

**THEORETICAL AND METHODOLOGICAL FRAMEWORK TO IDENTIFYING
STRATEGIC CATEGORIES IN THE BRAZILIAN MOBILE PHONE SECTOR
(BMPS): TOWARDS THEORY DEVELOPMENT**

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Abstract:

The Brazilian Mobile Phone Sector (BMPS) has been through a series of technological and structural changes in the past few years, which have directly impacted strategic issues that should be taken into consideration by companies in this sector. This article addresses three main objectives: the first is to explore some strategic BMPS categories; the second is to build a theoretical and methodological framework from them; and the third is to present a value-added model supporting theory development. Towards that aim, we build on a theoretical approach to *competitive strategy*, *technological innovation* and *stakeholders theory*, and perform an empirical research supported by interviews with Brazilian experts from the sector; the interviews were further analyzed from a *content analysis* perspective. The key result from this study concerns the very theoretical and methodological framework for the BMPS, and such a framework can be conceived as a value-added contribution to theory. It is worth noting that some advances over traditional approaches to framework development are made, as well as regarding particular content analysis procedures.

Keywords: Theoretical framework, framework development, competitive strategy, technological innovation, stakeholders, mobile telephony.

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INTRODUCTION

The international mobile phone sector has been in increasing development over the last years. Data-and-voice broadcast technology are under constant fine-tuning, supporting continuous innovations in products, services and processes. In order to increase competition and develop this sector in Brazil, the once state-owned telecommunications system Telebrás has been under auctions to privatize bandwidths (A, B, D, and E) in different regions of the country. As a consequence, multinational telephone companies, mainly from Europe, assumed leading positions in this sector.

The companies that were granted licenses to work in Brazil started to modernize and develop the national infrastructure for the business, with bold initiatives in implementing state-of-the-art technologies. In the beginning, the Brazilian Mobile Phone Sector (BMPS) was analogically based (technology regarded as the first generation of mobile telephony – 1G). Soon after, digital technology standards were introduced to the sector, the most common of which being the *Time Division Multiple Access* (TDMA) – the second generation (2G). From 2003 onwards, following the natural trend of infrastructure evolution in mobile telephony towards a third generation of technologies (3G – digital standard with considerable gains in speed and data transmission) and taking into account that the TDMA technology does not provide means for one to migrate to that third generation, telephone companies were forced to choose between two competing technologies (considered to be in an intermediate generation in Brazil – 2.5G): the *Code Division Multiple Access* (CDMA) and the *Global System for Mobile* (GSM) technologies.

The technology adopted by each company impelled them to innovate in services, since those new technologies introduced to the country modern communication devices with improved functionality, and data services formerly seldom requested due to low speed technologies became widely used.

This initial focus on BMPS, in spite of being superficial, tells something about the importance of the strategic analysis, due to constant changes in a process of continuous innovation in the sector. The technological alternatives adopted by the telecoms entail the strategy of those companies, but the strategic implications are not limited to the technology

itself. Although companies in this sector are in a relentlessly effort to offering high technology, other strategic categories derived or not from the selected technologies should also be prioritized.

The remaining of this article is dedicated to three key objectives: the first is to explore some strategic BMPS categories; the second is to offer a theoretical and methodological framework from the categories; and the third is to present a value-added contribution to theory development. Towards that, we discuss theoretical developments supporting our exploratory research with experts from the sector; the methodological procedures carried out, and the brand new theoretical and methodological framework resultant from this effort.

THEORETICAL REFERENCES

The theoretical approaches used in this research include competitive strategy, the management of technological innovations, and stakeholders theory. We do not aim to cease the discussion on such topics, but to present some of the main authors, mainly those whose works set the grounds for the theoretical and methodological framework to be presented.

Competitive Strategy

Although many authors are working deep on strategy over the last years, two streams of thought currently dominate the academic and the business communities: the resource-based view, and the industrial organization economy.

The perspective of strategy based on resources was, mainly in the 1980s, somewhat neglected if compared with the perspective linking strategy to the external environment (GRANT, 1991). However, from the late 1980s, some authors reinforced the role of the resource-based view in developing organizational strategies (tangible and intangible resources – GRANT, 1991; BARNEY, 1991; HALL, 1992; MAHONEY and PANDIAN, 1992; PETERAF, 1993; COLBERT, 2004; CORREA and SHARMA, 2004; capabilities – COYNE, 1986; core competences – PRAHALAD and HAMEL, 1990; HITT, IRELAND, HOSKISSON, 2002; JAVIDAN, 1998). The logic behind such an approach is that strategies should be formulated with a primary focus on a company's resources, capabilities and competences, and only then the external environment should be assessed.

Among the leading researchers on this approach, Hall (1992) is of special importance for our work. This author deals with an important subject regarding the inner resources

perspective: the intangible resources. According to him, intangible resources could be seen as assets (patents, records, protection, contract, reputation, databases, etc.) or as capabilities and competences (know-how, culture). In order to build his model for competitive advantage from intangible resources, he makes use of Coyne's (1986) contribution on capabilities. According to Coyne (1986), sustainable competitive advantage would have its roots in four different capabilities:

- a) *functional capability*: derived from knowledge, skills, and the experience of employees and others who constitute the value chain;
- b) *cultural capability*: includes routines, attitudes, beliefs and values that characterize people and groups;
- c) *positional capability*: the outcome of past attitudes that helped build reputation with customers, advantages in the market, etc.;
- d) *regulatory capability*: results from the ownership of legal issues like intellectual properties, contracts, private exchange secrets, etc.

