

MANAGING STRATEGIC ISSUES IN GLOBAL TECHNOLOGICAL INNOVATION PROJECTS

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Abstract

This article aimed to identify those issues that were present in global technological innovation projects carried out by Brazilian multinational companies and which performance criterions these undertakings have met. Besides that, we also sought to understand how strategic issues influenced project performance in multinational companies. We have investigated 36 global technological innovation projects from Brazilian multinational enterprises through a web-survey. Findings show that these companies have gone beyond the traditional iron triangle to evaluate their technological efforts and considered additional performance dimensions such as customer satisfaction, business results, and preparation for the future. Results also show high degree of presence for issues emerging from R&D activities, industry, and external environment, moderate degree of presence for issues emerging from both the project and R&D activities, and low degree of presence for issues emerging from the headquarters and subsidiaries. Regression outputs show that project performance has been impacted under the following dimensions: business results, organization's capabilities, marketing focus, and synergy among organization units.

Key Words

Innovation, Internationalization, R&D, Global Projects

File name: Document1

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Status: Full Paper

Last updated: Dec 2, 2009

Organisation: FEA/USP-Brazil

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1. Introduction

The internationalization of R&D is said to be an important step for a company to be globally competitive. Much has been studied on how companies go global and how R&D supports this process. This theme has been extensively explored from the perspective of multinational companies from developed countries although only a small number of studies address this subject from the perspective of multinational companies from emerging economies. Moreover, the internationalization of R&D has been widely investigated at an economical, industrial, and firm level but not at the project level, especially with regard to technological innovation projects.

As companies increase the exposure to international markets by performing a variety of activities overseas, their projects also cross borders (PMI, 2000). Even though becoming global is not a necessary condition to be successful (Porter, 1980), global operations may benefit companies in several ways. Moreover, the internationalization of R&D itself does not assure the organization's skills to innovate (Von Zedtwitz & Gassmann, 2002) neither the quality of innovative outputs (Singh, 2008).

Taking into account that technological innovation efforts are conducted through projects and global projects are much more complex than those carried out domestically, standard project management practices do not seem to be sufficiently good to efficiently manage them. Besides this limitation, it is of great importance to emphasize the action of strategic issues, which according to Cleland (1999) involve those internal and external conditions that exert pressure on the project. Considering that global technological innovation projects are assumed to be one of the means by which multinational companies achieve global competitiveness and share knowledge and learning, it seems to us that there is an open question regarding how strategic issues affect these projects. Therefore, this work aims to analyze the internationalization of R&D at the project level by identifying which issues and to what extent they influence project performance in global technological innovation undertakings.

2. Theory Review

2.1. The Globalization of R&D

The intensification of globalization has motivated market dispersion, and as a result of that, companies have spread their assets over several locations (Bardhan, 2006), however the globalization of R&D is not fully accepted in multinational companies yet (De Meyer & Mizushima, 1989; Von Zedtwitz & Gassmann, 2002). The notion of globalization of innovation has emerged between the increasing integration of economic activities and the greater relevance of knowledge to economic processes (Archibugi & Iammarino, 2002).

The need for organizing the multinational corporation to face the challenges of the global competitive environment has been increasingly calling for the scholars and practitioners' attention. Although there is no consensus concerning the best form to organize, relevant proposals include the multifocal multinational corporation (Prahalad & Doz, 1987), the transnational corporation (Bartlett & Ghoshal, 1989), the born global firm (Knight & Cavusgil, 1996), the differentiated network (Nohria & Ghoshal, 1997), and the metanational corporation (Doz, Santos, & Williamson, 2001).

As the coordination of R&D activities strongly affects the global strategic positioning of the multinational corporation (Zou & Ozsomer, 1999), the importance of management of innovation augments as the organization faces the challenge of establishing a global strategic positioning that allows meeting both local and global demands. Hence, R&D challenges mainly encompass the evaluation of new knowledge, the motivation of

laboratories and functional areas to mutually collaborate, the management of complexity in global projects, and the optimization of ways to innovate (Goldbrunner et al, 2006). Additionally, the majority of challenges related to the globalization of R&D involve how the organization defines structures, processes, and mechanisms that facilitate decisions concerning new knowledge, new technologies, and new products (Von Zedtwitz, Gassmann, & Boutellier, 2004).

