

THE IMPLEMENTING OF ENTERPRISE 2.0 AND COLLABORATIVE CULTURE IN THE DIGITAL AGE: A COMPARATIVE STUDY BETWEEN BRAZIL AND GERMANY

Mariana de Campos Oliveira

Bacharel em Gestão de Comércio Internacional pela Universidade Estadual de Campinas, Brasil. Analista da Toyota do Brasil. E-mail: <u>mari.fcampos@gmail.com</u>

Gustavo Hermínio Salati Marcondes de Moraes

Doutor em Administração pela Fundação Getúlio Vargas, Brasil. Professor da Universidade Estadual de Campinas, Brasil. E-mail: <u>salati@unicamp.br</u>

Anne Kathleen Lopes da Rocha

Doutoranda em Administração pela Universidade Estadual de Campinas, Brasil. Professora do Centro Universitário Adventista de São Paulo, Brasil. E-mail: <u>anne.rocha@hotmail.com.br</u>

Abstract

Enterprise 2.0 was designed aiming to create an environment of dynamic and interactive shared information in a scenario of rapid technological change and increasing global competitiveness. The objective of the research was to understand the main challenges and the real benefits of implementing Enterprise 2.0 and its new collaborative culture. The method used was a single case study in a multinational company still implementing the tool, to examine along with associates in Brazil and in Germany its acceptance. The study assessed the perceptions of end-users in different hierarchical levels of the company and highlighted the cultural differences of the respondents according to their country. Results indicate that cultural characteristics, size of the company, encouragement to use and training of the associates directly influence the adhering of Enterprise 2.0.

Keywords: Enterprise 2.0. Collaborative culture. Digital age.

A IMPLANTAÇÃO DO ENTERPRISE 2.0 E A CULTURA DE COLABORAÇÃO NA ERA DIGITAL: UM ESTUDO COMPARATIVO ENTRE BRASIL E ALEMANHA

Resumo

Em um cenário de rápidas mudanças tecnológicas e crescente competição global, surgiu a Enterprise 2.0, que tem como finalidade criar um ambiente de compartilhamento de informações de forma dinâmica e interativa na organização. O objetivo da pesquisa foi entender os principais desafios e os reais benefícios que a implantação do Enterprise 2.0 e sua nova cultura de colaboração podem trazer para uma organização. A metodologia utilizada foi um estudo de caso único em uma empresa multinacional, para analisar junto aos colaboradores no Brasil e na Alemanha, a aceitação dessa ferramenta, ainda em processo de implantação. Foram avaliadas as percepções de usuários finais em diversos níveis hierárquicos da empresa, e destacadas as diferenças culturais dos respondentes, de acordo com o país pertencente. Os resultados indicam que aspectos culturais, tamanho da empresa, incentivo no uso e treinamento dos colaboradores influenciam diretamente na adesão ao Enterprise 2.0.

Palavras-chave: Enterprise 2.0. Cultura de colaboração. Era digital.

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1 INTRODUCTION

The current business environment can be characterized by internationalization, globalization of markets and the information society (ORTEGA; BLANCO; VANTI, 2013). Information Science has been developed as a technical science to solve the informational problems of society, being an area that focuses not only on how humanity relates to technology, but on the process of transformation through information (BAPTISTA, 2019; NHACUONGUE; FERNEDA, 2015).

The study of the topic comes from the increasingly adoption of Web 2.0 technologies (currently referred to as Enterprise 2.0) by companies. Continuous and profound transformations have been caused by the new challenges imposed to companies in recent decades. A new attitude is required from companies on how they develop their products, services and even on how they conduct their business, because of the rapid changes and growing global competition that creates a highly competitive and tempestuous environment (KALIL; LOPES, 2018; SCHONS, 2008; MATHUR, 2015).

Corporate social technologies aim to create an environment in which the associate can dynamically and interactively acquire and share information, through internet-based communities, social media websites, wikis and blogs. This type of sharing promotes integration among users and has the power to change the content on the web. The use of these technologies in the context of commercial businesses was named Enterprise 2.0 (DENYER; PARRY; FLOWERS, 2011).