The economic approach of the *industrial organization* developed by Jones and Cockerill (1984) and Ferguson and Ferguson, 1994, has in Porter (1986; 1989) one of its champions on competitive strategy. According to that approach, the core logic in business is driven by a *structure-conduct-performance* perspective, in which it is first necessary to follow the structure of the industry where the company is placed – what in turn implies the study of what Porter (1986) calls the five *strengths* (the entry of new competitors, the threat posed by products substitutes, the power of buyers in negotiations, the power of suppliers in negotiations, and the rivalry between competitors). Second, the value chain inside the company should be assessed in terms of its ability to respond to the industry structure. Third, the company could choose a specific strategy (conduct) – be it driven by cost, differentiation, or focus. Finally, the company could expect as reference for performance obtaining competitive advantages on cost or differentiation.

It should be pointed out that competitive advantages on cost can be crafted from the control of cost drivers (scale, learning, links, interrelationships, integration, opportunity, etc.) or from the reconfiguration of the value chain (new distribution channels, different production methods, new raw materials, new channels for publicity). On the other hand, competitive advantages on differentiation can be shaped by controlling the singularity drivers (similar to the cost drivers, but focusing on differentiation) and by studying the buyer's value chain (cost reductions and improvements in performance).

Technological Innovation

From a historical perspective, Zawislak (1995) assumes that the innovation process has always existed. The author argues that, until the 17th century, the process was informal, based on empiricism, and focused on solving technical problems. Starting from the 18th century and due to scientific knowledge serving as the basis for problem solving, as well as to the evolution of the industrial societies and their needs, innovation takes autonomy and is set apart from the operational activities.

According to Pearson (1991), *innovation* means change. Changes could be radical or incremental, evolutionary or revolutionary, qualified or disruptive; whereas for Zawislak (1995) innovation would be a new combination of knowledge in order to generate new knowledge that holds value for exchanges. That author sees two sets of innovations under a technological or technical perspective: *incremental innovations*, which are carried out in a somewhat continuous way and are normally represented by adaptations and improvements; and *radical innovations*, which lead to significant changes in techniques and technologies.

Concerning *technology*, Itami and Numagami (1992) define it as being the most fundamental of all core organizational capabilities, a systematic body of knowledge about how natural and artificial entities work and interact. Zawislak (1995) complements that, to be truly innovative, a particular technology must hold value for exchanges, and not only value for use.

Pavitt (1990) posits that innovation opportunities facing the organization are strongly influenced by their size and the core business. The author presents four key attributes of the technological innovation in an organization: it involves continuous and intensive collaboration and interaction between functionality and professionalism of expert groups; it keeps alive the deep uncertainty within activities; it is cumulative; and it presents high differentiation.

Giget (1997), in turn, would say that innovation is not limited to the technical domain. The author suggests the “diamond of total innovation”, from which the most promising and more suitable innovations to place the company in a competitive position come from human and financial resources, and mostly from extant relations and knowledge exchanges between organizational departments. He also argues that every organization has five basic functions: two *resource functions* (*human* and *financial* functions) and three *operational functions* (*scientific/technical*, *productive*, *marketing*, and *sales* functions). Giget (1997) also presents the *development of innovation throughout the axis of Research and Development functions*

and Marketing functions. According to him, this axis shows innovation as an outcome of two flows: the *technical push*, which starts at the Research and Development function, passes by the Production function, and ends at the Marketing function; and the *market pull*, which starts at the Marketing function, passes by the Production function, and ends at the Research and Development function. He finally puts that the magnitude of such flows fluctuates, and that the combination of both flows is a requisite for satisfactory results in the innovation process.

Itami and Numagami (1992) work on the relation between strategy and technology. According to them, technology will inevitably be one of the key factors mediating organizational strategies. There would be three perspectives on the interaction between strategy and technology:

- a) strategy capitalizing technology;
- b) strategy cultivating technology; and
- c) technology guiding strategy.

The first perspective focuses on the effects of current strategies over current technologies, i.e., the strategy the company wants to deploy and the technology it currently implements. In this perspective, the authors suggest that technology can act upon strategy as a competitive weapon that the company may deploy in its own interest, as something the company should adhere to, and as a threat against which the company must act and compete. In this case, the basic premise is that the current strategy can make better use of the company's technology, but implicitly may serve as well as its technological constraints.

The second perspective focuses on the effects of current strategies over future technologies. According to the authors, the effort put on technological developments may convey not only competitive weapons for current business processes, but also a profound technological basis applied to other business processes in the company; that is, technology is *extensive* in this case.

The third perspective deals with the effects of current technologies over future strategies. This perspective represents the technologies the company currently implements and/or the company's current commitment to the technological development, putting forth the human cognitive process to building strategies. The authors warn that current technologies may impact the individual and organizational cognitive processes in two stages: the first concerns a deep knowledge of technologies shared by many people in the company, stimulating them to develop new products and competitive weapons enabled by such technologies; the second is on sharing the understanding about the emerging ideas that will form strategies.

