

December 2003

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## Recommended Citation

Sa, Luciana; Marczak, Sabrina; Avritchir, Jairo; and Audy, Jorge, "Effectiveness of Fiscal Incentives to Attract IT Investments: A Brazilian Case" (2003). *AMCIS 2003 Proceedings*. 155.

<http://aisel.aisnet.org/amcis2003/155>

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# EFFECTIVENESS OF FISCAL INCENTIVES TO ATTRACT IT INVESTMENTS: A BRAZILIAN CASE<sup>1</sup>

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## Abstract

*Big companies of the Information Technology (IT) industry have been increasingly distributing on a world scale their units of software development to countries in Asia, Eastern Europe and Latin America through offshore development centers as a strategy to increase competitiveness and reduce costs. In this context, emerging countries, like Brazil and its several measures focused on the development of hardware and software industry, have become an attractive option to receive investments in the IT sector. This article analyzes the major attracting factors for investments in Brazil by foreign companies of the IT industry and current challenges to keep the investments in that segment. This study is an exploratory case study based on the concrete experience of implementation of an offshore software development center, belonging to Dell Computer Corporation, in Brazil.*

**Keywords:** Latin America, tax incentive, information technology investments in Brazil, distributed software development

## Introduction

The competitive environment, in which high technology companies are part of, with the economy and market globalization, the need for such companies to adopt alternative strategies to remain competitive is increasingly higher. In this context, a major trend among those companies is the distribution on a world scale of their software development areas to countries in Asia, Eastern Europe and Latin America.

Latin America in general, particularly Brazil and its several measures focused on the development of hardware and software industry, has become an attractive option to receive investments in the IT sector. The rules developed by the Brazilian government over the last years in order to reduce tariff barriers, exclude the market reserve and reestablish the National Computer Policy have actively added to the position of Brazil as an interesting option to receive foreign investments in the high technology sector.

The government's concerns in supporting industries already based in Brazil and the need to create an attractive environment for the foreign capital led to the creation of the Computer Tax Incentive Law (Law 8248/91), this is a law that allows the companies to use the money they should pay to the government as income tax to invest in research and development projects previously approved. This measure strongly bolstered the creation of new software companies and also attracted new companies to Brazil

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<sup>1</sup>Research developed at the Dell Brazil Global Development Center (GDC), sponsored by Dell Computer Corporation through the Brazilian Federal Law for Information Technology (Law No. 8.248/91).

that produce computer goods in several regions of the nation today. Among those companies are several software development centers of big foreign companies, which saw a way of reducing costs through total or partly distribution of their software development areas by taking advantage of incentive offered by the government and technical preparation of Brazilian computer professionals.

The goal of this article is to analyze the major attracting factors for investments in Brazil by foreign companies of the IT industry, assuming the concrete case of implementation of a Distributed Software Development (DSD) center of a large U.S. company in IT industry. Finally, this study aims at presenting the main challenges to keep and increase those investments in Brazil.

## **Distributed Software Development**

As part of the globalization efforts currently pervading society, the software project teams have also been geographically distributed in worldwide. This characterizes Distributed Software Development (DSD). When the stakeholders involved in the process are globally distant, it's characterizes a kind of DSD, called Global Software Development (GSD) (Herbsleb *et al.* 2001). The companies that adopt its strategy seek competitive advantages in terms of costs, quality and flexibility in the systems development area. The concepts of *outsourcing* and *offshore outsourcing* arise when a company chooses to set up a development environment that is physically distant from their head office. Outsourcing is the practice of hiring an external organization to develop a system, instead of developing it in-house (McConnel 1996). One of the options of outsourcing, which is becoming very popular over the last years is the offshore outsourcing. Offshore organizations are companies located in some other country that offer lower development costs with quality comparable with the quality of organizations based in their own country (McConnel 1996).

