


THE INFLUENCE OF ORGANIZATIONAL VALUES IN THE PROCESS OF TECHNOLOGY TRANSFER: A BRAZILIAN STUDY

A INFLUÊNCIA DOS VALORES ORGANIZACIONAIS NO PROCESSO DE TRANSFERÊNCIA DE TECNOLOGIA: ESTUDO BRASILEIRO

 **Dra. Sandra Martins Moreira**

Department of Administration, State University of Western Paraná,
Campus of Francisco Beltrão, Paraná, Brasil
sandramoreira77@gmail.com

 **Dra. Claudia Tania Picinin**

Department of Production Engineering, Federal University of Technology - Paraná, Campus of Ponta Grossa, Brasil
claudiapicinin@utfpr.edu.br

 **Dra. Renata Vidart Klafke**

Department of Administration, Federal University of Paraná,
Curitiba, Paraná, Brasil
rena.klafke@gmail.com

 **Dr. Maik Arnold**

University of Applied Science Dresden (FH), Dresden,
Faculty of Applied Social Sciences. Germany
m.arnold@fh-dresden.eu

 **Dr. Luiz Alberto Pilatti**

Department of Production Engineering, Federal University of Technology - Paraná, Campus of Ponta Grossa, Brasil
lapilatti@utfpr.edu.br

Abstract

The main objective of this study is to investigate the influence of organizational values in the process of technology transfer in Brazilian enterprises. The present study is theoretical and seeks to better understand the organizational values and sources of technology transfer in Brazilian organizations. The methodology of this exploratory research consists of a quantitative approach that utilizes two survey instruments developed by Pinto (2006). Findings are based on research including four companies that won the Brazil Innovation Award in 2017 and belong to different industries. Firstly, the results show the absence of significant variations in the data provided by the small sample and towards cohesion in organizational values and preferences for the sources of technology transfer. Secondly, this research emphasizes the influence of cultural values on corporate practices and the decision-making process within these organizations.

Keywords: Organizational values. Technology transfer. Brazilian companies.

Resumo:

O objetivo principal deste estudo é investigar a influência dos valores organizacionais no processo de transferência de tecnologia nas empresas brasileiras. O presente estudo é de natureza teórica e busca compreender os valores organizacionais e as fontes de transferência de tecnologia nas organizações brasileiras. A metodologia foi a pesquisa exploratória, com delineamento levantamento utilizando a abordagem quantitativa, através de dois instrumentos de pesquisas desenvolvidos por Pinto (2006). As conclusões são baseadas em uma pesquisa com quatro empresas que ganharam o Prêmio Brasil de Inovação em 2017 e pertencem a diferentes setores. Em primeiro lugar os resultados mostram a ausência de variações significativas nos dados fornecidos pela pequena amostra e no sentido da coesão dos valores organizacionais e suas preferências pelas fontes de transferência de tecnologia. Em segundo lugar, a pesquisa enfatiza a influência dos valores culturais nas práticas corporativas e no processo de tomada de decisão nessas organizações.

Palavras-Chave: Valores organizacionais. Transferência de tecnologia. Empresas brasileiras.

Cite como

American Psychological Association (APA)

Moreira, S. M., Picinin, C. T., Klafke, R. V., Arnold, M., & Pilatti, L. A. (2022, jul./dez.). The influence of organizational values in the process of technology transfer: a brazilian study. *Revista Inovação, Projetos e Tecnologias - IPTEC*, São Paulo, 10(2), 164-182. <https://doi.org/10.5585/iptec.v10i2.21846>.

Introduction

The current situation in organizations is shaped by innovation, competition, and a higher valorization of human resources. Managers must continuously develop their practices and approaches to enter or remain in the market and achieve their objectives. Notably, human resources are valuable assets in organizations, which must adapt to the reality that is constantly challenging for all market participants since it is well known that companies also strive to implement a sustainable competitive advantage into the market besides obtaining profits. A strong relationship between employees' performance is such a competitive factor for any organization. Moreover, in this context, organizational values play an essential role as they impact the behavior and performance of individuals and their work activities in companies. Values provide a basis for norms, rules, and regulations to be followed in the work environment and corporate culture.

As indicated by Amalia et al. (2019), organizational culture is an important factor in company performance. Based on the work by Setiawan et al. (2019), several studies have shown that organizational culture influences how technology transfer is applied. For the authors, this process can only be successful when it considers cultural differences, providing effective understanding, communication, and training.

