PORTER’S FORCES IN THE INTERNET AGE: CONTEXTUALIZING THE TRADITIONAL MODEL WITH OTHER APPROACHES¹

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ABSTRACT

This paper proposes to confront the theoretical model of industry attractiveness - the Porter’s five forces theory - elaborated by Michael Eugene Porter in his original publication of 1980 “Competitive Strategy”, in relation to other approaches proposed by other authors. It is particular intended to verify the impacts of new information and communication technologies that have arisen after the development of Porter’s theory. By means of comparison, limitations and inconsistencies of traditional analysis are raised, as well as ways to expand and to complement the strategic analysis are suggested.

Key words: Porter. Strategy. Internet. Business.

Introduced by Michael Eugene Porter, in his work “Competitive Strategy”, published originally in English in 1980 -

INTRODUCTION

Elaborated by Michael Eugene Porter, the Porter’s Five Forces model was first published originally in English in 1980. The present study aims to confront the analysis model of industry attractiveness created by Porter with analysis approaches proposed by other authors, especially in relation to the impacts of information and communication technologies (ITCs). At first, the ITCs are aspects that were not fully covered because they had been developed after the elaboration of Porter’s model. From this confrontation, limitations and inconsistencies from this traditional analysis arise, as well as possible ways to expand and complement the strategic analysis. The reference work used to the study is the publication in Portuguese of 1991.

First, the main concepts of the five forces proposed by Porter (1991) will be introduced. The concepts are: the threat of new entrants, the bargaining power of customers, the bargaining power of suppliers, the threat of substitute products or services and the competitive rivalry among companies.

By bringing other authors’ approaches, each force in the model will be confronted or confirmed with another analysis perspective found in the present literature about strategy or, in particular, in reference literature that links strategy and technology.

BIBLIOGRAPHIC REVIEW

On the main author – porter

According to the biography hosted on the internet by Harvard Business School – a well-known North American university, Professor Michael E. Porter is considered the father of the modern strategy field. He is recognized for several researches as the most influential thinker on management and competitiveness. His analysis model of the industry attractiveness – Five Forces Model, or Porter’s model, or Porter’s forces, was

first described by the author in a book published on the United States in 1980 – *Competitive Strategy: Techniques for Analyzing Industries and Competitors* – which is in its sixty-third edition (in English) and it has been translated into 19 languages. This paper was based on the Portuguese version, printed in 1991.

Moreover, according to his biography, Professor Porter was awarded with several prizes as recognition for his academic contribution. In Japan, the Porter Prize was created in 2001 and it is granted to the companies that stand out in strategy in that country.

**The five forces model**

Porter (1991) introduced the basic five competitive forces that guide the competition in industries, namely:

- Threat of new entrants
- The bargaining power of customers
- The bargaining power of suppliers
- Threat of substitute products or services
- Rivalry among companies

For Porter (1991), these are the forces that operate and compete on possible profitability inside the industrial segment.
In relation to the threat of new entrants, Porter (1991) says that the entry of new companies with more production capacity seeking to gain market share is usually accompanied by many resources or investments. The result is the fall in prices or inflation of production costs, because the suppliers will have more customers to buy their products. Consequently, this will affect the profitability of the sector.

The author also describes forms of entry barriers that may hinder the entry of new competitors.

The economy of scale, or the reduction in production cost per unit as the production volume increases, is one of the barriers. The economy of scale affects not only the production, but the research, marketing and distribution, for example. Companies with diversified products and services can also spread their costs in shared operations, such as brand marketing and distribution. On the other hand, the new companies need to conquer their space. They are at a disadvantage in costs, for not having yet the scale of the consolidated companies or the shared operations in order to dilute their costs.
Another entry barrier identified by the author is the product differentiation, the customer loyalty to the established brand, result of previous efforts in marketing, consolidated quality of products and services or even by being recognized as a pioneer in the segment. Two examples mentioned by the author illustrate well the barriers. One of them is the baby products. The customer chooses a specific brand by trusting on its quality. The second example is the brewing industry whose product differentiation is added to the economies of scale in production and to the diluted costs of marketing and distribution to maintain high barriers to entry.

Porter (1991) also describes the need of capital as a major entry barrier, especially in segments that demand high-risk investments as initial efforts of marketing or research and development. Capital for facilities, working capital to leverage credit sales or maintenance of stocks are also examples of capital as entry barriers.

