The 'SWOT CLOCK' Strategic Behavior

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Abstract

Corporate Strategy is known in the late 20th century and early 21st century as one of the cornerstones in the process of strategic management of corporations, private firms, NGO's and public sector organizations.

In an effort to amend these shortcomings, the author suggests a rationalistic typology based on the 'SWOT Strategic Clock' (henceforth: the 'CLOCK' model). The methodology proposes a strategy formula which embeds Leading Strategy (LS) as dependent variable with Weighted Power Intensity (WPI) as independent variables. The CLOCK behavior methodology reflects the affected change of the Leading Strategy (LS) strategy POINTER over the time series scale factor. Principles of the suggested approach, emphasizing, through comparison, the similarity between the features of the CLOCK model and the well-known models, such as the Product Life Cycle (PLC) and the Boston Consulting Group (BCG).

Recommendations are made for further investigation through academic and applied researches which can enrich current Know-How and understanding. Business and organizations can gain more effective and efficient management tool in their strategy formulation system.

Key Results

The 'CLOCK' model opens a wide window to a broad variety of academic and empiric studies that could enrich and deepen the existing knowledge on applying the SWOT methodology. The model challenges researchers to initiate further investigations in the strategy formulation arena, in particular when adjustment to the difficult competitive conditions of the business environment in the 21st century is nowadays a necessity.

The 'CLOCK' methodology suggests a rationalistic typology for managers and decision makers in considering the firm's strategic direction. The proposed model is suitable for application mainly by Small Mid Enterprises (SME's), but also by large businesses, mainly in the short and mid term.

Key words: SWOT, 'CLOCK', Leading Strategy, 'POINTER'
1. Introduction

The aftermath of WWII contained many changes, not only in the political, social, economic, technological and other aspects, but also in the thinking modes prevailing in the area of management science & strategy formulation. These trends led, in the early 1960's, to a situation in which it was possible to find in almost all of the companies contained in the Fortune 500 list an appointment of a functionary in charge of corporate strategic planning. At that time, the unit of strategic planning focused mainly on long-term planning.

According to the SWOT approach, the interaction between the organization's capabilities and resources was examined from the view point of strengths and weaknesses (SW) and between the opportunities and threats (OT) identified in the organization's environment. The external analysis of the environmental forces, focused on identifying opportunities and threats created by the business environment, in an effort to find an answer to the strategic question: "What should the organization be doing?" On the other hand, internal analysis, that is, analyzing the organization's internal forces, focused on positioning resources (tangible) and capabilities (intangible) from the view point of its strengths and weaknesses. The intra-organization analysis is trying to come up with an answer to the strategic question: "What can the organization do?"

The SWOT approach is more common among the businessmen community because of its intelligibility and applicability at the initial level of consolidating the organization's strategy. The approach is perceived as applicable mainly at the organization's micro environment level and in the short and medium term. At the same time, some organizations have introduced this approach in consolidating their long-term business strategy. It is still very intensively implemented as indicated by Elbanna (2010), where the SWOT methodology was found to be one of the 3 most commonly used as a strategic tool in the United Arab Emirates.

2. Literature Review

Christensen, Berg and Salter (1976) proposed a Grand Strategy Matrix (GSM) model, which structures & implies a four X-Y axis matrix quarters, resulting from the possible mutual combinations between the business's two states ('strengths' and 'weaknesses') and its business surrounding ('opportunities', 'threats').

Weihrich (1982) developed SWOT's naïve model, and later David (1986) suggested a quantitative model for analyzing and consolidating strategies for an organization that adopts the principles of the GSM model, called QSPM (Quantitative Strategic & Planning Matrix) in an effort to overcome the shortcoming of subjectivity in evaluating the factors that should be used in consolidating the organization's strategies. David (2007) presented in his book other SWOT-related models, such as External Factor Evaluation (EFE), Internal Factor Evaluation (IFE), General Electric (GE), and others.

On the basis of the GSM model, Rowe, Mason, Dickel and Snyder (1989) developed the Strategic Position & Action Evaluation (SPACE) model. The model deals with the problem of positioning the organization's strategic direction, offering the consolidation of strategic alternatives that are based on four dimensions: the strength of the industrial branch, stability of the business environment, competitive advantage and the organization's financial robustness.

