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Research Article

Organizational factors influencing project success: an assessment in the automotive industry

Izabela Andressa Machado dos Santos[a], Gladys Dorotea Cacsire Barriga[a], Daniel Jugend[a*], Paulo Augusto Cauchick-Miguel[b,c]

[a]Universidade Estadual Paulista, Departamento de Engenharia de Produção, Bauru, SP, Brasil

[b]Universidade Federal de Santa Catarina, Departamento de Engenharia de Produção e Sistemas, Florianópolis, SC, Brasil

[c]Universidade de São Paulo, Escola Politécnica, Programa de Pós-graduação em Engenharia de Produção, São Paulo, SP, Brasil

*daniel.jugend@unesp.br

Abstract

Paper aims: Although many researchers have identified important factors for project success, there is no consensus with regard to all the factors that influence project success. This work aims to assess organizational factors that influence project success in automotive firms.

Originality: Few studies have analyzed the integrated relationship between organizational factors and project success.

Research method: The study carries out a quantitative survey on a sample of 72 companies. Data were analyzed through confirmatory factor analysis.

Main findings: The results show that the variable that most influences project success is 'organizational culture', followed by 'change management', and 'top management support'. The results also indicate that a culture of flexibility and a climate that supports innovation tend to positively influence project performance.

Implications for theory and practice: The findings suggest that it is relevant to focus attention on human resource development, empowerment, and teamwork within the context of project management.

Keywords

Project management. Organizational factors. Critical success factor. Human resource management. Automotive companies.

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1. Introduction

The company's competitiveness partly depends on the success of its projects. Project success is the closure of a project within scope, time, cost, quality, resources, and risk as agreed between project managers and top management (Heldman, 2011; Jha & Iyer, 2007). The first studies about project success considered the 'iron triangle', which includes factors related to project conclusion on time, on budget, and according to quality specifications as a measure of project success (Pinto & Slevin, 1987; Heldman, 2011). In the course of time, people realized that this issue was far more complex; these factors were not enough to establish the success of a project (Papke-Shields et al., 2010; Patah & Carvalho, 2016).

Therefore, the creation of a new assessment mode that would include more than a traditional view to project success was considered relevant (e.g. Berssaneti et al., 2016; Müller et al., 2018; Rabechini Junior et al., 2010; Shenhar & Dvir, 2007; Söderlund, 2011). In this sense, Müller et al. (2018) emphasized the importance of managing people in projects by suggesting a framework for understanding the interaction between person-centered leadership and team-centered leadership by individuals in the project team. Martinsuo & Hoverfält (2018) suggested that

the subject of project management should analyze inter-organizational aspects of change programs, considering the needs of different stakeholders.

A number of researchers have identified important factors in project success (e.g. Clarke, 1999; Jugend et al., 2016; Rodríguez-Segura et al., 2016). However, there is no consensus among researchers regarding which factors influence project success (Crawford, 2000; Jha & Iyer, 2006). Several studies have highlighted the organizational factors in the field of project management and the importance of these factors for the success of projects (e.g. Bredin & Söderlund, 2011; Brem & Wolfram, 2017; Ekrot et al., 2016; Lu et al., 2017; Martinsuo & Hoverfält, 2018). Those organizational factors can be grouped into the following dimensions (Dezdar & Ainin, 2011; Shao, 2018; Wai et al., 2013): top management support (Brem & Wolfram, 2017; Ekrot et al., 2016), communication (Pinto & Mantel, 1990; Wu et al., 2017), change management (Hwang & Low, 2012; Martinsuo & Hoverfält, 2018), organizational culture (Situmeang et al., 2017), and training (Dandage et al., 2018; Ramazani & Jergeas 2015).

Despite the prominence of these organizational factors in project management, and specially the importance of soft organizational factors in project success, few studies have addressed the integrated relationships among this set of factors and the measurement of success. That is, to the best of our knowledge there is no conceptual model that considers these organizational constructs in an integrated way to analyze the performance in projects. Previous work usually focus only in one of the dimensions selected in this study. For example, Wu et al. (2017) focused on the effects of communication-conflict interaction on the success of projects. Davis (2017) analyzed the relationship between project success and stakeholders, and Martens et al. (2018) verify the relationship between entrepreneurial orientation and project success.

