CORPORATE DISTANCE EDUCATION: AN APPLIED UNDERSTANDING OF ITS RESISTANCE FACTORS

Dr. Marcus BRAUER
Sao Paulo School of Business Administration-FGV, UNESA/UERJ/UNIRIO
Sao Paulo and Rio de Janeiro, Brazil

M.Sc. Luiz Eduardo ALVES
Department of Master in Administration, UNESA
Rio de Janeiro, Brasil

Dr. Paulo Roberto da Costa VIEIRA
Department of Master in Administration, UNESA
Rio de Janeiro, Brasil

Dr. Alberto Luiz ALBERTIN
Sao Paulo School of Business Administration-FGV
Sao Paulo, Brazil

Dr. Marcello ROMANI-DIAS
Sao Paulo School of Business Administration-FGV/ESEG-SP
Sao Paulo, Brazil

ABSTRACT

The objective of this study was to identify and analyze the main factors that explain the resistance to distance education (DE) in corporate education (CE) in a military institution. The present study was structured with quantitative and explanatory approach, based on the theoretical framework of the READEC model, which was developed and validated by Albertin and Brauer (2012). From a technical point of view, a bibliographic survey and a field survey were carried out by means of an electronic questionnaire. Data collection was carried out with a sample of 345 Brazilian Army personnel who were part of the Training Course for Sergeants (TCS). The data of this research were treated with the Structural Equation Modeling (SEM), technique based on Partial Least Squares (PLS). The results of the research showed that the self-efficacy and performance expectation dimensions directly and positively influence the resistance to the DE in the CE, and the effort expectation, facilitating conditions and interactivity dimensions are constructs antecedent to the performance expectation. Contrary to the previous theory, the results also indicated that the perception about the organizational infrastructure was not significant to explain the resistance to DE, which allows us to bring new insights about this phenomenon.

Keywords: **Distance Education, corporate education, Utaut, Readec, e-learning.**

INTRODUCTION

Learning can be transmitted in the following forms of education: face-to-face and distance learning. The face-to-face modality is commonly used in traditional courses, where teachers and students are always in one physical place - called a classroom - and these meetings occur at the same time. In distance learning, teachers and students are physically separated in space and/or time. This type of education is carried out through the intense

use of information and communication technologies. This modality may or may not present face-to-face moments, and its use has grown exponentially in the past decades (Moran, 2002; 2013; Rashid & Rashid, 2012; Rashi & Elahi, 2012).

In this context, distance education (DE) is analyzed as a viable possibility in the construction of mechanisms that foster lifelong learning and qualification throughout life it is fully usable in the corporate environment, since it permits the design of educational events focusing on specific situations, as well as expanding and democratizing access to training opportunities (Abbad, Zerbini & Souza, 2010: 2; Zerbini et al., 2013). This modality has been widely adopted in education, in qualifications, and professional training programs and in corporate education (CE).

Despite the increasing use and importance of DE, whether in a traditional or CE context, there has been resistance to its use. As an example, this opposition can occur due to: the perceived utility of the tool on the part of collaborating users (Brauer, 2008), the difficulty of understanding the technology and the lack of contact with other students (Vianney et al., 2003; Lanzer, 2007; Litto & Formiga, 2009; Rashid & Rashid, 2012; Berge, 2013), and the lack of feedback from tutors and inflexibility regarding the content of the courses (Berge, 2013; Dutra, 2014). It is argued that if a user (such as a collaborator, for example) has one of these resistances in relation to DE, distance learning tends to fall short of expectations and consequently, training results will be lower.

Based on these losses due to resistance of the learning process via DE, and the absence of established theoretical models that explain this process, we start in this article with the following research question: What are the main factors that explain resistance to Corporate Distance Education? To answer this question, we adopted, as a base, the READEC model developed by Albertin and Brauer (2012) by applying a structured questionnaire answered of 230 military personnel who conducted distance corporate courses in the Brazilian Army. This is an institution chosen for recently making massive investments in DE, always with the purpose of training the military professional in the era of knowledge (Peri, 2013). One of the assumptions in this article is that if resistance occurs in an institution that preaches the importance of the DE, this scenario may worsen in other institutions and, for this reason, the Brazilian Army presents itself as an important and pertinent unit of analysis.

This article presents two central contributions. The first contribution (theoretical) is made by evaluating the model proposed by Albertin and Brauer (2012) as well as having an important discussion about which hypotheses in this theoretical model can be accepted and which should be rejected. This study also takes into account the context in which the hypotheses were tested. The second contribution of this article is intended for administrators of DE, both in the public and private spheres. Since they are in possession of the elements that impact resistance the most, DE administrators can make decisions on the ground in order to increase the acceptance of this type of teaching and, consequently, improve their program's results.

THEORY AND HYPOTHESES

Our theoretical reference is organized into three topics. The first two deal with concepts related to distance education and corporate distance education, and topic number three deals with the READEC Model, as well as the presentation of its hypotheses, which are adopted in our article.

Distance Education

As a result of globalization, changes and technological progress have become more common and faster among humans. It is interesting to note the impact of this development in the educational sector as it forms part of a series of knowledge and information frameworks of humans and society. As a result of this development, a modality of education, called Distance Education (DE), is being adopted in the world and applied in education, vocational training programs, and corporate education. DE, therefore, has

emerged as one of the most important tools for transmitting knowledge and democratizing information.

According to Moore and Kearsley (2013), one of the earliest instances of distance education occurred in the early 1880s. For the first time, people who wished to study from their work or home environment could do so through the postal services. As an integral part of the social system, traditional education methods have inevitably been affected by the increasing ubiquity of this alternative for education. DE has grown rapidly with the advent of cyberspace as a direct or indirect educational tool. Emerging in this context, DE has characterized itself as an education-learning process in which internet technology acts as mediator of the teacher-student relationship (Moran, 1994).

What can be concluded is that DE, leveraged by technologies, has grown noticeably and gained the attention of educational planners in recent years. Such a situation may be justified by its benefits, some of which have been mentioned by Moore and Kearsley (2010), such as: access to learning opportunities, improving human skills, reduction of educational costs, targeting of education campaigns for specific audiences, reconciliation of professional life with familiarity, and ease of inclusion of an international dimension to the educational experience.