According to Santos Silva et al. (2015, 665), technology transfer “is understood as a process of implementation of new technologies developed for an environment that do not have the same technologies.” Against the backdrop of that definition, the authors further mention that no matter if there are one or more concepts for technology transfer, the important thing is to understand the differences between research traditions.

In this scenario, the question to be addressed in the present study was: Do organizational values influence the technology transfer process for Brazilian organizations participating in the 2017 Brazil Innovation Award? Given this specific context, our study aims to analyze the influence of organizational values on the technology transfer process in Brazilian corporations. Therefore, our research focusses on the identification of the values of each surveyed organization and their preference for the most appropriate method of technology transfer.

Theoretical background

Organizational values

Values are an object of reflection in many disciplines: In philosophy, values are understood as the sources of moral and ethical reflection; in sociology, values are regarded as the base of a society and justify actions; in anthropology, they are fundamental in the understanding of culture; and in psychology, they are the lasting beliefs for behavior (Tamayo, 2007).

Further, there is a long research tradition that sees organizational values as elements of culture in organizations (Kriemadis et al., 2012). Organizational culture is generally considered to be a shared social knowledge that includes values, norms and rules, which in turn shape the behavior of individuals (Good et al., 2019).

According to Schwartz (2006, 57), "values are desirable and trans-situational goals, which vary in importance, and serve as principles in the life of a person or another social entity." He also presents a theory of personal values, where individuals recognize the motivational values based on their motivation and how individuals produce necessary human activities, such as biological, social interaction, and survival. According to Viera and Gomes (2013, 77), "organizational values are understood as principles and beliefs that guide the functioning of an organization, grounding the organizational culture from the individual's point of view within it." Thus, the individual's behavior is influenced by values, and the judgment individuals make of others. Values, as part of organizational culture, have a guidance function of existence and direct the behavior of those involved (Good et al., 2019).

According to Özçelik, Aybas, and Uyargil (2016), organizational values permeate the ways in which organizations implement and operationalize their organizational culture. Vargas (2013) aptly noted that organizational values should be taken into account when thinking about the design of an internal learning process aimed at developing innovations. Organizational values, which are a reflection of organizational culture, influence a range of significant factors, from strategic adjustments, decision-making and employee engagement, to the organization's interaction with external stakeholders (Özçelik, Aybas & Uyargil, 2016).

Furthermore, the culture within a country has a precise influence on the ability of local or foreign companies to create and maintain innovation in specific locations. According to Efrat (2014, 19), "it establishes a synergistic relationship between the different dimensions of culture: dimensions that negatively impact innovation when individually operated can positively impact when combined with others." Therefore, companies should also consider the national culture

by determining the location of the organizational units involved in creating any type of innovation (Efrat, 2014).

Pinto's study (2006) pointed out seven cultural traits that transformed into organizational values, as described in Table 1.

Table 1.

Organizational Values

Values	Description
Innovation	It states that employees are encouraged to innovate and take risks.
Attention to Detail	It includes the intensity of precision, analysis, and attention to detail that employees must demonstrate.
Results Pursuit	Express the extension organization management focuses more on outcomes than on the techniques and processes used to achieve those outcomes.
Concentration on People	It relates to the intensity to which management decisions affect employees.
Team Orientation	It reveals to what degree the activities are organized in the function of the teams rather than a person.
Aggressiveness/Audacity	It detects the extent to which people are competitive and aggressive rather than calm and accommodating.
Stability x Growth	It shows how much organizational activities emphasize maintaining the status quo as opposed to growth.

Source: Pinto (2006, 46-47).

Kriemadis et al. (2012) emphasize that the system of values obtained and developed by an organization are acquired through the practices and basic philosophies of its founders, which are shaped by the rules or guidelines around thinking and action implemented to achieve organizational goals. Similarly, Özçelik, Aybas and Uyargil (2016) state that organizational values drive performance and are therefore highly significant for companies.

Organizational values are dynamic by nature and can take different forms, including consolidating themselves as shared values (Özçelik, Aybas & Uyargil, 2016).

Additionally, Tamayo (2007) states also that there are strategies to recognize organizational values, such as: a survey of employee values (official company documents) and employee perception regarding the analysis of organizational values. On the one hand, these strategies are not very adequate, as they may not adequately express the collective values of organizations.