Switching costs are entry barriers due to the financial impact of changing suppliers by the customers, either in employee training to handle the new product, or adjustments in structure, procedures and operations. According to Porter (1991), these costs oblige the new entrants to offer major advantages in costs or product performance. The goal is to convince customers to take the switching costs.

Besides, Porter (1991) defines the access to distribution channels as an entry barrier because the new entrant will need to convince the already consolidated distribution channels to take the new product by means of promotions and discounts, and, consequently, reduce the profit margins. This can happen either by persuading a retailer to allocate displays for their products or even investing in new distribution channels.

For Porter (1991), the disadvantages of cost independent of scale are entry barriers that may be impossible to be put on the same level of comparison by the new entrants. Examples of critical advantages that the established companies may have are: patented technologies, easy access to raw material, geographical location advantages, government subsidies and the learning curve achieved by the experience and
improvement of the process over time, making the entry of new competitors extremely difficult.

Porter (1991) cites that the entry barrier imposed by government policies may hinder or completely prevent new companies to compete in certain industries by means of operation licenses or restrict access to raw materials. Other entry barriers of more discreet government policies may be done through pollution control regulation (by increasing the need of initial capital to entry in the industry) or through standards for testing the product or certification (medicine, food industry). Such policies may also prevent new competitors.

Other aspects regarding the entry barriers that the new competitors need to pay attention are described by the author, such as:

- Retaliatory measures or, in other words, the expected reaction of the companies already established. If they have the financial leverage, they can reduce their profit margins and compete more aggressively; if they have production capacity to meet market growth; if they are in balance with suppliers and customers and, finally, if market has been growing at a pace that can absorb the production of a new company.

- The deterrent entry price. The structure of price formation in the current industry may have been already operating with narrow profit margins by consolidated companies in order to not encourage new competitors.

The second force described by Porter (1991) is the intensity of rivalry among competitors currently present in industry which is characterized by disputes of prices, advertising, launches and the increase of services and guarantees to customers. The combination of structural factors determines the rivalry in the sector.

In segments with several competitors or already in balance, the author suggests that the entry of new competitors is discouraged by the perspective of greater competition with the current competitors.
Porter (1991) also states that when there is slow growth of the industry, the rivalry is also marked because the company investments are targeted to improve its market share in relation to competitors, instead of investing on the expansion of the industry. In industries with high fixed costs, the pressure is manifested by the need to operate at maximum production capacity, seeking for the dilution of these costs in the produced volume. Porter (1991) mentions the example of the paper and aluminum industries. In these industries, the high production costs and investments are amortized over the immense production volume that occasionally generates derisory profit per unit produced. However, the amount of batches manufactured tirelessly ensures the profits. One of the consequences of this type of segment is the trend of operating with narrow profit margins in order to increase sales of production volume. For example, it is inconceivable that the paper industry gets a penny of profit per page produced.

Porter (1991) further describes exit barriers that are costs, strategic decisions or emotional attachment that can lead companies of a certain segment to continue the competition even operating with very narrow margins or at loss. Examples of exit barriers are: the specialized assets with low liquidation return (specific machines, specific properties); exit fixed costs (labor costs, product warranty still in force); strategic relations (the product can give access to markets or strengthen the image of the company); emotional barriers (loyalty, pride, tradition) and, finally, from government restrictions to impact on regional economy and unemployment.
In Figure 2, it can be seen the relation that the author makes between the intensity of the entry and exit barriers and the potential profitability of the industry with these characteristics.

Pressure from substitute products is described by Porter (1991) as a limiting factor of the potential profitability of the industry, because the more attractive and cheaper the substitute product is, the greater will be the pressure over the prices charged by the industry. As an example, the author cites the competition among the sugar producers and fructose corn syrup producers, a cheaper substitute with similar performance.

Bargaining power of customers is the force that Porter (1991) describes as the customers’ ability to put pressure on price reduction in the industry, seek for higher quality or more services and make competitors play against each other. These are factors that reduce the profitability of a particular segment. The author also details some characteristics that may strengthen this force and highlights some among them: if products have little difference to the customer, what the purchasing volume is, the

Figure 2 - Entry and Exit Barriers

Source: adapted from Porter (1991, p. 39)
existence of switching costs to the customer and even if there is any threat on the part of the customer to integrate the production of the product to his/her own industry.

Another immediately identifiable force is the bargaining power of the suppliers. Its impacts can withdraw the profitability of an industry by means of increasing prices or reducing the quality of products and services, as it is stated by Porter (1991). When the industry cannot pass on any cost increase to its own prices, it is forced to operate with reduced profit margins.