In order to fully absorb the elements of strategy and technology innovation in organizations, it is necessary to better understand the actors directly or potentially involved in it.

Stakeholders Theory

Freeman (1984) proposed a definition for *stakeholder* as being any individual or group that is likely to impact or be impacted by the fulfillment of a company's goals.

Many authors have been studying this topic recently (DONALDSON and PRESTON, 1995; ROWLEY, 1997; MICHELL, AGLE and WOOD, 1997; FROOMAN, 1999; JONES and WICKS, 1999). Michell, Agle and Wood (1997) offer a typology for the Stakeholders Theory involving three dimensions: power, legitimacy, and urgency. The authors propose that stakeholder classes can be identified from their ownership or attributed ownership of one, two or three of the following attributes:

- a) stakeholder power impacting the company;
- b) stakeholder legitimacy in the relationship with the company; and
- c) urgency of demands from a stakeholder to the company.

According to the authors, such a typology defines the field of Stakeholders Theory and which are the entities managers must pay attention to.

In what comes to stakeholder power, Frooman (1999) proposes an interesting typology. The author tries to link Stakeholders Theory to Resource Dependency Theory by means of investigating two basic issues: "Which are the different classes of strategic influence?" and "Which are the main drivers when choosing a strategic influence?". The fundamental answers he elaborates are that the classes of strategic influences can be understood in terms of resources and that the strategic option driver will be the sort of resource relationship the company and its stakeholders have, and where the equivalence of power remains in this relation.

According to Frooman (1999), there are four sorts of relationship between companies and stakeholders: company power, high interdependence, low interdependence, and stakeholder power. The author asserts that in this typology power plays a central role. Power is the main driver of outcomes in situations where stakeholder and company interests are different. The author says that power is structural by nature and rises from the relationship between two actors. The typology puts that if stakeholders are not dependent on the company and the company is not dependent on the stakeholders, then there is low interdependence

between them; if stakeholders are dependent on the company and the company is not dependent on them, then there is company power over stakeholders; if stakeholders are not dependent on the company and the company depends on them, then there is stakeholder power over the company; and if stakeholders depend on the company and the company depends on them, then there is high interdependence between the two.

The present theoretical review on Competitive Strategy, Technological Innovation and Stakeholders Theory sets the grounds for the upcoming discussions. In the BMPS, competitive strategies in companies have increasingly taken into account the need for constant innovation in and attention to the relationships with stakeholders.

METHODOLOGY

This research is of an exploratory nature and was based on qualitative techniques for collecting and analyzing data. The option for an exploratory research was made due to its natural flexibility and due to the research's purpose of exploring some of the key strategic dimensions in the national mobile phone sector, with no intention of reaching at general or confirmatory findings. Concerning the selection of a qualitative approach, the decision was made due to the suitability of qualitative research for providing a fuller view and understanding of the subject under analysis; qualitative research is characterized by more subtle procedures and small samples (MALHOTRA, 2001). Furthermore, Victoria, Kauth, Hassen (2000) emphasize that the qualitative research is useful for whom tries to understand the context in which a given phenomenon takes place, allowing for the simultaneous observation of multiple elements in small groups and providing the means for a profound knowledge to develop about particular events.

Data Collection

Data collection was performed from the interaction with 14 experts in mobile telephony, who were interviewed face to face in the Brazilian cities of Porto Alegre (8) and São Paulo (6). The interviews were performed in 25 minutes each on average at the respondents' offices, being recorded. A semi-structured instrument for data collection (Appendix A) with 13 topical questions was employed, which was built from the aforementioned theoretical discussion – except for the Stakeholders Theory, which was added after the empirical research due to categories that emerged from the interviews. The

respondents' traits are as follows:

- a) *Respondent 1* – Ph.D. Professor at the Electrical Engineering Faculty of Universidade Federal do Rio Grande do Sul (UFRGS), developing research on the thermal and non-thermal effects of the radiation from the transmission of electromagnetic waves, mainly in the telecommunications sector;
- b) *Respondent 2* – Ph.D. Professor at the Business School of UFRGS, member of the Center for the Study and Research on Administration (CEPA) and manager in the research on satisfaction ordered by the National Agency for Telecommunications (ANATEL) conducted with users of mobile telephony in Brazil;
- c) *Respondent 3* – Employee at a telephone company that started to operate mobile telephony in 2004. The company is granted permission to operate bandwidth E in the state of Rio Grande do Sul, and that employee works in a team responsible for the implementation of mobile telephone services in that state;
- d) *Respondent 4* – Professor at the Electrical Engineering Faculty of UFRGS (former employee at ANATEL). Like respondent 1, he develops research on the thermal and non-thermal effects of the radiation from the transmission of electromagnetic waves, mainly in the telecommunications sector;
- e) *Respondent 5* – Engineer at a manufacturer of cell phones that also supplies GSM technology, being responsible for the qualification and implementation of GSM ERBs in Rio Grande do Sul;
- f) *Respondent 6* – Ph.D. Professor at the Business School of UFRGS (CEPA chairperson). Like respondent 2, he works with CEPA in the ANATEL project for gauging user satisfaction levels with regard to telecom services;
- g) *Respondent 7* – Employee at a telephone company that started operations with mobile telephony in 2004. He works for the same company as respondent 3 and also with a team responsible for the implementation of mobile telephone services in the state;
- h) *Respondent 8* - Professor at the Electrical Engineering Faculty of UFRGS. Like respondents 1 and 4, he researches the thermal and non-thermal effects of the radiation from the transmission of electromagnetic waves, mainly in the telecommunications sector;
- i) *Respondent 9* – Ph.D. Professor at the Department of Control and Telecommunication Engineering of the Polytechnic School of Universidade de São Paulo (USP) He researches on telecommunications;
- j) *Respondent 10* – Employee at a supplier of GSM and CDMA technologies, working as