## **The IT Market in Latin America and Brazil**

International Data Corp. has recently released a survey on the world market of IT. Such study shows that after the difficulties of 2002, the world IT industry is expected to grow over 5% in 2003, while the estimated growth rate of the IT market in Latin America is 8.7%, index that shall reach a two-number rate by 2006. On the other hand, in USA, the expected growth rate is 4.4% (IDG 2002a).

With population around 170 million inhabitants, Brazil, a country located in the far south of Latin America, is the world's fifth largest country in territory, with geographical area at 8,547,404 km<sup>2</sup> (BIGS 2000) and the world's eighth biggest economy according to data of the World Economic Forum (WEF 2003). An annual study carried out by the World Economic Forum, showing the most developed countries in IT in the world, indicated Brazil as top of the rank of Latin America and 29<sup>th</sup> of the world rank (WEF 2001).

The IT industry accounts for 2.3% to 2.5% of Brazil's Gross Domestic Product (BIGS, 2001). In 2002, the trading volume of hardware, software and services carried out in Brazil reached around US\$ 11 billion, divided as follows: 52%, 16% and 32%, respectively. The study also forecasts growth by 5% in hardware sector, 5% in software and 12% in services (IDG 2002b).

The companies in the IT sector, however, do not work only with hardware production and software development. A recent survey by the Brazil's Ministry of Science and Technology shows that over 60% of IT companies based in Brazil work with computer projects and advisory and over one fourth provides computer training services (STM 2001). Table 1 shows the main working areas of computer companies in Brazil.

**Table 1. The Brazilian Technology Information Industry**

Areas	No. of companies	%
Data or database commerce	31	7,0
Computer projects and advisory	268	60,8
Software development	402	91,2
Distribution/editing of software of third companies	79	17,9
Distribution/re-selling of hardware	43	9,8
Computer, telecommunication or automation industry	56	12,7
Computer maintenance and technical assistance	68	15,4
Internet server	39	8,8
Bank automation services	27	6,1
Commercial automation services	70	15,9
Industrial automation services	45	10,2
Data entry services	23	5,2
Data processing services	64	14,5
Computer training	124	28,1
Others	11	2,5
<b>Total</b>	<b>441</b>	<b>100</b>
Source: Quality and productivity in the Brazilian software sector Brazil's Ministry of Science and Technology, 2001		

Brazil's public policies carry out an important role in the consolidating and expanding process of the information technology sector in Brazil. Most recently, attempting to attract more foreign investments to Brazil, the government created the Brazilian Fund for Information Technology (CT-INFO), which is an important tool of public policy in the area, as it invites national and foreign companies to invest in Brazil through tax incentive (reduce in TIP - Tax on Industrialized Products).

## Brazilian Fund for Information Technology

The Brazilian government has tried to establish specific policies for the computer area since the end of the 70's. In 1978, the Brazilian government created the Market Reserve, trying to reserve the medium-sized and small computer segment to Brazilian companies. At that time, the first 5 computer industries focused on production of medium-sized and small computers emerged in Brazil. Such policy, called back then as National Computer policy, was based on market reserve and protectionism for companies of Brazilian capital.

Only in the early 90's, with the opening process to the world market, the Brazilian government cancelled that law and opened the market of this sector to foreign companies. In 1991, a bill that created tax incentive for investments by computer companies in Brazil was passed. Part of that incentive was focused on the academic area, motivating companies to invest in research centers. In the second half of the 90's, amid the privatization process the Brazilian economy faced, the Brazilian Funds emerged. Fourteen funds were created in several areas (energy, telecommunications, health, air force, biotechnology, space technology, etc.)

The Brazilian Fund for Information Technology (CT-INFO) was based on the Computer Law (Law no. 8,248 of 1991) and is intended for the promotion of strategic projects of IT research and development in Brazil. Besides trying to bring companies and universities closer, the financial resources of CT-INFO are also an attractive factor for Brazilian and foreign companies to invest in the IT sector in Brazil. Its financing sources come from the Computer Law, which establishes that the developing or producing companies of computer goods and services and automation must invest, every year, 5% of their gross turnover in information technology research and developing activities to be carried out in Brazil.