2.2. Global Technological Innovation Projects

Innovation projects are the means by which the company manages its efforts with regard to new technology and product development and advances in the existing ones to serve the markets it is in. These efforts aim to improve the organization's operations to strengthen its competitiveness and normally include product and process innovation. Although, following the Oslo Manual (OECD & EUROSTAT, 2005) marketing and organization innovation can also be considered as innovation categories.

R&D projects differ from other projects the organization conducts especially due to the uncertainty related to scope, time, cost, and quality, among other dimensions characterizing projects. Then, the perception of the benefits associated with the employment of project management techniques increases as the uncertainty decreases (Lambert, 1993). However, R&D project managers are required to make decisions without sufficient information (Hosley, 1993). Therefore, the employment of traditional project management techniques to technological projects may be harmful because they are not appropriate to them since these projects are high-risk undertakings, full of unknowns and technical uncertainties (Cooper, 2006). In spite of that, there is certain neglect on how to manage and structure global R&D projects (Chiesa, 2000).

Global project and international project terms appear interchangeably in the project management literature. Cleland (2006) suggests that global projects are those whose stakeholders are geographically dispersed in several countries. For Kerzner (2001), global projects are those that cross borders. Cleland and Ireland (2002) add that in global projects team members work for several organizations in a number of countries and there are challenges concerning costumes, cultures, and practices that emerge due to border crossing. Lientz and Rea (2003) argue that international projects are those that involve many locations, entities, organizations, and business units. Therefore, there is no precise frontier between the concepts of global and international projects. More important than that is how they are characterized and how this brings complexity and makes more difficult their management. Among a variety of global projects features, we emphasize the exposure to different kinds of risks, cultural differences among team members and partner organizations, increasing use of virtual and geographically dispersed teams, influence of stakeholders situated all over the world, and difficulties in sharing knowledge and training people.

2.3. Project Performance

Project performance criteria are the means by which companies measure and assess project outcomes. Initial works on project performance have essentially considered schedule, cost, and technical performance (Pinto & Slevin, 1988; Cleland & Ireland, 2002), the so called iron triangle. Later, the customer satisfaction (Pinto & Slevin, 1988; Darnell, 1997) and stakeholder (Westerveld, 2003) dimensions have been added to the list. By studying 200 cases of new product development in 125 organizations, Cooper e Kleinschmidt (1987) have identified 10 success measures that they classified into financial performance, window of opportunity, and impact on market dimensions.

Pinto and Mantel (1990) have investigated 97 projects considered as failures and found out that success or failure measures should consider the implementation process, the project perceived value by the organization, and the customer satisfaction regarding the main deliverable. For Freeman and Beale (1992), the most adopted success criteria are technical performance, efficiency in project execution, managerial and organizational implications, personal growth, project conclusion, technical innovativeness and business performance, and manufacturing feasibility.

Baccarini (1999) has employed the Logical Framework Method to discuss project success and pointed out four levels of project objectives: goal, purpose, outcome, and insight. Andersen et al (2006) argue that project success consists of a broader view encompassing both project management success and project's product success. Shenhar and Dvir (2007) have proposed a set of dimensions that seems to include the most relevant aspects previously mentioned, that they labeled project efficiency, impact on customer, impact on team, business results, and preparation for the future.

2.6. Strategic Issues in Global Technological Innovation Projects

Strategic issues differ from critical success factors since the latter refer to those aspects to be considered in order to increase the probability of project success and the former relate to those conditions that emerge during the project life cycle and may influence project performance. Strategic issues are regarded as the most important part in international projects and when they emerge their shape and nature are not sufficiently clear (Lientz & Rea, 2003). Then, the sooner strategic issues are identified, the sooner the project team will make decisions regarding how to deal with them (Cleland & Ireland, 2002). Due to the complexities and dynamics that characterize the project we highlight the strong potential for the emergence of discontinuities, which require the organization to develop the right competences to resolve them in a professional way (Gareis, 2006).