In view of these gaps, in addition to the lack of integrated literature with respect to this subject, the objective of this article is to address the influence of organizational factors on project success in automotive companies that operate in an emerging economy (Brazil). In this sense, this research aims to answer the following research question: What are the most important organizational factors for project success?

Hannevik et al. (2014) observed that organizational factors related to project success change according to different sectors. The context of the automotive sector was chosen because it is a diffuser sector for managerial innovation. The automotive industry has always been influential for management innovation—considers "Fordism", "Sloanism", and "Toyota Production System" (Midler & Navarre, 2004). Furthermore, the automotive industry is relevant in the country under study; Brazil has 31 assemblers, 65 auto parts, and a production capacity of 4.4 million vehicles per year, corresponding to 20.4% of the manufacturing industry's Gross Domestic Product (GDP) (Associação Nacional dos Fabricantes de Veículos Automotores, 2016).

In this context, the Brazilian government has been aiming to encourage the growth and competitiveness of the automotive sector in Brazil in the past years; Inovar-Auto program was one of these relatively recent initiatives (Pascoal et al., 2017). Moreover, Brazil is one of the main markets among the emerging countries and, consequently, large American, European, and Asian firms (assemblers and suppliers) have invested in the country since the 1990s (Humphrey, 2003). Although the sector is usually a follower of the headquarters new product development projects, local design changes are usually necessary to adapt to situations such as the country's traffic and road conditions, consumer preferences, and market purchasing power (Cauchick Miguel, 2006; Consoni & Carvalho, 2002; Humphrey, 2003), among others. The R&D effort in Brazil for the development of flex fuel technology (capable of using gasoline and ethanol at the same time) is an example of project efforts to meet local demands (Gatti Junior, 2011). For those reasons, it is relevant the study of project management and especially as organizational factors (soft skills competencies) impact on performance, specifically focused on the automotive sector in the country.

The next section defines the theoretical aspects investigated in addition to the hypotheses used for the field work. Section 3 describes the research design, followed by the results obtained from the survey responses in section 4 and discussion in section 5. The last section (6) draws the conclusions and limitations and outlines future research.

2. Theoretical background and research hypotheses

One of the main schools in project management is the success or critical success factors, aimed at assessing managerial or organizational factors that lead to either success or failure in project management (Bredillet, 2008; Turner et al., 2013), and examine the reasons for successes and failures (Söderlund, 2011). The success of a project is related to the ability to achieve the proposed goals (Turner, 2006).

Project goals have traditionally been depicted in the form of a triangle representing time, cost, and quality (Pinto & Slevin, 1987); which is illustrative because it clearly represents how a change in any of these factors impacts the two others (Heldman, 2011). Nevertheless, some authors (e.g. Davis, 2017; Jha & Iyer, 2006;

Papke-Shields et al., 2010; Turner, 2014) have argued that the triangle is only a simple depiction of the complex interactions between the goals of most projects, and the feelings of stakeholders involved. In this sense, Agarwal & Rathod (2006) suggest that customer satisfaction with the project is also a critical aspect of success. Rodríguez-Segura et al. (2016) stated that the classification of project success is a multidimensional construct that depends on many factors; however, it should be considered mainly the client/user perspectives, and the firm's project policies.

Given the existence of these different factors, when analyzing development project managers in an Ethiopian non-governmental organization, Aga et al. (2016) noted that team-building and the effect of transformational leadership contributed to project success. When investigating Spanish firms, Cobo-Benita et al. (2016) found that relationships within partnerships with national and international companies favored success in projects performance.

A problem that many companies have with project management is that project success is often defined very strictly (Turner, 2014). If a project is on time and on budget it is considered a success, even though project criteria should also include the company's strategic objectives (Shenhar & Dvir, 2007). Given this scenario, Shenhar & Dvir (2007) developed the diamond model—a multidimensional model to measure project success. The diamond model, in addition to considering the traditional dimensions of success (efficiency, cost, time, etc.), also considers four other dimensions: impact on customer, on-time completion, business success, and preparation for future.