Technology transfer

Innovation and advancement in the economy can be divided into at least two levels: a macro and a micro perspective. The *macro level* refers to the consequence of globalization, which can be defined as the country's capacity to establish institutions that enable individuals to look for knowledge and competition in the market. Contrary, the *micro level* refers to knowledge as a limited source that leads to process intensification. On both levels, we can assume forms of social freedom as an indispensable necessity in developing innovative activities (Lehmann & Seitz, 2017).

Lehmann and Seitz (2017) emphasize that "innovation-driven growth is a product of talented people, diversity, social tolerance or creativity spillovers." For these authors, innovation is not exogenous but highly social, as it incorporates communities and social institutions that harmonize individuals in integration, improvement, collaboration, and the creation of joint information.

Technology, which is a set of tools used to store information that facilitates data management and makes the decision-making process more efficient, has advanced its meaning (Lemon and Sahota, 2004). Moreover, Burgelman et al. (2004, 2) define technology as a tactical and practical knowledge of activities and occurrences related to the transformation and production of materials. They emphasize that "it is a resource of great relevance to several organizations; managing this resource for competitive advantage means integrating it into the company's strategy." The authors stress that for organizations to be competitive, it is necessary to use knowledge and group the accumulated knowledge with technology management.

Adebayo et al. (2017) defines technology transfer as a process by which science and technology are connected with all human activity. Technology transfer is a competitive alternative for organizations to exploit internal resources and available technologies to increase and improve what is new in the market (Silva, 2013).

For Langer and Hassan-Beck (2021), the technology transfer process is particularly important for innovation management. Technology transfer has become a means for organizations to gain competitive advantage. Through the acquisition of shared knowledge, ideas and innovations, technologies developed in one part of the world, mainly from developed countries, can be transferred to developing economies (Abu et al., 2018).

Deitos (2002) concluded that technology processes usually involve the following steps: the selection of technology and suppliers, negotiation in technology acquisition, process execution, assimilation and implementation of technology, and adaptation and improvement.

Miesing and Tang (2018) further note that technology transfer is a process of sharing knowledge or technology generated in one place and implemented in another where the final purpose often differs from the original.

In this context, also Vasconcelos (1992) mentions that the secret is not to know which is the best source of technology, but rather the combination of an idea and a technique for a certain moment, and presents the following relations within and between companies and their environment:

- Technology obtained from the company's own research team: Teams operate within the organizational structure.
- Foreign companies: These are especially those that develop cutting-edge technologies.
- Research institutes—either abroad or national: They are created with a focus on the research and development of technology through training and extensive knowledge.
- Foreign and national universities: These can be seen as technology generators.
- National suppliers: Organizations that supply a particular company.
- National customers: Companies that make use of the products industrialized by the organization.
- National engineering companies: They provide scientific and technical training.
- Joint ventures: This allows for sharing the risks of companies interested in exploiting any business opportunity.

Against this backdrop, Pinto (2006) listed the following mechanisms for technology transfer, like the one presented by Vasconcelos (1992), who was involved in the research of a company: universities, foreign companies, research institutes and customers. The authors of this paper consider these specific stakeholders and technology transfer mechanisms and processes to be the best available source for an evidence-based analysis of the relationship between organizational culture and technology transfer.

In this context, organizational culture plays a strategic role in the success of the organization to grow and develop (Setiawan et al., 2019). It is a tool to determine how resources are invested and to provide decisions and implement solutions for internal and external problems (Bolatan & Gozlu, 2018).

For Setiawan et al. (2012), companies must cultivate a culture of integration and reduce barriers related to cultural differences between donor and recipient to facilitate the success of the technology transfer process. Similarly, Bengoa et al. (2021) state that cultural and

informational barriers between universities and companies may create additional impediments to technology transfer.

In our study, we included multinational corporations (MNCs) as the major driving forces of economic development in our study not only because they "combine different technical expertise along with efficient product marketing liabilities," but also because they could be regarded "as channel for transferring technology" (Fazal and Wahab, 2014, p. 440). As Fazal and Wahab (2014) have aptly noted, the impact of inter-firm and -intra-firm technology transfer on foreign affiliates must be explored in the future.

