

Impact of Internationalization on the Management Control System in Pharmaceutical Industries: Study of Multiple Cases

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Abstract: This research aims to analyze the internationalization strategies and to identify if there was an impact on the Management Control Systems (MCS), in nine pharmaceutical companies, being seven Brazilian: EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA, FARMANGUINHOS and two Portuguese, SIDEFARMA and ATRAL. The methodology is characterized as qualitative, descriptive and multiple case study, based on semi-structured interviews with executives in the international and management area, in addition to the collection of secondary data. In the literature, he sought to discuss classical theories, classification, strategies and motivations for internationalization, in addition to the characteristics and mechanisms of management control. The pharmaceutical industry was contextualized, portraying the global and national panorama, pointing out the structural characteristics of the segment. Therefore, the results revealed that the internationalization strategies and the SCG are very close to what the literature recommends, following strategies with a P&DI focus, similar to developed countries. It was concluded that there was an impact, in Internationalization, on the MCS in EMS, EUROFARMA and CRISTÁLIA; and in the others, there was no impact or change in control mechanisms. It is suggested to deepen studies in other pharmaceutical companies, with greater participation of international sales, developing an agenda to follow the evolution.

Key words: internationalization of firms, internationalization strategies, management control, pharmaceutical industry

JEL codes: L, L1

1. Introduction

The Management Control System (MCS) in international companies is similar to that of domestic companies, but they are designed in the global context. In this context, cultural differences have influenced the way information is generated and used. The strategy adopted by the organization allows managing international operations and, thus, allows achieving the objective, through the determination of success factors relevant to its strategy (Malmi, 2013).

Hitt, Ireland and Hoskisson (2012) state that the internationalization of a company affects its (MCS) and the operational challenges and complexities of the organization increase, and therefore, new systems are needed to

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deal with the new scope of the business.

In order to contextualize the Brazilian pharmaceutical industry, which are not formed by large companies, with the relevant portion held by a few companies, subsidiaries of Big Pharmas, called the holders of most patents for innovative drugs, but by emerging companies, established on the basis of in external dependence, with little focus on domestic technological development, which specialized in medicines with expired patents, dedicating themselves to the manufacture of low added value products, such as generics and similar products, which together represent 65.30% in units (boxes) sold, in 2018, according to Anvisa (2019).

In view of this, a low investment in R&DI (Research, Development and Innovation) is identified, in relation to global ones, and it has low interaction with agents linked to innovation, competing with global pharmaceutical companies in the domestic market (Paranhos et al., 2018). In addition, national pharmaceutical companies have low production of Active Pharmaceutical Inputs (API), inputs necessary for the manufacture of medicines, with China and India being the largest suppliers (Hasenclever et al., 2010).

In addition to the competitiveness of the pharmaceutical sector, Brazil has other factors that influence the growth in demand for medicines: the aging of the population, which corresponds to the increase in society's life expectancy; the greater use of generic drugs, due to the low price and the improvement in the average income level of the population (SINDUSFARMA, 2017).

Faced with this apparently competitive, adverse scenario with unique characteristics of this very closed pharmaceutical segment, in which some industries are building international trajectories, the objective is to analyze the internationalization strategies, as well as to identify, if there was an impact on the MCS, in the companies' pharmaceutical companies studied, based on the constructed literature. Therefore, the methodology used was a study of multiple cases in nine (9) national and international pharmaceutical industries.

The expected contributions with the research from the academic point of view with the practical implications is to empirically provide results that can stimulate the pharmaceutical industries to adopt different internationalization strategies on the management control system, recommended by the literature, generating competitive advantage with a focus on R&DI, demand by strategic resources and challenges, effective controls, identifying benchmarking opportunities for professionals, governments and companies both in the domestic and international markets in order to adapt to the needs of customers and provide useful information to help pharmaceutical companies to improve their management control systems and increase its ability to meet global requirements.

2. Theoretical Reference

2.1 Internationalization

Roque, Alves and Raposo (2019), the internationalization of a company is established by extending the product market strategies it adopts to other countries and these strategies used will establish the form of its operational chain and another relevant point for internationalization is innovation.

For Alguacil, Martí and Orts (2017), estimates have shown that companies whose activity is restricted to the domestic market are less productive, smaller in size, young in age, with human capital and R&D activities under construction and have its ranking lower than those that access the international market. Companies with foreign direct investment show higher values and more relevant characteristics than exporters.

2.1.1 Classic Internationalization Theory: Economic and Behavioral Approach

The economic approach was developed from a macro perspective, a holistic and logical prism, reducing total costs associated with a transaction, with a competitive advantage. It contemplates four (4) main theories: that of market power; that of the product cycle, that of internalization and the eclectic paradigm.

The theory of market power, by the economist Hymer (1960), considered its main representative, focuses on recognizing that Direct Investment Abroad (FDI) is more noticeable in industrial companies. The product cycle theory, the main representative is Vernon (1966). For him, companies facing maturity stages in local markets should increase the life cycle of their products, entering markets. The Internalization Theory, whose main authors are Buckley (1976) and Casson (1976), based on the concepts of Williamson's Theory of Transaction Costs (1985), attaches importance to the concept of internalization to justify the existence of processes of internationalization.