Within this literature, the Enterprise system is seen as indispensable in several strategic areas in such a way that companies can achieve a competitive advantage (KRUGER, 2002). However, the Enterprise technology is only seen as a competitive advantage when companies successfully implement it (AKKERMANS; VAN HELDEN, 2002; DAVENPORT; HARRIS; CANTRELL, 2004; SOJA, 2006). McAfee (2006) points out that to implement the Enterprise and its collaborative social tools, a structured introduction is needed because users might not accept it automatically. This challenges the company to achieve the acceptance of these associates, especially those who are not familiar with social technologies.

Although new to Brazilian companies, Enterprise 2.0 has been successfully adopted by a large number of companies worldwide. This collaborative culture is used for various collaborative activities (EZEQUIEL; YAMAGUCHI; WATANABE, 2019; SHUEN, 2008).

Focusing on facing technological changes and providing an increase in competitiveness, this new technology aims to meet the expectations of costumers increasingly demanding, impatient and hungry for quality innovative products. According to Finney and Corbett (2007), companies need to connect information from diverse sources through a single entity in order to remain competitive in the business environment.

Given this context, by comparing the perceptions of Enterprise 2.0 between associates from a multinational company in Brazil and in Germany, the objective of this study is to understand the main challenges and the real benefits of implementing the tool and its new collaborative culture on a company.

The company chosen for this single case study was a multinational company, which is globally implementing Enterprise 2.0 and which was also one of the first companies to implement the system in Latin America. The company has the largest number of users on an internal social network and it is present in approximately 60 countries, employing around 375.000 people worldwide. This makes the inquiries raised in this research relevant to an academic and practical analysis.

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The concept of Enterprise 2.0 is new, lacking research, monitoring and deeper analyses, in such a way that this study contributes to a greater understanding of it (WANG; JUNG; KANG; CHUNG, 2014).

2 THEORETICAL FRAMEWORK

In the initial part of this topic, we will present concepts used on the term Enterprise 2.0 and its history. Later on the topic, we explore the strategic role of the technology and identify its benefits, functions, challenges and implementation obstacles.

2.1 Enterprise 2.0

The name Enterprise 2.0 originated from Web 2.0, which originally appeared in a brainstorming session between Tom O'Reilly and MediaLive International employees. The central point of this debate consisted of the new technological tools and how they could cooperate for a real development of the Web (O'REILLY, 2005).

Applying Web 2.0 technologies within the corporate environment in order to allow employees to collaborate, share ideas and communicate about the resultant content is the idea of Enterprise 2.0 (RAMIREZ-MEDINA, 2009).

Currently, Enterprise 2.0 is used worldwide. McAfee (2006) defines it as a service platform that can be applied inside and outside of the corporate environment and it is used by a variety of business software applications. He adds that the tool is usually found in large companies in order to stimulate the corporate collaboration and to harness collective intelligence by means of participation. With this, the tool creates significant benefits for the company by promoting collaboration between employees, partners, suppliers and customers. Finally, it contributes to the company and generates knowledge of intellectual capital.

Sari et al. (2008) used the term Enterprise 2.0 to refer to people who used Web 2.0 technologies with the purpose of improving the way they communicate in a corporate environment.

Other factors appear to define the term Enterprise 2.0 in relation to the ease of acquiring information and collective intelligence, by which managers can make decisions using information provided immediately, managing the information flow among complex groupings (DAVENPORT; HARRIS; CANTRELL, 2004).

Unique features of Enterprise 2.0, such as social digital technologies, accompany many features from the Web 2.0 such as the use of tools and services from digital network technologies, web-based communities, social network websites, wikis and blogs that allow the users to interact, share information and change internet-based content (DENYER; PARRY; FLOWERS, 2011).