national sales manager and operating directly in the market of mobile telephony with the main companies in the country;

- k) *Respondent 11* – Employee at the company that holds the rights on the CDMA technology, working as senior marketing manager responsible for activities related to the development of businesses and to CDMA service/product marketing in Brazil and Latin America;
- l) *Respondent 12* – Employee at a manufacturer of cell phones, working as national sales manager and operating directly with companies and the market of mobile telephony in general;
- m) *Respondent 13* – President of the council of a civil organization that watches out the rights of consumers who feel disturbed with mobile telephone services in Brazil. He heads a national entity, being deeply knowledgeable on legal and ethical issues related to mobile telephony; and
- n) *Respondent 14* – Publisher of a magazine specialized in telecommunications in Brazil, with nationwide coverage and distribution.

Data Preparation and Analysis

Content analysis techniques were used for data analysis, in order to extract a richer picture from the answers given by the respondents. Bardin (1977) defines *content analysis* as a set of communication techniques making use of description objectives from the message contents and systematic procedures. For Moraes (1999), content analysis is unique in that it highlights category building, description and interpretation as essential stages in the methodology of analysis. Moraes (1999) says also that the techniques demand one to reflect on validity (related to the adequacy and relevance of the content as compared to the research's goals), exhaustiveness (investigation of all the information the unveiled content reveals), homogeneity (the whole group is structured under a single analytical dimension), exclusivity (each element must be classified under only one category), and objectivity (association rules are specified in straightforward fashion).

According to Bardin (1977), content analysis features three stages: pre-analysis; materials investigation; and outcomes treatment, inference building, and interpretation. Following the steps proposed by Bardin (1997) and the criteria from Moraes (1999), content analysis proceeded as follows:

- a) pre-analysis: transcription of the recorded interviews, amounting 100 pages of transcriptions;
- b) materials investigation: key excerpts from the interviews were extracted and divided into discourse units focusing a dominant topic for the subsequent proposition of initial categories. Right after, the initial categories were grouped in order to shape intermediate and final categories, and it should be noted that after the identification of the initial categories new theoretical models (which will soon be discussed) were incorporated so as to provide means for the development of intermediate and final categories;
- c) outcomes treatment: inferences on the initial categories were made, inferences which were supported by testimonials from the respondents and by the theoretical background. For the final and intermediate categories, inferences were made based on the theoretical background presented.

It should be explained an important detail already briefly commented. During the interviews, the semi-structured instrument for data collection was grounded on a previously assessed theoretical model on competitive strategy and technological innovation; after the interviews and the application of content analysis techniques, what drove us to the initial categories, we returned to the theoretical background in order to add more authors whose works could help us understand the initial categories and allow for the assembly of the intermediate and final categories. This situation was specially true for the Stakeholders Theory, which was incorporated to our research after the interviews. Such a procedure differs from the traditional way content analysis is performed, where theoretical models are incorporated only after the identification of the initial, intermediate and final categories. Besides that, our procedure is also unconventional due to the researcher having started from a previously developed theoretical background and sought after new authors whose works could better explain the initial categories. Alves-Mazzotti and Gewandsznajder (1998, p. 158) present a reasoning for such a procedure when they suggest that “the early adoption of a theoretical stream does not impede other categories to be subsequently added, as long as they are not incompatible with the original standpoint”.

THEORETICAL FRAMEWORK

From the literature review and the empirical research with experts, it was possible to build a theoretical framework to help understand some of the key strategic BMPS categories.

Theoretical and methodological framework to identifying strategic categories in the Brazilian mobile phone sector (BMPS): towards theory development

The theoretical framework is made of 27 initial categories derived from the content analysis procedures, and of 11 intermediate categories and 7 final categories based on theoretical models that supported the understanding of the initial categories. The theoretical framework is presented in Figure 1.

