

Stream of consolidation in high-tech industry

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Abstract - We researched and analyzed development trends in high-tech, world pharmaceutical industry. We found out that pharmaceutical industry has been strongly concentrating and consolidating over the last several years. According to our research outcomes, we may conclude that the most important strategic reasons for the intensive consolidation processes are the lack of new products, high investments needed for R&D activities to develop new products, globalization processes, and as well increased competitiveness in the industry sector. The concentration process has formed some new pharmaceutical players in the world marketplace.

IndexTerms - consolidation, high-tech industry, pharmaceuticals, mergers and acquisitions

1. INTRODUCTION

Referring to the ongoing activities of world pharmaceutical industry, we have discovered some evident elements which mark the most important characteristics of world pharmaceutical industry:

- increased globalization,
- changing structure of competitors and increased competitiveness,
- lack of new products, despite increased investments into R&D (Research & Development)
- fast consolidation and concentration of world pharmaceutical industry
- development of new therapeutic fields and technologies (biotechnology, pharmacogenomics)
- fast development of world generic markets.

The basic activity for each inventive pharmaceutical company is to research and develop new products to provide new therapies to patients and to cover unmet medical needs. There are still many unfulfilled therapeutic fields such as cancer and diabetes or severe diseases like rheumatoid arthritis, psoriasis and rare genetic diseases. [1]

However, the basic research and development of a new product is an extremely demanding, comprehensive and expensive task. We can underline that basic research and development activities (R&D), together with marketing and sales, are definitively two most important operative and even more significant strategic activities of pharmaceutical companies. These two activities

require the biggest investments in all pharmaceutical companies.

Having analysed the figures, we found that the most inventive pharmaceutical companies invest on average around 16 % of their sales into R&D and even more (approximately 25 % or higher) into marketing and sales activities [2]. However, these ratios, especially those for R&D investments, are even higher with specialist firms in biotechnology and pharmacogenomic pharmaceutical companies, and much lower with generic pharmaceutical companies [3]. The global pharmaceutical industry is structurally not unique, as pharmaceutical companies differ very much according to their basic mission, core activities, performance and their strategic development and vision. Considering all these factors, we can define three different groups of pharmaceutical companies [4]:

- pharmaceutical companies which primarily work on basic research, development, marketing and sales of brand new, inventive, original pharmaceutical products (the inventors or originators)
- pharmaceutical companies which primarily work on development and sales of generic products (the generic or copycat producers)
- pharmaceutical companies which primarily work on basic research and development of biotechnology and pharmacogenomic products and technologies of new delivery systems (the specialists).

2. RESEARCH METHODOLOGY AND OBJECTIVES

We aim to research consolidation and concentration process in world pharmaceutical industry. We plan to use publicly available and published data of world pharmaceutical companies in our research activities. We plan to use in our research study the research methods of description, compilation and case study to explore our research. Thus, on the basis of known factors, we postulated two exploratory hypothesis which we would like to confirm or discard:

H1: World pharmaceutical industry has been undergoing strong consolidation and concentration process.

H2: Consolidation is only performed in the segment of inventive pharmaceutical companies.

We used the following research methods in our research work: description method, compilation method, method of analysis, comparative method, case study method and synthesis method of bringing out the final research conclusions.

3. ASSUMPTIONS AND LIMITATIONS

We assumed that pharmaceutical industry is in a strong globalization process, we assumed that pharmaceutical industry is very competitive and market driven business. Main limitations were access to all business data and figures of pharmaceutical companies and their accuracy and reliability.

4. PHARMACEUTICAL INDUSTRY

We can see a relative strong concentration of market share of the world pharmaceutical market in 10 leading world pharmaceutical companies, despite the fact that the leading pharmaceutical company Pfizer has currently around 7% of pharmaceutical global market share.

TABLE 2: LEADING WORLD PHARMACEUTICAL COMPANIES IN 2014*

Position	Company	Country of origin	Sales in bn \$	World market share in %
1.	Pfizer	USA	49.6	5.0
2.	Novartis	Switzerland	44.2	4.5

3.	Sanofi	France	42.1	4.3
4.	Merck & Co.	USA	37.6	3.8
5.	Roche	Switzerland	36.9	3.7
6.	Johnson & Johnson	USA	32.3	3.3
7.	GlaxoSmithKline	UK	30.8	3.1
8.	AstraZeneca	UK	26.1	2.6
9.	AbbVie	USA	19.9	2.0
10.	E. Lilly	USA	17.3	1.7

* - according to consolidated sales of pharmaceuticals and vaccines

Source: adapted from the companies official published reports

The leading ten pharmaceutical companies had over 34 % market share of the global pharmaceutical market in year 2014. For comparison, this figure was around 17% ten years ago. This is quite a significant sign of how intensive market consolidation and concentration of the pharmaceutical industry has changed its strategic global position and structure over the last several years. We have found out that many mergers and acquisitions (M&A) have occurred, resulting in the creation of new pharmaceutical companies. Examples can include Novartis which acquired the American pharmaceutical company Alcon, Pfizer which acquired Wyeth and King Pharmaceuticals, Merck & Company purchased ScheringPlough, and leading French pharmaceutical company Sanofi acquired the US-based biotechnology company Genzyme [5] .

After having analyzed what is the most important strategic clue for these acquisitions, we researched and found out one of the most important reasons were products themselves. The need for new products is a reality in today's pharmaceutical industry. The development of a new drug, NAS (New Active Substance) is set to be funded in excess of US\$1.3 billion and require over 12 years to get it to market as a finished and approved product [6]. This is a very complex, comprehensive, and highly risky effort with no guarantee the new product might succeed in the market and provide a Return-on-Investment (ROI).