The literature points to additional advantages of DE. The "school" can be on any computer available with internet access, whether at home, in a company, or even in a Lan house. That is, the most salient advantage is centered around the student's availability to carry out the respective activities according to his or her time (Litto & Formiga, 2009; Rashi & Elahi, 2012). Costas (2006) cites the flexibility of schedules, the pace of learning and the development of self-study, and self-learning abilities as perceived advantages in DE. Diniz (2007: 27) agrees that "another differential is the possibility for the individualization of teaching, according to the rhythm of study and preferences of each student". With concern to advantages, Peter (2003) affirms that distance learning presupposes new behaviors of the students, among them is the ability to think and act independently, to make right choices among several study plans of a course, to reflect on their own learning, and to control their own learning activities. Such behaviors would be decisive for the effectiveness of DE situations as they are characterized by low dialogue and substantial transactional distance (Moore & Kearsley, 2013).

Distance education also has drawbacks, and several of these are identified in the literature. These disadvantages range from problems with the technology used to the lack of interpersonal relationships with other students (Vianney et al., 2003; Abbad, 2007; Lanzer, 2007; Litto & Formiga, 2009; Berge, 2013). For Dutra (2014) it would be interesting if people were also aware of the difficulties that could occur in this type of teaching process, such as: (i) the feeling of isolation, due to being in direct contact with a "machine" and not with people; (ii) a lack of self-motivation to take the course; (iii) a lack of self-discipline to prioritize the course, in the midst of numerous competing daily activities; (iv) feedback from tutors, which can be received later than expected by the student and delayed in relation to the students' needs; (v) the content, which may be inflexible.

Many of these disadvantages, problems, and limitations are caused by high levels of resistance to the use of DE and consequently student avoidance. In this context, Zwicker and Reinhard (1993) affirm that independent of the form used, the didactic use of a computer will only be effective to the extent that the student can be actively involved in the teaching process. This means that the simple use of technology in education or teaching does not improve learning without this involvement of the student. As a consequence, the structuring of a specialized team, composed of people who understand technology and pedagogy, and work in a cohesive way, can generate a better learning performance for the student. This specialized team can also minimize the risks of student avoidance - a troubling problem in the area (Meirelles & Maia, 2009).

Corporate Distance Education

The increase of organizational knowledge has been considered an indicator of organizational learning and is based on the acquisition of employee expertise and on the change and institutionalization of procedures in an organization (Antonello & Godoy, 2010). In this context, corporate education has been applied as a business strategy since it is capable of promoting competitive advantages. It contributes to the goal of transforming business opportunities through knowledge developed and continuously shared between people who are part of, or who are in contact with the organizations.

Ferreira, Valerio and Souza (2010) observe that DE has been diffused through the e-learning modality as a tool for the development of corporate education. This diffusion has been motivated by the considerable spread of information technology and in combination with the improvement of telecommunication infrastructure. Another relevant point for the dissemination of e-learning lies in the fact that organizations and trainees have learning needs that can be met by this modality.

E-learning as a tool in CE has many advantages compared to traditional face-to-face training. Among them is the speed in disseminating knowledge and information, as well as the ease of reaching a larger number of participants. Another point to emphasize is the ease and agility in reproducing and updating the class content (Ferreira, Valerio & Souza, 2010). Despite its advantages, before being invited to participate in distance learning courses, people need to know the advantages of the new technology and how it can complement or replace traditional forms of learning. Without prior preparation of employees for the implementation of distance learning courses, certain prejudices and resistance may surface (Dutra, 2010).

Regarding this last point, Albertin and Brauer (2012) argue that the full use of DE tools in corporate education can generate resistance on the part of employees since many are not familiar with this model of education or do not dominate the technological tools. Creating habits and generating familiarity with the technologies becomes crucial for the success of this process. In view of these challenges, the authors proposed the READEC model.

The Readec Model

Numerous models seek to explain the adoption of individualized technology. It is a subject that has been studied for more than two decades. Venkatesh et al. (2003) have created a unified model in which they integrate the elements of other eight models that work with the acceptance of the technology, according to Table 1:

Table 1. Models or Theories Forming the Theoretical Basis – UTAUT

Theory	Definition	Authors/Year
TRA	Theory of Reasoned Action	Fischbein & Azjen (1975)
TAM, TAM2	Technology Acceptance Model	Davis (1989)
MM	Motivational Model	Davis et al. (1992)
TPB	Theory of Planned Behavior	AJzen (1991)
C-TAM-TPB	Combined TAM and TPB	Taylor & Todd (1995)
MPCU	Model of PC Utilization	Thompson et al. (1991)
IDT	Innovation Diffusion Theory	Rogers (1995)
SCT	Social Cognitive Theory	Compeau & Higgins (1995)

Source: Albertin and Brauer (2012).

From empirical and conceptual similarities between these eight models, Venkatesh et al. (2003) selected the constructs that presented greater power in explaining the acceptance of technology (expectation of performance, expectation of effort, social influence and

facilitating conditions), as well as the most influential moderators (gender, age, experience, and conditions). Thus, the UTAUT model was formulated, according to Figure 1:

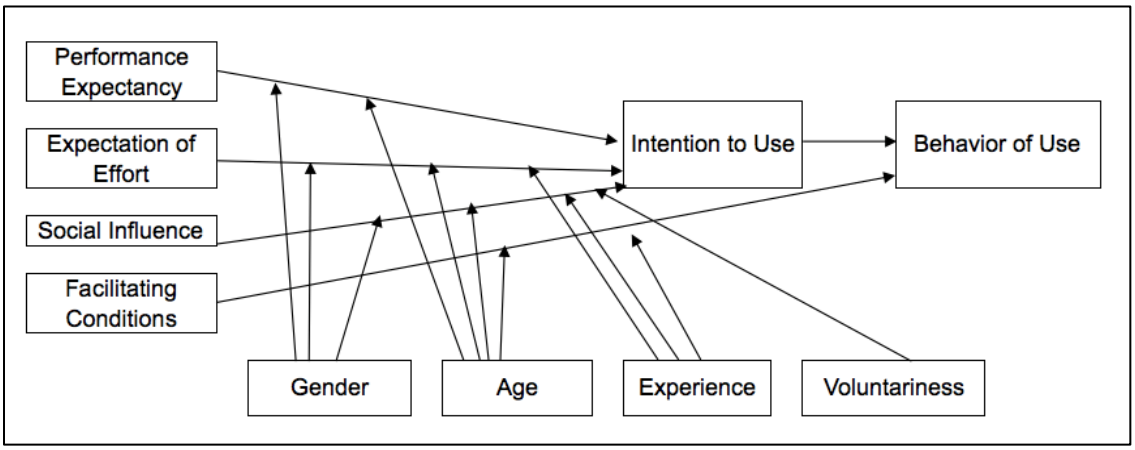

Figure 1. The UTAUT Model
Source: Venkatesh et al. (2003).