INITIAL CATEGORIES	INTERMEDIATE CATEGORIES	FINAL CATEGORIES
1. Market Positioning	I. Marketing Function	A. Innovation Capacity (GIGET, 1997)
2. Market Segmentation		
3. Innovation in Service Development	II. Research and Development Function	
4. Sector Expansion and Dynamics	III. Scale	B. Cost Control (PORTER, 1989)
5. Investment		
6. Likelihood of Group Concentration in the Market	IV. Interrelationships	
7. Outsourcing		
8. Effects on City Structure and Environment	V. Reputation	C. Positional Capacity (HALL, 1992)
9. Ethical and Social Responsibility		
10. Credibility with Users		
11. Concern about the Effects of Radiation on the Human Health		
12. Know-how	VI. Know-how	D. Functional Capacity (HALL, 1992)
13. Relationship with Suppliers	VII. Relationship with Stakeholders	E. Relationship with Stakeholders (FROOMAN, 1999)
14. Relationship with Civil Organizations		
15. Relationship with Dealers		
16. Relationship with Customer		
17. Law Suits	VIII. Contracts	F. Regulatory Capacity (HALL, 1992)
18. Norms and Rules		
19. Licenses	IX. Licenses	
20. Patents		
21. Conceptual Change about Cell Phone Devices		
22. Interconnection between Systems and Integration of Telecommunication Services	X. Technology Guiding Strategy	G. Interaction between Strategy and Technology (ITAMI & NUMAGAMI, 1992)
23. Roaming		
24. Data Transmission		
25. ERBs and coverage		
26. Globalization	XI. Strategy Capitalizing Technology	
27. Political Issues		

Figure 1: Brazilian Mobile Phone Sector (BMPS) theoretical framework

Source: The present research

In the pursuit of building a richer understanding about the theoretical framework, below we discuss key features of the final categories by means of transcribing the speech of some respondents (reasoning why the speeches support the framework) and discussing the theoretical coherence of using the aforementioned authors for developing the framework.

A. Innovation Capacity

This category was developed from the experts' argument about the importance of companies in the mobile phone sector having established clearly their positioning and the market segment they want to address.

“In what comes to strategic issues, I would carefully and affectionately observe the strategy of the marketing function, how they are addressing each market...” (Translated from respondent 10.)

“I think they [telephone companies] are making huge efforts in order to establish such a position, (...) I have the impression that they are in trouble, I do not know whether they have a well-defined positioning plan.” (Translated from respondent 2)

“A key concern of whom provides services would be a broader attention to the multiple segments, since the sector is not working appropriately this subject.” (Translated from respondent 2)

Furthermore, the experts also highlight the importance of continuously innovating in products and services, in order to differentiate steadily against the tough competition, mainly due to the likelihood of prompt imitation within the sector.

“What is important for the telephone company right now is: first, it should have the possibility, i.e., the technology the company employs enabling it to provide new services for the users.” (Translated from respondent 11)

“As soon as you launch a new technology in services, you will have something else after six months...” (Translated from respondent 12)

From this, Giget's (1997) approach to exploring the initiatives towards innovation from the market (perceptions from the target audience) or the company's R&D personnel (from project and design teams) helps explain the categories.

B. Cost Control

This category emerged from the experts observing that the national mobile phone sector has been exhibiting in the last years a strong tendency towards expansion, mainly due to high investments in the sector made by the companies that were granted licenses for

operating in the country.

“The key feature of this market is that, first of all, it is growing fabulously; even though from time to time it realizes losses, it is a market in which technological innovations occur in very short waves...” (Translated from respondent 12)

“Mobile telephony grew in the past 20 years, having outnumbered the wired base. Thus I think it is the superior technology, the foremost service offered in the last years...” (Translated from respondent 7)

Additionally, the experts also discussed the strong tendency towards clustering companies in groups with nationwide presence, seeking returns regarding negotiation (costs) and scope, in addition to the tendency of outsourcing areas that are not considered essential for business.

“What we currently see in the Brazilian market is that the business is consolidating around three or four telephone companies, it depends on what is coming ahead... and those companies are operating or will operate on a nationwide basis... the context is truly promising for large nationwide companies...” (Translated from respondent 10)

“Mobile telephony has also been outsourcing many areas... support is outsourced, cleansing is outsourced too... from the lower level to the more structural ones alike.” (Translated from respondent 5)

Taking Porter's (1989) approach, it is possible to apprehend the characteristics pointed out by the experts addressing the control of cost drivers like scales and interrelations between companies in order to obtain competitive advantages on cost. By becoming large nationwide groups and by outsourcing ordinary routines, companies in the sector realize negotiation power from lowering costs.

C. Positional Capacity

This category reflects the opinion of experts about the need for companies in this sector to build reputation in society. The experts discussed ethical issues linking the companies and the society with which they interact, like the attention in appropriately installing antennas for data transmission, the care with emitting cell phone radiation, or even implementing social responsibility programs.

“Achieving social responsibility... but, honestly, not simply pretended social responsibility, specially in the telecommunication business, which is not that accessible (...) thus I think we have to

think about how to make the cell phone accessible to other social strata, which community issues you can develop (...)" (Translated from respondent 11).

"The industry itself is steadily trying to reduce the power of cell phones and everything else... not reducing the radiation, but saving battery consumption, and, consequently, emitting less radiation (...)" (Translated from respondent 11)

For this category, one of Hall's (1992) distinguishing capacities, the positional one, mediates the understanding that companies in this sector should rationalize on this intangible resource (reputation), in the sense of seeking solutions for radiation and for the number of antennas, thus interacting better with society.