Porter (1990, 1988) presented his concept to competitive positioning, using the SWOT approach, especially in the context of the entry and exit of substitute competitors and products to the industry and barriers to entry and exit, which he calls 'Threats' or 'Opportunities'. In the same vein, he also views the customers' and suppliers' bargaining power as a kind of 'Threat' and 'Opportunity'. Further to that, Mintzberg, Alsterand and Lampel (2006) stress that the SWOT approach is suitable for the Positioning school at the business' micro level.
Severe competition conditions and the globalization trends emerging in the late 20th century stimulated the development of new approaches and models and the upgrading of existing models in the area of strategic management. In this context, the approach of the Balanced Score Card (BSC) developed by Kaplan and Norton (1996, 2001, 2004) is noteworthy.

Another substantial and significant contribution to cope with the difficulty of subjectivity in evaluating the parameters that should be included in the SWOT analysis and their priority, was made by Bernroiderg (2002) in a study on the computer software industry in Austria.

In attempt to assess the effect of environmental, economic and social factors Shrestha, Janaki Alavlapati and Kalmbacher (2004) applied the SWOT approach in combination with the Analytic Hierarchy Process (AHP). The SWOT-AHP allows to defined the hierarchical structure of factors and to evaluate factors in pairs, and to quantify the relative importance of each factor to the adoption decision. This was based upon preference data from selected opinion leaders and a rating scale to weigh each factor and to relate it to the other was applied.

Thus, one of the challenges facing researchers and managers in the field of strategy is the need for objective and quantitative presentation of the data base in consolidating the firm's strategy. Chang and Huang (2006), emphasize that in the past, most of the studies published presented simplistic approaches while only a few employed quantitative approaches. They conclude that the result of strategic analysis according to the SWOT approach was often superficial, shallow, and inaccurate, mainly because it was based on the qualitative analysis of internal and external factors. The authors applied a complex, quantitative and analytical model in a comparative analysis of strategic positioning of seven ports in China and South-East Asia, including the Hong-Kong Port, Shanghai, and others. The analysis is based on 12 internal factors and on seven external factors of quantitative information drawn from official publications and identifying behavioral situations of the environment, such as geographic location, political stability, macro-economy measures, and so on. The internal factors reflect mainly tangible elements such as storage and handling spaces, efficiency in handling cargoes, customer tariffs, equipment and so on. Taken from Chang and Huang study, Figure 1 presents the change occurring in the strategic positioning of each of the ports from the year 2000 up to 2004, by an arrow with direction and intensity.

**Figure 1: Change in strategic positioning between 2000 and 2004 in South-East Asian ports**
According to the legend of the figure, Hong Kong Port (A4) moves within the first quadrate and the port maintains its competitive advantage. In comparison, Kaohsiung Port (A3) has weakened and Shenzhen Port (A5) was, between the years of 2000–2004, in a process of moving from the third to the first quadrate, building its competitive advantage. On the other hand, in the third quadrate, representing strategic competitive weakness (weaknesses and threats) are positioned the ports of Taichung (A2) and Xiamen (A6) that are currently in the process of deteriorating due to strategic erosion.

The main contribution of this study is that it provides an indication of the competitive positioning of each port at any given time. The study was conducted in two stages, the first in the year 2000 and the second in 2004, which allows to identify the trend of the strategic direction. The study should be considered as a breakthrough because it adds the time axis variable, not just as a specific positioning of competitive advantage, but also as an indicator of direction and development process of the strategy.

Against the many advantages found in Chang and Huang (2006) model, it has one salient drawback, concerning its applicability at the level of medium and small businesses. The structure of the model and its application are of the highest level of sophistication and complexity, demanding knowledge and the effective capabilities of data collection and processing. These are more suitable to large businesses that are able to carry the high costs of this kind of research. Such requirements pose a large difficulty and raise a higher hurdle when applied to medium and small enterprises. SME's expect a more practical answer that will allow them to achieve similar results to those of Chang and Huang's (2006) model, on the one hand, but that the process of consolidating and shaping strategy will be relatively short and simple in its structure and application, on the other hand.

Yuksel, Dagdeviren (2007) highlighted the fact that the SWOT analysis does not provide an analytical means to determine the importance of the identified factors. They argue that although the analysis successfully pinpoints the factors, but individual factors are usually described briefly and generally which leads to deficiencies in the measurement and evaluation steps. Although the AHP method assumes that the factors presented in the hierarchical structure are independent, the assumption may be inappropriate in light of certain internal and external environmental effects. In their perspective it is necessary to employ a methodology that measures and takes into account the possible dependency among the factors. They propose to apply the Analytic Network Process (ANP) which allows measurement of the dependency among the strategic factors in addition to the application of the AHP methodology. They comment that the mathematical model is very much applicable, it is still the problematic situation that the priority values for the factors are determined by the judgment of experts which affects the validity of the model. On the other hand, they argue that the fact that the values of the pair wise comparative factors change depending on the views of experts, should not be a reason for rejecting the validity of studiesw using the suggested ANP model. Avery interesting out come of the study was that the strategy orders obtained by the ANP method and the AHP method were found to be different. As a conclusion to that, future research should seek to consider the effect of possible dependencies among the SWOT sub-factors themselves. In addition, fuzzy numbers can be introduced both in the AHP and ANP methods to more effectively analyze in the pair wise comparison matrices.