Rivard and Lapointe (2005) won the award for best article in MIS Quarterly magazine, with the qualitative article "Multilevel Model of Resistance to the Implementation of Information Technology". The authors argued that individuals and groups may have various intentions and reactions in relation to the perception of changes in technology. Of the diverse studies in main databases, no other quantitative research was found that had a robust theoretical foundation that used a model of resistance for information systems, with the exception of the research developed, validated and tested by Albertin and Brauer (2012), proponents of the READEC (resistance to DE in corporate education) model.

This model is based on the UTAUT model, and maintains that there are five dimensions that imply the acceptance or resistance to DE in the CE, i.e. Performance Expectation, Expectation of Effort, Facilitating Conditions, Self-Efficacy and Interactivity, which are partially related to the latent variable Resistance to DE in CE, according to the following definitions:

- **The Performance Expectancy dimension reflects the degree to which an individual believes that using the system can help him or her achieve performance gains in his or her work;**
- **The Expectation of Effort dimension reflects the system's degree of ease to use;**
- **The Facilitating Conditions dimension is defined by the degree to which an individual trust that there is an appropriate organizational and technical infrastructure to support the use of the system;**
- **The Self-efficacy dimension reflects the judgment of individuals and their ability to organize and execute courses of action required to achieve some designated types of performance;**
- **The Interactivity dimension is the degree of interaction between the student and the tutor or between the other students in the group. This involves aspects such as monitoring, stimulus and feedback.**

Based on the five dimensions, a theoretical structure of resistance to DE in CE (Model READEC) was constructed, according to Figure 2:

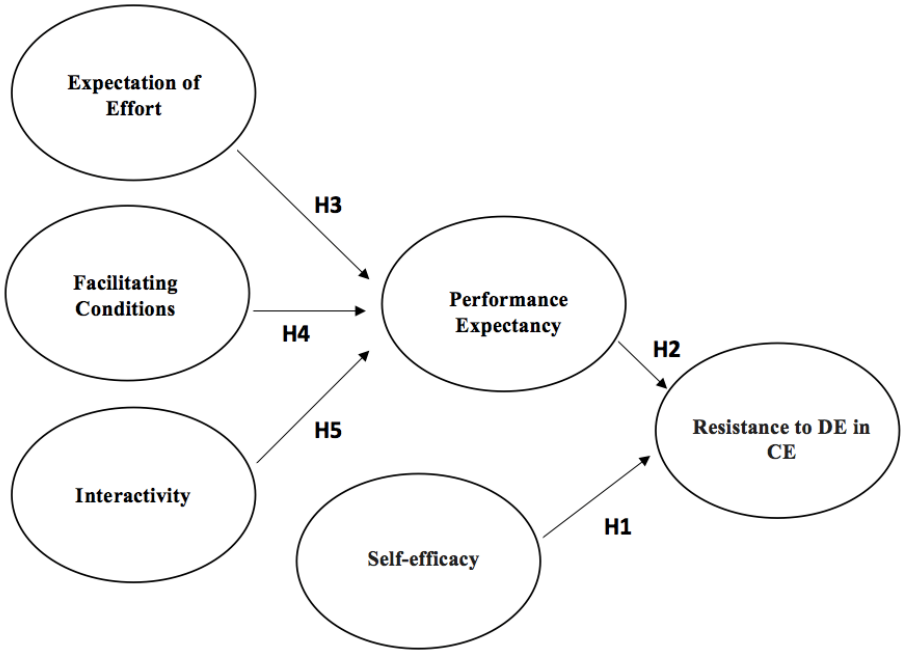

Figure 2. READEC Model
Source: Albertin and Brauer (2012)

Albertin and Brauer (2012) emphasize that there are two dimensions related to the environment in which the individual is placed (Facilitating Conditions and Interactivity). The authors also highlight three other dimensions that are related to the individual itself, i.e., they are characteristics or expectations of their own (Self-efficacy, Expectations of Effort and Performance). The authors conclude that with the identification of these five dimensions, it is possible to explain the process of resistance to DE in the CE by the following hypotheses in testing:

- **H1: The Self-efficacy construct has a positive influence on the resistance construct to DE in CE.**
- **H2: The Performance Expectation construct has a positive influence on the Resistance construct to DE in CE.**
- **H3: The Expectation of Effort construct has a positive influence on the Performance Expectation construct.**
- **H4: The Facilitating conditions have a positive influence on the Performance Expectation construct.**
- **H5: The Interactivity construct has a positive influence on the Performance Expectation construct.**

These five hypotheses will be tested in our study, using the method that will be described in the next section.

METHOD

For the development of this article, we adopted an explanatory approach, with the concern we had regarding the registration of facts, analysis, interpretation and, especially, the identification of causes, following the precepts proposed by Lakatos and Marconi (2011) and Gil (2014). In addition, the study can be considered deductive, since generalizations were made to reach the conclusions. A theoretical-empirical approach, through a bibliographical survey and field research, was carried out in the place where the phenomenon occurred. It has elements to explain it, therefore, it follows the precepts of Vergara (2013).

Participants and Data Collection

This article has quantitative characteristics. It has an approach chosen to be adequate for our initial intention to interact with as many individuals as possible. This was done in order to obtain an overview of respondents' behavior in the context of the public sector - specifically in the army - about the reasons for resistance to DE. It is important to emphasize that the choice of quantitative research was because, in this first stage, the intention is to use as many people as possible, so that we can get a general picture of the behavior of the respondents in the context of the public sector (Army) about the reasons resistance to DE. We believe that this quantitative strategy will also enable the prediction and generalization of the data to other contexts on this topic. Additionally, we emphasize that the statistical analysis and the tests of the data obtained in this research were done through software WarpPls, version 5.0.

Soldiers in Brazilian Army who were participating or completed one or more corporate distance courses are the population in this study. Located at the School of Sergeants of Arms (EASA) in the city of Cruz Alta - RS, the CAS aims to update the common professional knowledge specific to the Military Qualification of Lieutenants (CAS-2016) and Sergeants (QMS) and permits promotions for sergeants within their military career. All 345 military personnel who were taking the course received an electronic questionnaire, and 230 responded.

It should be noted that the Brazilian Army was chosen to be part of this research because of its recent investments in education and the increasing use of DE. Through the Department of Education and Culture of the Army (DECEx), the Brazilian Army has, as one of its missions to research, to educate and train human resources. It believes that DE is an effective way to constantly invest in the improvement of its professionals and society. With the concept of "education without distance", DECEx created the Coordination of Distance Education (CEAD) in 2005 with the objective of developing and implementing actions of DE in the Brazilian Army. This would allow the soldier, even if transferred to any part of Brazil or abroad, to continue their studies in search of better professional qualifications.