2.1. Top Management Support (TM)

Top management support serves as referent group; set pay and promotion policies in organizations (Baird et al., 2007; Viswesvaran et al., 1998). It can involve aspects such as sufficient resource allocation and project management confidence to support in crisis and should be transmitted to all stakeholders (Pinto & Slevin, 1987). Viswesvaran et al. (1998) verified that ethical behavior and employee satisfaction in organizations depends on top management support. Feng & Zhao (2014) noted that top management support enhances relationships both with customers and with suppliers, improving operational performance.

In the project management field, some studies call attention to the importance of top management support as a factor that tends to improve project performance (e.g. Brem & Wolfram, 2017; Ekrot et al., 2016; Law & Ngai, 2007; Young & Jordan, 2008; Young & Poon, 2013). The support of top management has a decisive influence on the success or failure of projects (Young & Jordan, 2008; Young & Poon, 2013). When top management support a project, a positive signal is transmitted to those involved with the project development, which therefore positively affects their performance (Brem & Wolfram, 2017; Law & Ngai, 2007). Furthermore, the perceived organizational support tends to contribute to a better project managers' job satisfaction (Ekrot et al., 2016). Therefore, the following hypothesis is proposed:

Hypothesis 1: Top management support is positively related to project success.

2.2. Communication (CO)

Effective communication is usually a positive factor for management processes, because the greater the open communication, the shorter the social distance and cooperation in organizational relationships (He et al., 2016; Patterson et al., 2005). For better organizational performance, it is important that managers plan not only the formal communication mechanisms, but also the non-formal (Král & Králová, 2016). Good communication is related to provision of adequate networking and required data to all key actors in project implementation (Pinto & Mantel, 1990). Effective communication tends to encourage teamwork, increase motivation and ensure the involvement of all key stakeholders, which favors the probability of projects achieving their goals within the assigned time and resources (Clarke, 1999).

Hagen & Park (2013) found a significant positive relationship between open communication and organization outcomes in Six Sigma projects. By analyzing construction firms, Wu et al. (2017) noted that it is important to enhance the willingness to communicate and to efficiently enhance the formal communication among various project teams during project implementation. Musah et al. (2017) observed that one of the main sources of conflict in projects is the communication breakdown. Information technology is an important mechanism that can improve knowledge transfer in project environments, since this technology could increase the openness of communication and make knowledge transfer easier, which may overcome the difficulties of geographical distance (Ren et al., 2018). Thus, the following hypothesis can be established:

Hypothesis 2: Good communication is positively related to project success.

2.3. Change Management (CM)

Change management relates to how organizations communicate goals and values, negotiate for agreement and cooperation, reward behaviors that support change, redirect resources to support change, and encourage increased participation and decision making (McGuire, 1996). In order to stimulate organizational change, Jacobs et al. (2013) developed a framework to analyze context-dependent barriers and enablers of organizational change. This framework proposed the adoption of tools such as environmental scanning, SWOT (strengths, weaknesses, opportunities and threats), and stakeholder analysis.

Studies suggest that change management is a relevant element for the effective performance of project management (e.g. Hornstein, 2015; Hwang & Low, 2012; Martinsuo & Hoverfält, 2018). Martinsuo & Hoverfält (2018) observed that in dynamic environments, is important for companies to have change program management integrated into project management. Poor change management may be a cause of project failure, while clear control of project change is critical to its success (Taylor, 2000). Hornstein (2015) suggested the adaption of project management certification (e.g. Project Management Institute - PMI) in order to include education on organizational change management in the certification process for new project managers. Thus, the following hypothesis can be established:

Hypothesis 3: Effective change management is positively related to project success.

2.4. Organizational Culture (OC)

Organizational culture (OC) can be defined as a set of assumptions that unite the norms and values, social ideals, or beliefs that are shared by the members of an organization (Schein, 1993). In this sense, OC can influence employee behavior and formal systems of control (Chang & Lin, 2007), guiding the way in which employees think, act, and respond to improvement and innovation actions (Hofstede, 1991; Hung et al., 2005; Kraśnicka et al., 2018; Lee et al., 2016).