Government is a variable that Porter (1991) claims to be able to influence the structural aspect of the industry because it has the power of curtailing or regulating corporate behavior both in the role of suppliers or customers through legislation. Besides, it may impose legal conditions that are entry barriers (bids, concessions) or exit barriers (continued warranty) for a given market segment. Tax incentives or additional taxes are also able to change the structure and profitability of a segment.

**Porter confirms the model**

Porter (2002) enhances the validity of his model by pointing out that the set of the five competitive forces is crucial for the industry’s profitability. The author also states that if there are customers willing to pay for certain product a higher price than its production costs, it is the industry structure that will determine how this value will be paid up.

Porter (2001) makes some appointments and relations about the effect and influences of the Internet on his five forces model. Table 1 attempts to summarize the positive and negative effects of the Internet and communication on structural forces of the industry described by the author.
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Table 1 - Internet influences on Porter’s Model, according to Porter

<table>
<thead>
<tr>
<th>Force</th>
<th>Positive Impact</th>
<th>Negative Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threat of substitute products</td>
<td>Efficiency increase, expanding the market.</td>
<td>New threats of substitute products due to Internet diversity.</td>
</tr>
<tr>
<td>Bargaining power of suppliers</td>
<td></td>
<td>Allows the supplier to establish a direct channel with final consumer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The electronic purchasing processes democratize the access to suppliers,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>promoting standardization of specifications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strengthening of the supplier by the smaller entry barrier in the market.</td>
</tr>
<tr>
<td>Bargaining power of customers</td>
<td>Eliminates powerful channels or increases the bargaining power in traditional sales channels</td>
<td>Promotes more bargaining power to final consumer.</td>
</tr>
<tr>
<td>Entry barriers</td>
<td></td>
<td>Reduces entry barriers as need of a sales force (they can be on-line) and access to channels. Internet applications can be easily copied by new entrants. A flood of new entrants has occurred in several markets, facilitated by the Internet.</td>
</tr>
<tr>
<td>Rivalry among current competitors</td>
<td></td>
<td>Reduces the differences between products Transfers the competition to the price.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expands the market performance, by increasing the number of competitors.</td>
</tr>
</tbody>
</table>

Source: Elaborated from Porter (2001)

Porter (2001) points out that due to the intensity of forces vary in each industry analysis, sit would be wrong to consider definitive the impacts of the Internet on profitability of each segment at long term, because each industry will be affected differently. Nevertheless, the author presents his point of view about the subject, stating that the majority of the impacts is negative for profitability.
According to the particular characteristics of a company and its market, Porter (1991) suggests three generic strategies that can be used alone or together to find a sustainable long term position and to beat the competitors. They are:

- Cost leadership;
- Differentiation;
- Focus

The cost leadership involves the search for cost reduction by means of strict control of the expenses and the accumulated experience curve. It minimizes costs of development and advertising by making the low cost as the backbone of the entire strategy of the company. According to Porter (1991), this cost leadership provides a strategic position with which the company can best exploit the possible profit margin.

The differentiation strategy is achieved by offering a service or a product that can be considered unique in the industry. Porter (1991) points out a few ways to achieve the product differentiation:

- Project or image
- Technology
- Peculiar features
- Customized service
- Network of suppliers

The author states that the differentiation causes a protection strategy due to consumer’s loyalty in relation to special features of the product, usually larger than his/her price sensibility. In this way, the profitability potential for the company is increased when compared to the competitors without differential advantages.

Finally, the author defines the strategy approach, with which the company seeks a niche to be explored. It can be a particular group of customers, a specialized segment of the product line or even a geographic area. Therefore, Porter (1991) suggests that the
company can use either the differentiation strategy or the cost leadership one, or even both strategies. However, it has to focus on the exploitation of the target niche.

Figure 3 summarizes the application of generic strategies.

Other approaches for strategic analysis

Mintzberg et al. (2000) describe ten different approaches to the strategy process which are summarized in Table 2.
<table>
<thead>
<tr>
<th>Approach school</th>
<th>Strategy formulation process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Conception</td>
</tr>
<tr>
<td>Planning</td>
<td>Formal</td>
</tr>
<tr>
<td>Positioning</td>
<td>Analytical</td>
</tr>
<tr>
<td>Enterprising</td>
<td>Visionary</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Mental</td>
</tr>
<tr>
<td>Learning</td>
<td>Emergent</td>
</tr>
<tr>
<td>Power</td>
<td>Negotiation</td>
</tr>
<tr>
<td>Cultural</td>
<td>Collective</td>
</tr>
<tr>
<td>Environmental</td>
<td>Reactive</td>
</tr>
<tr>
<td>Configuration</td>
<td>Transformation</td>
</tr>
</tbody>
</table>

Source: Creation based on Mintzberg et al. (2000).