Method

Concerning the main objective of this paper, our empirical research is exploratory in nature and incorporates two survey instruments as part of a quantitative approach. This study aims at analyzing the organizational values of four large Brazilian companies that won the 2017 Innovation Award, awarded by Strategy & PwC, whose participation criterion was: "companies with at least 5% private equity participation and net revenue in Brazil above R\$ 500 million (circa USD 140.000) in one of the last two fiscal years. "

The Brazil Innovation Award 2017 listed 90 winning companies from 18 different industrial sectors. The researchers attempted to establish telephone contact with all 90 companies that won the award. However, only four allowed the research to be carried out and requested for anonymizing their answers.

As described in table 2, those four companies in our study come from different industries: agrobusiness, food, automotive/large vehicles, and service industry.

Table 2.

Description of Participating Companies in Different Industries

Industry	Description
Agrobusiness	The company was founded in 2000 due to the merger of two larger companies with more than 25 years of experience in the market. The Brazilian unit is situated in the central region, equipped with a research center and experimental stations, has more than 2,900 employees, and is part of a complex and diversified production chain: chemical industry, agricultural companies, cooperatives, and agricultural producers.
Food	Within the last 80 years, the company became one of the largest food companies in the world in 2009, thanks to the merger of two major brands. Now it is a global company with more than 90,000 employees.
Automotive / vehicles	An American company founded in 1837, one of the most valuable brands in the world. World manufacturer of equipment for agriculture, construction, and forestry market, with businesses in more than 160 countries and around 46,000 employees worldwide. The company has been operating in Brazil since 1979.

Industry	Description
Financial services	It is one of the main financial groups in Brazil, founded in 1943, with more than 73,000 service points, 12 branches and subsidiaries abroad.

Source: Author's own illustration.

The 2017 Innovation - Strategy Award was chosen for our research because of its (international) prestige and because of its purpose to reward companies that meet "four pillars of the chain of innovation: intention to innovate, effort to achieve innovation, results obtained and evaluation of the marketplace".

To meet the proposed objectives, a literature review was initially conducted and included a thorough analysis of books, articles, newspapers, and other available material that approached the theme 'Innovation and Technology Transfer' and research of applicable instruments that meet the objectives to identify (organizational) values in the process of technology transfer.

The following research incorporates two instruments developed by Pinto (2006): The first survey instrument focused on an investigation of the organizational values practiced by a company, while the second instrument helped to determine the relationship between organizational values and the sources and transfer of defined technologies defined by Pinto (2006). This article replicates Pinto's study (2006) by expanding the number of companies and diversifying the industrial segments.

The first survey instrument grouped organizational values into seven categories: Innovation; Attention to detail; Results Pursuit; Concentration on people; Team Orientation; Aggressiveness / Audacity; and Stability x Growth. The survey instrument includes 42 statements, for example: "The company requires great precision in the execution of my tasks", an affirmation belonging to the group 'attention to detail'; "I realize the concern of the company with me as employee", an affirmation of the group 'concentration on people'. Respondents were asked to analyze the value statements presented in the form of an affirmative sentence and to respond using a four-point scale where: 1 - I totally disagree; 2 - Partially Disagree; 3 - I agree partially; 4 - I totally agree.

Table 4 compiles the instrument responses for "Cultural Traits" from the four companies, in which the 12 managers (respondents) stated their company's practices. In the tabulation, the scores assigned to the practices that represent organizational values were tallied; these scores were then added together to form the hierarchy of values of the surveyed group.

Table 5 was also developed using data from the "Cultural Traits" instrument to analyze the consistency of the data and significant variation and deviation in relation to the scores on

organizational values. Thus, we considered a maximum score of 168, based on the maximum response of 4 “Totally agree”, for the 42 instrument questions. The Table provides a comparison of the sum of each respondent with the maximum, average of the answers, and their variation.

The *second* instrument helps to identify the perception of the interrelationship between values and technology sources/transfer, covering five different types of sources: internal research and development department; foreign companies; public research institutes; Brazilian universities and national clients. The instrument consists of 21 questions about the respondents' perception of how a company acquires new technologies separated by a group of values, such as, for example: "Which source is most suitable for the development of a new product?" This question belongs to the innovation value group and has the five sources described above as options. Another question belongs to the team guidance value group: "Does the company allow for a participation of the technology receiving team in its development and application?"