The data about the soldiers was collected in August 2016, through an electronic questionnaire elaborated in Google Forms. This questionnaire is based on six different constructs proposed in the READEC Model of Albertin and Brauer (2012) and had 31 questions structured with the 7-point Likert scale. The response options ranged from "strongly disagree" to "strongly agree". In addition, demographic information was requested from respondents (all male), such as age group and training area. Regarding age, 55.4% of the sample is between 29 and 32 years old; 42.4% are between 33 and 36 years old; and 2.2% are 28 years old. Regarding the respondents' training area, more than half (53%) come from the humanities, 38.3% come from the natural sciences and 8.7% from the biological sciences.

Data Analysis: Modeling by Structural Equations (SEM)

We adopted the Structural Equation Modeling (SEM), a family of statistical models that seek to explain the relations between multiple variables simultaneously, and which has been considered particularly useful for the development and evaluation of theories (Hair, Hult, Ringle & Sarstedt, 2014).

For Hair et al. (2009) there are two main types of variables that are part of the SEM: (i) The exogenous latent variables, which are the constructs that explain other constructs in the model as the endogenous latent variables, are the constructs that are being explained in the model; (ii) endogenous latent variables, which are neither directly observable nor measurable, should be estimated indirectly, through observable variables. Following this precept, the model used for the article was designed with the minimum of three variables observed by construct (latent variable). Based on this structure, multiple observed variables were defined for each construct. The constructs (latent variables) with their respective definitions, topics, observed variables, and questionnaire items are described in Table 2.

Table 2. Categorization of Constructs

Construct	Definition	Topic	Variable	Item
Self-efficacy	Degree of employee's ability to learn alone and accomplish what he plans	Need for face-to-face interaction in classes or studies	auto1	I prefer classes where I have face-to-face contact with the teacher
			auto2	I prefer to study alone than with other person (s)
		Indiscipline and difficulties with time management	auto3	I'm disciplined
			auto4	I have the ability to prioritize my activities
			auto5	I have the ability to realize the things I have prioritized
		Procrastination	auto6	I often postpone the things I have to do
Performance Expectation	Degree in which an employee believes that using the system will help him achieve gains at work	"Performance expectancy (adaptation of UTAUT) "	edesem1	I consider that DE is useful to my work
			edesem2	DE has allowed me to increase the quality of my work
			edesem3	Using DE did not increase my productivity
			edesem4	Using DE increased my chances of growing the company
Expectation of Effort	Degree of facility associated with system use	Ease of perceived use (adaptation of UTAUT) and Complexity	eesfor1	The DE system I use is clear and easy
			eesfor2	It was easy to acquire the ability to use DE
			eesfor3	I find it easy to use the resources of the DE system
			eesfor4	Learning to use DE was easy for me
Facilitating Conditions	Degree in which an employee believes that there is an organizational and technical infrastructure to support the use of the system	Facilitating Technical Conditions (adaptation of UTAUT)	cond1	When there are problems in DE, it is easy to solve
			cond2	I have the resources needed to use the DE system
			cond3	The DE system I use has many problems of functioning
			cond4	A specific person (or group) is available to assist in difficulties with the DE system
			cond5	I received incentive (s) to take distance learning courses
Interactivity	Degree of interactivity and timing between the employee student with the tutor or with other students	Interactivity	inter1	In the DE I had, there was a lot of interaction between the students
			inter2	In the DE I had, the teacher encouraged me a lot.
			inter3	In the DE I had, the interactivity between the teacher and the students was high
			inter4	In the DE I had, feedback from the teacher was fast
			inter5	In the DE I had, the teacher monitored my learning a lot

Resistance to DE in CE	Degree in which the employee resists DE	Resistance to IT	resis1	I intend, by my own will, to continue using DE
			resis2	I would recommend using DE to friends
			resis3	Classes are more enjoyable than distance learning
			resis4	Taking distance courses was a good thing for me.
			resis5	Turning the company's face-to-face education to DE worries me
			resis6	For me, there are more advantages to DE than disadvantages
			resis7	If in my company there were a group of employees that likes DE, I will be part of it

More specifically, in this article we use the technique of Modeling by Structural Equations by Partial Least Squares - PLS, a technique that uses the method of ordinary least squares regression. We opted to use the SEM - MQP technique because area of study is in the public sector (a military institution) and since the main intention was to verify the behavior of said model in a totally opposite context. Thus, in addition to attempting to identify the factors that motivate or contribute to the resistance phenomenon, this article investigates and measures the applicability of the READEC Model in a sector not yet explored. This is in order to develop insights that can be useful in other contexts of analysis.

SEM-PLS functions as a multiple regression analysis (Hair et al., 2014). This feature makes SEM-PLS particularly valuable for exploratory research. Hair et al. (2014) argue that the importance of their use increases in problematic models. These problematic models routinely occur in the social sciences since they contain characteristics in which the data are not normal and the models are highly complex. According to Roberts, Thatcher and Grover (2010), Hair et al. (2014) and Ringle, Silva and Bido (2014), the following characteristics may justify its use: (i) no requirement for multivariate normality in data distribution; (ii) the possibility of using relatively small samples; (iii) the possibility of using training indicators.

The evaluation of the model in the context of the SEM-MQP was carried out in two stages. The first step refers to the analysis of the external model (measurement), which deals with the relationship between constructs and their indicators. The evaluation of the external model in this article included Compound Reliability (CR), Cronbach's Alpha, Extracted Mean Variance (VME) and Cross Loading (Cross Loading) and Fornell-Larcker criteria to assess discriminant validity (Fornell & Bookstein, 1982; Hair et al., 2014). The second step refers to the analysis of the internal (structural) model, which has as its premise the verification of its predictive relevance and the relation between the latent variables. In the structural model, the values and significance of the path coefficients, the Pearson coefficient of determination (R^2), the effect size (f^2) and the predictive relevance (Q^2) were calculated.

EVALUATION AND ANALYSIS OF RESULTS

By means of the appropriate statistical tests it is necessary to evaluate the quality of the model used. In this section, the measurement and structural models are evaluated, both in their original format and in their format after statistical adjustments. Parallel to the evaluation, there is an analysis of the research findings.