Mintzberg et al. (2000) describe Porter’s model based on the Positioning School as an analytical formulation process of strategy. The authors establish Porter and his “Competitive Strategy”, published in 1980, as the main reference theoretician in this school.

For Jenkins and Ambrosini (2002), as organizations are one of the more complex phenomena studied in the social sciences, it would be very convenient to use only one approach for analysis. In order to refine, study and develop strategic issues, it is necessary to embrace any approach that helps to explore such matters.
Jenkins and Ambrosini (2002) explain that, although they recognize the need to diversify perspectives and levels of analysis to the strategic formulation, and to clarify common areas of these different perspectives. Therefore, Jenkins and Ambrosini (2002) propose seven main categories of common strategic issues, related to the three analysis levels (environment, company and individual). The categories would be:

- Context
- Competition
- Corporation
- Skills
The seven issues, common or essential strategic issues proposed by Jenkins and Ambrosini (2002) are presented in a summarized form in Table 3 with their main characteristics.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>External environment, perception of the company, market structure and strategic groups.</td>
</tr>
<tr>
<td>Competition</td>
<td>Conquer customers, identify and beat the competitors, strategies for sustainable competitive advantages.</td>
</tr>
<tr>
<td>Corporation</td>
<td>Partnerships, diversification, joint ventures, globalization.</td>
</tr>
<tr>
<td>Competences</td>
<td>Organization resources, skills, technical knowledge, organizational knowledge and their roles in generating competitive advantages.</td>
</tr>
<tr>
<td>Culture</td>
<td>Internal environment of the organization, the role of the organization culture, its value and relevance and how employees perceive the culture.</td>
</tr>
<tr>
<td>Change</td>
<td>Types of change that one organization can implement and how it can be effective or be controlled, reasons for change, change</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Control</th>
<th>Organizational structure, power relations and the role and limitations of the leaders.</th>
</tr>
</thead>
</table>

Source: Creation based on Jenkins and Ambrosini (2002).

To Wit and Meyer (2004), textbooks about the study of strategic management have some characteristics in common:

- Few differences in perspectives
- Prescriptive structure (step by step)
- Lack of primary material (usually articles and books rework the concepts that have been already developed by the traditional authors)
- Domestic guidance – although the titles occasionally cite globalization, the choice of perspectives, theories, examples and cases, they are largely aimed at the domestic context of traditional authors

Wit and Meyer (2004) also speculate about the causes of this isomorphism in industry of the strategic management study, and they try to offer in their work another approach, with some distinctions. Some cultural differences are emphasized, the international context and the use of international cases and examples.

The authors make a distinction among the strategy process, content and context. These dimensions can be described as it follows:

- Strategy process: the way strategies are developed in the answers to questions such as who, when, how, which and how the activities will be implemented;
- The strategy content: the result of strategic activities, the answer to the question: “what?”;

• Strategic context: the environment in which the strategic process will make sense to produce a particular strategic content. It would be “where?” of the strategy development.

For Wit and Meyer (2004) the dimensions are not different parts of the strategy, but its components, like the measures of a box (length, height and width) that do not make sense if isolated.

**Figure 5 - Dimensions of the strategy and the purpose of the organization**

A new approach is described by Kim and Mauborgne (2005) as the “blue ocean strategy”. For the authors, the “red ocean” would be the known competitive environment, the existing sectors whose boundaries of the sectors are defined and the competition rules are known. It is the space in which the products have been already becoming commodities, the profit margins have been reducing, and in order to conquer more market share, the companies are in a nasty fight that “bloodies” the environment. Consequently, it is created what the authors call “red oceans”.

*Systemic Organization Magazine, no. 1, July/Dec. 2013*
On the other hand, the “blue oceans” are new and unexplored market spaces with the possibility of creating demand and profitable growth. The rules are not yet fully defined and the competition is irrelevant. This strategy seeks to create value innovation that enables high profitability. One of the best known examples of such strategy application is Cirque du Soleil whose spectacles do not rival with the traditional circuses, because its innovative approach has created a whole new market to be explored.

Some characteristics compared between the “blue ocean” and the “red ocean” can be seen in table 4.