The survey included the two mentioned instruments and was carried out from November 2017 to February 2018. A considerable amount of time was dedicated to phoning all 90 company contacts to convince the participants to join this survey. The request for authorization and informed consent for the research was established by contact with the administrative directors. The directors were asked to appoint three supervisors who have worked closely with management and have a minimum experience of two years in the company, to ensure that they were aware of the company's practices and values.

The data collection was assigned to the supervisors by sending the two mentioned survey instruments by e-mail to colleagues; the deadline for reply was seven working days. Table 3 below shows the profile (age, level of education, time in position) of the survey respondent supervisors. This information is relevant as it provides an indication as to whether the respondents are qualified to represent the company.

Table 3.

Profile of Survey Respondent Supervisors

Gender	Amount	%	Age	Amount	%
Female	4	33,33	between 20 to 29 years old	0	0,00
Male	8	66,67	between 30 to 39 years old	6	50,00
	0	0	between 40 to 49 years old	5	41,66
	-	-	Above 50 years old	1	8,33
Educational Level	Amount	%	Years in the position	Amount	%
Completed High School	0	0,00	De 0 a 2 anos	0	0,00
Incompleted Higher Education	0	0,00	De 2 a 4 anos	2	16,66
Completed Higher Education	3	25,00	De 4 a 7 anos	5	41,67
Post Graduation	9	75,00	Acima de 7 anos	5	41,67

Source: Author's own illustration.

This profile of the participants surveyed shows that they are experienced supervisors. 83% of them have been working in the position for over 4 years and can demonstrate good knowledge of the organizational practices and values. Although 66.67% are aged between 30 and 39 years, all respondents are experienced. Education attainment level shows that 100% are individuals with at least a higher education qualification. It can be assumed that they could have a greater understanding of the researched content.

Results and discussion

Organizational values

The main objective of this research is to identify the cultural profile of the four Brazilian companies. It should be noted already here that the results of this research cannot be generalized to all companies and industries that participated in the Innovation Award Brazil 2017 since only a (non-representative) group of four corporations accepted to participate. However, it can be said that the study is valid and applicable to the companies participating in the research, and perhaps, to companies with similar profiles. Eventually, the profile was compiled per the value groups presented as a hierarchy, such as in table 4.

Table 4.

Hierarchy of Organizational Values

Values	Max.***	Result*	% of the Result****	% of the Total**	Classification.
Attention to Details	288	245	85%	18%	1
Team Orientation	288	208	72%	15%	2
Concentration on People	288	196	68%	14%	3
Innovation	288	194	67%	14%	6
Aggressiveness/Audacity	288	192	67%	14%	4
Pursuit Results	288	188	65%	13%	5
Stability x Growth	288	170	59%	12%	7
Total	2016	1393	69%	100%	

*** Maximum: Demonstrates the maximum scoring scale allowed by the research instrument. The maximum punctuation for each value could be 288 points.

* Result: This is the sum of the scores a value has obtained from the 12 surveyed.

****% Result: $245/288 = 85\%$ - Determines how high the percentage is that a value reached of the possible total.

**% s / Total: $245/1393 = 18\%$ - Determines how high the percentage is that a value is represented in the total sample, aiming at locating the value with the highest score for classification.

Source: Developed by the authors.

Table 4 shows "attention to detail" as the priority value of the group of four companies surveyed, with a score of 85%. The second priority value in the hierarchy was "team orientation" with a 72% score.

An intermediate intensity was expressed in the values "concentration on people" (68%), "innovation" (67%), and "aggressiveness/audacity" (67%), respectively, showing a balance between these values.

It can be noticed that the value "pursuit of results," which obtained 65%, is classified as second to the last group of values. Besides, results indicate that companies are concerned not only about the results but also how processes are executed. The last value group of the hierarchy was "stability," which is quite contrary to the company's growth. Organizations are more concerned with maintaining the *status quo* than accepting risks to change.

Strategic collaboration is a useful area/dimension for most enterprises, as it helps to achieve goals and to unify completed tasks for employees or people working on a similar task or even on the same task (Prakash et al., 2020). This conclusion could be drawn from other research emphasizing the "attention to detail" and "guidance for the group/team workers".

The second objective of our research was to study the behavior of the 12 representatives of the companies belonging to the four different industrial segments, to analyze if there were significant variations between the answers of each respondent.