Evaluation of the Measurement and Structural Models

For the evaluation of the proposed hypothetical model, the first criterion to be verified, according to Hair et al. (2014) is the reliability of internal consistency. In this first approach, it was possible to verify whether the values related to Compound Reliability, Cronbach's Alpha, and Extracted Mean Variance were within the limits established in the literature. As a reference of analysis, for models with exploratory purpose, it is recommended that the composite reliability is superior to 0.60 and, for confirmatory models, superior to 0.70 (Chin, 1998; Höck & Ringle, 2006). We observed that the latent variables (Effort, Interati, Desempen, and Resist) did not present the desirable scores for the composite reliability index, meaning, values above 0.90. These results demonstrate the existence of possible problems with internal consistency in the constructs mentioned. As for the EMV index, the latent variables Condifac and Autoefic presented values below 0.50, revealing that these variables explain less than the mean of the variance of their indicators. All the variables studied reached the values specified in the literature on the Cronbach's Alpha index, as Table 3:

Table 3. Compound Reliability, Cronbach's Alpha and Extracted Mean Variance – Hypothetical Model

Index	Latent Variable					
	Esforc	Condifac	Interati	Desempen	Autoefic	Resist
Compound Reliability	**0.963**	0.810	**0.940**	**0.924**	0.751	**0.929**
Cronbach's Alpha	0.948	0.705	0.918	0.888	0.632	0.908
Extrated Mean Variance	0.866	**0.464**	0.759	0.753	**0.410**	0.658

It was also possible to discern that the observed variables auto1 (I prefer classes where I have face-to-face contact with the teacher*) and auto2 (I prefer to study alone than with other person(s)). The Autoefic construct presented lower loads than the other loads of the other constructs. That is to say, observed variables explain less of their latent variable (Autoefic) than other constructs and, for that reason, we opted to eliminate them. In the case of the Condifac construct, we chose to remove the observed variable cond5 (I received incentive (s) to take distance course). This decision was based mainly on the fact that the respective research item is not representative of the questioning of the Facilitating Conditions (Facilitating Technical Conditions/Infrastructure) made for the survey respondents. It is worth noting that the variable cond5 also exhibited the lowest load among the others of its construct, according to Table 4:

Table 4. Cross Loads - Hypothetical Model

Observed Variable	Latent Variable					
	Esforc	Condifac	Interati	Desempen	Autoefic	Resist
eesfor1	**(0.912)**	0.004	0.027	-0.019	-0.036	-0.014
eesfor2	**(0.955)**	-0.018	-0.043	-0.030	0.012	0.053
eesfor3	**(0.927)**	0.041	0.039	-0.008	-0.020	-0.036
eesfor4	**(0.929)**	-0.027	-0.022	0.057	0.043	-0.004
cond1	0.245	**(0.828)**	0.065	0.002	-0.042	-0.035
cond2	0.016	**(0.636)**	-0.362	-0.009	0.000	0.079
cond3	-0.136	**(0.650)**	-0.328	-0.070	-0.008	0.061
cond4	0.056	**(0.682)**	0.334	0.069	0.053	-0.120
cond5	-0.279	**(0.584)**	0.278	0.004	0.007	0.035
inter1	0.022	-0.127	**(0.706)**	-0.067	-0.043	0.184
inter2	0.032	0.027	**(0.918)**	0.061	0.010	-0.067
inter3	-0.009	-0.012	**(0.930)**	-0.095	0.032	0.101

inter4	0.073	0.048	**(0.859)**	0.062	-0.043	-0.165
inter5	-0.107	0.037	**(0.923)**	0.029	0.031	-0.022
edesem1	0.039	-0.023	-0.026	**(0.926)**	0.065	0.135
edesem2	-0.012	-0.047	0.048	**(0.937)**	0.038	0.054
edesem3	0.026	0.050	-0.162	**(0.757)**	-0.111	-0.184
edesem4	-0.053	0.033	0.121	**(0.838)**	-0.014	-0.044
auto1	0.229	-0.270	-0.248	0.031	**(0.045)**	0.673
auto2	0.265	-0.047	-0.388	0.243	**(0.166)**	-0.060
auto3	-0.106	-0.074	0.148	0.018	**(0.809)**	-0.009
auto4	0.051	-0.037	-0.006	0.034	**(0.886)**	-0.047
auto5	-0.014	-0.029	-0.002	-0.030	**(0.860)**	0.058
auto6	-0.004	0.273	-0.073	-0.119	**(0.504)**	-0.043
resis1	0.038	0.028	0.026	-0.200	-0.048	**(0.849)**
resis2	0.032	0.079	0.023	-0.103	-0.042	**(0.904)**
resis3	0.154	-0.180	-0.195	-0.181	-0.173	**(0.544)**
resis4	-0.058	0.041	0.040	0.266	0.068	**(0.895)**
resis5	-0.036	0.002	-0.103	-0.116	0.149	**(0.691)**
resis6	-0.025	-0.002	0.042	0.311	-0.014	**(0.834)**
resis7	-0.054	-0.036	0.071	-0.063	0.024	**(0.894)**

With the withdrawal of the observed variables auto1, auto2 and cond5, it was possible to continue the adjustment of the Hypothetical Model, since the EMV values referring to the constructs Autoefic and Condifac reached the desired score. We started the verification of the Structural Model, through the Variance Inflation Factor - VIF and the P-value. Regarding VIF, we observed that some observed variables related to the constructs effort (Expectation of Effort), performance (performance Expectation), interactivity, and resist (Resistance to DE in CE) presented border values and others showed values above the limit suggested by the literature, as shown in Table 5:

Table 5. VIF And P-Value - Hypothetical Model

Observed Variable	VIF	P - value
eesfor1	**4.504**	**<0.001**
eesfor2	**6.937**	**<0.001**
eesfor3	**4.573**	**<0.001**
eesfor4	**4.791**	**<0.001**
cond1	**1.790**	**<0.001**
cond2	**1.307**	**<0.001**
cond3	**1.436**	**<0.001**
cond4	**1.456**	**<0.001**
inter1	**1.595**	**0.002**
inter2	**4.421**	**<0.001**
inter3	**4.894**	**<0.001**
inter4	**2.738**	**<0.001**
inter5	**4.407**	**<0.001**
edesem1	**5.326**	**<0.001**
edesem2	**5.847**	**<0.001**
edesem3	**1.608**	**<0.001**
edesem4	**2.128**	**<0.001**
auto3	**1.804**	**<0.001**

auto4	2.348	<0.001
auto5	2.098	<0.001
auto6	1.130	<0.001
resis1	4.680	0.002
resis2	5.622	0.001
resis3	1.359	0.034
resis4	4.327	0.001
resis5	1.636	0.010
resis6	3.315	0.002
resis7	3.951	0.001

An analysis of Table 5 leads us to conclude that the high indexes and the borderline VIF presented are a reflection of the existence of a semantic overlap between the items of the observed variables. This high correlation confirms the presence of multicollinearity among the indicators. Despite this observation, according to Bollen (1989), in cases where there is multicollinearity among reflexive indicators, the consequences are minimal. This is because this correlation structure is justified by the very nature of the relationship between the indicators and the latent variable. In addition, Bollen (1989) states that by choosing indicators for latent variables, it is preferable to choose observed variables that are correlated with the construct. This rule is valid only for the choice of reflexive indicators.