The application of fuzzy numbers in the SWOT analysis discipline was introduced by Kuo-liang and Shu-chen (2008). The fuzzy quantified SWOT analytical procedure is proposed to evaluate the environmental relationships according to the competitive degree in accordance with the grand Strategy Matrix (GSM) model. The research applies fuzzy analysis for AHP to determine the relative importance of the SWOT factors. The fuzzy quantified SWOT procedure provides a reference for developing strategy such as the GSM model. The comparison of the environmental analysis methods of Resource-Based View (RBV), Competitive Profile Matrix (CPM) the traditional SWOT and the fuzzy quantitative SWOT method, not only precisely shows the competitive position but also can propose suitable competitive strategies in accordance with accepted strategy analysis such as the GSM matrix.
Further research in line with the application of the AHP methodology was presented by Arslan & Deha (2008). The use of SWOT has been implemented successfully for ships that are designed to carry liquid chemicals in bulk. Effort was made to explore ways and means of converting possible Threats into Opportunities and changing Weaknesses into Strengths for safer tanker operation. The AHP approach is applied in conjunction with the SWOT methodology. AHP is a general theory of measurement based on some mathematical and psychological foundations. AHP can deal with both qualitative and quantitative attributes and it has been found to be useful decision analysis technique and it has been applied in cases dealing with strategic planning. Based upon the results of the study, the authors are convinced that the suggested SWOT-AHP methodology can be an acceptable basis for formulating strategy designed to minimize human error, accidents and incidents, and defects of shipboard operations.

A novel innovation in the strategy formulation systems based upon the SWOT methodology is presented in a paper published by Zhang and Razmi (2010). Quantified SWOT is applied in the context of suppliers selection. They emphasize that the problem of pair wise comparisons of the AHP and the ANP systems are remained. More over, integration of SWOT combined with fuzzy logic and Linear programming models is proposed as a decisional model for supplier selection which includes both qualitative and quantitative factors. It is indicated that for the first time fuzzy logic and quantitative SWOT have been composed, where both quantitative and qualitative factors have been considered, and the capacity of warehouse and minimum Order Quantity are taken into account as constraints. Although mathematical and Linear Programming models are employed, the SWOT internal and external factors list and the weights of the qualified linguistic variables had been determined by experts in a Brain Storming sessions and by decision makers subjective opinions of priorities between criteria.

3. The 'SWOT CLOCK' Strategic Behavior Model:-Methodology & Structure

Since its introduction in the 1960's and early 21st century, the SWOT approach was accompanied by the presentation of various models that attempted and are still attempting to come up with answers to the weaknesses of the approach, on the one hand, and to enrich the knowledge and effective applicability, on the other. Managers are aware of the fact and recognize that strategy is influenced more by events in the short-term, due to time constraints, which force them to react faster, and also by their personal intuition, among other parameters. The Hi-Tech environment, where events follow each other at high frequency and intensity, is only one characteristic example of such situations. The reciprocal and integrated system of "environment – firm" is a dynamic system that changes continuously, constitutes a considerable number of stakeholders, and is exposed to events of high intensity and frequency. The higher the frequency of the events and their intensity, the more turbulent and risky the environment becomes. Therefore, especially for SME's scale enterprises which are active in such an environment, immediate decisions are required, mainly in the short term; thus the application of the SWOT approach in consolidating their business strategy becomes increasingly attractive.

Along with the advantages of SWOT, several major drawbacks can be discerned:

- To large an extent, the model is based on 'qualitative' and 'intuitive' findings and assumptions by decision makers. Such reliance is not supported by 'quantitative' data of the environment and the organization's characteristics. This drawback is particularly marked when the overall picture is not easily contrasted in "black and white" colors and the "gray" area is relatively large. Greater sensitivity is then required in analyzing the system to reach appropriate conclusions.
- Sometimes, it seems that because of time constraints, forcing fast responses, there is a tendency towards over-simplification of the forces that is not always appropriate to the actual situation.
- The definition of the SWOT factors is often made intuitively.
- In its essence, the SWOT approach does not analyze situations in which a change process occurs in the strategic positioning on the time axis, except this of Chang and Huang (2006) pioneering study.
Businesses and researchers, who were active in applying the principles of the SWOT approach, have encountered several difficulties, including the following:

- Determining the number and type of parameters to be employed Subjectivity in evaluating the contribution of the parameters influencing the strategy.
- The suitable time frame to which the SWOT approach refers, i.e. Short medium or long term.
- The business level, in which the SWOT approach is employed, i.e. small, medium and large businesses.