The Eclectic Paradigm Theory, or OLI Theory, according to its developer, Dunning (1998), recognized that it is not a new theory, but that it seeks to explain the process of internationalization of companies. It proposes to explain the breadth, form and pattern of international production based on three groups of advantages: (O)wnership (property), advantages of ownership of specific assets of the company; (L)ocation (Location), advantages that the environment brings to the company's competences; and (I)nternalization (internalization), advantages arising from the company guaranteeing activities in another country through its own means. According to Souza and Fenili (2012), the eclectic paradigm is a "broad analytical framework", capable of covering market deficiencies caused by the company's development in its domestic market.

An alternative approach, the theory from the point of view of the behavioral or procedural approach, was given within the scope of Administration, greater subjectivities, based on the attitudes and insight of decision makers when proposing explanations about the process, through which a company enters, in the international market, and on the influence of attitudes, perceptions and expectations of its executives (Barreto, 2002).

The Uppsala school, developed by Swedish researchers in the 1970s and originating from scholars of the Nordic School, emphasized the studies conducted by Johanson and Wiedersheim-Paul (1975). Johanson and Vahlne (1977), who defend the thesis that an organization, which goes through phases and models, contains data with adjustments and proportional increases.

Johanson and Vahlne (2009, p. 1423), "this sequence of stages indicates the growing commitment of resources to the market. It also indicates current activities (operations) that are differentiated due to accumulated experience." The Uppsala School points out a relevant characteristic, in the perception of psychic or psychological distance, between the country of origin and foreign countries, in the firm's internationalization process, according to Hemais and Hilal (2004). This distance can be defined as the perceived differences between values, languages, practices or management controls, industrial development, and education of the two countries. In general, companies do business with countries that are culturally closer, since very large cultural distances would make it impossible to do international business.

Based on the Uppsala theory, the Behavioral Theory of the Nordic School of International Business emerges, linked to networks, which, according to Hemais and Hilal (2004), can be considered a natural evolution of the school's thinking. Andersson (2000), one of the main representatives, points to entrepreneurship as a relevant factor in the internationalization process.

For Hemmert and Jackson (2016), the Uppsala model remains an indelible model and suggests a precursory as well as enduring appeal. The type of data sources used in the development to track, compare patterns of original and incremental investment and the sudden divestment by the emerging company suggest help in defining the

element and state of Uppsala.

2.1.2 Classification of Internationalized Companies

The internationalization process can be defined as an increase in company's commitment to international markets, and this process can take place in several ways: export, import, foreign investment, opening of subsidiaries, among others (Dethine, Enjolras, Monticolo, 2020). According to Casillas, Barbero and Sapienza (2015) stated that internationalization is a process by which a company increases the influence and awareness of international activities to carry out cross-border transactions. The adaptation of the organization to international markets is managed through small incremental steps. Internationalization is a continuous process and companies increase their influence, beyond borders, going beyond traditional exports and organizing production, marketing and sales, in the foreign market, through an entire value chain.

Therefore, this process can be considered as a strategy of internationalization, accelerates the economic activities of companies with abroad, the authors Bartlett and Ghoshal (1992), Canals (1994) and Dymont (1987), listed some classifications for companies internationalized: a) Exporting company — initial process of internationalization, industries are in a single country, commonly in the host country or of origin of the manufacturer. The risk of this type of business is small; b) Multinational company — is to exploit the important competitive advantages, domestically, diversifying its activities abroad; c) Global company — has a centralized system or structure of production on a global scale of goods that is installed in a given country and only markets production to others; d) transnational enterprise — seeks to be efficient locally in order to achieve global competitiveness.

2.1.3 Typologies or Strategies

To establish international expansion, the organization can adhere to different modes of entry, abroad, analyze the risk levels and distinct properties of each method. These internationalization strategies present typologies or different forms for the modes of entry into the foreign market. Sarathy and Terpstra (1991), Cateora and Graham (1996) and Brito and Lorga (1999) conceptualize the forms most used in the literature: a) Direct export: exports directly its goods, products or services, to the final consumer abroad, through an intermediary (distributors, agent of the producer, representative, subsidiary), focusing on the target market. The advantage is the opportunity for the exporter to control the distribution rules and know which international market they are selling; b) Indirect export: located, in the manufacturer's country of origin, which is called domestic intermediaries, who buy the goods, to market, abroad. The greatest advantage of knowing about international standards and procedures; c) distribution agreement: agreement signed between the exporter and a legally constituted distributor with technical knowledge of its products for foreign market; d) Licensing/franchise: the licensing company authorizes, through a contract, the licensed company, in the marketing of its products, in an area previously agreed between both parties; e) Sales subsidiary: through a sales office, the producing company fixes its physical presence abroad; f) Own distribution center: the exporter disseminates its production abroad and the financial burden is greater, compared to a sales subsidiary; g) strategic alliances and joint ventures: a kind of consortium or collaboration agreement between local and foreign organizations; h) merger: merger of two or more companies in the same or complementary sector, whose strategy is to increase market share or use such cooperation; i) Acquisition: an organization buys the share control of another that is already established, in the country, and only one of them will maintain its identity; and j) Greenfield: assembly of a subsidiary, starting from scratch.