D. Functional Capacity

This category emerged from the experts' perception that know-how would mean a competitive breakthrough for companies in the sector. According to the experts, companies which could deploy their employees' know-how, or even their suppliers', would be able to ensure advantages on effectiveness and efficiency in the implementation of some services and technologies.

"This is know-how... the employee who has deep knowledge about the company, deep knowledge about the technology, will be able to provide a specific service with greater speed and efficiency." (Translated from respondent 7)

"We observed some telephone companies doing this or even launching data services, and the bold step is when they move from a voice-only model to a voice-data-service one. Not only because their marketing function was not ready (lack of know-how)... it was something completely new, the sales personnel was not ready (lack of know-how), and even worse, the engineering personnel was not ready (lack of know-how)." (Translated from respondent 10)

Here again one of Hall's (1992) capacities helps one to understand this category. According to him, the functional capacity of companies would lie in their capacity of seizing this intangible resource (know-how) and realizing competitive advantages from it. This seems to be the case of Brazilian mobile phone companies which are taking advantage of the internal know-how of employees and suppliers, even when choosing technologies for use.

E. Relationship with Stakeholders

This category was developed from the experts' discernment about the importance of the relationship between the companies in this sector and their suppliers, dealers, customers and society in general. The experts stressed how important it is for companies to establish good relationship and negotiation with such stakeholders.

“It is important, such a partnership is very important – between companies and suppliers.” (Translated from respondent 7)

“I see the issue of suppliers as central here, the arrangements that can be set with suppliers...” (Translated from respondent 2)

“Another issue is the very distribution. I feel that this issue was not given the due value in cell phone telephony... I think this should be leveraged to earning money with the whole system, in line with the reasoning of output logistics in Porter's value chain model. I think the subject of the distribution system can leverage great benefits for the companies.” (Translated from respondent 2)

“I think that customer support, independently from the particular service you are offering, the proximity to the customer, knowing how to develop plans – and this involves mostly charges –, knowing how to develop plans as flexible as possible... all this works both for data and voice, and knowing how to identify the audience, the niches within the customer base...” (Translated from respondent 14)

From Frooman (1999), power is key in relationships between companies and stakeholders. Hence, the negotiation power of companies in this sector with the aforementioned stakeholders may be important for building competitive advantages. In this case, since the companies carried out a series of merges and became larger and with nationwide presence, they started to be in a better position to negotiate with stakeholders like suppliers and dealers.

F. Regulatory Capacity

This category has been emphasized by experts mainly due to the governmental regulation controlling the sector and also due to contractual issues regarding company licenses and patents.

“Ruling is always mandatory... companies should not do whatever they want...” (Translated from respondent 10)

“Telecommunications are ruled by the National Agency for

Telecommunications (ANATEL), therefore all contracts, all authorizations for activities... for installing new equipments... everything goes through ANATEL's discretion, which is the only responsible for conceding permissions and inspecting even the choice made by companies regarding technologies." (Translated from respondent 5)

Once again, Hall (1992) suggests in his model a capacity that enables one to grasp the theoretical facts from this category. Hall (1992) points out that the regulatory capacity of companies would lie exactly in contract management and legal issues somehow exerting influence over the business. This means that legal norms play an important role in company strategy.

G. Interaction between Strategy and Technology

This category was highly discussed by the experts when they emphasized how much the technologies adopted by companies in this sector may mediate their strategies, or when they described how the strategies may capitalize on idiosyncrasies of such technologies.

"Anyone who once used a cell phone will for sure not live without one anymore. Nowadays, cell phones with more intelligent functions... in a while you will be conditioned by those functions, and this is operating huge changes in many markets..." (Translated from respondent 11)

"I think the primary interest is about interconnection, and this can be fulfilled even with a mixed technological infrastructure... today, you can interconnect and roam from any cell phone, with any company and with any technology... actually anywhere in the world, sometimes very badly, but all cell phones are able to operate analogically, in the base mode, and all companies offer channels in this mode." (Translated from respondent 8)

"The great advantage for customers concerns coverage... the company that offers coverage (...) for sure... when you are traveling, on the road, you want to have access to the frequency in your mobile in order to make calls. Consequently, factors like maintenance is [sic] fundamental... when a broadcasting antenna is off and you turn it on again..." (Translated from respondent 7)

Itami and Numagami (1992), as already presented, suggest some ways in which strategy and technology may interact that allow for the comprehension of this category. According to them, technology could guide strategy, that is, depending on the adopted technology, companies in this sector would maybe realize advantages in services involving data broadcast or roaming, or even the possibility of interconnection with diverse regions in the country and the world, as well as the number of antennas for transmission needed to be put in place. Moreover, the technology adopted by a company may influence the class of cell phones and services that can be offered, what in turn influences even the relation that customers will have with such devices.

“One virtue of the globalization process is that new developments made abroad arise soon in Brazil, so today Brazil is able to access the most advanced technologies...” (Translated from respondent 11)

“The technological gap... [between Brazil and] the technological vectors of Asia and Europe is steadily diminishing...” (Translated from respondent 12)

“These are issues, of a geo-strategic, political and economical nature; these are companies that frequently operate with considerable losses, and you do not know why they remain in business.” (Translated from respondent 13)

Itami and Numagami (1992) also highlight that strategy can capitalize technology. In this case, globalization allows companies in this sector to have prompt access to innovations developed all over the world, and from this they can launch new products and services by deploying the technological potential available. Moreover, decisions that address national politics may influence the sort of product and service that a company is likely to launch in the market.