To find an answer to the challenge of these drawbacks, the author suggests the application of the CLOCK model. The model presents an analytical and rationalist approach to the naïve SWOT approach, as represented by Weihrich (1982). In addition, the model provides an answer to the salient drawback of the complexity and difficulty in applying Chang and Huang's (2006) model, by simplifying the strategy-shaping process at the small and medium enterprise level.

The CLOCK model offers a series of steps and principles in consolidating a business strategy:-

**Principle no. 1 – the generic integrated behavior:** there is a generic behavior, reflecting the interaction between 'business environment – organization,' whose characteristics exist and are derived from the naïve model, as follows:

- In each given moment a situation exists in the firm's environment that simultaneously more opportunities can be seen than threats, and vice versa.
- In each given moment a situation exists in the firm that more strengths can be seen than weaknesses, and vice versa.

**Principle no. 2 – defining the independent variables to calculate the intensity of power:** the power intensity of the four variables (Opportunities, Threats, Strengths and Weaknesses) could be evaluated by using a matrix (see Table 1 and Table 2) that is based on the following components:

- **Influencing Factor (IF):** the factor according to which the characteristics of the organization and/or its business environment are analyzed. The list includes factors that in the management and decision makers' view influence the organization's level of power ('weaknesses', 'strengths') and environmental forces ('opportunities', 'threats'). In general, these factors reflect the perception of the organization's stakeholders. This is also expressed in the studies by Berndroider (2002) and Lee & On Ko (2000). Establishment of the IF can be done by the Delphi approach which reflects individual management perception. After establishment, the list of Influencing Factor is kept constant in the CLOCK strategy formula.

- **Relative Weight (RW) of the influencing factor:** the importance and influence of any factor that the organization considers to be important in determining and consolidating its strategy. Deciding on the relative weight of the influencing factor is one of the greatest difficulties in applying the SWOT approach. Wheelen and Hungr (2000), David (1986), and others suggest assigning a relative weight to the influencing factor in a subjective and arbitrary manner, on condition that the total sum of the relative weight of all the factors equals to 1 (100%). In this way, it is possible to offset the influence of bias in the final result. The CLOCK model keeps the Relative Weight as a constant value in the strategy formula.

- **A quantitative, Objective Measuring Scale index:** a measurable index representing the factor's quantitative value. The index is determined according to the characteristic represented by the factor. For example, the organization's financial situation is determined according to the level of cash flow or an index such as "Altman's Survival Index." Productivity index (%) reflects the level of efficiency of operations, and market share (%) reflects the market positioning, and so on.

- **Relative Intensity (RI) positioning index:** each IF is positioned according to three levels of an Interval Scale: level 3 reflects High position, level 2 Medium position, and level 1 Low position. The objective quantitative measuring index scale is attached to the Interval Scale. For example, Table 1 shows that for Financial Situation IF, a measuring scale in which a surplus of 100K$
exists is defined by the management as a 'strength' in level 3. If the financial current situation is of (60) K$ (over draft), it is defined and positioned as a 'weakness' in level 3 and so on.

- **Weighted Intensity (WI):** the weighted intensity represents the contribution of each factor to the total power intensity of each of the SWOT variables, calculated as the multiplication of the Relative Intensity (RI) and its Relative Weight (RW) determined according to the current positioning of the appropriate quantitative measuring index. In the example presented in Table 1, the current financial situation is a positive cash flow of about 100K$, and its suitable positioning on the scale is in the 'strength' level of 3. Hence, the 'Weighted Intensity' will be 105 = (3*35).

- **Weighted Power Intensity (WPI):** reflects the total intensity of all the factors positioned in each of the SWOT variables, and is calculated as the total sum of the Weighted Intensity of those factors. According to the example in Table 1, the Weighted Power Intensity of 'strengths' is 155 (105+55), and similarly, that of the 'weaknesses' is 77 (45+14+18).

**Principle no. 3 – developing a WPI matrix for the environment and the organization:** two matrixes of identical structure exist, one for the business environment and the other for the firm. Using these matrixes it is possible to calculate quantitatively the power intensity of the four SWOT variables. Table 1 presents a hypothetical example for calculating the intensity of internal power ('strengths', 'weaknesses') and Table 2 presents a hypothetical example for calculating the intensity of environmental powers ('opportunities', 'threats'). Bernroider (2002) concludes that six internal success factors exist for the organization, reflecting the positioning of the 'strengths' and 'weaknesses', denoting them as 'physical resources,' 'abilities,' 'quality,' 'contact with customers' (responsiveness), and 'innovation'. The organization's management could use these factors and/or others in such a way that will express the business structure & its activities.