World pharmaceutical industry has been concentrating for the last 30 years. R&D and marketing and sales activities represent two of the most important and strategic priorities of pharmaceutical companies and into which the majority part of companies proceeds are invested.

According to our research, we can underline the most important reasons for the consolidation processes in world pharmaceutical industry are the next ones:

- lack of new products to drive sales growth
- huge investments needed for R&D activities to develop new products
- fast globalization processes of the global economy
- global marketing and sales activities which need large investments
- changed structure of competitors created by M&A strategies and consolidation processes

The concentration process has formed brand new pharmaceutical players, however some pharmaceutical companies have vanished from the world market. We researched and found out one of the most important and as well strategic reasons for mergers and acquisitions (M&A) are pharmaceutical products. Besides, keeping and increasing global competitiveness is another very important reason for the consolidation of pharmaceutical industry in its all three defined sectors.

TABLE 3: SOME IMPORTANT STRATEGIC ACQUISITION DEALS IN WORLD PHARMACEUTICAL INDUSTRY

Acquirer	Target	Year of closing deal	Value in bn \$	Main strategic reasons for take-overs
GlaxoWellcome, UK	SmithKline Beecham, UK	2000	79	product portfolio, R&D
Pfizer, USA	Warner Lambert, USA	2000	89	product Lipitor (atorvastatin)
Novartis, Switzerland	Alcon, USA	2008/2010	52	product portfolio - ophthalmology
Roche, Switzerland	Genentech, USA	2008	42	product Avastin (bevacizumab), R&D

Source: own estimation, adapted from the companies' official published reports

We found out this process enables pharmaceutical companies to enter new development circles and arrange long-term development and needed growth. Formation of various partnerships is nowadays one of the mostly used strategies in pharmaceutical industry. We researched and marked below the most important strategic activities of creating common strategies for pharmaceutical companies:

- research and development (R&D) for new product creation
- products to drive the sales growth and gain increased market shares
- markets for geographic and market expansion
- marketing and sales to enforce marketing and sales activities to compete on the global markets and to drive further sales growth
- strategic development
- increasing global competitiveness

Following are some significant examples to illustrate the market situation for a better understanding [7]:

- in the group of inventive companies several acquisitions of US-based Pfizer (Warner Lambert, Pharmacia-Upjohn), the merger of GlaxoWellcome and SmithKlineBeecham to create GlaxoSmithKline, the merger of Astra and Zeneca to form AstraZeneca, and in the last year Pfizer acquired another three pharmaceutical companies: Hospira, Anacol Pharmaceuticals and Medivation,
- in the group of generic companies the leading Israeli company Teva has executed over 25 big acquisitions in the last decade, having lastly acquired four companies: Auspex Pharmaceuticals, Rimsa, Allergan Generics and Actavis Generics,
- in the group of specialists the US-based biotechnology company, Amgen, has been active in the USA by acquiring six specialists in the same segment.

We have researched available published pharmaceutical firms data regarding their M&A activities and the key reasons for them. According to our research outcomes, there have been more than 10,000 various alliances formed in global pharmaceutical industry over the last three decades [8]. We have found out consolidation processes have been performed in all three sectors of pharmaceutical industry (inventive - original pharmaceutical companies, generic producers, and specialists). We have also discovered world pharmaceutical industry has become more oligopolistic. We support this statement with

Knickerbrocker theory of oligopolistic reaction which says that [9] "Oligopolistic companies, as minimizers of taking risks in avoidance of destroying effects of competition follow each other to new markets to protect their own interests. It is significant that the action of one player creates a reaction of the other competitors, an action creates a reaction and so the story of oligopolisation continues". This statement illustrates and explains properly consolidation process in world pharmaceutical industry.

According to our research we found out the most important key factors for merger and acquisitions in the pharmaceutical industry are the following ones: need for sales growth, new products, new markets, marketing and sales activities, R&D (research and development), creation of synergies and strong need for the increasing of global competitiveness.

Pharmaceutical companies tend to internationalize and globalize their business activities sooner as in the past due to market liberalization, increased global competitiveness and a need to react properly to strategic consolidation and concentration activities of competitors.

According to Svetlicic who stipulates that »Modern ways of internationalisation with the aid of network formation and strategic alliances enable internationalisation without company growth. Today, companies decide for internationalization and alliances because they desire to:

- be closer to customers
- increase effectiveness
- gain better access to technologies and knowledge (know-how)
- protect themselves from competitors (strategic reasons)« [10].

We may say that in a certain way the concept of strong market oriented management clearly designates a company's business philosophy. We may entirely agree with Corstjens' estimation that »The sector of pharmaceutical industry, despite being very specific in all aspects, is an ideal case, how a practice and usage of the marketing management concept directly relates to a very successful business performance of this industrial sector". [11]

4. CONCLUSION

Our research shows M&A strategy predominate as a strategic orientation for a number of world

pharmaceutical companies. We may conclude increased global competitiveness and amended structure of competitors which is generated by the M&A process and strategy, have greatly influenced the strategic orientation of majority of pharmaceutical companies. Based on that we can confirm our first hypothesis H1 that world pharmaceutical industry has been undergoing strong consolidation and concentration process.

We found out that intensive globalization process influences the concentration and consolidation in the global pharmaceutical industry which becomes more oligopolistic. Further on, the lack of new products, fight for global market shares, increased global competitiveness, and changed structure of competitors further speed up the consolidation in pharmaceutical industry. Moreover, consolidation is evident in all three sectors of world pharmaceutical industry. Based on that research outcome, we can overturn our second hypothesis H2 that consolidation is only performed in segment of inventive pharmaceutical companies.

Based on our research outcomes we may foresee consolidation processes is set to continue as pharmaceutical firms tend to follow the M&A strategies of their competitors in endeavour to defend their global market position and as well their long-term competitiveness.

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