The development of such a theoretical framework was characterized by intermittent theoretical and empirical research. The methodological steps are here depicted as a methodological framework that guided the research.

METHODOLOGICAL FRAMEWORK

As discussed when describing the development of the theoretical framework, some stages in this research were unusual when contrasted with more traditional approaches. When building a theoretical framework, the researcher usually starts from a theoretical research and

then proposes a framework, not necessarily supporting the effort with empirical studies. However, in our research, which was aimed at searching for a value-added contribution to theory development, three aspects should be highlighted .

First, in order to build the theoretical framework, an empirical research was carried out with experts in the sector under study, besides the fulfillment of a thorough literature review (traditional theoretical frameworks are based only on this procedure). The empirical research was performed with the purpose of collecting information belonging deeply to the implied sector, and from them a theoretical structure was to be set addressing idiosyncrasies of the sector.

Second, besides fulfilling an empirical study (along with a previous literature review), in order to develop the theoretical framework we returned to the theoretical structure after the empirical procedures searching for theories that could complement previous theories and amplify our comprehension about the investigated subject. When returned to the theoretical background, Stakeholders Theory was incorporated, what provided means for better understanding the relationship between companies in the mobile phone sector and the interacting stakeholders (suppliers, dealers, customers, and civil organizations).

Third – and relating to the specific content analysis procedures employed in examining the interviews with experts –, we anticipated the stage of incorporating theoretical elements to classifying the categories. Usually, when performing content analysis, the initial categories emerge from the respondents' answers, and from them intermediate and final categories are set (with no regard to incorporating theoretical models). Nonetheless, and although initial categories emerged from the answers, here the theoretical developments were soon incorporated for building the intermediate and final categories, It should be highlighted that it was this very procedure of performing content analysis that made necessary a return to the theoretical models, aiming at finding theories that would better explain some initial categories that emerged (as said before, it was the case of Stakeholders Theory).

Whetten (1989, p. 491) said that “the more complex the set of relationships under consideration, the more useful it is to graphically depict them”. For him, “not all theoretical treatises must contain figures with boxes and arrows, but the visual representation often clarifies the author's thinking and increases the reader's comprehension”. In this sense, Figure 2 shows the graphical representation of the theoretical and methodological framework (as this framework represents the methodological framework and incorporates the theoretical framework, here it is called *theoretical and methodological framework*).