<table>
<thead>
<tr>
<th></th>
<th>Red Ocean Strategy</th>
<th>Blue Ocean Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compete on existing</td>
<td>Create unexplored market places.</td>
<td></td>
</tr>
<tr>
<td>market places</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beat the competitors</td>
<td>Make competition irrelevant</td>
<td></td>
</tr>
<tr>
<td>Take advantage on the</td>
<td>Create and capture new demand</td>
<td></td>
</tr>
<tr>
<td>existing demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform the trade-off</td>
<td>Break the trade-off</td>
<td></td>
</tr>
<tr>
<td>Align the whole</td>
<td>Align the whole activity system of the company by</td>
<td></td>
</tr>
<tr>
<td>activity system of the</td>
<td>pursuing differentiation and low cost</td>
<td></td>
</tr>
<tr>
<td>company</td>
<td>with its strategic choice of differentiation or low cost</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kim and Mauborgne, (2005, p. 17)

Fine (1999) introduces a different approach to business analysis that considers the evolutionary speed of the industry sectors. According to the author, in an equivalent way of the evolution of species in the natural world, companies are also subject to evolution and transformation in order to face or perish the new challenges. He also states that there are different rhythms in this evolutionary speed, comparing them with the life cycle of nature species. Species and companies evolve in defined speeds by their own life cycles and by the interaction with the environment.
To Fine (1999), there is an evolutionary speed owned by environments that are subject to speedy advances such as the computer industry, and the slower ones such as in aeronautics.

Comparing the molecular structure of natural species DNA, the double helix, the author also examines the company’s structure to check its ability to evolve capacity through the tension of its network of capabilities.

A genética empresarial apresenta o equivalente setorial da hélice dupla – um modelo com base num ciclo duplo infinito, que se movimenta entre setores integrados verticalmente, compostos de empresas gigantescas, e setores desintegrados horizontalmente, compostos de uma multidão de inovadores, cada um buscando um nicho próprio, no amplo espaço aberto resultante da prévia extinção dos gigantes. [...] A hélice dupla empresarial esclarece como essas fases verticais e horizontais determinam o destino das empresas, dos setores e, às vezes, das próprias economias nacionais. Forças internas e externas – a competição por nichos, a tensão por manter a paridade tecnológica entre muitos produtos, e a arteriosclerose que com tanta frequência aflige os líderes do mercado – conduzem as empresas integradas verticalmente rumo à desintegração e à estrutura setorial horizontal. (FINE, 1999, p. 53)

According to Fine (1999), these phases (vertical and horizontal) would be the forces and influences for integration and verticalization. Moreover, they are the one that show the position of a particular sector at a particular time. For the author, these forces are always acting and pressuring so that the phases occur successively.

The characteristics that Fine (1999) describes as belonging to vertical and horizontal phases can be summarized in Figure 6 and Table 5.
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Figure 6 - Double Helix Model

Table 5 - Double Helix Forces

<table>
<thead>
<tr>
<th>Disintegration phase (Horizontal pressure)</th>
<th>Integration phase (Vertical pressure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical sector structure</td>
<td>Horizontal sector structure</td>
</tr>
<tr>
<td>Integrated product architecture</td>
<td>Modular product architecture</td>
</tr>
<tr>
<td>New competitors</td>
<td>Technological advances</td>
</tr>
<tr>
<td>Leadership maintenance/market position</td>
<td>Suppliers power</td>
</tr>
<tr>
<td>Organizational inflexibility (bureaucracy/structure)</td>
<td>Power of patents and integrated systems</td>
</tr>
<tr>
<td>Factors that encourage the modular and horizontal configuration</td>
<td>Factors that encourage to vertically integrate and to integrate the product architecture</td>
</tr>
</tbody>
</table>

Source: creation based on Fine (1999).

Grant (2005) explains the “dynamic competition” approach, developed by Schumpeter and the Austrian school of economics. In this approach, the competition is a rivalry dynamic process that recasts the industry structure constantly. The industry structure would be the result of competitive behavior and not the opposite.

For Grant (2005), the analysis based on the dynamic competition has the speed of change in the industry structure as the main factor. It corroborates the aspect of the
evolutionary speed proposed by Fine (1999). The problem in relation to Grant’s approach is that it limits Porter’s model, because it is not able to predict the future competitiveness and profitability of the sector.

Scott and Davis (2007) cite the “creative destruction” of Schumpeter’s dynamic competition. They mention that the radical introduction of new technologies in a sector is often responsible for the historical decline of the dominant companies and for an outbreak of new operators with other organizational characteristics. In other words, with other different structures from the traditional ones.