According to Lientz and Rea (2003), international projects are subject to the influence of four types of issues; to be precise, project issues, business issues, management issues, and external issues. When related to innovative activities, these projects are likely to involve other parties and become much more complex due to the high level of uncertainty. As they are of great importance to support the organization in pursuing competitive advantages to strengthen its competitiveness, other sources of strategic issues may call for our attention. Hence, by analyzing the literature on project management and innovation management, we propose that global technological innovation projects in multinational companies from emerging countries may be subject to the influence of issues emerging from (i) the project, (ii) R&D activities, (iii) the headquarters, (iv) subsidiaries, (v) the industry, and (vi) the external environment.

3. Method

3.1. Sample and Data Collection

The sample for this research involved 36 Brazilian multinational companies from multiple industries. We have selected these companies through a detailed examination of rankings and lists of Brazilian enterprises who have been going international. The unit of analysis is the global technological innovation project, mainly involving technological efforts that aim to develop new technologies or products, or to improve existing ones, or to adapt existing ones to serve foreign markets. Data were collected through a web-survey and invitations were sent to R&D managers and/or directors of the selected organizations.

3.2. Measures

3.2.1. Dependent variable

Project performance is a widely discussed subject in the project management literature, and as a result of that, many criteria are used to measure that. We have adopted the dimensions suggested by Shenrar and Dvir (2007), which are (i) project efficiency, (ii) impact on customer, (iii) impact on team, (iv) business results, and (v) preparation for the future. We have presented questions to respondents and asked them to indicate to what extent the selected project has met each criterion. To do so, we have used a 7-point likert scale in which the score 1 meant low extent and 7 meant high extent.

3.2.2. Independent variable

The independent variables are defined as issues in global technological innovation projects. We have based these variables upon Lientz and Rea's (2003) work, which suggests that issues in international projects may be categorized into four groups: (i) project issues, (ii) business issues, (iii) management issues, and (iv) external issues. As our research specifically addresses global technological innovation projects, we have adapted and upgraded Lientz and Rea's typology and created our own set of variables to study this kind of project. Therefore, we have classified issues in global technological innovation projects into six groups: (i) project issues, (ii) R&D issues, (iii) headquarters issues, (iv) subsidiary issues, (v) industry issues, and (vi) external issues.

For each one of the six groups we have presented a block containing 9 questions representing issues that have potential to surface in global technological undertakings. These issues were identified through a carefully analysis of the literature on project management and globalization of R&D. Then, we have asked respondents to indicate to what extent the listed issues were present in global technological innovation projects. To do so, we have used a 7-point likert scale in which the score 1 meant low degree and 7 meant high degree of presence.

4. Data Analysis

We have carried out a quantitative analysis in three phases encompassing descriptive analysis, principal component analysis and regression analysis. Each of them had a purpose and contributed in a meaningful way to the main findings of this work. Through the descriptive analysis, besides organizing the data collected, we have found those issues that were present in the selected projects. Using the principal component analysis, we have reduced the number of variables and simultaneously retained the largest portion of the variability of the dataset, what facilitated the next step, the regression analysis. This technique allowed us to study how strategic issues influenced project performance, for the selected undertakings.

4.1. Descriptive Analysis

4.1.1. Dependent Variables: Degree of Project Performance

Table 1 shows that all variables representing project performance dimensions had large median values. The highest median value observed was 6.42 and refers to the variable PPD3 (meeting of customer's requirements) and the lowest median score was 4.17, which relates to the variable PPD6 (synergy creation among foreign units). High frequencies have been observed for moderate (scores 4 and 5) and high levels (scores 6 and 7) regarding the utilization of the criteria listed to measure the performance of projects under investigation. For the variable PPD3 (meeting of customer's requirements), we have observed the frequency 47.22% with regard to the score 7 and 36.11% to the score 6.