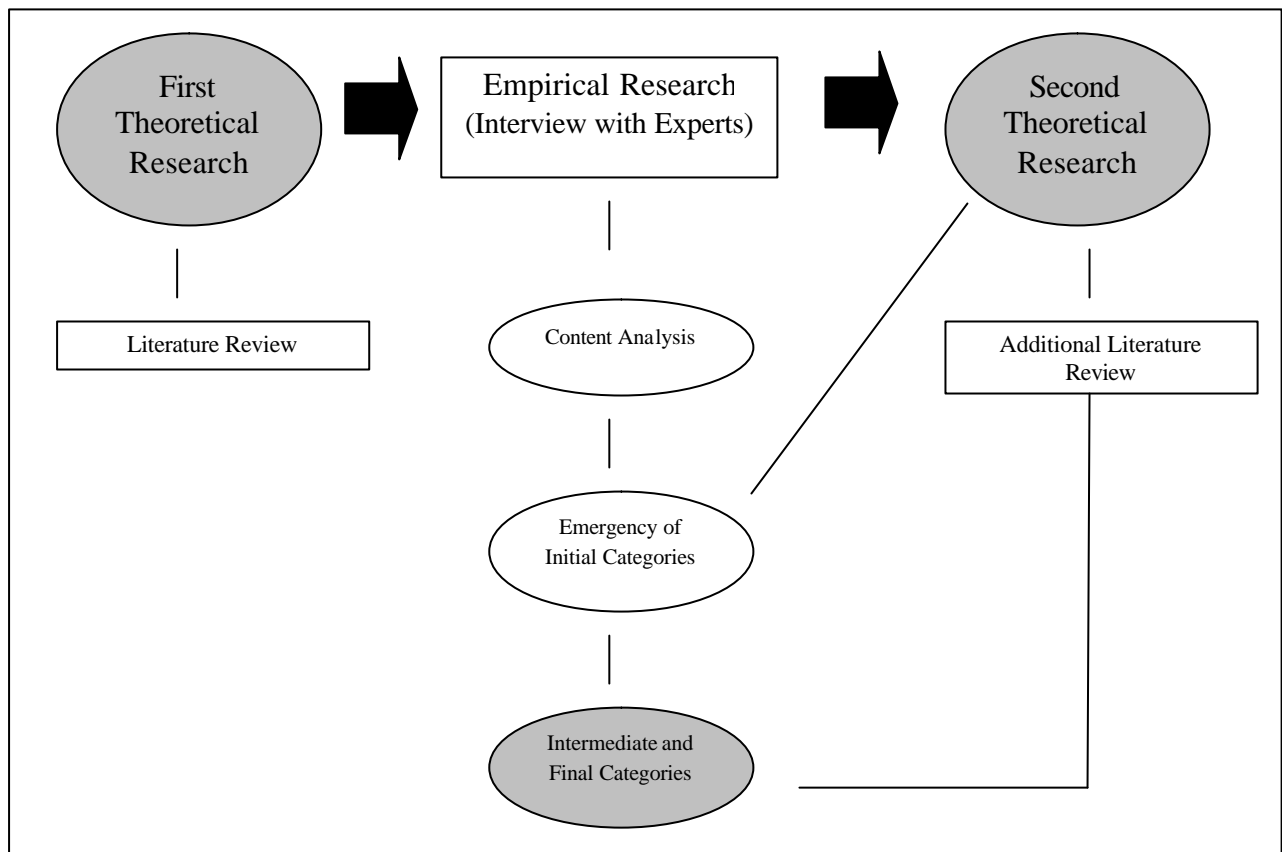


Figure 2: Theoretical and Methodological Framework

Source: The present research

According to Whetten (1989, p. 493), “the common element in advancing theory development by applying a new setting is the need for a theoretical feedback loop”, and in this article this situation is being developed. The present article, aimed at developing theoretical and methodological aspects of knowledge, share similarities with Klein, Dansereau and Hall’s (1994) article, which links level issues in theory development with data collection and analysis.

CONCLUDING REMARKS

This article intended to explore some of the key strategic categories in the Brazilian Mobile Phone Sector (BMPS) by suggesting a theoretical framework. In order to do it, some methodological procedures were employed that distinguish our approach from the more traditional ones. Therefore, we also saw the opportunity to propose a methodological framework resultant from the process of developing the theoretical framework.

The theoretical framework presents 27 initial categories that emerged from interviews

with experts in the BMPS, and also 11 intermediate categories and 7 final categories built from crossing the theoretical background (on Competitive Strategy, Technological Innovation and Stakeholders Theory) with the initial categories.

We underscore that the main contributions of the theoretical and methodological framework concern how the study was performed (it started from theoretical models – the first theoretical research –, then an empirical research was set, and finally we returned to the theoretical models – the second theoretical research) and the way content analysis was done – once the initial categories emerged from the respondents' answers, the theoretical background was incorporated in order to build the intermediate and final categories (in a more traditional approach to using content analysis, theoretical models are only incorporated after building the final and intermediate categories).

As said before, it was not the aim here to conclude the discussion on Competitive Strategy, Technological Innovation and Stakeholders Theory, but to take some of their theoretical developments to build the theoretical and methodological framework that was proposed. It was not the aim either to conduct a deeper analysis from the strategic categories found about companies in this segment that are working in the BMPS. another limitation, which was not either the objective of this study, was the disregard with general and confirmatory results from this theoretical framework, since such results would demand statistical analyses not appropriate for the purposes here. It was not either the aim to criticize the more traditional methodological procedures used for building frameworks, nor to criticize the traditional ways of technically performing content analysis. Actually, we attempted to move forward in such approaches and contribute in their debate. In this sense, in advancing theory development, Whetten (1989, p. 493) says that “theorists need to learn something new about the theory itself as a result of working with it under different conditions. That is, new applications should improve the tool, not merely reaffirm its utility”.

Thus, this article attained its goal by proposing a theoretical and methodological framework, as well as by opening the possibility that future studies can be done on this, like for validating our findings. Such a validation could be done through researches using statistical analyses like factorial analysis (verifying whether initial categories would really build compatible factors with the intermediate categories, and whether intermediate categories would really form compatible factors with the final categories) and regression analysis (verifying whether there are causal relations between initial and intermediate categories, and between intermediate and final categories). This is in line with Klein, Dansereau, and Hall (1994) who make a deliberately non-quantitative discussion; instead they use a “pictorial

approach” to demonstrate the potential dangers of data analysis and interpretation when data do not fit the theoretical level – “thus the treatment of these issues is more broadly accessible than only quantitative presentations of levels issues” (KLEIN, DANSEREAU, and HALL, 1994, p. 197). The authors suggest advancing to multi-level issues in theory development.

For future researches, the frameworks developed here can be viewed in an iterative way. In other words, after the second theoretical model, it is possible that the researcher goes back to listen again the respondents. Moreover, other executives, employees and stakeholders could be interviewed too.

Finally, we also highlight that similar exploratory studies could be done in other settings like Latin America, the USA and continents like Europe and Asia, wherever this sector is well developed, aiming at future comparisons of the mobile telephony industry structure in assorted countries.

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APPENDIX A – Semi-structured Instrument / Brazilian Mobile Phone Sector

- 1 – Knowledge about Mobile Telephony;
- 2 – Marketing;
- 3 – Techniques/Technology;
- 4 – Operator trustworthiness;
- 5 – Costs;
- 6 – Operator culture;
- 7 – Value chain;
- 8 – Positioning;
- 9 – Norms for the sector;
- 10 – Know-how;
- 11 – Social and ethic responsibility;
- 12 – Trends for the sector;
- 13 – Third Generation (3G).