Grant (2005) also discusses the characteristics of “creative destruction” and “hyper competition” of the dynamic competition model. These characteristics would be proper of the industries with high evolutionary speed, according to Fine (1999). Such industries reinvent themselves over time and make their own products obsolete (semiconductor, electronics and computers). The “hyper competition” would be used to describe industrial environments characterized by the speedy competition movements with which the competitors move rapidly to set up advantages and to reduce the advantages of their rivals. In the “hyper competition”, the movement is to generate continually new competitive advantages and destroy, become obsolete or neutralize the competitive advantages of the competitors. Another characteristic of “hyper competition”, as described by the author, is the finding that the competitive advantages are temporary and not sustainable. The only way to maintain and sustain superior performance would be to recreate and renew the competitive advantages continuously.

Fine (1999) also argues that the competitive advantages are temporary.

Johnson and Greenwood (*apud* JENKINS and AMBROSINI, 2002) support the perspective of the institutional theory, whose principles are summarized below:

- Organizations are not autonomous agents that maximize the economic opportunities, but they are embedded in a complex set of social norms and expectations that shapes and guides their decisions and strategies.
- The appropriate management behavior gets into the company by means of agents like the State and professional institutes.
- The legitimacy is originated in accordance with the social regulations that may ensure public approval and support.
- Social regulations and pressures may be considered accepted, or institutionalized, which make difficult the resistance and the change.
- This social conformance may hinder the organization’s performance and efficiency, but it may also improve the changes of long term survival.
- The isomorphism is a process that occurs when similar organizations are experiencing similar social expectations and then adopt also similar managerial strategies and arrangements.

Jeremy (*apud* JENKINS and AMBROSINI, 2002) shows a historical vision of strategic management with emphasis on how the integration and diversification need to be complemented with strategic activities in other business functions. Special attention is given to technology, multinational investments, work and location, as well as in the organizations.

Jenkins and Ambrosini (2002) also describe the strategic analysis by means of a vision based on resources with the following assumptions:

- Among the organizations, the available resources are heterogeneous.
These differences may remain stable over time which limits the transfer of resources among companies

The vision based on resources recognizes that the resources do not have perfect mobility among organizations

Methodology

To develop this work, an exploratory reading was carried out, based on authors who have discussed strategy, especially in recent publications after 2000. Evidences about authors who had been already considering the variables and influences from the ongoing technological revolutions were sought, especially issues related to the Internet and communications.

The research focused on reading and on the relation among several authors that discuss strategy and whose ideas are the same or different in comparison to the Porter’s Five Forces model.

After a first exploratory reading step, the authors were organized according to the relation of their studies with Porter’s forces for later comparison or corroboration.

A more in-depth reading of Porter’s texts was necessary for the development of an introduction to the model and to the aspects that are discussed in this article. Other latest Porter’s publications in which the author had the possibility to defend or update his model were also analyzed.

Some limitations need to be recognized such as the limited number of the consulted authors, the restriction of publication period, among others. In relation to the limited number of consulted authors, it refers to the titles available in traditional or virtual libraries accessible to the researchers. The publication period of the authors (except Porter) was intentionally restricted in order to try to find the effect of the Internet already discussed in the literature review.
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Other limitations that can be cited are related to language (only texts in Portuguese and in English were consulted), the type of publication (higher number in books and lower use of articles to seek the most accepted concepts in the literature).

COMPARISON WITH OTHER APPROACHES

How does technology affect the threat of new entrants?

Regarding the technological effects, in special with the advent of Internet in the mid-1990, Scott and Davis (2007) say that the Internet has created access to new markets, brought new unexpected competitors, as well as substitute products and even the creation of entirely new markets.

Porter (2001) describes the facility of the entry of new operators in the industry sectors as a negative effect of the Internet for the established companies. Another effect perceived by Porter (2001) is the reduction of entry barriers. As an example, he cites the substitution of the sales force by the electronic commerce. In this case, the “invasive” company may use the online sales mechanism in opposition to the established company that has already incurred costs to train, prepare, maintain and pay commissioned work to a large sales force.

How does technology change the bargaining power of customers?