Sørensen (2002) suggests that a strong culture, in which standards and values are widely shared and deeply retained throughout the organization, improves the organization's performance because employees are committed to common goals. According to Sørensen (2002), the benefits of a strong organizational culture are the result of performance standards and strongly shared values, which may imply better alignment between business and member goals as well as bigger efforts of employees. In this sense, Triguero-Sánchez et al. (2018) noted that human resources practices have positive effects on organizational performance when striving for employee engagement.

Culture is also known to support innovation by generating a creative organizational climate (Büschgens et al., 2013; Naqshbandi et al., 2015) and influences organizational performance (Kraśnicka et al., 2018). Büschgens et al. (2013) identified that the way in which a company directs its organizational culture can broaden its innovative posture, since innovative organizations may develop a culture of flexibility and external orientation. Additionally, Uzkurt et al. (2013) noted that it is important for firms to encourage an innovative organizational culture by instituting mechanisms that boost the absorption of new ideas. Situmeang et al. (2017) verified that organizational cultures capable of change tend to favor the performance of new product development projects. Thus, this line of thought resulted in the hypothesis:

Hypothesis 4: Innovative organizational cultures are positively related to project success.

2.5. Training (TR)

Training is a planned effort by an organization to facilitate learning in behaviors related to a job (Wexley, 1984). Investment in training and development is important to the organization's and employees' long-term success (Bratton, 1993). For human resource development, Nolan & Garavan (2016) noted that training programs can build relevant skills in areas such as strategic management, financial management, business development, and marketing.

Dezdar & Ainin (2011) suggested that training increases the level of knowledge, individual performance, and consequently organizational performance. Firms with higher percentage of trained employees are likely to perceive training to be useful and the occurrence of human resources management practices that either encourages employees to undertake training (Ng & Dastmalchian, 2011).

Stock et al. (2014) noted that training and development are effective for enhancing cross-functional Research and Development (R&D) cooperation; even over-training can be positive and can improve employee learning (Lewis, 2014). In the context of project management, it is important that managers receive training to develop

interpersonal and technical skills (Ramazani, & Jergeas, 2015), which usually increases the motivation of project teams (Lin et al., 2017). Dandage et al. (2018) verified that the lack of formal training to employees is one of the top priority barriers that affect effective implementation of risk management in projects. This leads to the last hypothesis:

Hypothesis 5: Training is positively related to project success.

Having developed five hypotheses, attention is turned to the research design and respective methods, described next.

3. Research design

Given the theoretical review presented in this study, organizational factors were defined as independent variables and project success as dependent variable. A structured questionnaire was developed for data collection, considering the following organizational factors based on previous studies: (i) top management support (Pinto & Slevin, 1987; Baird et al., 2007); (ii) communication (Furnham & Goodstein, 1997; Patterson et al., 2005; Pinto & Mantel, 1990); (iii) change management (Hwang & Low, 2012; McGuire, 1996; Preziosi, 1980); (iv) organizational culture (Chang & Lin 2007; Hung et al., 2005); (v) training (Furnham & Goodstein, 1997); and (vi) project success (Shenhar & Dvir, 2007). The respondents indicated their agreement or disagreement with a statement on a seven-point Likert scale (from 1 = 'totally disagree' to 7 = 'totally agree'). The list of variables and their respective codes are provided in Appendix A.

To define company size, criteria from the Brazilian Micro and Small Business Support Service (SEBRAE) was used: micro-sized firms up to 19 employees, small-sized firms between 20 and 99 employees, medium-sized firms between 100 and 499 employees, and large-sized firms with 500 or more employees.

The questionnaire was firstly pilot-tested in two steps. First, two project managers and three academics verified the questionnaire. Second, a group of 10 professionals from the target automotive companies answered as well as assessed the questionnaire. After the feedback from the respondents, the questionnaire was adjusted in both form and contents for its final version.

The questionnaire we used in this study consists of five parts: (i) cover letter to introduce the respondent to the research topic, in which we emphasized the research's importance; (ii) respondent's characterization: contained information such as function and time of experience in projects; (iii) company's characterization: information regarding to the company, such as operation sector and kinds of projects; (iv) organizational factors; and (v) project success factor.