**Table 1: A Matrix for Calculating the Intensity of the Firms 'Strengths' and 'Weaknesses'**

<table>
<thead>
<tr>
<th>Influencing factor</th>
<th>Power intensity of 'strengths'</th>
<th>Power intensity of 'weaknesses'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial situation (economic value)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial value index assets (K$)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Control of the market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market share index (%)</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Management and human resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR index by (%) of Motivation &amp; Absenteeism</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>R&amp;D technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological age index (years)</td>
<td>Up to 2</td>
<td>2-4</td>
</tr>
<tr>
<td></td>
<td>4-6</td>
<td>6-8</td>
</tr>
<tr>
<td></td>
<td>8-10</td>
<td>&gt;10</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Operations and management processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production index (efficiency)</td>
<td>90%</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>82%</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>76%</td>
<td>72%</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Infrastructural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment index (age by no. of years)</td>
<td>Up to 3</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>6-9</td>
<td>9-12</td>
</tr>
<tr>
<td></td>
<td>12-15</td>
<td>&gt;15</td>
</tr>
<tr>
<td>Weighted intensity</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td>Weighted Power Intensity (WPI)</td>
<td>155</td>
<td>77</td>
</tr>
</tbody>
</table>

**Note:** - Establishment of the Relative Weight for each factor can be determined either by brainstorming sessions, Delphi approach or experts opinion. The Relative Weight is the only parameter in the CLOCK model which is determined subjectively, where the established Measuring Scale is objectively defined. In this way the number of the subjective parameters is minimized. Only the Relative Weight index remained as subjective estimate in the CLOCK model.
According to the example shown in Table 1, the Weighted Power Intensity of the organization's 'strengths' is 155, resulted of the sum of the weighted intensity of the influencing factors: 'financial situation' and 'control of the market.' The influencing factors 'Human Resources' and 'technology and infrastructure' reflect a total Weakness Weighted Power Intensity level of 77 (18+14+45).

Very similar, hypothetical example of a matrix of power intensity for the business environment ('opportunities', 'threats') is presented in Table 2. Seven influencing factors were defined. In the example, the Power Intensity Index score of Strengths is 39 and the Weakness Power Intensity Index score is 78.

Table 2: A Matrix for Calculating the Power Intensity of the Firms 'Opportunities' and 'Threats'

<table>
<thead>
<tr>
<th>Influencing factor</th>
<th>Relative weight</th>
<th>Measuring Scale</th>
<th>Power intensity of 'opportunities'</th>
<th>Power intensity of 'threats'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic situation</td>
<td>30</td>
<td>Prime interest rate (%)</td>
<td>3&lt; 3-3.5 3.5-4.0 4-5 5-7 &gt;7</td>
<td>30</td>
</tr>
<tr>
<td>Marketing potential</td>
<td>25</td>
<td>Market size index (mil. $)</td>
<td>&gt;20 15-20 10-15 5-10 2-5 2&lt;</td>
<td>25</td>
</tr>
<tr>
<td>Human resources recruitment</td>
<td>15</td>
<td>Unemployment level index</td>
<td>&gt;12 11-12 10-11 9-10 8-9 7-8</td>
<td></td>
</tr>
<tr>
<td>R&amp;D technology</td>
<td>10</td>
<td>Technological age index (years)</td>
<td>Up to 2 4-6 6-8 8-10 &gt;10</td>
<td>10</td>
</tr>
<tr>
<td>Regulation</td>
<td>8</td>
<td>Aggregation taxation index (%)</td>
<td>15% 20% 25% 30% 35% 40%</td>
<td>8</td>
</tr>
<tr>
<td>National infrastructure</td>
<td>7</td>
<td>Investment budget (mil. $)</td>
<td>&gt;40 20-40 10-20 5-10 2.5 2&lt;</td>
<td>14</td>
</tr>
<tr>
<td>Political situation</td>
<td>5</td>
<td>Annual event frequency</td>
<td>1 1-2 2-4 4-6 6-8 8-10</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>Total</td>
<td>14 25 63 15</td>
<td>78</td>
</tr>
</tbody>
</table>

A summary of the Weighted Power Intensity (WPI) of the variables is presented in Table 3.