Thus, Enterprise 2.0 can be understood as a digital platform that seeks the stimulation of corporate collaboration aiming at making the company more innovative, transparent, efficient and competitive (LOUW; MTSWENI, 2013). Companies that use this technology aim to develop a connection between people, associates, specialists, partners, customers and users through integration and collaboration, in addition to being concerned with removing unnecessary limits.

Having a bad reputation because of failed initiatives to be implemented, Enterprise 2.0 requires acceptance and user participation to be successful (ALQAHTANI; WATSON; PARTRIDGE, 2010). Many companies bet on these digital technologies and face the necessary changes despite this reputation (MCCONNEL, 2015).

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Over nine years, McConnel (2015) conducted several surveys with companies of multiple segments to discover what makes the transition easier to some companies than for others. Chart 1 presents the five biggest obstacles to change found by him.

Obstacle	Obstacle causes
Slow decision making	Internal policies aligned with the priorities or attempts to reach a
	consensus.
Inability to prove the business value (Enterprise 2.0)	It is impossible to prove the value of digital technology through
	traditional calculations, such as the ROI, resulting in the lack of
	support from senior management.
Lack of understanding of operational problems	Difficulties in decision-making and putting the theory into practice.
Excessive focus on technology	Not facing the profound changes in the culture and not rethinking
	how people work.
Fear of losing control	The administration or the central functions fear that employees
	would waste time on social platforms.

Source: Adapted from McConnel (2015)

Companies that face these obstacles have a low sense of common purpose, making difficult for people to come to agreements and make decisions. When compared with companies in which there is a strong feeling of common purpose, such companies are five times more likely to face obstacles derived from internal politics, five times more likely to be concerned about employees wasting time and three times more likely to suffer from the lack of support from senior management (MCCONNEL, 2015).

In addition to these obstacles, the difficulty of implementation can be grouped in terms of technological and organizational challenges (LOUW; MTSWENI, 2013). Chart 2 presents the challenges to adopt Enterprise 2.0 grouped into the following five categories:

Enterprise 2.0	
Implementation	Challenge description
Challenges	
Business Change	Users have daily repetitive routines on the use of certain technologies, such as electronic mail, and it is difficult to change or adapt to new ways of using technology. Enterprise 2.0 technologies require a radical change in the work environment, organizational structures and business processes.
Enterprise 2.0 Culture	A significant role is played by culture when adopting the technology. Enterprise 2.0 technology requires a collaborative culture that promotes innovation, collaboration and participation.
Interest in the technology	If there is no clear vision or strategic direction as to why a new kind of technology should be used, low adoption rates should be expected. The goals, the vision and the benefits of Enterprise 2.0 collaborative technologies must be communicated and clearly understood by all end-users.
Complexity of the technology	End-users often face the complexities of technology, such as information overload and the lack of UI consistency, resulting in cognitive limitations. In most cases, this is the result of the lack of user awareness and training. Technical support and the structure of business support need to be available to respond to concerns and listen to suggestions from end-users.
Company security	Information security and protection of intellectual capital is vital for any company. In addition, any technology that exposes the company to vulnerability

Chart 2 – Challenges to to adopt Enterprise 2.0

nature of Enterprise 2.0, which promotes information sharing and social collaboration.		
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Source: Adapted from Louw and Mtsweni (2013)

An implementation strategy focused primarily on changing the culture of the company is necessary to address these challenges. Understanding cultures, processes and functions, management and capabilities, as well as experience, are key to successfully implement the Enterprise 2.0 system (MCADAM; GALLOWAY, 2005).

Collaboration in the change of the management process needs the involvement of people, raising awareness and facilitating the acceptance of the user to change. This involvement is one of the main challenges for many initiatives, regardless of the technology or the methods used (VAN SCHALKWYK, 2008).

2.2 Strategic role of Enterprise 2.0

The growing demand for faster information and communication reports has contributed to the development of internet-based technologies, expanding the use of technology such as collaborative platforms and websites for social interaction. (DENYER; PARRY; FLOWERS, 2011).