Table 5 shows the set of scores to check if some significant variations or deviations could disqualify the study due to inconsistent analysis.

Table 5.

Variations in the Results

Respondents by segments	Punctuation		Mean	% in relation to the result
	Result	Max.		
1 – Agrobusiness	119	168	116,08	71%
2 – Agrobusiness	114	168	116,08	68%
3 – Agrobusiness	110	168	116,08	65%
4 – Food	114	168	116,08	68%
5 – Food	113	168	116,08	67%
6 – Food	120	168	116,08	71%
7 – Automotive vehicles	117	168	116,08	70%
8 – Automotive vehicles	119	168	116,08	71%
9 – Automotive vehicles	121	168	116,08	72%
10 – Financial Services	112	168	116,08	67%
11 – Financial Services	119	168	116,08	71%
12 – Financial Services	115	168	116,08	68%
Total	1393	2016	1393	69%

Source: Author's own illustration.

When comparing the individual scores with the obtained mean, it is observed that the answers are coherent, the highest score being 121 points and the lowest 110 points. The result confirms the absence of any significant deviations that could disqualify the research sample.

The sample of the four companies constituted a total of 1,393 points of 2,016 points, representing a maximum score of 69%. After studying the hierarchy of the values in the sample, the companies could be considered more conservative than liberal, since the innovation values obtained an average of 188 points and stability received 170 points on average. Similar results were obtained for companies that try to innovate without seeking improvements in the current situation and without objectifying the growth, denominating incremental innovation than investing in innovations that would be radical. The findings of this study also correspond to that of Pinto (2006). Similarly, Sordi and Azevedo (2008) conducted a survey whose results indicate some organizational challenges: the worker's ability to create, the organization's capability to convert individual knowledge into organizational knowledge, the maximization of the use of

organizational knowledge, the generation and preservation of information and knowledge, among others.

Table 6 summarizes the hierarchy of values by industrial segments to understand the differences between the four segments studied.

Table 6.

Organizational Values by Segments

Values	Agrobusiness	Food	Automotive vehicles	Financial Services	Total
Attention to Detail	67	56	62	60	245
Team Orientation	51	53	50	54	208
Concentration on People	53	49	48	46	196
Innovation	46	47	47	54	194
Aggressiveness/Audacity	47	45	53	47	192
Pursuit Results	41	47	53	47	188
Stability x Growth	38	50	44	38	170

Source: Author's own illustration.

Table 6 highlights that – measured by its total number – "attention to details" is the most critical value in all segments, showing that the Brazilian sample emphasizes the execution of activities, the intensity of precision, and applying the procedures of how employees should perform their tasks. In the food segment, aggressiveness/audacity was the last value listed, showing that competitive characteristics may not be important. Companies prefer collective spirit when they prioritize the team orientation value. The other segments presented a lower value of growth, showing a tendency towards stability.

Relationship between organizational values and technology transfer

In the next step, we can analyze the interrelationship between the cultural values of organizations and the sources to obtain technologies, also called forms of technology transfer. Table 7 highlights the data of the four different segments.

Table 7.

Interrelationship Between Organizational Values And Technology Transfer

	TOTAL							
	Stability x Growth							
	Results Pursuit							
	Innovation							
	Aggressiveness/Audacity							
	Concentration on People							
	Team Orientation							
	Attention to Details							
Research Dpt. of the Company	17	18	13	16	14	10	18	106
% of the total source	16%	17%	12%	15%	13%	9%	17%	100%
% of the total value	47%	50%	36%	44%	39%	28%	50%	42%
Multinational Companies	9	7	4	12	15	12	11	70
% of the total source	8%	7%	4%	11%	14%	11%	10%	66%
% of the total value	25%	19%	11%	33%	42%	33%	31%	28%
Universities	8	7	10	5	2	6	3	41
% of the total source	8%	7%	9%	5%	2%	6%	3%	39%
% of the total value	22%	19%	28%	14%	6%	17%	8%	16%
Research Institute	2	4	9	3	4	7	4	33
% of the total source	2%	4%	8%	3%	4%	7%	4%	31%
% of the total value	6%	11%	25%	8%	11%	19%	11%	13%
Clients	0	0	0	0	1	1	0	2
% of the total source	0%	0%	0%	0%	1%	1%	0%	2%
% of the total value	0%	0%	0%	0%	3%	3%	0%	1%
TOTAL	36	36	36	36	36	36	36	252
	100%	100%	100%	100%	100%	100%	100%	100%

Source: Author's own illustration.