Root (1994) produced a summary with 3 (three) different typologies or modes of entries abroad: by exports (direct and indirect export); contractual relations (licensing, franchise, agreements and contracts); and investments

(partnerships, new ventures, subsidiaries, mergers/acquisitions and joint ventures, *greenfield*).

2.1.4 Motivations for Internationalization

The classification of the motivations for internationalization (although commonly referred to as motivations for The IDE) is the best known one proposed by Dunning (1977), Dunning (1993), Dunning (2001), built on the eclectic paradigm. In fact, motivations do not only support investment operations, but generally entry modes. This classification distinguishes four types of motivations, as follows: *Resource seeking*: the company's motivation seeks to access resources that are not available in its home market. The traditional goal in these cases is to locate at least part of the value chain abroad, as a way to benefit from lower costs of production factors; b) *Market seeking*: companies invest to capture market (consumers) (P. Buckley et al., 2008). c) *Efficiency seeking*: when this reason is in force, the company performs AED, can benefit from differences between countries as to the cost or availability of production factors and can benefit from economies of scale, range and differences in consumer tastes; The reasons already specified: demand for resources, markets and efficiency, are in the concept that the company is internationalized, eventually performing IDE, because it can realize additional profits by exploiting specific assets (P. Buckley et al., 2008); and *Strategic Asset Seeking*: Companies carry out RHE, aim to acquire new skills and resources, or dynamic capabilities, rather than merely exploiting the assets they already have (M. P. Ferreira et al., 2007).

2.2 Management Control System

According to Caroline Sulzbach Pletsch, Dallabona and Oliveira (2016), the terms management accounting, management accounting systems, management control systems and organizational controls are often used as synonyms.

Thus, management accounting consists of a set of practices, such as methods of costing products, budget, among others. Management accounting systems refer to the systematic use of management accounting for achieving the objectives. Management control system is more comprehensive and involves management accounting systems, as well as other organizational controls. Organizational controls consist of internal controls of activities and processes (Chenhall, 2003).

Different mechanisms of organizational control types are used in organizations: family control, bureaucratic, results and *ad-hoc*, Table

2.2.1 Artifacts With Combination of Financial and Non-Financial Measures

Table 1 Typology of Organizational Control

Characteristics of the organization	Local context	International context	Social context
Small	Family Control	Ad hoc control	Limited formalization
Large door	Bureaucratic Control	Control by results	High formalization
	Centralized	Decentralized	

Source: Gomes (2014, p. 117).

Family control is used in companies, whose smaller dimension or stability of the social context facilitates a more informal control. Management performs a very centralized control, in which no importance is attributed to formal mechanisms and financial control systems. Bureaucratic control is typical of uncompetitive environments and large organizations, centralized and usually closed to the outside world (Gomes, 2014).

According to Gomes (2014), control by results is more common in competitive social contexts and is based on financial controls. It has a high degree of decentralization and the wide use of responsibility centers evaluated

by results. Due to the large size of this type of company and the greater degree of autonomy and responsibility, it is common to use formal systems of procedures to facilitate control. Sophisticated mechanisms of financial control are used. Ad-hoc control is based on the use of non-formal mechanisms that promote self-control. It is common in very dynamic and highly complex environments, which hinder the formalization of procedures, such as those found in high-tech companies, advertising, consulting and develops in very decentralized structures, but with limited use of financial measures.

2.2.1 Artifacts With Combination of Financial and Non-Financial Measures

The evolution of artifacts, revolutionize business management, bringing not only information, indicators, or financial measures, but also information, indicators, or non-financial measures, such as which can be both quantitative and qualitative.

According to Frezatti et al. (2009), different artifacts may or may not be part of the management control of any organization: strategic planning, systems such as *Enterprise Performance Management (EPM)*, life cycle analysis, product profitability analysis, value chain analysis, quality improvement programs, real options, project and investment analysis, operational research techniques, Costing System, Benchmarking, *Economic Value Added (EVA)* and *balanced scorecard (BSC)* and intellectual capital.

Knowing about which control system or instrument to adopt is important for the success of organizations. The correct improvements of these controls are very useful for managers, for effective decision-making, in the steps that involve strategic planning, budgets and management control in the performance of activities (Frezatti et al., 2009).

Currently, there is a strong trend in the combination of financial and non-financial measures. Large corporations use integrated information systems, artificial intelligence and state-of-the-art information, which provide a volume of information never imagined (Pereira & Gomes, 2016).

2.2.2 Management Control in an Internationalized Environment

Regardless of most of the practices used to control an organization abroad and similar to the local ones, Anthony and Govindarajan (2008) consider two discussions, in management control systems, used in activities abroad: transfer pricing policy and exchange rates.

According to Busco, Giovannoni, Scapens (2008), some questions should be perceived in the management control mechanisms of internationalized organizations. In this context, in addition to the role of accounting, there is the social and institutional aspect of management control systems in these environments. They allow coordinating and integrating activities in different countries, creating understanding of the world through symbolic representations, controlling distance and integrating activities of geographically dispersed organizations.