Prahalad and Krishman (2008) argue that companies are moving towards to provide unique experiences to their customers. In this model, the company’s operation would be based on every customer (what they called N = 1). The company would need to trigger global resources to meet the dynamism of this demand. So, the authors called R =
G, which means the resources (R) should be triggered globally (G). In this logic, the authors show that the main technological trends point to three critical items:

1. Convergência da conectividade ubíqua, em voz, dados e em vídeo, por meio de telefones celulares, de PCs e de Internet.

2. Acesso onipresente à computação, a custos cada vez mais baixos, por meio de avanços em novas tecnologias e de inovações nos modelos de entrega.


The findings of these authors fragment the bargaining power of the company in addition to increase significantly the power of the customer, because they are based on the unitary negotiation (N = 1). As a result, the transactions are carried out individually with each customer.

**How does technology change the bargaining power of suppliers?**

Graeml and Macadar (2007) describe an example of cost reduction in corporate purchases (as a consequence of the bargaining power of suppliers) made possible by the corporate purchases on the Internet. In this case, the analysis dimension of Porter’s model would present the strength of bargaining power of suppliers with low value.

Prahalad and Ramaswamy (2004) describe how the supply chain should be designed so that it allows the company to do a quick reset of its resources. In this way, the company is able to access its suppliers’ skills quickly and integrate them by means of information systems. Besides, it can offer single and personalized experiences to its customers. This collaborative view contrasts with Porter’s view (1991), who considers that the suppliers can drain the profitability of a sector. In opposition to Porter’s view,

**Systemic Organization Magazine, no. 1, July/Dec. 2013**
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Prahalad and Ramaswamy (2004) believe that it is necessary to know the skills of partner companies and uses them in order to improve the experience of their own customers.

Technology and threat of substitute products or services

For Scott and Davis (2007), the technological changes may corrupt the boundaries of industries, as well as allow competition from substitutes, demanding answers from the current dominants. The authors emphasize the role of information technology by exemplifying with the changes and evolution occurred in the North American banking market due to the technological advances.

For Shapiro and Varian (2003), the production of information can be expensive, but it is cheap to be reproduced. According to the authors, after the production of the first copy of an information item, the production costs had already occurred. The unitary cost for the production of new copies with the same content is constant and it tends to be derisory.

An example described by Shapiro and Varian (2003, p. 39), refers to the electronic phone books. The commercialization of the catalogues in New York began in 1991 for ten thousand dollars. After only 15 years, it cost less than twenty dollars or for free on the Internet. In other words, after the producing companies had amortized their production costs, they began to compete only by marginal costs, the costs of reproduction per unit.

It can be concluded that this characteristic of the information assets influences directly the profitability of a sector and it can drastically erode the profits over time.

Rivalry among the companies in the new economy

The period of intensive economic and technological changes that began in the late nineties has been described as “third industrial revolution”. However, at this time, it was
leveraged by digital technologies and communication, especially the mobile phone and Internet (GRANT, 2005).

For Grant (2005), the negative impacts on industry profitability, caused by new technologies may be noted in the application of the Porter’s Five Forces model. It becomes visible with the Internet, especially the increase of rivalry among the competitors, reduction of entry barriers and the increase of the customer’s power.

The rivalry increased due to the number of competitors or, at least, the competitors who have rivaled locally (local production, distribution and commercialization). By means of the Internet, they were able to offer their products to new markets and to compete with competitors of traditional local bases. The production is in a specific place (fixed), but the distribution and commercialization can overcome the distance barriers whereas other requirements such as price and quality are competitive.

The entry barriers are reduced, for example, by the virtualization of distribution channels. A good e-commerce site can replace several physical stores. The buyer’s power has also grown considerably, because the buyer is informed about products, their characteristics and substitutes by means of the Internet.

Kim and Mauborgne’s work (2005) presents the vision of the “blue ocean” strategy, which considers competition irrelevant. The exploitation of the niche or the specialization of the product/service would be so specific when following this strategy that there would be no competitors. The Internet expands this possibility, because the niches are more easily identified and served by the web.

The sixth force

Brandenburger and Nalebuff (apud GRANT, 2005) developed an analysis model called "value chain" to introduce the suppliers of complementary products in the competitive environment.
Grant (2005) illustrates his thesis with the case of suppliers of printer supplies who influence the value of the printer to the customer. For the author, the supplements increase the product value perceived by the customer while the substitute products and suppliers will degrade it. He also suggests that, the convenience and functionality on using Porter's model, this sixth force – complementary products and suppliers – could be added to the analysis to contemplate the creation of value and exercise bargaining power for the industry.

In Table 7, it can be seen how the force suggested by Grant (2005) could be added to Porter’s traditional model (1991).