Enterprise 2.0 technologies are social, open and participatory; they can bring significant benefits to business. In a survey of 406 global executives, 35% felt that these tools transformed the companies (ECONOMIST INTELLIGENCE UNIT, 2007).

There are many benefits to a company that makes use of collaborative technologies. Some were listed by Colin (2014):

- Improve the communication and the information sharing between users;

- Quicker and easier access to corporate information;
- Better quality and more accurate information for corporate;
- Simple to use and cost effective;

 Instant notification when new updates are done through RSS subscription to a blog or a Wiki.

Another benefit listed by Davenport, Harris and Cantrell (2004) is the possibility of business managers making decisions based on real-time information due to connectivity and information flow between management and complex organizations.

Davenport, Harris and Cantrell (2004, p 18) identify three key-value drivers of a Enterprise 2.0 system:

I. To integrate: by creating a unified environment of processes and data that offers better integration with the organization and its processes, as well as customers and suppliers;

II. To optimize: standardize processes by using the best practices, ensuring the optimization of processes and the best practices to support the strategic goals of the business;

III. To report: using information to transform the work.

The Enterprise 2.0 system enables companies to transform data into contextual information to business analysis and decision-making (DAVENPORT; HARRIS; CANTRELL, 2004).

It can be understood that the company that implements this tool is looking for several benefits, among which can be highlighted: transparency, efficiency and agility on the access to information, integrating people, ease in the communication between multiple hierarchic positions, monitoring of the market and the competitors, attracting and retaining talent and especially the contribution and incentive to corporate collaboration.

2.3 The collaborative culture in the digital age

Rollyson (2009) mentions that since the Internet came to change roughly all areas of businesses, social network will take an increasingly dominant role on how people communicate. The web will bring a new collaborative culture in which it is necessary to have openness, transparency, cooperation, service, reputation and no hierarchy.

Networks are anti-hierarchical and the cultural changes will be challenging for big companies with established hierarchies. The market is used to assume that technology leads the innovation. The Enterprise 2.0 uses the communication software as a technology service that imposes very little on the users and to be successful the leaders must concentrate on the users' behavior and not on the tool (ROLLYSON, 2009).

Enterprise 2.0 tools facilitate the sharing and capturing of tacit knowledge in a company that has a collaborative culture. Not taking bureaucratic control and chart organization into consideration is one of the principles of Enterprise 2.0, according to Van Schalkwyk (2008). This is a characteristic of the organizational collaborative culture and requires support from upper management.

The collaboration is a process that creates value and depends on the trust of the collaborators. It is driven by desire to solve problems, create solutions or to discover new methods of completing work (KAPOGIANNIS; SHERRATT, 2018). Hence, the collaborative culture relates to a conducive culture that provides a channel for sharing and enables effective organizational conditions (NUGROHO, 2018). Likewise, Davenport and Prusak (2000) state that, besides facilitating knowledge sharing and integrating knowledge within organizations, it encourages debates and dialogues to facilitate forms of contributions from individuals at various levels of the organization.

Therefore, free cooperation is necessary because participation is essential for collaborative culture. To turn Enterprise 2.0 into a successful initiative, the more contributors the better, with no restrictions from the companies, processes, technologies or specific platforms. This requires the need for adaptation to the new needs of collaborative culture.

The company chosen for the study, on its initiative to implement the Enterprise 2.0, had the need for a new organizational culture, which has five elements as its main basis. They are highlighted in Figure 1, that presents how the company invested in the creation of this new culture using five elements as basis (FOLGER, 2016):

a) Leadership and Collaboration: an inspiring leadership and the responsibility given to associates is the main element to create a high-performance culture. Thus, creating an emotional security in the associates and an environment of cultural change improving respect, the working environment and trust between leaders and associates.

b) Products and Agile Strategies: an essential element to establish the basis for transformation and to align a strategic business orientation. To discuss, refine and connect the strategies, vision, target and to incorporate the continuous ability to adapt.