Additionally, some existing tensions in the relationship between the parent company and the subsidiaries present in companies operating in the global environment. These tensions correspond to the conflict between centralization versus decentralization, vertical relationships versus lateral relations, convergence versus differentiation (Busco et al., 2008).

According to the authors, the conflict between centralization and decentralization concerns the amount of delegation of the authority, in decision-making, delegated by the headquarters to the subsidiaries. Generally, centralized organizations concentrate their strategic decisions, in the matrix, while in the decentralized, decisions are made in the subsidiaries. In this case, management control systems can help reduce this conflict in two ways: in decentralized companies these systems can reduce the distances between the matrix and subsidiaries, through a real-time flow of information, particularly through integrated systems (ERP), allowing the decentralization of

decisions; while centralized, the SCG can help the matrix with regard to branch information (Busco et al., 2008).

2.2.3 Previous Studies of the Internationalization on MCS in Pharmaceutical

Previous studies have shown that the impact of internationalization on the management control system in pharmaceutical companies is quite significant. With the implementation of new international accounting standards, the adoption of strategic planning and risk management methods by pharmaceutical companies require an adaptation of the management control system. Internationalization can bring significant changes in the planning and control process, as action plans must be adjusted to new market rules and the needs of international markets (Min W., Chen Y., & Kim Y., 2019).

Other studies indicate that internationalization can increase the effectiveness of the management control system, as it allows pharmaceutical companies to better take advantage of market opportunities and obtain better results and also showed that it leads to changes in control processes and systems and that it can result in increased complexity of the control system, need for more centralized control, use of performance measures more adapted to international operations and greater dependence on technology for control purposes. In addition, they highlighted the importance of cultural differences and the need for local adaptation of control systems, especially in relation to communication processes and reports. In addition, a study published in the journal *International Journal of Pharmaceutical and Biomedical Research* described how several pharmaceutical companies in Brazil implemented the internationalization process to improve their management control systems (Pereira A. J. P., & Gomes J. S., 2017).

3. Pharmaceutical Industry

The pharmaceutical industry is one of the most internationalized and the one that most leverages the world's business. Part of the geographical dispersion of the sector is the result of technological and institutional shocks that impacted its productive structure.

3.1 Overview of the Global Pharmaceutical Industry

It is responsible for the development of welfare conditions for patients. This is the main reason for the high percentage invested by pharmaceutical companies in R&D (R&D), in the search for new and better products, for various types of diseases.

The pharmaceutical industry is highly regulated because most of its products are directly life related products. Due to strict regulations, flexibility in changing product characteristics (e.g., indication, appearance) by country or region is low. Pharmaceutical companies enter new countries with a product very similar to that of their domestic markets, which they can use to test the acceptance of their offers by foreign customers and thus are able to transfer the entire production process of a particular product to various markets. However, these companies cannot test the acceptance of their medical products, the prescribed drugs require the regulatory approval of a country to launch them in other countries or regions, which is based on a large amount of scientific data that incur significant costs and take a long time with a very low probability of technical success. Although pharmaceutical companies understand acceptance of the country or regions, they need to apply for regulatory approval from another country to change the characteristics of their medical products (for example, to expand indications, change from capsule to tablet).

In the ranking of *the main pharmaceutical companies* globally, in 2018, it is noteworthy that only the 10 largest pharmaceutical companies in the world held a market share of about 32.6% and considering the 15 largest

pharmaceutical companies, they are equivalent to approximately 41.3% of the market, based on the compiled numbers, from GLOBALDATA (2019), based on sales of Prescription and Generic drugs, as shown in Table 2. The development trajectories of the pharmaceutical industries are centuries-old, which regularly use F&A (Merger and Acquisitions) processes. It is noted that of these fifteen largest pharmaceutical companies in the world, nine have the origin of capital, in the United States of America (USA), and have multiple internationalization strategies. The average percentage spent on R&D (Research and Development) among the 15 largest in the world was 20.3%, a very significant number in terms of investment, according to a survey (EvaluatePharma, 2018), according to Table 2. The development trajectories of the pharmaceutical industries are centuries-old, which regularly use F&A (Merger and Acquisitions) processes. It is noted that of these fifteen largest pharmaceutical companies in the world, nine have the origin of capital, in the United States of America (USA), and have multiple internationalization strategies. The average percentage spent on R&D (Research and Development) among the 15 largest in the world was 20.3%, a very significant number in terms of investment, according to a survey (EvaluatePharma, 2018), according to Table 2.

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Table 2 World's Largest Pharmaceuticals in Drug Sales