Table 6. Table of Construct

Construct	Observed Variable	Item
Performance Expectation	edesem1	I consider that DE is useful to my work
	edesem2	DE has allowed me to increase the quality of my work
	edesem3	Using DE did not increase my productivity
	edesem4	Using DE has increased my chances of growth in the company
Expectation of Effort	eesfor1	The DE system I use is clear and easy
	eesfor2	It was easy to acquire the ability to use DE
	eesfor3	I find it easy to use the resources of the DE system
	eesfor4	Learning to use DE was easy for me
Interactivity	inter1	In the DE I had, there was a lot of interaction between the students
	inter2	In the DE I had, the teacher encouraged me a lot.
	inter3	In the DE I had, the interactivity between the teacher and the students was high
	inter4	In the DE I had, feedback from the teacher was fast
	inter5	In the EAD I had, the teacher monitored my learning a lot
Resistance to DE in CE	resis1	I intend, by my own will, to continue using DE

resis2	I would recommend using DE to friends
resis3	Classes are more enjoyable than distance learning
resis4	Taking distance courses was a good thing for me.
resis5	Turning the company's face-to-face education to EAD worries me
resis6	For me, there are more advantages to DE than disadvantages
resis7	If in my company there were a group of employees that likes DE, I would be part of it

With further consideration of Table 6, most of the authors view VIF values above 5 as indicating a high degree of collinearity or multicollinearity between the independent variables. However, for others, the presence of multicollinearity is severe only with the Variance Inflation Factor- VIF greater than 10 (Hair et al., 2009; Kennedy, 2003; Myers, 1990). Freund and Wilson (2006) describe that for the nonoccurrence of problems with collinearity in the data, the VIF should present indexes between 1.0 and 10.0. The formula for calculating this statistic has the following characteristic: VIF = 1 / T = 1/1-R^2, where R^2 = Determination Coefficient or Explanation and T = Tolerance.

Tolerance, as presented in the VIF formula, is the inverse of this indicator. Thus, authors who suggest a VIF of 10 point to a tolerance of 0.10. In this case, it means that 10% of the variance is not redundant. Regarding the P-value, all the observed variables presented statistical significance. That is, they present a strong relation with their respective constructs.

Evaluation of the Adjusted Measurement Model

In compliance with the parameters defined in the literature for convergent validity, the indices presented in Table 7 indicate an adequate adjustment of the model, given the observed indicators:

Table 7. Compound Reliability, Cronbach's Alpha and Extracted Mean Variance - Adjusted Hypothetical Model

Index	Latent Variable					
	Esforc	Condifac	Interati	Desempen	Autoefic	Resist
Compound Reliability	0.963	0.813	0.940	0.924	0.858	0.929
Cronbach's Alpha	0.948	0.692	0.918	0.888	0.774	0.908
Extrated Mean Variance	0.866	0.524	0.759	0.753	0.611	0.658

To evaluate the discriminant validity, the Fornell-Larcker criterion and the Cross Loads were adopted. The values shown (diagonally) in Table 8 for the Fornell-Larcker indicator, showed that the constructs share more variance with their associated indicators than with any other construct:

Table 8. Fornell-Larcker Criterion - Adjusted Hypothetical Model

	Latent Variable					
	Esforc	**Condifac**	**Interati**	**Desempen**	**Autoefic**	**Resist**
Esforc	**(0.931)**	0.511	0.531	0.426	0.448	0.487
Condifac	0.511	**(0.724)**	0.506	0.299	0.379	0.327
Interati	0.531	0.506	**(0.871)**	0.444	0.453	0.468
Desempen	0.426	0.299	0.444	**(0.868)**	0.336	0.800
Autoefic	0.448	0.379	0.453	0.336	**(0.782)**	0.368
Resist	0.487	0.327	0.468	0.800	0.368	**(0.811)**

In the examination of cross loads presented in Table 9, the values confirmed that their latent variables explain more of their own construct than any other variable in the adjusted model:

Table 9. Cross Loads - Adjusted Hypothetical Model

Observed	**Latent Variable**					
Variable	**Esforc**	**Condifac**	**Interati**	**Desempen**	**Autoefic**	**Resist**
eesfor1	**(0.912)**	0.004	0.027	-0.019	-0.036	-0.014
eesfor2	**(0.955)**	-0.018	-0.043	-0.030	0.012	0.053
eesfor3	**(0.927)**	0.041	0.039	-0.008	-0.020	-0.036
eesfor4	**(0.929)**	-0.027	-0.022	0.057	0.043	-0.004
cond1	0.245	**(0.828)**	0.065	0.002	-0.042	-0.035
cond2	0.016	**(0.636)**	-0.362	-0.009	0.000	0.079
cond3	-0.136	**(0.650)**	-0.328	-0.070	-0.008	0.061
cond4	0.056	**(0.682)**	0.334	0.069	0.053	-0.120
cond5	-0.279	**(0.584)**	0.278	0.004	0.007	0.035
inter1	0.022	-0.127	**(0.706)**	-0.067	-0.043	0.184
inter2	0.032	0.027	**(0.918)**	0.061	0.010	-0.067
inter3	-0.009	-0.012	**(0.930)**	-0.095	0.032	0.101
inter4	0.073	0.048	**(0.859)**	0.062	-0.043	-0.165
inter5	-0.107	0.037	**(0.923)**	0.029	0.031	-0.022
edesem1	0.039	-0.023	-0.026	**(0.926)**	0.065	0.135
edesem2	-0.012	-0.047	0.048	**(0.937)**	0.038	0.054
edesem3	0.026	0.050	-0.162	**(0.757)**	-0.111	-0.184
edesem4	-0.053	0.033	0.121	**(0.838)**	-0.014	-0.044
auto1	0.229	-0.270	-0.248	0.031	**(0.045)**	0.673
auto2	0.265	-0.047	-0.388	0.243	**(0.166)**	-0.060
auto3	-0.106	-0.074	0.148	0.018	**(0.809)**	-0.009
auto4	0.051	-0.037	-0.006	0.034	**(0.886)**	-0.047
auto5	-0.014	-0.029	-0.002	-0.030	**(0.860)**	0.058
auto6	-0.004	0.273	-0.073	-0.119	**(0.504)**	-0.043
resis1	0.038	0.028	0.026	-0.200	-0.048	**(0.849)**
resis2	0.032	0.079	0.023	-0.103	-0.042	**(0.904)**
resis3	0.154	-0.180	-0.195	-0.181	-0.173	**(0.544)**
resis4	-0.058	0.041	0.040	0.266	0.068	**(0.895)**
resis5	-0.036	0.002	-0.103	-0.116	0.149	**(0.691)**
resis6	-0.025	-0.002	0.042	0.311	-0.014	**(0.834)**
resis7	-0.054	-0.036	0.071	-0.063	0.024	**(0.894)**