Table 3: Summary of the Weighted Power Intensity of the variables in the CLOCK model

<table>
<thead>
<tr>
<th>Strength Intensity</th>
<th>Opportunity Intensity</th>
<th>Weakness Intensity</th>
<th>Threat Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>O</td>
<td>W</td>
<td>T</td>
</tr>
<tr>
<td>155</td>
<td>39</td>
<td>77</td>
<td>78</td>
</tr>
</tbody>
</table>

Principle no. 4 – consolidating the 'Leading Strategy' (LS) direction: four generic strategic directions exist, resulting from the simultaneous integration of the Weighted Power Intensity of the two external factors ('opportunities,' 'threats') with the two internal factors ('strengths,' 'weaknesses'), which can be defined as follows:

- **Growth (S+O):** a situation in which the WPI of 'opportunities' is larger than the WPI of 'threats' and that of 'strengths' is larger than that of 'weaknesses.' The Growth strategy involves a synergic process to grow and expand. This strategy could be applied by 'market development,'
'product development,' 'vertical/horizontal integration,' 'diversification,' 'market penetration,' 'mergers and acquisitions' (such as Teva Ltd.), and so on.

- **Leverage (W+O):** a situation in which the WPI of 'opportunities' is larger than the WPI of 'threats' and that of 'weaknesses' is larger than that of 'strengths.' The line leading the Leverage strategy. This strategy could be applied in the directions of 'developing human resources,' 'investments in infrastructure and equipment,' 'developing business units,' 'developing and encouraging innovativeness and creativity,' and so on.

- **Response (S+T):** a situation in which the WPI of 'threats' is larger than the power intensity of 'opportunities' and that of 'strengths' is larger than that of 'weaknesses.' Therefore, the Response strategy employs 'strengths' to push the 'threats' away. This strategy could be applied and used by 'cooperation,' 'price war,' 'focusing and differentiating,' 'performance improvement,' enhanced HR motivation, and so on.

- **Survival (W+T):** a situation in which the WPI of 'threats' is larger than the power intensity of 'opportunities' and that of 'weaknesses' is larger than that of 'strengths.' The Survival strategy reflects the organization's struggle to maintain its continued existence as a 'living body.' In this kind of strategy, action and application modes could include 'liquidation,' 'dismissals,' 'closing production lines,' 'reducing product basket,' 'limiting number of brands,' 'vertical integration by the buyer,' and so on.

Thus the CLOCK strategy formula can be defined as:

\[
LD = f(\text{WPI}) = f(\text{IF, RW, WI})
\]

Figure 2 presents the positioning of the Weighted Power Intensity of each SWOT variable in the 'SWOT CLOCK Diamond Behavior Model. Results shown in Table 3 reflect the organization's Response strategy (S+T) quadrate as a Leading Strategy (LS). Placing the values of the Weighted Power Intensity of each variable creates four triangles. Each triangle represents a combination of an external environmental variable with an internal variable of the organization on the corresponding quadrate. Four possible strategies simultaneously at a certain moment in time are created, **Growth, Response, Survival and Leverage.** Intuitively, the Leading Strategy is determined by the largest triangle in size out of all the possible strategy triangles. In this example, the triangle of the **Response** strategy quadrate is the biggest of all the others in size. Therefore it is defined as the Leading Strategy.

*Figure 2: The 'SWOT CLOCK' Diamond Behavior Model*
weighted vector of the four SWOT forces, each having a direction and intensity. Figure 3 describes the process of strategic positioning for the weighted vector. In the first stage, the WPI of 'strengths' is vertically allocated upwards. Then, the allocation of the WPI of 'opportunity' continues horizontally to the left. From this point, the WPI of 'weaknesses' continues to be allocated downwards, and finally, the WPI of 'threats' is allocated to the right. In the example, the weighted vector begins from the origin point (0, 0) to the end point of the last vector S78:T49, and the 'POINTER' vector position is indicated accordingly (in red color) in the Response strategy quadrinate. The pointer's positioning is strategically significant. When the pointer's is aligned more vertically in the quadrinate of the Response strategy, the organization has a better chance of overcoming 'threats'. On the other hand, when the pointer's is aligned more horizontally, the situation will be more risky, because relatively, 'threats' direction will be larger than its 'strengths'.

**Figure 3: the POINTER strategic position**

The pointer's positioning is momentary. It "turns" according to the corresponding strategic positioning on the time series axis, as described in Figure 4. For example, at some point in time (say, T1), the POINTER indicates the Response strategy quadrinate, and the organization applies this strategy. In case that the organization will not succeed in operating its strategy, Strengths turn into Weakness and the Threats will remain the same, the strategy turns into the Survival quadrinate (say, T2).