Rank	Enterprise	Foundation	Officials (group)	Origin capital	Sales billions Dollars		Grow. %	Share %	P& D %
					2018	2017			
1	Pfizer	1849	92.400	USA	59.0	55.4	6.5	4.9	16.80
2	Novartis	1758	125.161	Switzerland	50.5	46.5	8.4	4.2	18.70
3	Roche	1896	94.442	Switzerland	44.7	42.8	4.4	3.7	22.00
4	Johnson	1886	135.100	USA	42.0	36.2	16.0	3.5	24.30
5	Sanofi	1858	104.226	France	41.5	39.2	5.7	3.4	18.10
6	Merck	1891	69.000	USA	40.8	38.7	5.5	3.4	21.40
7	Glaxo	1715	95.490	England	33.9	32.1	5.6	2.8	17.40
8	AbbVie	2013	30.000	USA	30.8	28.0	10.1	2.6	17.40
9	Gilead	1987	11.000	USA	24.8	25.9	4.1%	2.1	13.70
10	AstraZeneca	1999	61.100	England	23.9	21.7	10.5	2.0	27.40
Total	Top 10		817.919	-	392.0	366.5	6.9	32.6	19.7
11	Bavarian	1863	116.998	Germany	23.0	20.9	9.9	1.9	18.40
12	Amgen	1980	21.000	USA	22.2	21.8	1.7	1.8	16.00
13	Bristol	1887	30.251	USA	20.7	20.3	1.9	1.7	25.00
14	Eli Lilly	1876	33.815	USA	20.0	19.5	2.6	1.7	26.80
15	Takeda	1986	49.578	USA	19.1	17.1	12.0	1.6	21.60
Total	Top 15		251.642	-	496.9	466.1	6.6	41.3	20.3
Total	General		1,069.561	-	1,204.0	1,100.0	9.5	100%	100%

Source: Own elaboration from the data provided by Global Data (2018).

3.2 Overview of the Pharmaceutical Industry in Portugal

Internationalization and exporting have been two of the major challenges of the Portuguese pharmaceutical industry with a national production base in recent years, as evidenced by internationalization projects, with investment in Research & Development (R&D) or R&D, according to the report prepared by the Portuguese Pharmaceutical Industry Association (Apifarma, 2017), data extracted from INFARMED (2019).

With regard to the ranking of the largest Portuguese pharmaceutical companies, classified by operating revenue, in thousands of euros, rescued from the Amadeus Database, hosted at the University of Minho (UMINHO, 2019), it is noteworthy that the 15 largest pharmaceutical industries out of a total of 119, held a *market share* of 77.35% of the national market Portuguese, based on the balance sheets ended on 12/31/2018. The contextualization of the Portuguese segment is due to the fact that laboratories ATRAL e SÍDEFARMA, are part of the object of the case study of this research, and these emerge in this ranking, in 14º e 31º lugar, of the largest Portuguese pharmaceutical companies, respectively, according to Table 3.

Table 3 Twenty (20) Largest Portuguese Pharmaceutical Companies by Operating Revenue

Nº	Name	Group	ano	Operating Revenue.			Employees
				M €\$	Part %	M U\$	
1	BIAL S.A.	BIAL Group.	2018	217.788	14.9%	249,367	410
2	HOVIONE S.A.	HOVIONE Holding Lda	2018	157.430	10.8%	180,257	1.096
3.	HIKMA S. A.	HIKMA Lda Company	2018	145.084	9.95%	206,395	608
4.	LABESFAL S.A.	FRESENIUS SE & CO.	2018	128.250	8.8%	146,846	665
5.	TECNIMEDE S.A.	TECNIMEDE - S.A.	2018	108.919	7.47%	124,712	235
6.	LUSOMEDICA S.A.	Recipharm AB.	2018	55.991	3.84%	64,110	378
7.	IBERFAR S.A.	Mr. Pedro M.B.F.Costa	2018	45.976	3.15%	52,643	ND
8.	BLUEPHARMA S.A.	I.P.B.R. GEST, SGPS, Lda	2018	42.213	2.96%	48,448	423
9.	BASTOS S.A.	BASTOS VIEGAS	2018	40.578	2.78%	46,462	437
10.	LAB.VITÓRIA, S.A.	FAES FARMA, S	2018	37.141	2.55%	42,526	162
	TOP 10			980.370	67.24%	1.122,5	4.414
11	A. MENARINI S.A.	PHARMAFIN SPA	2018	31.096	2.13%	35,605	86
12	SOFARIMEX -	THEGEST - SGPS, S.A.	2018	30.711	2.11%	35,164	202
13	P.I.P. LTD.	GEMEXOL S.A.	2018	29.176	2.0%	33,407	ND
14	LAB. ATRAL, S.A.	GEMEXOL SA	2018	28.283	1.94%	32,384	273
15	LAB. BASI S.A.	F.H.C. S.A.	2018	28.252	1.94%	32,349	161
	TOP 15			1,127.888	77.35%	1291.4	5.136
31	SÍDEFARMA	Vistas & Fernandes S.A.	2018	6,299	0.43%	7,212	73
119	Total Active			1,458.079	100%	1,669.5	7.790

Source: Prepared by the Author, redeemed from the Amadeus Database (30/11/2019).

3.3 Overview of the Brazilian Pharmaceutical Segment

According to the special magazine of economic value, among the 1000 largest national companies, there are the 10 greatest pharmaceutical champions (Jornal valor economico, 2019). The interviewees, Eurofarma, EMS, Aché and Cristália, in 2018, represented a 35.45% share within this group and Eurofarma had a growth of 18.6%, well above the other and more than half, of the pharmaceutical companies in the ranking, which originates from the Brazilian capital, as shown in Table 4 .