c) Agile structure: to implement the Enterprise 2.0, to operate on a business level and to be closer to customers, the new desired culture is essential. Changing policies and guiding principles is an important requirement to better support the new behaviors and intentions of the leadership. Trimming the complexity and increasing the speed should be reflected on the policies and procedures to sustain the culture.

d) Organizational Design: designing an organizational structure with the specific objective to better adapt and respond to customers and market. Six design criteria were used as a calibrator to guide and measure the improvements: customer orientation, modularity, excellence, reference, governance and agility.

e) Dynamic work: dynamic work covers the techniques and methods normally associated with dynamic software development. Transparency, working with iterations,

tolerance to fault, fast delivery and early customer valuing best describes the agile work on the new culture. Also, the adoption of tools to enhance virtual collaboration, transparency and optimization of the horizontal workflow in all functions within a stream of holistic value.

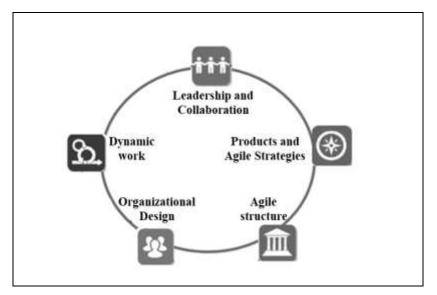


Figure 1 – The 5 elements of collaborative culture action of the company studied

Source: Adapted from Folger (2016)

The implementing of Enterprise 2.0 has as fundamental criteria for success, changes in the mentality of the leadership and in the organizational culture. Digital tools allow people within the entire company to easily share information. The message, the receiver and the calendar of news and announcements are no longer fully controlled by communication managers. The horizontal information and bottom-up flows became cheaper and stronger than the traditional top-down flows (MCCONNEL, 2015).

People who are too active on the internal social network and end up with great recognition within the company (including greater than some top managers) cause concern. This could be one of the issues to be faced and that is outside of the company hierarchy (MCCONNEL, 2015).

3 METHODOLOGY

In order to contextualize the implementing of the Enterprise 2.0 system and its corporate social networks and to do research in an area with few previous studies, qualitative methods seem to better adapt to the proposed problem justifying the choice for a single case study as the research strategy (BENBASAT; GOLDSTEIN; MEAD, 1987).

Technique of content analysis was used for data analysis, constituted of several techniques that seek to describe the transmitted content in the process of communication (through speech or written text) (BARDIN, 1977). The technique consists of procedures that provide indexes, allowing knowledge inference.

Unstructured interviews, non-participant observation and document analysis were performed. Data triangulation allowed for continuous comparison of various sources to validate them (EISENHARDT, 1989; YIN, 2001).

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For being considered experiment or research, the method of generalization must be of analytic generalization, in which a previously developed theory is used as reference framework to be compared with the empirical results of the case study. Thus, the analysis and the conclusion of the study were arranged using analytic generalization (MARIOTTO; ZANNI; MORAES, 2014; ZANNI; MORAES; MARIOTTO, 2011).

The choice of the topic Enterprise 2.0 and its collaborative organizational culture is because it is a new computerized model of collaborative participation aimed at creating and sharing information with the company.

Characterizing itself as a system to which the associate adheres voluntarily, Enterprise 2.0 is an important tool to increase collaboration and the associate might have benefits by adhering to it. The system is supported by the company in order to increase competitiveness and to make it more dynamic and transparent.

The findings might aid to better implement the system in other administrative contexts on other multinational companies, generating useful information regarding the main challenges and benefits of implementing the technology.

Focusing on answering the two key questions regarding the implementing of the Enterprise 2.0 system and comparing the acceptance among associates in Germany and in Brazil, the queries of the study were based on research done on the subject:

What are the main challenges of implementing the Enterprise 2.0 system and its collaborative culture in a multinational company?

What are the real benefits brought to the company by the Enterprise 2.0 tools?

Interviews with five people from the office in Campinas, Brazil (three analysts and two interns) in May 2016 and five other people from the office located in Cologne, Germany (one manager, three analysts and one intern) in April 2016 were the data source. All respondents were directly affected by the implementing of Enterprise 2.0 in the company.