Figure 7 - Five or Six Forces?

Critical view of porter’s model

Mintzberg et al. (2000) point out several criticisms to the models of the positioning school, especially to Porter’s model. Among the authors’ criticisms, it can be highlighted the ones about focus, context, process and strategy.

For Mintzberg et al. (2000), the focus of Porter’s model is very narrow. The exclusive focus on the economic and quantifiable aspect, and the absence of reflection or analysis on political and social issues or even on non-quantifiable issues would be the responsible for the narrow focus.

In relation to the context, Mintzberg et al. (2000) question the validity of the model for businesses of all sizes and all industries. They mention the propensity for the model to be validated more easily in mature industries, but its efficacy is questionable for niche operators, for example. Another issue pointed out by the authors is the tendency to analyze only the external conditions of the industry sector and its competitors, without considering the information about the internal capabilities.

Regarding the process of the positioning school, Mintzberg et al. (2000) are concerned about the lack of learning in the model, and only the presence of calculation and the analysis of external conditions.

Finally, about the strategy resulting from the analysis, Mintzberg et al. (2000) also point out the limitations of generic strategies supported by the model. They are almost reduced to formulas, as if the companies had only three options to act, and that would be still defined by external conditions.

If Porter’s model (1991) shows a snapshot of an industry force, Fine’s approach (1999) amplifies the analysis. This author shows by means of the double helix that these forces are moving (on their own speed for each industry) and, at the same time, where they are going to. Or, in other words, to vertical or horizontal directions.

Rickard (apud JENKINS e AMBROSINI, 2002) argues that in Porter’s model, the lack of an organizational perspective limits the business analysis rather than the
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corporation. Despite Porter’s model suggests that the business unit needs a competitive advantage (it is understood as sustainable profitability) with a top market position by offering highly differentiated products or producing at levels below cost, the model does not make any mention to organizational structures and other necessary resources to achieve the top position.

Some support to porter

Grant’s position (2005) is in accordance with Porter’s statement (2001) on the consequences of the Internet.

Both point out that the main consequences of the development and diffusion of the information and communication technologies have enabled the growth of several industries (such as mobile communication, satellite TV, e-commerce) and the transformation of many others (from book sales to financial services). The two authors also mention that most of the implications of the virtual economy based on information have generated negative impacts on the performance of industries. Especially about the implications of the Internet, Grant (2005) states that the application of Porter’s model shows that instead of a new age of opportunity and profitability, the results were greater rivalry among competitors, the reduction of entry barriers and the increase of customers’ power. For Grant (2005), the Internet has intensified the competition and eroded the attractiveness of the industry.

CONCLUSIONS AND RECOMMENDATIONS

Porter’s model still presents persistent advantages on its simple analysis or on its easy application. Some of its limitations are highlighted by the authors that were consulted, such as: the absence of a dimension of complementary products and services analysis, the dynamics of relations with complementary products and services (GRANT,
2005); the non-consideration of pressures for vertical or horizontal movements and the evolution speed of the sector (FINE, 1999); the disregard of the market information characteristics (SHAPIRO and VARIAN, 2003); and the treatment given to suppliers and customers just as competitive forces that do not add value, and not as potential part of value creation (PRAHALAD and KRISHMAN, 2008; PRAHALAD and RAMASWAMY, 2004).

Despite the limitations, the authors do not invalidate the approach of Porter’s five forces for the attractiveness analysis (profitability) of a particular sector. The main issue is to understand that Porter’s model may represent the sector profitability in a given time, in a given situation, or in other words in a static representation. To understand the industry dynamics, it is necessary to appeal to complementary approaches in order to cover other factors in motion and to try to prospect which paths can be followed or, at least, to which direction the industry is going (for example, between vertical or horizontal).

It also has to be highlighted that issues related to technology (Internet and communication) and innovation are especially absent from the five forces model.

The confrontation among the authors, and even with the observations made by the main author (Porter, 2001), the hypothesis of the research problem that there were influences of new technologies on the forces of Porter’s model is confirmed. The specific objectives were achieved in the bibliographic review which described Porter’s model and his forces compared with more recent authors.

The data collection with the authors showed that far from agreeing about the generic model, there are several complementary and even contradictory methods and approaches. However, all of them have their own attractions.

Future studies could validate in sets of companies which aspects of new technologies have been used on strategic analysis. In a second moment, which aspects the companies notice that were neglected in the development of previous analysis, as well as to get information on which analysis can be more consistent for a given sector.
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