Table 4 Ten Largest, Classified by the Sector: Consolidated Net Revenues Million Reais

Rank	Classification		Enterprise	Seat	Revenue Liquid		Cresc. %	Active Total R\$	Capital origin	Profit liquid	Ebtida
	2018	2017			R\$	US\$					
1	117	105	Pfizer ²	SP	5,128	1323.4	1.0	-	EUA	-	-
2	126	211	Sanofi ²	SP	4,881	1259.7	3.6		FRA	-	-
3	178	171	Roche	SP	3,743.2	966.0	8.1	2761.3	SU	361.8	522.4
4	180	158	Hypera-Pharma*	SP	3,724.3	961.18	6.4	10557.0	BR	1,129.6	1,296.1
5	183	190	Eurofarma*	SP	3,701.9	955.40	18.6	3520.7	BR	491.6	694.1
6	188	164	EMS*	SP	3,625.2	935.6	5.1	2904.2	BR	288.2	375.1
7	208	197	Novartis	SP	3,221.4	831.3	7.9	2754.9	SU	78.3	245.0
8	212	201	Aché*	SP	3,183.2	821.5	7.3	3009.5	BR	608.0	934.4
9	335	320	Cristália*	SP	1,877.9	484.6	5.0	3810.9	BR	359.4	727.8
10	337	329	Abbott	SP	1,857.5	479.4	1.0	-	EUA	-	-
Total					34,944	9018	6.3				

*Data extracted from consolidated or combined balance sheet as of 12/31/2018

¹Company with balance sheet date different from 31/12. ²Estimated values by Value 1000.

Source: Magazine value 1000 Largest Companies (2019), own elaboration.

3.4 Structural Characteristics of the Pharmaceutical Industry

According to Paino Paim et al. (2012), in the Brazilian market, the pharmaceutical industry presents two moments that determined the competitiveness of the sector: the Patent Law, implemented in 1996, and Law 9,787 (BRASIL, 1999) of Generic Drugs.

According to the National Health Surveillance Agency (ANVISA, 2019), the definition of the specific terms of the pharmaceutical area was published: a) Reference medicine: innovative product, safety and quality have been scientifically proven with the competent federal agency; b) Generic medicine: similar to a reference product or innovative, interchangeable, usually produced, after the expiration or waiver of patent protection; c) similar medicinal product: one containing the same active ingredients, has the same concentration, pharmaceutical form, identified by trade name or trade mark.

Also according to ANVISA (2019), the drugs according to the type of prescription are classified: a) Non-Prescription Drugs (MIP): do not require prescription, the packaging has no stripe; b) Prescription drugs: prescribed by a doctor or dentist, divided into two groups: without prescription retention and with prescription retention.

4. Methodology

According to Beuren et al. (2013), it proposes that the typologies be grouped into three categories: research on objectives, which includes exploratory, descriptive and explanatory research; research on procedures, which addresses the *case study*, *survey*, bibliographic research, documentary, participant and experimental; and research on the problem approach, which comprises qualitative and quantitative research.

This investigation was framed in a category as approach as qualitative research, as to the objectives as descriptive research and as to the procedures, it is a bibliographic, documentary and case study research. According to Yin (2015) the case study is appropriate, when it comes to empirical research that investigates a contemporary phenomenon, within its real-life context, especially when the limits between the phenomenon and the context are not clearly defined. The author further clarifies that multiple cases say respect for the establishment of comparisons and the achievement of more robust results.

The technical procedure adopted to collect the primary data was through interviews, with semi-structured questions in depth, which occurred with executives, both in the areas of Control and Management of the pharmacists surveyed, following a previous script with questions directed to the object of study.

In addition to the interviews, secondary and complementary data were collected through bibliographic and documentary research (statistical data, videos, *press releases and official company information*, contained in the institutional website, in its financial and sustainability reports). In the case of Portuguese pharmaceutical companies, these data were accessed directly in the Amadeus database made available by the University of Minho in Braga, at the Advanced Scientific Internship (ECA-2019) in Portugal.

The selection and sample of this research was constructed considering the following requirements for selection and sample: a) The stock control being national; b) belong to the industrial sector; c) act directly or indirectly in another country(s); d) different dimensions (small, medium or large); e) be located in any Brazilian state or Portuguese and f) to work in internationalization activities for more than five (5) years.

In view of these differentiated requirements, nine (9) industries pharmaceuticals were the object of the case study: seven (7) Brazilian: EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA And FARMANGUINHOS and two (2) Portuguese: SIDEFARMA and ATRAL.

5. Presentation of Cases

The institutional scenario of the nine (9) pharmaceutical companies surveyed: EMS S.A., was founded by Emiliano Sanchez, the first factory installed in São Bernardo do Campo (SP) (EMS, 2019). EUROFARMA Laboratórios S. A., with 82% of the Latin market, in addition to Brazil (EUROFARMA, 2019). ACHÉ Laboratórios Farmacêuticos S.A., has expanded boundaries and be closer to its customers (ACHÉ, 2019). CRISTÁLIA Ltda, presents 23 PDPS with the federal government, 107 Patents, 300 product registrations abroad (Cristália, 2019). The HEBRON Laboratory produces medicines from a national raw material (Hebron, 2019). RIOQUÍMICA S.A., a national reference in the production of sanitizers for hospital environments (Rioquímica, 2019). The Institute of Technology in Pharmaceuticals (FARMANGUINHOS/FIOCRUZ), is the largest Brazilian official laboratory linked to the Ministry of Health (Farmanguinhos, 2019).