The survey instrument was hosted in a web-based environment. A link to access the questionnaire was sent to 385 participants of an 'automotive project management group' on LinkedIn (in Brazil). Seventy-two responses from different companies were received, yielding a response rate of approximately 19%; this can be considered suitable in operations management research (Synodinos, 2003).

In order to identify and evaluate the influence of organizational factors in the success of projects, we performed confirmatory factor analysis with the software R. For the reliability test, we used Cronbach's alpha and composite reliability tests. Finally, to verify the validity of constructs, we used the average variance extracted. Answers from respondents were analyzed according to the Box & Cox (1964) transformation and we used the Shapiro- Wilk test for normality.

4. Results

Forty-three percent of respondents occupied the positions 'project manager' and 'project coordinator'; approximately 30% occupied the positions 'product engineer', and 'sales manager'; and the remainder held executive positions like 'director' or 'quality engineer'. The most common type of project cited by respondents was 'new product development' (37%), followed by improvement projects for production/operations (16%). Concerning company size, more than half of the companies (about 58%) had more than 500 employees (large-sized firms), 25% were medium-sized firms; 12% were small-sized, and 4% were micro-sized firms.

The ANOVA test was used to verify the effect of the size of the company on the success of projects. As a result, a p-value = 0.11 (greater than 0.05) was obtained, which indicated that, on average, the agreement with successful projects in the perception of the respondents of the different companies is approximately similar. Therefore, company size has statistically no effect on project success response.

Table 1 shows Cronbach's alpha, composite reliability, and average variance extracted.

As can be seen in Table 1, Cronbach's alpha values were above 0.7, which can be considered as an acceptable degree of construct reliability (Bernstein & Nunnally, 1994). The composite reliability values were above 0.6, thus also regarded as acceptable (Bagozzi & Yi, 1988). The average variance extracted values were above 0.5, providing evidence of the construct's convergent validity (Fornell & Larcker, 1981). Table 2 shows the results of adjustment measures with the complete model.

Table 1. Results of reliability and constructs validity tests.

Constructs	Cronbach's Alpha	Composite reliability	Average variance extracted
Top Management Support (TM)	0.889	0.891	0.671
Communication (CO)	0.936	0.938	0.791
Change Management (CM)	0.907	0.912	0.723
Organizational Culture (OC)	0.903	0.902	0.699
Training (TR)	0.954	0.957	0.846
Project Success (PS)	0.845	0.843	0.522

Table 2. Adjustment measures.

Setting	Value	Reference Model
Chi-Square	454.623	-
Degrees of Freedom	260	-
Normed Chi-Square	1.749	< 2.00
Non-Normed Fit Index (NNFI)	0.875	> 0.90
Comparative Fit Index (CFI)	0.892	> 0.90
Standardized Root Mean Square Residual (SRMR)	0.068	< 0.08

Table 2 also showed that some of the adjustment measures of the model did not present reasonable values. Therefore, some variables were eliminated for model improvement.

The adjustment measures should adequately represent the full model. For this, the model was enhanced by eliminating variables with a high modification index (MI). The following variables had the highest modification indices and were thus excluded from the model: "*the organization's vision, strategy and policy are openly discussed.*" (MI = 17.76); "*top management provides enough resources to support the effort in project implementation.*" (MI = 13.28); "*there is an open organization culture and trust in the organization.*" (MI = 12.63); and "*there are appropriate guidance procedures in the company.*" (MI = 12.44).

The adjusted final model was satisfactory, since the modification indices stayed below 10 and the factor loadings were above 0.634. Table 3 shows the factor loadings results.

Table 3. Results of factorial loads.