Table 1. Frequency distribution (%) for project performance dimensions

Degree of presence	PPD1	PPD2	PPD3	PPD4	PPD5	PPD6	PPD7	PPD8	PPD9	PPD10	PPD11	PPD12
1	2.78	2.78		2.78		27.78	2.78	2.78	2.78	5.56		
2	5.56	2.78				11.11	2.78	5.56	8.33	5.56	13.89	5.56
3	8.33	2.78			5.56	5.56	5.56	8.33	2.78		8.33	11.11
4	11.11	11.11	2.78	11.11	13.89	8.33	25.00	5.56	13.89	8.33	11.11	8.33
5	27.78	30.56	13.89	25	33.33	30.56	25.00	25.00	25.00	25.00	27.78	30.56
6	27.78	22.22	36.11	33.33	36.11	11.11	25.00	33.33	33.33	36.11	25.00	27.78
7	16.67	27.78	47.22	27.78	11.11		13.89	19.44	13.89	19.44	13.89	16.67
Mean	5.06	5.42	6.28	5.67	5.33	3.58	4.97	5.22	5.06	5.28	4.83	5.14
Median	5.30	5.50	6.42	5.83	5.42	4.17	5.06	5.58	5.39	5.65	5.10	5.32
sd	1.55	1.46	0.81	1.26	1.04	2.05	1.42	1.57	1.55	1.61	1.59	1.42
sir	0.98	0.96	0.62	0.83	0.72	1.91	1.00	0.86	0.93	0.81	1.15	0.85

Source: authors.

Concerning the score 6 (high level), the highest frequencies were associated with the variables PPD1 (completion on schedule), PPD4 (improvement of customer's performance), PPD5 (people integration within the organization), PPD7 (improvement of organization's profitability), PPD8 (increase of organization's market share), PPD9 (contribution to shareholder's value) and PPD10 (contribution to new markets creation). Moderate level (scores 4 and 5) of employment of project performance criteria was found to be highly frequent for the variables PPD1 (completion on schedule), PPD2 (completion on budget), PPD6 (synergy creation among foreign units), PPD7 (improvement of organization's profitability), PPD11 (contribution to new processes creation within the organization), PPD12 (contribution to organization's capabilities improvement).

In summary, results indicate that Brazilian companies under analysis are strongly committed to their customers and do their best to deliver the project on budget and schedule. Results also suggest that these companies look beyond the project environment and try to understand how global technological innovation projects contribute to organization's growth and help preparing the organization for the future by developing new capabilities.

4.1.2. Independent Variables: Key Strategic Issues Degree of Presence

With respect to independent variables, we have identified higher degree of presence for project issues, R&D issues, industry issues, and external issues. Headquarters issues and subsidiary issues only showed low degree of presence for the assessed cases as shown in Table 2.

Table 2 – Summary of issues in global technological innovation projects

Issue category	Issue description	Degree of presence
Project	Cost escalation due to unplanned tasks.	Moderate
Project	Difficulties in determining the status of work in different locations.	Moderate
R&D	Need to simultaneously manage several technological innovation projects.	High
R&D	Project approval without consideration of other projects and efforts.	Moderate
Headquarters	Centralization of R&D activities in headquarters hinders the involvement of foreign units.	Low
Headquarters	Approval is centralized in headquarters without the involvement of subsidiaries.	Low
Subsidiary	Need for sharing critical resources.	Low
Industry	Escalation of price competition.	High
Industry	Competitors rapidly imitate one another.	High
Industry	Emergence of new technological standards.	Moderate
External	Economic instability.	High

4.2. Principal Component Analysis

The Principal Component Analysis has been carried out for both dependent and independent variables. From the dependent variables, we have built four principal components named business results, organization's capabilities, marketing focus, and synergy among organizational units. Concerning the independent variables, we have built around five components for each group of strategic issues, that is, project issues, R&D issues, headquarters issues, subsidiary issues, industry issues, and external issues. All these dimensions were considered for the next analysis.

4.3. Regression Analysis: the influence of Strategic Issues on Project Performance

The regression analysis has been conducted to understand how strategic issues influenced the performance of global technological innovation projects. Therefore, we have run the regression for each of the dependent principal components, that is, business results, organization's capabilities, marketing focus, and synergy among organizational units. To determine the best regression model, we have employed the stepwise mode in which all independent components have been inserted together with their first-order iterations. Then, using the AIC (Akaike's An Information Criterion) criterion, we have selected those with the smallest AIC according with the formula ($-2 \cdot \log\text{-likelihood} + 2 \cdot \text{npar}$), where npar represents the number of parameters for the adjusted model. The same procedure has been repeated until all the statistically significant independent components have been selected.

4.3.1. Regarding Business Results Criteria

The business results dimension refers to the degree the selected projects have contributed to increase the organization's profitability, the organization's market share, and the shareholder's value. For the selected regression model, we have found Adjusted R-Squared = 0.7594 and p-value = 1.464e-06 ($p < 0.001$).