The Portuguese, SIDEFARMA S.A, is part of a French Multinational group, which started its activity, for its own production and for third parties (Sidefarma, 2019). ATRAL Laboratories were pioneers, in Portugal, in the production of antibiotics, offers outsourcing services (Atral, 2019).

6. Analysis and Discussion of Results

Analyzing the primary (interviews) and secondary information regarding the organizational profile of the companies surveyed, it is possible to determine the size of the pharmacists surveyed. The criterion of classification by size was redefined by the number of employees of the Brazilian Support Service for Micro and Small Enterprises (SEBRAE). According to SEBRAE (2013), for the industry of 20 to 99 employees, it is classified as Small Business (EPP); from 100 to 499, as A Medium-Sized Enterprise (EMP); and with 500 or more employees, such as Large Enterprises (EGP). Therefore, EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA, FARMANGUINHOS, are classified as EGP, because they have more than 500 employees, meanwhile, SIDEFARMA should be classified as EPP, with 73 and ATRAL, EMP, with 273 employees.

The information related to internationalization, deployed into four variables: classification; motivation;

strategies and theories of internationalization, have:

The variable referring to the classification of internationalized companies, confronted with literature, it is observed that the industries EMS, EUROFARMA and CRISTÁLIA, should be classified as Multinational, because they have plants abroad with decentralized structures with small, expatriated people flow. The other laboratories should be classified as exporting companies, as they do not have factories abroad and are only installed in the country of origin.

As for the variable of motivation of internationalized companies, it is perceived that the Laboratories EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA, FARMANGUINHOS, have as main motivation the search for efficiency, mainly seek skills in *innovation, organizational capabilities*, penetration capacity, markets, ability to access distribution channels and skills in understanding the tastes and preferences of consumers. On the other hand, the Portuguese Laboratories SIDEFARMA and ATRAL, one perceives different motivations of these, whose main motivation is market demand, in the purpose of capturing new consumers, due to growth limitations and new markets, because it is a small consumer market in terms of population.

Regarding the variables of strategies, typologies, or mode of entries in internationalization, it is observed that EMS, EUROFARMA, ACHÉ and CRISTÁLIA, show similar internationalization strategies, usually hybrid, presenting the 3 differentiated typologies for the mode of entry abroad: 1) by exports; 2) contractual; and 3) for investments. Depending on the strategy and performance, in each country, it may be by direct or indirect export, use of contractual typologies, distribution agreements, partnerships and sales subsidiaries abroad. On the other hand, the laboratories, HEBRON, RIOQUÍMICA, FARMANGUINHOS, SIDEFARMA and ATRAL, due to the demands being few and sporadic or occasional, to the target countries abroad, the typology is only by export, direct or indirect, do not have sales offices, subsidiaries, contracts, factories, or plants abroad.

Finally, regarding the variables of classical theories of internationalization, under the economic approach, it was observed in the interviews that all the laboratories researched, have a common point, used the theory or model of the eclectic paradigm, in the search for some competitive advantages, based on the OLI concept, all focusing mainly on innovation. Rescuing the behavioral approach, it was observed that EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA, identify with the applicability by the Theory or Uppsala Model, pointing out as a common characteristic relevant between them, the perception of the psychic or psychological distance between the country of origin and foreign countries, which are the Latin, Andean, Caribbean countries, because a very large distance would make business impossible. The EMS and HEBRON Laboratories further strengthen this theory, with offices in Portugal, because they consider, in addition to the shorter psychic distance, the most marked differences between values and languages, practices and management control. SIDEFARMA Laboratory and ATRAL are exporting to countries close to their origin, such as the European Union (EU). In addition, these pharmaceutical companies have presented a process of incremental adjustments to the variable conditions of the company and its environment, and it is observed that each laboratory is in different stages. EMS, EUROFARMA and CRISTÁLIA, are more advanced, in stage 4, in addition to sales offices, also have plants abroad. ACHÉ, on the other hand, is found, in stage 2, because it does not have sales offices, abroad, only through independent representatives. The laboratories HEBRON, RIOQUÍMICA, SIDEFARMA and ATRAL, in stage 1, sales made through regular export activities, as well as the FARMANGUINHOS laboratory, with occasional sales, when there is a need to serve the countries in need. However, all the laboratories surveyed experienced, in one way or another, the process of incremental adjustments or gradualism.

Finally, analyzing the MCS (Management Control System) of pharmaceutical companies, unfolded in two

distinct variables: characteristics and control instruments, it was identified: the control characteristics of large laboratories EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA and FARMANGUINHOS, sometimes inserted in an international context, it is observed that they are framed in a type of control by results (large, large, large strategy in the market, decentralized structure, high evidence of formalization and a culture focused on results because they use such control mechanisms. Meanwhile, the Laboratory Portuguese SÍDEFARMA, classified by EPP, when inserted in a domestic context the typology of control is the familiar and in an international context the typology of *is Ad-hoc control*, with entrepreneurial characteristic, decentralized, professionalization with limited formalization. However, the ATRAL Laboratory (EMP), when inserted in an international context, the typology of *control is also Ad-hoc*, as both have the same characteristics of control typology.