Construct	Variable	Estimates of loads	Squared Error	z-Value	Pr(>|z|)
Top Management Support	TM1	0.806	0.100	8.037	9.189e-16
	TM2	0.954	0.091	10.464	1.269e-25
	TM4	0.789	0.101	7.791	6.626e-15
Communication	CO1	0.925	0.091	10.194	2.106e-24
	CO2	0.799	0.099	8.042	8.848e-16
	CO3	0.917	0.091	10.037	1.043e-23
	CO4	0.899	0.093	9.700	2.999e-22
Change Management	CM1	0.837	0.098	8.572	1.013e-17
	CM2	0.823	0.099	8.355	6.537e-17
	CM3	0.929	0.091	10.173	2.617e-24
	CM4	0.822	0.099	8.326	8.329e-17
Organizational Culture	OC3	0.927	0.092	10.112	4.899e-24
	OC4	0.908	0.093	9.771	1.499e-22
Training	TR1	0.956	0.088	10.867	1.658e-27
	TR2	0.948	0.089	10.701	1.011e-26
	TR3	0.946	0.089	10.663	1.518e-26
	PS1	0.657	0.109	6,027	1.669e-09
	PS2	0.634	0.110	5.761	8.366e-09
Project Success	PS3	0.913	0.094	9.693	3.226e-22
	PS4	0.704	0.107	6.597	4.182e-11
	PS5	0.845	0.098	8.582	9.290e-18

The hypotheses were tested to check the statistical significance of the constructs (Table 4).

As can be seen in Table 4, project success is positively related with top management support (β = 0.599). Therefore, hypothesis 1 is supported. The results indicate that project success is positively related to communication (β = 0.445), thus hypothesis 2 is supported. The results also indicate positive relationships between project success and change management (β = 0.603), and, the strongest relationship, between project success and organizational culture (β = 0.651). Consequently, hypothesis 3 and hypothesis 4 are supported. According to the results, there is a positive relationship between project success and training (β = 0.504), therefore hypothesis 5 is also supported.

Table 4. Hypotheses results.

Hypothesis	Path	Load estimates (β)	Squared Error	z-Value	Pr(>|z|)	Significance Level
H1	TM-> PS	0.599	0.087	6.859	6.957e-12	0.000
H2	CO-> PS	0.445	0.105	4.243	2.206e-05	0.000
H3	CM-> PS	0.603	0.087	6.976	3.046e-12	0.000
H4	OC-> PS	0.651	0.081	8.086	6.142e-16	0.000
H5	TR-> PS	0.504	0.097	5.209	1.894e-07	0.000

The final model including hypotheses and factor loadings is shown in Figure 1. All exogenous organizational constructs positively influence the success of different kinds of projects. The constructs OC, CM, and TM have the most statistical significance in this sample for project success in the context of the Brazilian automotive sector.

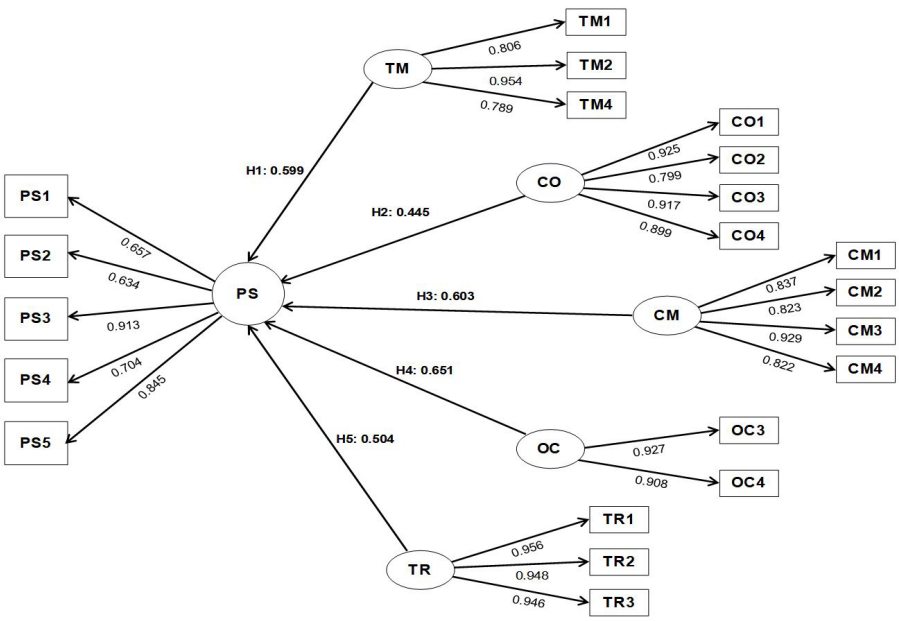

Figure 1. Path diagram for organizational factors and project success.