Regarding project issues, we emphasize "*the difficulties to determine work status in several locations*" and "*the lack of a uniform project management methodology*". We have found out that these issues negatively influenced the performance of target projects with regard to the business results dimension. Even with the advance of information and communications technologies, geographic distance and local culture are still seen as significant barriers to the management of global undertakings. It is also expected that different foreign units develop and use their own methodologies to run R&D projects.

With respect to R&D issues, we point out "*the difficulties to manage global R&D efforts*" and "*the need to simultaneously manage several technological innovation projects*". Regression results show that these issues negatively affected the performance of the selected projects concerning the business results dimension. By geographically disperse their global R&D efforts, multinational companies firstly face management problems in order to benefit from potential dispersion advantages later. To be competitive in both domestic and foreign markets, the multinational corporation must be able to simultaneously run a variety of technological undertakings. Different markets with specific needs demand customized project requirements and management skills to take project performance to the next level.

Among headquarters issues, we mention "*the centralized approval at the headquarters without the involvement of subsidiaries*" and "*the centralization of R&D activities at the headquarters*". Regression outputs suggest that they negatively influenced the performance of the selected projects concerning the business results dimension. The internationalization process of companies from emerging economies shows idiosyncrasies

when compared to that of multinational corporations from developed countries. Especially regarding the internationalization of R&D, and due to the large use of acquisition strategy to go global, Brazilian companies mostly keep the core of their R&D activities under the headquarters' umbrella. This has been gradually changing, but slowly.

For subsidiary issues, we highlight "*the difficulties to access and apply lessons learned from previous projects*" as having negatively impacted the performance of investigated projects. Even though R&D efforts are conducted with the intention of creating something new, lessons learned are considered to be very useful when it comes to manage projects under uncertain conditions. If time is money for business, time is a lot of money for R&D, because the sooner the company introduces a novelty in the marketplace the greater their chances of success. Regarding the issue "*high turnover rate of staff in subsidiaries*", we realized that it positively contributed to project performance in terms of the business results dimension. A possible cause for this is that new people may bring new capabilities, knowledge, and experience to project environment what in turn may benefit all involved and increase project performance.

Concerning industry issues, regression coefficients indicate while "*price competition*" undermined the performance of selected projects, "*new ways to commercialize products*" increased it. Price competition is said to be unhealthy for organizations because they mainly focus their efforts on destroying their enemies without considering the real impacts of their actions on business performance as a whole. Differently, new ways to market products can be seen as a signal that the company must be more dynamic and creative with respect to its marketing strategies. This may motivate the organization to rethink the relationship between R&D and marketing functional areas.

When it comes to external issues, "*economic instability*" and "*political instability*" appeared to have diminished the performance of studied projects. The external environment is a very precise thermometer for companies doing business worldwide. Nowadays, economies are connected and interdependence is part of the game. Hence, economic disturbances certainly affect in a negative way project performance and the organization's agenda for new undertakings. Besides economic instability, the multinational corporation should also watch for political instability because changes and new regulations in host countries may impact the project work that is done in subsidiaries, and consequently, the whole project as well.

4.3.2. Regarding Organization's Capabilities Criteria

The organization's capabilities dimension relates to the degree the selected projects have contributed to new business processes creation, to improve organization's capabilities, and to complete projects on budget and on time. For the selected regression model, we have found Adjusted R-Squared = 0.79 and p-value = 1.431e-07 ($p < 0.001$).

For project issues, we identified "*changes in project requirements*" and "*difficulties to obtain cooperation from functional areas*" as negative drivers of project performance for the selected cases. Even though innovation projects refer to creating something new, changes in project requirements may alter project planning and executing. Depending on the extent to which changes occur, a new project may be needed. In addition, R&D projects demand cooperation and involvement of other functional areas. Without them, project performance may be negatively impacted with respect to the organization's capabilities dimension.