Of the percentage established in the law for investment in IT, at least 2.3% must be invested as follows: 1% in partnerships with universities and research centers; 0.8% in partnerships with universities and research centers in northern, northeastern and central-western regions of Brazil (of which 30% with public institutions) and 0.5% must be invested as financial resources deposited in

the National Fund of Scientific and Technology Development. On the other hand, the law benefits those companies with a progressive reduction of the TIP.

## Research Methodology

This research is characterized predominantly as an exploratory study since its goal is to analyze a topic little studied or known (Sapieri *et al.* 1998). Also, according to Sapieri *et al.* (1998) this sort of study intends to let us become familiar with relatively unknown phenomena. The main research method was the case study as proposed by Yin (1993). The research team followed the entire process of implementation of an offshore software development in Brazil, from the negotiation stage to its effective implementation with the start of activities. The question that intends to be answered by this research is which are the major attractive factors for investments in Brazil by foreign companies of the IT industry and which are the current barriers to keep the investments in that segment.

The technique used to analyze the data was the analysis by category (Richardson 1985). This technique is based on the decoding of a text in diverse elements, which is then classified and grouped. The collected data passed for one pre analysis, after that the group explored the collected data with the purpose of to get the major information and to organize it in a logical way (Bardin 1979).

## Characterization of the Organization

The researched organization is the Dell Computer Corporations, a large U.S. computer producing company, with world turnover that was over US\$ 30 billion in 2002. With several branches around the world, the company installed its computer factoring in Brazil in 1999. In January 2001, the company decided to transfer to Brazil part of its software development and created its first center of offshore software development worldwide – the Brazil Global Development Center (Brazil GDC), with the goal of developing and improving the software applications that support the trade areas of the company around the world.

GDC operates in a DSD environment (Figure 1), and it is one of the offshore software development centers of the researched company. The other centers are located in India and Russia. The Brazil GDC was created based on the incentives of Brazilian Federal Law No. 8.248/91, which provides that companies producing computer goods and services invest at least 5% of their revenues in research and development activities in the country. When GDC was set up in January 2001, it had 20 employees. Now, it relies on over 110 professionals working on over 25 software projects. Figure 2 shows the present organizational structure of GDC, highlighting their development areas (one devoted to legacy systems and one to new technologies).



Figure 1. Distributed Software Development

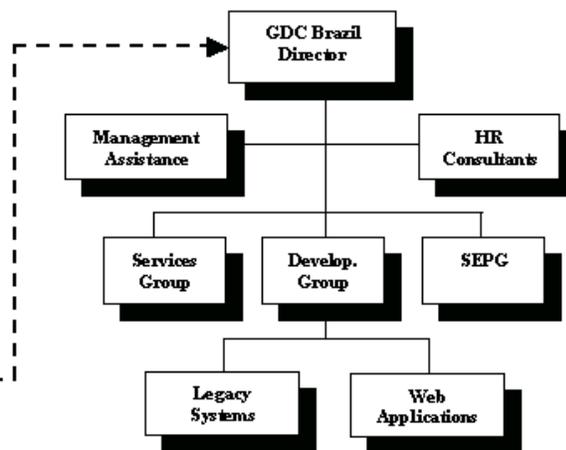


Figure 2. GDC Organizational Structure

The company started the implementation process of its first offshore software development center in Brazil in August 2000, one year after installation of its computer factory in Brazil. The creation of that center was a joint decision between the head of the factory in Brazil and in the United States. GDC officially started its activities in January 2001 as a sector linked to the IT unit of the computer factory in Brazil. At that moment, GDC counted on 25 professionals working specifically to meet the demands for systems of the factory in Brazil.

Important strategic changes took place at that period. In January 2002, an offshore board of directors was created in the company's head office, in the United States, which started to manage all orders of software projects of all trade areas in the company around the world. From then on, both the offshore development center in Brazil and the newly inaugurated center in India became directly subordinated to that board.