5. Discussion

From a confirmatory factorial analysis, this work tested the influence of five organizational factors on the success of projects. Given that all hypotheses can be considered valid, the conceptual construct used reveals itself to be coherent when applied to a sample within the automotive context in Brazil. Although the literature indicates that good individual management of the five investigated factors—top management support, communication, change management, organizational culture, and training—favor the success of projects, this study may contribute to the literature by offering a model that considers, in an integrated way, the analysis of the impact of these factors on the success of projects, this being a relevant contribution to this work.

Although the results indicate the importance of these five factors, the factors that had greater influence on the success of the project were: innovative organizational culture, change management, and top management support. The results also suggested that a culture of flexibility and a climate that supports innovation tend to positively influence project performance. Therefore, these findings suggest that firms should focus on human resource development, empowerment, and teamwork in the context of project management. This article also adds to previous research, verifying that the presence of an innovative organizational culture favors the performance of the companies, for instance in the domain of new product development, as discussed in Büschgens et al. (2013), Situmeang et al. (2017), Uzkurt et al. (2013), and Brem & Wolfram (2017). For example, Brem & Wolfram (2017) emphasize that team structure and innovative culture are aspects to be examined in the context of new product projects. Similarly, Marzagão & Carvalho (2016) identified that innovation and adaptation is a relevant factor for the success of six sigma projects.

Regarding the relationship between effective change management and project performance, the findings indicate that for effective project performance it is important to have an organizational culture aligned with the principles of change management, corroborating previous work (e.g. Hornstein, 2015; Hwang & Low, 2012). Therefore, organizations should evaluate whether the adopted change management strategies are effective and identify functional areas that are not being discussed, for example, a firm's ability to change to overcome organizational resistance to change.

This work also highlights the importance of top management support. In line with others (e.g. Law & Ngai, 2007; Young & Jordan, 2008; Young & Poon, 2013), it was found that top management support of a project has a positive influence on its success. Thus, it is important to ensure top management members are involved with the projects and provide the resources to support the project plan and implementation. In the same line as the work of Law & Ngai, (2007), the results suggest that top management support can create a culture conducive to changes in project management activities.

The most relevant constructs in the model were TR1 and TM2. These findings reveal the importance of adequate training for the skill development of the employees involved in the projects, and the effective support of top management throughout the project's life cycle.

Among the results, there were no significant statistical relation between the size of the companies and the successes of projects. Concerning this finding, it is worth observing that most of the sample obtained was from medium and large companies, which probably bias this result.

From a theoretical point of view, this study provided a set of organizational factors that influence project success. Although the five factors studied were positively related with project success, innovative organizational culture demonstrated a stronger influence. More innovative organizational cultures tend to boost the other dependent factors researched here, which is relevant to project success. Another contribution is the business context of this research, carried out in an emerging economy. There are few quantitative studies on critical success factors in projects in developing countries, especially in significant industries such as the automotive industry. This study also offers the opportunity to contribute to this gap.

Concerning practical implications, the results suggest that practitioners should initially pay attention to the effective management of the five organizational factors analyzed in this study, since all demonstrated significant statistical relationships with project success. It may be necessary to prioritize the elements that favor an innovative organizational culture, which should also facilitate the company to be more open to change management. Therefore, it is key that companies direct their efforts toward creating a culture that places more emphasis on their employees by giving them adequate support, so they can perform their tasks in a better way, therefore positively impacting the project.

It is common for many firms to be concerned about the technical aspects involved in project management, and this is essential to their effective performance: risk analysis, time planning, and scope definition are examples of some relevant technical issues. On the other hand, the results of this research suggest that in the context of project management, practitioners should also be concerned with the soft side of organizational aspects, related to organizational culture and people management.