Regarding subsidiary issues, we point out "*difficulties to access and apply lessons learned from previous projects*", "*high turnover rate of staff in subsidiaries*", and "*dependence on partners that do not have presence in some locations*" as those that negatively influenced the performance of the selected projects. The relationship between headquarters and

subsidiaries does not follow a rigorous pattern. Instead, it depends on the organization's international expansion process and the degree of wisdom the headquarters give to subsidiaries to make their own decisions regarding the project work they must do. Therefore, the subsidiary issues regarding difficulties to use lessons learned, turnover of staff, and dependence on partners who do not have physical presence may increase the tension between headquarters and subsidiaries, and as a result, take project performance down.

Among industry issues, "*changes in customers' preferences and habits*", "*forward integration (with clients) or backward integration (with suppliers)*", and "*competitors rapidly imitate one another*" take the performance of the studied projects down, while "*the entrance of new competitors*" and "*the domination of supplier industry by a few companies*" positively affected their performance. Each industry has its particularities and some are very dynamic while others are more rigid. Issues emerging from the industry usually exert pressure on companies forcing them to respond in a creative way in order to sustain their competitiveness. For that reason, in some cases, industry issues negatively affect project performance, and in others, they contribute to project performance increase.

Concerning external issues, we emphasize "*demographic changes*" and "*social responsibility*" as drivers that contributed to increase the performance of target projects. The business environment has increasingly been calling for project manager's attention with regard to better understand demographic changes and follow social responsibility requirements. In doing so, for the selected projects, we have noticed a project performance augment in terms of the organization's capabilities dimension.

4.3.3. Regarding Marketing Focus Criteria

The marketing focus dimension refers to the degree the selected projects have contributed to new market creation, to increase the organization's market share, and to meet customer's requirements. For the selected regression model, we have found Adjusted R-Squared = 0.6879 and p-value = 5.587e-07 ($p < 0.001$).

For R&D issues, we point out "*difficulties to establish technological trajectory*", "*difficulties to involve suppliers, users, and partners*", and "*need to simultaneously manage several technological innovation projects*" as those that undermined project performance in terms of the marketing focus dimension. Additionally, "*project approval without the consideration of other projects and efforts*" contributed to augment the performance of the selected cases. The marketplace is very dynamic and issues regarding those difficulties companies face to organize their efforts and approach marketing opportunities may take project performance down. This is likely to happen especially when the industry is undergoing a period of ambiguous technological trajectory and a solution depends on organization's capacities to involve third parties and manage simultaneously a number of R&D undertakings.

When it comes to headquarters issues, "*controlled authority to project leader to resolve strategic issues when they arise*" appeared to help increase the performance of the investigated projects. Addressing and resolving issues demand knowledge and skills on how to do that although they are not sufficient without authority to make it happen. For the projects we have studied, it seems to us that controlled authority to project manager benefited project performance due to the idiosyncrasies of the internationalization process of Brazilian multinational companies.

4.3.4. Regarding Synergy among Organizational Units Criteria

The synergy among organizational units dimension relates to the degree the selected projects have contributed to the synergy creation among international units. For the

selected regression model, we have found Adjusted R-Squared = 0.5302 and p-value = 5.918e-05 ($p < 0.001$).

Regarding project issues, we noticed that “*lack of abilities to work on the project*”, “*lack of knowledge about local culture and habits*”, and “*communication problems*” positively contributed to project performance with respect to synergy creation among international units. It seems reasonable that foreign units will collaborate with one another when they need to overcome barriers. By doing that, they work together to build the required knowledge and abilities that in turn may augment project performance with regard to synergy creation among international units.

For subsidiary issues, we point out “*the need for sharing critical resources*” and “*the inappropriate way to handle strategic issues that affect only the project work that is carried out in the subsidiary*” as those who positively influenced the process of synergy creation among international units. Once again, when foreign units need collaboration they are likely to assist one another. This may explain why subsidiary issues help taking project performance up.

5. Conclusions and Final Remarks

This article aimed to identify those issues that were present in global technological innovation projects carried out by Brazilian multinational companies and which performance criterions these undertakings have met. Moreover, we also sought to understand how strategic issues have influenced the performance of the selected projects. Findings show that Brazilian multinational companies go beyond the iron triangle by considering other project performance dimensions, previously unknown or neglected, when measuring the performance of their global technological innovation undertakings. Actually, these companies try to understand how their innovation efforts contribute to organizational growth and prepare them for the future in terms of capability building, which is one of the greatest challenges multinational enterprises from emerging economies face. Additionally, they care very much about their customers' satisfaction and also pay attention to stakeholders' interests.