Regarding the MCS, referring to the variable of the control instruments used, it was found in the interviews that the laboratories EMS, EUROFARMA, CRISTÁLIA are using other instruments after internationalization, however, the others are using the same control instruments after internationalization. EMS, EUROFARMA and CRISTÁLIA reported that they are in the process of integrating to the Management Information System (SAP/TOTVS), B2B (*Business-to-Business*), with the objective of working with more complex sales in the face of internationalization. In the interviews, a greater emphasis was identified in the face of *internationalization on the Benchmarking control instrument*, although it was already part of the scope of SCG controls, due to the increasing search for innovation, in foreign markets, these organizations are producing a relevant benchmarking and updated to management control for the organization. This expertise generated reflects the time of the internationalization process by these three industries researched, the object of the case study.

7. Conclusion/Future Suggestions

The objective of this research was to analyze the internationalization strategies and verify, if there was an impact on the SCG, in 9 (nine) pharmaceutical industries, 7 (seven) Brazilian: EMS, EUROFARMA, ACHÉ, CRISTÁLIA, HEBRON, RIOQUÍMICA and FARMANGUINHOS and 2 (two) Portuguese: SÍDEFARMA and ATRAL, through semi-structured interviews and secondary data obtained.

In the results, it was observed that Brazilian pharmaceutical companies have a dimension of EGP and Portuguese ones such as PPS and EMP. It is noteworthy that of the ten largest Brazilian companies, the four largest Brazilian scans interviewed, classified by net sales in 2018, corresponded to a *Market Share* of 35.45%, an average of 6,159 employees in 2019 and have been working for 50 years in Brazil and are considered young compared to centenary global pharmaceuticals, all of which originated from the closed and national capital.

Regarding the classification, it was noticed that EMS, EUROFARMA, CRISTÁLIA were framed as multinational companies and the others as exporting companies, as understood in the literature, according to the authors (Bartlett & Ghoshal, 1992; Canals, 1994; Dymont, 1987).

Regarding motivation, the results show, with regard to the variable internationalization, Brazilian women are looking for efficiency seeking; while in *Portuguese*, the main *motivation is market seeking*, these are distinct searches (Ferreira, Saw, Kings, 2011).

About the modes of entry into internationalization, EMS, EUROFARMA, ACHÉ and CRISTÁLIA reveal similar internationalization strategies, generally hybrid, presenting the 3 differentiated typologies: 1) by exports; 2) contractual; and 3) for investments. However, it was found that the internationalization strategies used were direct

or indirect export, due to the demands being few and sporadic or eventual, according to Root (1994).

As for the classical theories of internationalization, under the economic approach, all the laboratories researched, it was observed that the OLI theory was used, focusing on innovation (J. H. Dunning, 1998). Rescuing the behavioral approach, the pharmaceutical companies converge with the applicability of the Uppsala model, with a common characteristic of the psychic distance, however, FARMANGUINHOS does not fit these theories because it is dealing with eventual sales, in order to meet unscheduled demands. EMS, EUROFARMA and CRISTÁLIA stand out in a stage 4, more advanced (plants abroad), while ACHÉ, in stage 2. The other was observed in stage 1. All the laboratories surveyed, with the exception of FARMANGUINHOS, experienced the process of incremental adjustments or gradualism (Johanson & Vahlne, 2009).

In relation to the characteristics of MCS (Management Control System), large industries, inserted in an international context, reflected a type of control by results while SÍDEFARMA, and ATRAL, identified itself as an Ad-hoc control, with characteristics of a decentralized structure with limited formalization (GOMES, 2014). EMS and EUROFARMA altered their control instruments, while the other pharmaceutical companies did not realize the use of other control instruments after internationalization.

Therefore, the results found in this research revealed that internationalization strategies are very close to what the literature recommends, since almost all aspects studied are coincident and indicate an approximation with traditional models of classification, motivations, strategies, and classical theories of internationalization, as well as the Management Control System for internationalized companies. These companies follow internationalization strategies, focusing on Research & Development and Innovation (P&DI), similar to developed countries. Only a few cases aim to reach the technological frontier of a given industry, which will somehow have a more active participation. A relevant fact that drew attention: in most reports of the interviews, Brazilian women will leave an international sales share of an average of 2.5% per year, for more promising objectives, whose goals are around 15%, already in the coming years, which will impact a large volume of sales, if this happens.

Finally, it is concluded that there was an impact, alteration, adaptation or change on the SCG with the Internationalization of EMS, EUROFARMA and CRISTÁLIA. These are in stage 4 of the Uppsala model and the other industries did not occur any impact or alteration, adaptation, or change, in the SCG and are in stage 1 and 2, of the Uppsala theory.

Therefore, the results presented show that the existing controls of these pharmaceutical companies are adequate, to adapt to the changes in future scenarios, both domestically and internationally, as well as to face new challenges, as they present capable and effective control instruments to identify opportunities, as well as face threats to the organization's business.

As a future suggestion to elaborate an agenda and apply this methodology in other foreign pharmaceutical industries with greater percentage participation of foreign sales and R&I, which are operating, in the Brazilian domestic market.

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