6. Conclusions

By identifying and analyzing the organizational factors that influence project success (or critical success factors), this study contributes to the literature on project and innovation management and human resource management. Furthermore, the results of this research may support practitioners and academics in defining management practices that can influence project success. Moreover, the study focuses on the Brazilian automotive

industry that has several assemblers and suppliers in the country. In addition, this industrial sector has contributed significantly to the industrial production of the country since the 60's.

The results revealed that the factors that have a significant influence on project success are related to human resource management, especially issues related to an organizational culture oriented to innovation and change management. Therefore, an important aspect into which organizations should drive their efforts is the development of their employees. According to this perception, project success could be increased through the joint work of human resource and project management to ensure adequate training is being provided. In addition, a strong organizational culture gives flexible values to employees and their development, and appropriate communication within the organization. Therefore, a closer relationship between human resource management and project management may positively affect project performance and increase the chances of project success.

Given the results of this study and considering that many companies have used the projects as a form of management, it is relevant that practitioners and researchers in human resource management and project management deepen knowledge and improve their skills in how to better manage organizational aspects in project environments, both for traditional and agile approaches. We understand that proper management of these organizational aspects in an integrated manner can facilitate the performance of various kinds of projects, such as the development of new products, information technology, R&D, among others.

Furthermore, these results are important for professionals involved with projects in the Brazilian automotive supply chain. This is mainly due to the evidence of the local subsidiary's increasing participation during the stages of product and process engineering, identified earlier studies in addition to the increase of developing projects focused in the adaptation of products to the needs of the Brazilian automotive market (bi-fuel models, different road conditions, and demand for smaller vehicles, etc.).

As with any research that is constrained by methodological choices, there are limitations in this study. The first limitation was regard to maintain only OC3 and OC4 variables to define the organizational culture construct, because they were statistically significant and the model adjustment measures presented improvements, resulting in possible final model that best fit. The suggestion is, therefore, that future studies on project management and performance in the automotive sector in Brazil should focus on the organizational culture.

Moreover, there is a sample limitation, as this work was based on a set of project management practitioners in the context of the Brazilian automotive industry. The fact that only single responders was used for both independent and dependent variables this may bias the results, which is also a limitation recognized in this study.

Future studies could use similar research instruments in other industrial sectors, in addition to cross-country studies. This work only investigated the influence of organizational factors related to the success of projects. Future research could also add, as dependent factors, technical factors related to project management, such as risk analysis, control deadlines, scope, and cost management. Finally, it is also expected that future studies on organizational factors in project success would also incorporate a greater number of micro and small companies.

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Appendix A. Study variables.

Construct	Code	Meaning
Top Management Support (TM)	TM1	Top management believe in the project's importance
	TM2	Top management actively support the project
	TM3	Top management provides enough resources to support the effort in project implementation.
	TM4	Top management exercises authority to support the project.
Communication (CO)	CO1	I get all the information I need to perform my job.
	CO2	I am adequately informed about significant company issues.
	CO3	My department receives all necessary information to perform its function well.
	CO4	Generally, the company's communication is effective.
Change Management (CM)	CM1	The organization is not resistant to changes.
	CM2	The organization introduces a sufficient number of new policies and procedures.
	CM3	The organization is favorable to changes.
	CM3	The organization is able to change.
Organizational Culture (OC)	OC1	The organization's vision, strategy and policy are openly discussed.
	OC2	There is an open organization culture and trust in the organization.
	OC3	The organization pays attention to human resource development, employee morale and teamwork.
	OC4	The organization pays attention to efficiency and performance to achieve goals.
Training (TR)	TR1	I receive the training I need to do a good job.
	TR2	The training I receive is of high quality.
	TR3	I receive the training I need to develop my skills.
	TR4	There are appropriate guidance procedures in the company.
Project Success (PS)	PS1	The initially agreed scope, time, and cost of the project were satisfactorily fulfilled.
	PS2	The technical measures, functionalities and specifications requested by the customer have been satisfactorily met.
	PS3	The project positively affected team members, providing learning, and growth, and development of their skills and expertise during project execution.
	PS4	The project development provided immediate benefits for the company, such as an increase in sales, volume, revenue and profitability.
	PS5	The project provides long-term benefits for the company, as preparation of company's infrastructure to the future and creation of new opportunities.