## Discussion

As we analyze the implementation process of the offshore software development plant in Brazil by Dell, the researchers detects some factors that seem to have added to the decision of installation and consolidation of that plant in Brazil. Table 2 briefly presents the main attractive factors identified.

**Table 2. Attractive Factors and Barriers**

Area	Motivating Factors	Barriers
<b>Technical</b>	Training and technical qualification of professionals	Lack of high-quality culture
	Technological infrastructure	
	Access to new technologies	
<b>Social</b>	Universities and Research Centers with international quality standard	Language
	Social and political stability	Cultural differences
<b>Taxes</b>	Tax incentive	Tax complexity
		Deficient and incomplete legislation
<b>Economical</b>	Relative economic stability	Country-risk
	Low manpower cost	Brazil cost

Several statements by the company's professionals reinforce the awareness of high level of technical knowledge of IT professionals in the Brazilian offshore development center. That can be explained by the center's location. GDC is based today inside a technological park of one of biggest Brazilian university, in a region of high concentration of highly qualified research centers, big universities and several centers of education and technical training. The education level of the GDC team is high for national standards, while all the staff is either taking a graduating course (28%) or is already graduated (72%). The average time of experience of employees in IT industry is 11.5 years, thus proving that Brazil has qualified technical manpower for companies that decide to base in the country.

Brazil has a sophisticated technological infrastructure installed in the country. During the 90's years Brazil privatized all its telecommunications system and created the Brazilian National Agency for Telecommunications (BRANAT), factors that are allowing bigger and faster availability of access to the communications medias. Large investments by the government ensure to the academic and research environment an information flow and access to high-speed Internet and connection with big research centers in Brazil and abroad. Likewise, the major international companies of IT industry such as HP, IBM, Microsoft, DELL and ORACLE has their own operations in Brazil, which helps the access to technologies produced by those companies.

The Brazilian government set some programs that stimulated the continued education and distance learning, based in the Internet, through promotion of the schools, professors qualification, self-learning and certifications in information technologies and communication in wide scale aiming to use the technologies information and communication in pedagogical and educational activities. Brazil has a chain of high-level universities, while their researchers are inserted in the international scientific scenario, particularly in the computer industry. Although that sector is facing a crisis, particularly in the public sector, there is also a critical

mass enough to meet the current demands. However, one speculates the need for higher investments in preparation of technical professionals if the demand in that sector keeps growing.

As described in Section 4, Brazil has a set of laws and incentives very attractive to investments in the IT industry, focused mainly on computer goods production. Yet by attracting the investments in the IT industry production, such incentive has made companies also invest in the software sector. In the studied case, nearly all resources invested by the company in R&D (Research and Development), via tax incentive of the Computer Law, are in software industry and training and preparation in IT.

Developing countries like Brazil present the cost factor as a crucial competitive factor. From the social point of view it should be a reason to be proud of, however, from the economic point of view, in the globalize society we live, it works as an important attractive factor for foreign investments. Still about the economic factors, despite the constant economic crises, Brazil enjoys a somewhat stable situation, particularly if compared to other Latin American countries.

Although the above mentioned factors have added to make Brazil an extremely attractive nation for investors, there are still many barriers that should be cancelled in order to make Brazil a more financially attractive country. After that the researchers also briefly present the main barriers that seem to have hampered the installation process of GDC in Brazil in the context of the analyzed case study.

The search for competitiveness by Brazil's software industry necessarily demands reaching international quality and productivity standards of its products and services. Brazil has for many years kept its computer market closed to international competition, which led to generation of professionals that did not worry about quality; there was not in Brazil a culture focused on quality. In the early 90's, however, with the commercial opening, the country suddenly found the competition of cheaper and better quality foreign products.

The analyzed case study shows a good example of the effort and ability of Brazilian professionals to adapt to new scenarios. Recently, the Brazil GDC obtained the certification under an international software quality regulation (SW-CMM Level 2), thus becoming the first offshore plan of the company to obtain such certification, even before the American head office. It shows that the Brazil professionals in the IT sector start to worry about this factor and it is succeeding in to overrun this challenge.