The documents available for analysis were specific surveys with those responsible for the system. Non-participant observation was done by being present in training sessions carried by those responsible for implementing the project.

4 RESULTS PRESENTATION

Bringing the reports of different cultures and of end users on different hierarchical levels in the company, the survey was conducted in the units located in Cologne, Germany and Campinas, Brazil.

According to the survey carried out in both countries, Enterprise 2.0 and its communication tools, combined with the new collaborative culture, are considered of great importance to the company, since technology is currently changing the business world and, along with such changes, there is the need for increasingly fast and worldwide information sharing.

Consisting of approximately 50 associates, the Cologne unit presented difficulties on the use and understanding of the benefits brought by the Enterprise 2.0 tools – this information was identified by the survey. Hence, acceptance and use on Germany are extremely low so far.

The survey on acceptance and use found the following scenario on the Campinas unit: being a subsidiary with over 4.000 associates, the investment in training and on institutional advertisements during the implementation of the tool were much greater.

Researchers participated in meetings during the introduction of the system in the Campinas subsidiary. The introduction consisted of a program called "reversor mentoring" and trained mentors to introduce the Enterprise 2.0 system to high-hierarchy executives. The training aimed to teach how the tools of the social platform work.

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Introduction and training projects led the associates in Campinas to better accept and use the Enterprise 2.0 tools, contrary to the associates in Germany. However, the feedback from users of both countries is that they feel overwhelmed by information and often do not know where to look for the most relevant information.

Despite receiving more incentive and training, respondents from both Brazil and Germany mentioned the lack of technical knowledge of the tool. These results are in accordance with the research done by Louw and Mtsweni (2013), who emphasize the complexity of the technology, being this the factor identified as the greatest challenge to implement the Enterprise 2.0 in both countries.

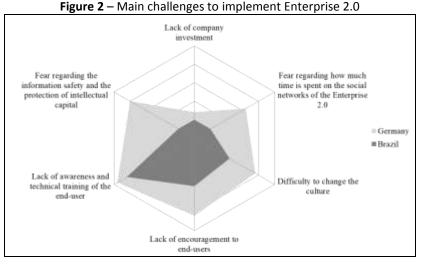
This research covered other challenges appointed by Louw and Mtsweni (2013), and some diverging points were found by comparing the results of both countries, for instance, corporate resistance and the needed cultural change for Enterprise 2.0. Due to the huge complexity of the company and to the fact that many people have been working the same way for years, respondents in Germany believe that changing the mentality and working culture is very difficult.

The scenario in Brazil is different, despite having trouble with the technical aspects of the tool, the respondents are willing to use it and show less resistance to cultural change when compared with Germany. Research done by Cappellozza and Moraes (2014) also emphasizes the differences between the countries in the use of new technologies, corroborating these results.

The theory discussed in the study caused another discrepancy, in this case regarding the usage encouragement. In Germany, the majority of the respondents stated that the company cares if the associate wastes time on social platforms because they do not see their colleagues using it often. However, in Campinas the respondents disagree with this statement. They claim that the company is not worried about the time invested by employees on social platforms. This discrepancy has its roots on the use of introduction projects to the tool in Brazil, but not in Germany.

Another diverging point when comparing Brazil and Germany refers to the feeling of safety of the intellectual capital. The fear can be attributed to cultural factors but can also be explained by the lack of technical knowledge of the tool. The lack of an adequate introduction and training on Germany can also be attributed to the feeling.

Figure 2 presents the comparison of the survey results obtained in Brazil and in Germany regarding the challenges of implementing Enterprise 2.0, according to the opinion of the interviewees.





The main benefit offered by the tool is the possibility to improve communication and information sharing, according to respondents from both countries.

Diverging opinions exist regarding the quality of the information and how fast and easy it is to access the information. Associates in Germany still do not trust the information posted on the social network and also do not feel confident when using the tool, which creates a greater difficulty in accepting it. Even facing the technical difficulties, most associates in Brazil feel safe and encouraged to use the tool because of the introduction to its benefits.