Among those issues emerging from the project itself we highlight the cost escalation due to unplanned tasks and difficulties in determining the status of work in different locations. Innovative activities are uncertain by their own nature, which makes its management not only complex but also challenging. When carried out worldwide, a variety of difficulties arise due to the dispersion of the work to be done. A moderate degree of presence indicates that these issues deserve carefully and constant assessment.

Need to simultaneously manage several technological innovation projects and project approval without consideration of other projects and efforts are issues that emerge from R&D activities and whose moderate degree of presence suggests the need for optimizing innovative resources and efforts. A company usually does not have sufficient resources to conduct all projects it would like to. Hence, it should be savvy and skillful in selecting those projects that are really connected with its strategies and manage some of them simultaneously when necessary.

Regarding issues emerging from the headquarters we mention centralization of R&D activities in headquarters hinders the involvement of subsidiaries and approval is centralized in headquarters without the involvement of subsidiaries with low degree of presence. These issues seem to reflect the internationalization process of Brazilian enterprises, especially with regard to the level of autonomy they give to their foreign units. Therefore, the organization should find out the right balance between centralization and decentralization to make it support the implementation of international strategies.

Escalation of price competition and competitors rapidly imitate one another are those issues emerging from the industry and whose degree of presence is high. Due to the importance of technological innovation projects to organization's competitiveness industry issues strongly call for top management's attention. There is no recipe for avoiding industry issues, although an active posture towards the management of innovation may help the organization deal with them.

Last but not least, issues emerging from the external environment should also be considered. Among those we have studied, economic instability is the one that requires management's attention mainly due to the reduced power the organization has to deal with that. Actually, dealing with economic instability is a matter of protecting the organization against the damages this issue may cause.

When it comes to project performance dimensions the analyzed issues mainly affected we point out business results, organization's capabilities, marketing focus, and synergy among organizational units.

Project performance, in terms of the business results dimension, has negatively been influenced by project issues, R&D issues, headquarters issues, subsidiary issues, industry issues, and external issues. However, some subsidiary issues and industry issues have positively impacted project performance. Even though every project has a specific purpose, project's goal must be aligned with organization's goal. In having this connection, one should notice that issues affecting project performance will likely affect organization performance. For the business results dimension, it means that the more these issues impact project performance the lesser the project contribute to increase organization's profitability, organization's market share, and shareholder added value.

With regard to the organization's capabilities dimension, project issues, subsidiary issues, industry issues, and external issues have taken project performance down, although some industry issues have contributed to increase project performance. The intrinsic complexities of innovation projects tend to become even worse due to the geographic dispersion of R&D efforts associated with problems emerging from subsidiaries, industry, and external environment. Therefore, global technological innovation projects must overcome these difficulties to contribute in a meaningful way to new process creation, to capabilities improvement, and to complete work on budget and time.

For the marketing focus dimension, we found out that R&D issues negatively influenced the performance of the selected projects, even though some other R&D issues together with headquarters and industry issues have augmented project performance. R&D issues mainly refer to those difficulties the multinational corporation faces to structure itself while trying to get the most of marketing opportunities. Complementarily, headquarters issues may help take project performance up depending on how headquarters are aligned with foreign units. In addition, industry issues may exert pressure on the organization forcing it to respond efficiently and effectively, what may contribute to increase project performance. Concerning the synergy among organizational units dimension, while project issues have increased project performance, subsidiary issues undermined it. Basically, the creation of synergy among international units results from their needs for building knowledge and skills regarding the work to be completed and cultural aspects to be dealt with.

In summary, Brazilian multinational companies have been successful in pursuing foreign markets. For some of them, technological innovation projects represent the foundations of competitiveness. Therefore, it is crucial to watch for issues emerging from projects, R&D activities, headquarters, subsidiaries, industry, and external environment. In doing so, they will be prepared to properly approach and deal with them.

Further research is needed to analyze how strategic issues affect project performance in multinational companies from developed economies. It should be also interesting to

identify which other project performance dimensions strategic issues are likely to impact. Another relevant aspect should be considering the emergence of strategic issues and its relation to the internationalization process of multinational organizations.

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