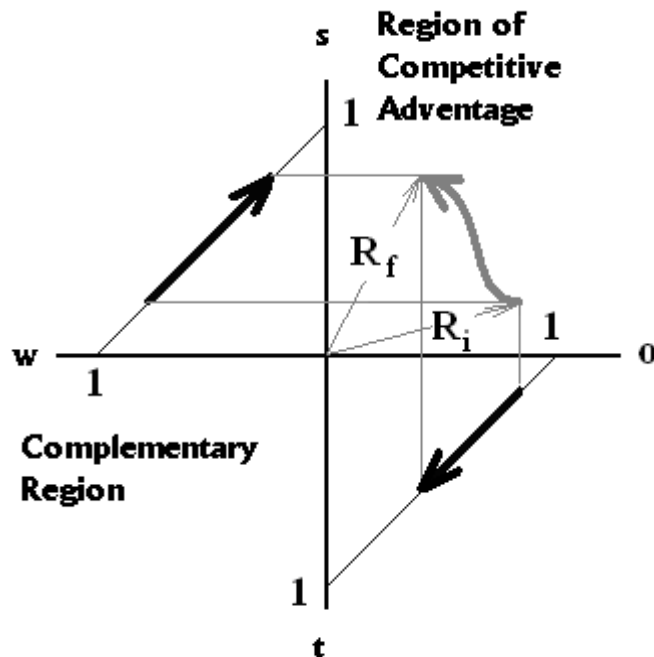


Figure 3: Example of an evolution where the strengths of the enterprise grow but the threats also, however profitability remains practically constant according to the modules of the vectors R_i and R_f that represent it. That is to say profitability sees compensated the increase of external threats by an increase in the internal strengths.

Of course we will have all the possible variants in the region of competitive advantage. One can observe that the maximum value for R is $2^{1/2}$ so it is convenient to use the normalized value of R : $r = R/2^{1/2}$. The profitability values in this way are between 0 and 1

CONCLUSIONS

The line of research opened in "*Trust, Swot and Scenarios*" of the same authors (Otero-Gache, 2005) is retaken now, to deepen the concepts presented in this work. We can conclude that, in the search of reducing the uncertainty that is generated when wanting to predict the situations that the environment will present to the enterprise, the

factors that cannot be modified by the enterprise have been related, with those that the Small and Medium Sized Enterprise, can modify.

The result obtained of relating "Porterized" SWOT (Gache, 2002), and the work *Trust, Swot and Scenarios* (Otero-Gache, 2005), is a matrix that links in hierarchical way the proposed objective, with the strengths and weaknesses of the human group which will carry out said objective, and this group will also, with the opportunities and threats presented by the industry and the industrial sector in which it operates (or will operate). Also, we have achieved that the SWOT diagram has a deep meaning, particularly in the possible trajectories of the economic variables, building up as from the strengths and the opportunities, a profitability vector that will result in a good indicator of the enterprise operation. It is clear that improving the strengths one can maintain constant profitability in spite of non controllable external threats which begin to threaten the functioning of the enterprise. In a future work we will advance on the possible dynamic evolutions of the variables $\{(s,w);(o,t)\}$

To sum up, in this work we have opened some doors that lead us to little explored places, and which in future studies we will go on analyzing. The idea is to deepen these topics so as to put to the Small and Medium Sized Enterprises managers' disposal, new tools that can be used to reduce the uncertainty that the future represents.

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