Figure 3 presents the comparative feedback about the benefits of Enterprise 2.0, according to the opinion of the associates from Brazil and Germany.

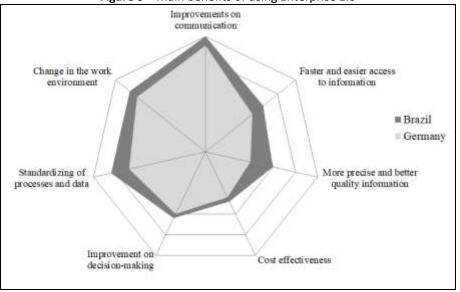


Figure 3 – Main benefits of using Enterprise 2.0

Source: survey data

It is noteworthy that to users from Brazil the benefits are greater in all parts of the research. Users in Germany use and believe far less on the benefits brought by the Enterprise 2.0 system.

5 FINAL CONSIDERATIONS

The Enterprise 2.0 technology, for its promise of improving communication, collaboration and participation in companies, has been highlighted in recent literature. Going beyond the mere implementing of a new technology, the tool has the potential to cause changes and to be the solution to anticipate difficulties that might arise in the challenging business practice on the digital age.

Developed as a single-case study on a multinational company with respondents from two countries, our research had aimed at the understanding of the main challenges and the real benefits that implementing Enterprise 2.0 and its new collaborative culture can bring to a company. March, Sproull and Tammuz (1991) argue that single-case studies provide companies and readers valuable tools that allow the experience to be organized and interpreted as a shared comprehension.

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Each country has different cultures, structures and size, the tool was introduced differently too. Therefore, comparing the benefits and challenges experienced by associates in both scenarios was possible, focusing on the implementing of Enterprise 2.0 and its collaborative culture and the perceptions about it.

Our results indicate that the Enterprise 2.0 system can be an efficient tool to improve communication within a large multinational company. However, despite the positive reports especially from users in Brazil, there is little evidence that in the current implementing stage of the tool the benefits claimed by the literature are already being achieved (simplicity and cost effectiveness; improvement of the accuracy and quality of the information; data providing and standardization of processes to provide a better integration of the company and its processes, customers and suppliers).

We may state that the acceptance and use of the Enterprise 2.0 system are directly affected by the efforts and projects to introduce the tool. The survey done on the Cologne office found a low acceptance and a lot of doubts coming from the associates regarding the new platform. One of the reasons for this is the lack of any form of training and introduction to the tool. The introduction projects and the training made the acceptance and use of the tool much more prevalent in the Campinas subsidiary.

Therefore, by the results of our survey, we perceive the importance of conducting training programs, institutional advertising, monitoring and providing support to users, in such a way that the tool can be accepted and used by the associates and the company can relish the benefits mentioned on literature.

The research highlighted other challenges such as the technical complexity of the tool and also the difficulty to change the mentality of the associates in such a way they can adapt and accept the new collaborative culture model.

In a moment when many companies are introducing the Enterprise 2.0 system and its collaborative culture, this research contributes with relevant information to the topic highlighting how the tool can support the required management changes to meet the demands of business on the digital age. As long as the implementation project is well defined, appropriate measures of introduction and monitoring are taken and enough time for the tool to prove its sustainability and achieve its benefits is given, the Enterprise 2.0 system can be seen as a factor of critical success.

As limitations of the study, we can highlight: the representativeness of the sample (10 respondents from a single company; 5 associates from Germany and 5 associates from Brazil); the use of a single cross-sectional study; the perception and ability of the researchers to develop the survey and analyze its results; the size difference between the offices in Brazil and in Germany.

As suggestions for future research, we recommend: to explore other initiatives at implementing Enterprise 2.0 – failed or successful – to have more insight on results; multiple case studies to compare results and suggest conceptual models; to conduct longitudinal studies using qualitative and quantitative methods.

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