**Figure 4: the CLOCK POINTER move over time series system**
The pointer position is a temporary one. It could remain in the same strategic quadrat for quite a long time, and change its direction position later on. This movement is very similar to the pointer's move in an analogical clock; hence the model name "The SWOT CLOCK."

The strategic direction immediately highlights the strategic question of How? That is, How to grow? How to respond? How to lever? and How to survive? For example, how should the organization respond once it has consolidated its strategy of Response? What should be the policy and how should it act regarding the steps it should take actually to use its strengths and push away the threats?

**Principle 6 – the dynamic process of the pointer and the time series variable:** observations on business behaviors indicate an associative relation between the pointer's positioning and its movements on the time scale. According to this principle, the pointer's movement from one strategic quadrat to the next constitutes a cyclical process, as described by Figure 5.

![Figure 5: the "CLOCK POINTER" stepwise model](image)

Finding support for the hypothesis that the direction of the pointer's movement is clockwise or counter clockwise, is due to some unexpected events (such as disruptive technology, regulation, etc.) is an open field for challenging studies, both academic and empiric.

Features of this process can be explained according to the following possible scenario:

- At a certain point in time the POINTER indicates the 'Leverage' Leading Strategy, applying opportunities to strengthen weaknesses.
- At the next point in time, the business combines opportunities and stretch new strengths, affecting the POINTER to move to the Growth Leading Strategy quadrat.
- Afterwards, the business is influenced mainly by competitors, customers and other stakeholders. Severe threats overriding the opportunities, moving the POINTER to the Response Leading Strategy quadrat. The business begins to use its strengths to push the threats away.
- Two possible strategic results could exist in later. If the business fails to push away the threats with the Response strategy, it becomes weaker and the POINTER will move to the Survival Leading Strategy quadrat. If the business succeeds in pushing away the threats, its strengths become weaker as a result. In this case, there are relatively more opportunities than threats and the POINTER will move to the Leverage Leading Strategy quadrat.

Allen Deutchman's (2005) article *The Managerial Rabbit of IBM* skillfully exemplifies how the principles of the CLOCK model could explain the behavior of strategic management. The article describes the process of strategic change undergone by IBM since the end of 1999. The CEO Lou Gerstner realized that up until that time IBM used mainly a defensive strategy, which corresponds with the Response strategy according to the Clock model. As a result, he identified IBM's weaknesses on the one hand, and opportunities on the other, consolidating the EBO (Emerging Business Opportunities) theory, which is based on the exploitation of internal abilities, motivation and intra-organizational entrepreneurship against the market forces' threats (competitors, customers). This innovative perception led IBM to a Leverage strategy that was actually executed by the establishment of business entrepreneurship units in areas that were not included in IBM's business core up until that time, such as biotechnology, life science, etc. Since its launch, the EBO program succeeded in creating about 22 'living' projects that produced in 2005 an annual profit of about 15 billion dollars. Since 2005/2006, IBM's strategic managerial policy has been characterized as Growth: a situation in which a significant combination of 'opportunities' and 'strengths' exists.
Applying the principles of the CLOCK model allows also small and medium scale businesses, not only large businesses, to use a quantitative/objective tool in shaping their business strategy. The model reduces the influence of the subjective factor on the possible bias of the result, on the one hand, while being more simplistic in the process of strategy on the other, consolidating and expanding the intelligibility of the change process of strategic positioning on the time series axis.

4. The Comparative Relation of 'SWOT CLOCK', 'PLC' and 'BCG' models

The CLOCK model explains behaviors of other models in the area of business strategy and provides them with applied validity. One of the many applications is reciprocal positioning with the well-known models of PLC (Product Life Cycle) and BCG (Boston Consultants Group), presented in Figure 6.

The PLC model suggests that similar to the time periods in human life (childhood, adolescence, maturity, old age, and death) a comparable analogy exists with products, organizations and even countries. According to the PLC model, these periods are defined as 'Introduction,' 'Growth,' 'Maturity,' 'Decline,' and 'Death,' as shown in Figure 6. At the end of the Decline period there are two possibilities to continue the business activity – death and the end of the activity, or upgrading the activity. According to the CLOCK model, there are four successive 'leading strategies' in the order of 'Leverage,' 'Growth,' 'Response,' and 'Survival' so that, analogically, it is possible to ascribe them to periods in the PLC model. Characteristics of the BCG model, too, which define four strategic positions – 'boy,' 'star,' 'milking cow,' and 'dog' – correspond to the analogy mentioned with the PLC and the CLOCK models.