With this, the discriminant validity of the adjusted model is ensured, and the analysis of the measurement model is concluded.

Evaluation of the Adjusted Structural Model

Following the second part of the analysis, the coefficients of determination of Pearson (R^2), predictive relevance index (Q^2) and effect size (f^2) were surveyed. As for the indices presented in Table 9, we can affirm that the measures presented, have demonstrated a significant effect, as Ringle, Silva and Bido (2014) suggest, for the area of social and behavioral sciences, that R^2 equal to 2% is classified as a small effect, 13% as an average effect and 26% as a substantial effect.

Table 10. Pearson Coefficient (R^2) - Adjusted Hypothetical Model

Index	Latent Variable	
	Desempen	Resist
Pearson Coefficient of Determination (R^2)	0.265	0.653

In Table 11, the presented measures revealed the existence of above-average predictive relevance, confirming the accuracy of the model. In summary, the presented values demonstrate how much the model in question approaches what is expected of it:

Table 11. Predictive Relevance Indicator (Q^2) - Adjusted Hypothetical Model

Index	Latent Variable	
	Desempen	Resist
Predictive Relevance - Stone-Geisser (Q^2)	0.268	0.654

According to Table 12, the indices referring to the f^2 indicator presented a moderate to strong correlation between the exogenous and endogenous latent variables, with the exception of the Autoefic variable that presented a value of 0.44 considered weak, but still above the lower limit of 0.02:

Table 12. Effect Size Indicator (f^2) - adjusted hypothetical model

Endogenous Variable	Exogenous Variable				
	Esforc	Condifac	Interati	Desempen	Autoefic
Desempen	0.115	0.024	0.126		
Resist				0.610	0.044

For a better visualization of the adjusted hypothetical model, the model path diagram was constructed. In it, all relations between latent variables (constructs) and observed variables are represented, as well as existing relations of latent variables (constructs) to each other, according to Figure 3:

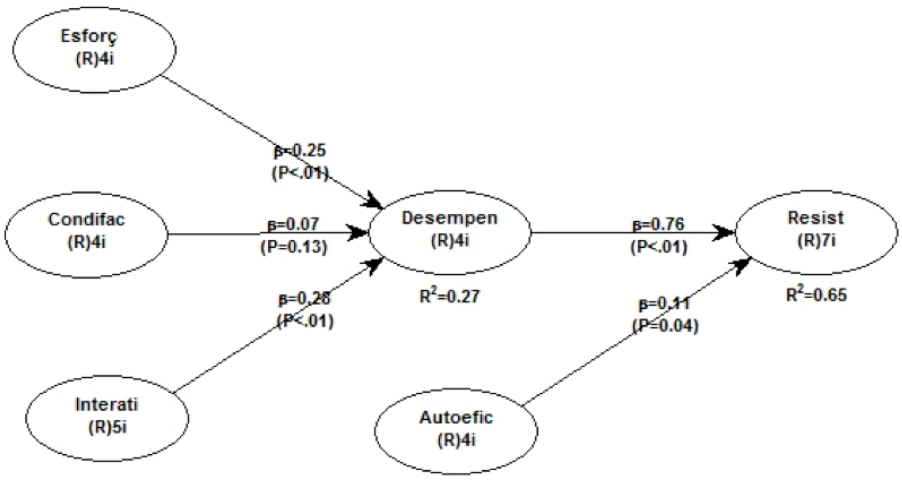

Figure 3. Path Diagram - Adjusted Hypothetical Model

By evaluating the coefficients (R^2) shown in the diagram, we evaluated the portion of the variance of the endogenous variables that are explained by the exogenous variables, indicating the quality of the adjusted model. Regarding the values related to the P-value, we can observe that, except for the Condifac construct (Facilitating Conditions), the other constructs presented statistical significance. In other words, the hypothetical relationships between the constructs of the model presented a strong relation.

The Condifac (Facilitating Conditions) construct had the presupposition to measure the degree to which an official believes that there is an organizational and technical infrastructure to support the use of the system. It showed little statistical relevance, considering that the military institution researched had an organizational and technical infrastructure to attend the military students and a system of high technological level.

Therefore, for the reasons described in the previous paragraph, the Condifac construct did not have a substantial influence on the construct Desempen (Performance Expectation) that was translated as significant for research. The hypothesis H4 (The construct Facilitating Conditions has a positive influence on the Performance Expectation construct) could not be accepted. In spite of this fact, the high R^2 values of constructs and path loads suggest that the READEC Model developed and validated by Albertin and Brauer (2012) was adequate to predict the main factors that explain the resistance of DE in the analyzed context.

DISCUSSIONS AND CONCLUSION

Over the years, technological changes involving the educational process have finally resulted in the education modality called distance education (DE). An outcome of this perceived development in the teaching/learning process is that DE has been adopted as a tool and applied in education, in professional qualification and training programs, and in corporate education (CE). It has become one of the greatest tools for democratization of information.

Despite the increasing use of DE in the corporate scenario in the past decades, there is still significant resistance to this educational modality. This study is a response to the absence of established theoretical models that are able to deal with and predict this resistance. This article had the objective of identifying and analyzing the main factors that explain the resistance to distance education in corporate education. To achieve this, we use the READEC Model, developed and validated by Albertin and Brauer (2012).

Testing and suggesting modifications in theories can be considered as theoretical contributions (Whetten, 1989; Corley & Gioia, 2011; Byron & Thatcher, 2016). From this reflection comes the main contribution of our article as we tested the READEC theory (Albertin & Brauer, 2012) and, of the five hypotheses originally proposed, one was rejected. With this, the ability to explain the model was increased, which means that the original model was polished.