Cultural issue presents a negative dimension and for several aspects must be continuously regarded, such as language, professional culture, evaluation systems, personal values, interpersonal relationship, etc. Studying this specific case, in a context of GSD, such social factors are multiplied since there is the relationship of several cultures working together at the same time yet in different countries.

One of the big barriers identified involves Brazil's fiscal and tax complexity and ineffectiveness. The Brazilian tax reality is notoriously complex, despite the innumerable efforts of the Brazilian government in reformulating its tax system. There is an important negative feeling in face of the high Brazilian tax burden that is one of the biggest in Latin America. Interesting examples of the studied case are statements by executives of the head office about the complex issue on renewal of the Computer Law in 2001, when the government and Brazil's law makers were very bureaucratic and imprecise in leading the transition process, typical behavior that we are used to in Brazil.

One of the factors that most hampers the investment of foreign capital in the country is the Brazil Risk. The high level of the index, which measures the distrust or risk of financial markets towards emerging countries like Brazil, has driven away foreign investors that do not believe in Brazil's chance to pay its foreign commitments. That image, hit by the index, causes severe damages to the nation because besides its impact on Brazil's image abroad it discourages even direct investors, who would come here with their companies to produce and sell, developing activities that in fact would be very little and indirectly affected by the index. Brazil Cost is also an unfavorable factor for competitiveness in the IT sector and in others Brazilian's economic sectors because it is a factor that does not depend on companies themselves to find a solution for. One strongly believes Brazil will solve those factors as a tool to attract new investments.

## **Final Considerations**

It is important to stress that despite the knowledge and professional experience of the team researchers, this study does not allow direct generalization of the results found and presented in the previous section. However, it allows us to speculate on the results of the analyzed case study so as to find factors that seem to be crucial in attraction of investments in IT industry for developing

countries like Brazil. The principle proposed by Yin (1993) of analytical generalization, in the context of case studying method, allows us to use it.

One can identify that the government's role as a boosting and regulating agent for the attraction of new investments in the IT industry is fundamental. The actions of the Brazilian government since the early 90's, resulting in the creation of the Computer and Fund Laws, played and keep playing an important and maybe decisive role in keeping the current investment levels. One notices that although the government's incentive is focused mainly on companies of industrial segment (hardware), the software sector has been the most benefited segment concerning resources for R&D and direct investments of companies of the IT industry. Emerging technology poles in Brazil, some around technological parks created by joint efforts among the government, companies and universities, seem to generate a synergy effect towards the member companies. Such concentrations of companies, in pre-set urban areas and near research centers, create the habitats of scientific and technologic development and new ideas, which have an effect of attraction towards other companies of the same sector or of complementary sectors. That clearly happens in the case analyzed, in which there are at least 3 of the biggest 4 IT companies in the world with business plants or research laboratories based within the same technological park.

The data collected and analyzed allow us to conclude that, at least for this case, the crucial initial factors of attraction for investments were cost and tax incentive. For the country to keep and expand those investments one urgently needs to draw and propose a new legislation on labor, fiscal and tax areas. Besides that, countries like Brazil, dependent on foreign investments that are based on low cost and tax incentive, should be aware that those factors attract but do not keep that kind of investment in the long term. One forecasts we will only be able to keep or increase the volume of investments if we are able to show those companies we can aggregate value to their businesses.

In this sense, some of the factors that added marginally to the attraction process may become the crucial factors for keeping the investment rates in Brazil. In that case, they are the factors of training and qualification of professionals, creative ability, existence of high-level research centers, and social, economical and political stability. That seems precisely to be the challenge countries like Brazil face, that is, to have the skills to create the proper attractive conditions and then develop the necessary tools to keep the investments.

The balance between knowing how to develop the factors to keep investments and working in order to destroy barriers shall become the differentiating elements among the emerging countries that overcame the stage of investment attraction in IT industry and kept those investments in the country.

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