**Figure 6: Reciprocal positioning of the CLOCK, BCG and PLC models.**

As can be seen from Figure 6, the PLC, BCG and the CLOCK models overlap each other. This behavior could be described with reference to the time series independent variable as follows:
- **Time scope \( T_0 - T_1 \)**: is characterized by the Introduction period according to the PLC model. This is also the period of the Leverage Leading Strategy according to the CLOCK model and the Boy positioning according to the BCG model.

- **Time scope \( T_1 - T_2 \)**: is characterized by the Growth period according to the PLC model. This is also the period of the Growth Leading Strategy according to the CLOCK model and the Star positioning according to the BCG model.

- **Time scope \( T_2 - T_3 \)**: is characterized by the Maturity period according to the PLC model. This is also the period of the Response Leading Strategy according to the CLOCK model, in which the organization uses its strengths to push away threats of the environment (competitors, etc.). The corresponding positioning according to the BCG model is that of Milking Cow.

- **Time scope \( T_3 - T_4 \)**: is characterized by the Decline period according to the PLC model. This is also the period of the Survival Leading strategy according to the Clock model. If the Survival strategy does not succeed, business activity will stop and the Death stage will begin. According to the BCG model, the positioning is of the Dog type.

- **Time scope \( T_4 - T_5 \)**: is characterized by the Introduction period according to the PLC model, following the product upgrade. According to the CLOCK model, this is the Leverage Leading Strategy of the upgraded product, to be followed by the Growth Leading Strategy in another cycle after time point \( T_5 \). Once again, the positioning according to the BCG will be of kind 'boy,' accordingly.

The CLOCK model focuses on factors that have significant influence and is employed effectively in situations, particularly when time is too limited to analyze a complex strategic situation. The model acts as a filter that focuses extensive information into applicable dimensions and is able to simplify and apply strategic factors in practice.

Table 4 shows the comparative relation between the strategy components of the three models.

<table>
<thead>
<tr>
<th>BCG model</th>
<th>SWOT Clock model</th>
<th>PLC model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boy</td>
<td>Leverage</td>
<td>Introduction</td>
</tr>
<tr>
<td>Star</td>
<td>Growth</td>
<td>Growth</td>
</tr>
<tr>
<td>Milking Cow</td>
<td>Response</td>
<td>Maturity</td>
</tr>
<tr>
<td>Dog</td>
<td>Survival</td>
<td>Decline</td>
</tr>
</tbody>
</table>

Such analogical comparison manner adds further validation to the existence of these models and enhances the confidence that a business strategy can be based on the principles of these models represents true business behavior.

**4. Summary**

The main goal of a quantitative, behavioral, strategic or any other kind of model is to present a rationalistic and structured system that has a defined goal and could be applied in practice. In the field of business strategy, the main expectation from using the traditional SWOT model was to point to a strategic direction that is based on the behavior of its variables, i.e., opportunities, threats, strengths, and weaknesses. The major drawback of the traditional SWOT model results from the fact that it is based on intuitive and qualitative evaluations. In this sense, it does not fulfill the expectations of its users, making it difficult to define the desired strategic direction for the organization in a sound manner. In addition, it does not consider the time dimension as an independent variable in determining the business strategy.

The CLOCK model presents a new view point for understanding the organization's strategic behavior at the micro level. The model offers an answer to the basic drawbacks of the SWOT approach and of other models presented in this article, and supplements them to create better understanding and objective, simple, and effective applicability of the SWOT approach. The model also provides appropriate answers.
to the special requirements and expectations of small and medium scale organizations in consolidating their strategy as well as dealing effectively with large organizations.

The typology according to the perception of the CLOCK model in comparison with the traditional SWOT model has several important advantages:

a. A more objective and quantitative approach for deciding on the strategic direction.
b. Offering well-defined strategic directions according to the principle of the traditional SWOT model.
c. Applying the concept of time as an independent variable in deciding the business strategic direction.
d. Introducing the cyclical order regime of strategic direction.
e. Giving an applied validity to accepted models in business strategy such as PLC and BCG.
f. Effective, simple and fast application of the traditional SWOT model, mainly in small and medium scale organizations.

The CLOCK model opens wide scope of studies to be applied both academically and practically. It is recommended to apply academic researches to study the correlation between LD and the WPI variables and the validity of the CLOCK strategy sequence on the time series. Also to operate applied researches which can investigate the end result of performed SME's strategy in practice. Business management can adopt the CLOCK concept to enhance their business strategy formulation process.

The refreshing ideological perception of the CLOCK model creates greater opportunities for conducting academic and empirical studies that could enrich our knowledge and understanding in the area of strategic management in the tough competitive environment of the 21st century.

**Biography**

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**References**