The results of the study showed that the self-efficacy and performance expectation dimensions directly and positively influence the resistance to the DE in the CE. Additionally, the effort expectation, facilitating conditions, and interactivity dimensions are constructs antecedent to the performance expectation. Contrary to the previous theory, the results also indicated that the perception about the organizational infrastructure was not significant to explain the resistance to DE, which allows us to bring new insights about this phenomenon.

The findings of this research infer that the lower the expectation of difficulty or effort to take a distance course, the greater students' perception are of the value of the course to increase their performance. The greater the perception of performance, the less likely the distance course will be rejected or resisted. Another important construct to explain this resistance is the ability of students to be self-efficacious: students who need a lot of teachers saying what they should do and how they should do tend to be less resistant to face-to-face courses as there is direct contact between instructor and learner. Therefore, it is considered fundamental - and we see this as a managerial contribution of our study - that the organization knows the profile of its students well before transitioning from a culture of courses 100% in-person to 100% distance courses. If resistance is high, the less tends to be learned and, consequently, the transfer of learning to the workplace will also be less. This makes training an expense rather than an investment. Moreover, unlike Albertin and Brauer (2012), the facilitating conditions, such as organizational and technical infrastructure (Venkatesh et al., 2003), did not significantly influence the course's expectation of performance, suggesting this theoretical frailty we address earlier. Such influence may not occur in organizational contexts where members are accustomed to working in adverse, challenging, and different conditions, such as the Army, consulting firms, and startups.

Despite its contribution to the field, this article presents limitations deriving from the method employed. For example, the study only gathered results relating to the perceptions of men. This is due to the studying being carried out in a military division. We believe that the collection of women's perceptions is fundamental to the understanding of this phenomenon. Also, with both views, it would be possible to verify if both genders understand resistance in a similar or divergent way. Another limitation of the study is the use of an electronic questionnaire, which has a broad scope and speed of collection, but makes it impossible (or at least makes it difficult) for the respondents' questions to be answered and may lead to distortions of answers due to misunderstandings about the survey statements.

During the development of this article, important insights emerged for future research on the subject. These insights arose from the literature analysis, the data collected, and our reflections on resistance to DE. In this sense, we believe that it is necessary for future research to, in a qualitative way, propose complementary constructs with the aim of expanding the READEC model used in this article. It is a new model and that still needs to be understood in other contexts and methods for greater acceptance by the academic community and for managerial practices. We also understand that there are still few specific empirical studies on the phenomenon discussed here, and, therefore, we suggest research that brings the practical vision of other groups, such as managers, teachers and tutors. This would also include those who have a greater variation of age and gender. We

argue that these efforts will be fundamental to the proper use of distance education, an important tool that can contribute greatly to the new challenges of global technology.

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BIODATA and CONTACT ADDRESSES of AUTHOR

Dr. Marcus BRAUER is post doc candidate at Sao Paulo School of Business Administration-FGV and Adjunct Professor at the Universidade Estacio de Sa (UNESA), State University of Rio de Janeiro (UERJ) and University of Rio de Janeiro (UNIRIO). He holds a Master's degree in Public Management from the FGV-EBAPE (2004) and a Doctor's degree in Business Administration from the Sao Paulo School of Business Administration-FGV (2008). He is member of the Academy of Management Association.

Marcus BRAUER
Department of Master in Administration, Universidade Estacio de Sa
Av. Pres. Vargas, 642 – 22º andar 20071-001, Rio de Janeiro, Brazil
Phone: +55 21 992159415
E-mail: marcusbrauer.gmail.com

M.Sc. Luiz Eduardo ALVES is IT-Manager at FGV and holds a degree in Information Technology from the Universidade da Cidade (2005), a MBA degree in Business Management from the IBMEC (2008) and a Master's degree in Administration from the Universidade Estacio de Sa-UNESA (2016).

M.Sc. Luiz Eduardo ALVES
Department of Master in Administration, Universidade Estacio de Sa
Av. Pres. Vargas, 642 – 22º andar 20071-001, Rio de Janeiro, Brazil
Phone: 55 21 991152669
E-mail: ledualves@gmail.com

Dr. Paulo Roberto da Costa VIEIRA is Professor at the Universidade Estacio de Sa (UNESA) in the Department of Master in Administration. He holds a degree in Economics from the Universidade Candido Mendes (1979), a Master's degree in Economics from the Universidade Federal do Rio de Janeiro (1987) and a Doctor's degree in Administration from the Universidade Federal do Rio de Janeiro (COPPEAD/UFRJ) in 2003.

Paulo Roberto da Costa VIEIRA
Department of Master in Administration, Universidade Estacio de Sa
Av. Pres. Vargas, 642 – 22º andar 20071-001, Rio de Janeiro, Brazil
Phone: +55 21 2206-9831
E-mail: paulo.vieira@estacio.br

Dr. Alberto LUIZ ALBERTIN is a Full Professor at Fundacao Getulio Vargas (FGV-EAESP), Coordinator of the Center for Applied Information Technology (also know, in Portuguese, as FGVcia - Centro de Tecnologia de Informacao Aplicada) of FGV-EAESP, besides being leader of the group Management, Analysis and TI from Conselho Nacional de Desenvolvimento Científico e Tecnológico. He received a Master's degree in Management from Universidade de Sao Paulo (USP) and a Doctor's degree in Management from Universidade de Sao Paulo (USP).

Alberto Luiz ALBERTIN
Sao Paulo School of Business Administration, Fundacao Getulio Vargas
Avenida 9 de Julho, 2.029, Bela Vista, Sao Paulo – SP - 01313-902
Phone: +55 11 3799 7777
E-mail: albertin@fgv.br

Dr. Marcello ROMANI-DIAS is Professor at Escola Superior de Engenharia e Gestao (ESEG) and Fundacao Instituto de Administracao (FIA). He received a Master's degree in Management from Centro Universitario da FEI (2016) and a Doctor's degree in Business Management from Sao Paulo School of Business Administration, Fundacao Getulio Vargas, with Visiting Scholar at Massachusetts Institute of Technology – MIT (2018).

Marcello ROMANI-DIAS
Sao Paulo School of Business Administration, Fundacao Getulio Vargas
Avenida 9 de Julho, 2.029, Bela Vista, Sao Paulo – SP - 01313-902
Phone: +55 11 940180998
E-mail: mromdias@hotmail.com

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