Table 7 shows the preference of the sample group for its own technology source and development. In all groups of organizational values, the source with the highest score was "Research Department of the Company," totaling 106 points, representing 42% of the 252 total points.

The second source of technology transfer was foreign companies, with 70 points, which is 28% of the total. National universities received 41 points, 16% of the total, and can be

described as the third source of technology transfer. In the research sample, the public institutes obtained 13%, showing that they are not highly utilized for this purpose.

It can be noticed that the value of "attention to detail" did not have the same prominence as in the organization's cultural values. The values with the highest scores for the "Research Department of the Company" source were "team orientation" and "stability". When associated with the two values and the technology source, one can affirm that the sample studied values teamwork highly to stay competitive in the market. But we also aptly note that the value of "innovation" was highlighted in the sources of technology transfer from foreign companies; it is understood that innovations are brought from outside the country. Concerning the national universities source, the strongest value was "concentration on people," an obvious fact considering that the main objective of universities is to train professionals and make them capable of interacting with the labor market, requiring them to participate and interact with people inside and outside the institutions. "Concentration on people" was also seen as a significant value in the source "Public Research Institutes," which reinforces that these institutions privilege human work and seek to employ a large contingent of labor. A study by Camelo *et al.* (2016) in a university hospital, shows that the skills needed in this organizational environment are: knowledge acquisition, leadership, lifelong learning, decision making, resource management, and interpersonal skills. Although studies indicate different terminologies, it is still an organizational challenge to transform everyday practices into competencies and, consequently, into organizational values.

Last but not least, table 8 below was designed to understand the differences between the segments in relation to the technology sources.

Table 8.

Preferences for Technology Transfer Sources

Source of Technology	Agrobusiness	Food	Automotive vehicles	Financial Services	Total
R&D Department	28	29	23	26	106
Foreign Companies	18	16	19	17	70
Brazilian Universities	12	11	12	6	41
Public Institutions	4	7	8	14	33
National Clients	1	0	1	0	2
Total	63	63	63	63	

Source: author's own illustration.

For the four segments surveyed, the most used source for technology transfer is "Internal Research and Development". The Food segment had the highest score, 29 points, and the automotive segment had the lowest score, 23 points. For this segment, the technology transfer mostly comes from "Foreign Companies".

"National Universities" obtained higher scores in the agrobusiness and automotive segments but lower in the service segments. The agrobusiness segment basically does not value "Public Research Institutes," emphasizing "Foreign Companies and Internal Research and Development." All segments practically do not use customers as the source of technology transfer.

Concluding remarks

In this article, we have correlated the organizational value with the processes of technology transfer, as seen by different functions of the organizations. From the results and its analysis, we can conclude that organizational values influence the technology transfer source, as evidenced by each company separately and in the whole group of the sample of the four Brazilian companies. The emphasis was on the identification of the cohesive values among the sample, more precisely, the values "Attention to Detail" and "Internal Research and Development," in all four companies analyzed.

The results of the four companies, even from different segments, showed no significant variations, demonstrating that the data and analyses can be considered as a single group. It is noteworthy that all companies gave a high value to "Stability" as opposed to "Growth;" in this sense, they prefer incremental innovation, which is improvements in existing processes and not radical innovation, valuing "Stability" in the use of technology.

The high scores for "team orientation" and "concentration on people" show the inclination of the Brazilian sample toward team participation and interaction, a factor related to and consistent with the low score for the "Results" value, which obtained the penultimate place in the hierarchy of all segments. This value emphasizes the perception that the company is not interested only in the results but in work as a whole.

The results of the four industrial segments showed a high similarity in the values and the use of the sources of technologies, indicating coherence with the cultural profiles and the decision-making process. A higher relevance attributed to "Stability" and "Internal R & D" can be interpreted as firms feel more secure when the searches are about their internal domain, and they rely more on themselves than on looking outside for help. Another relevant finding is the

knowledge of the organizational values so that companies can properly train their teams and better understand their decisions, which are usually based on their organizational values.

Future studies can expand the research presented in this paper using other empirical approaches, e.g., mixed methods or a longitudinal study, and larger sample sizes from different industries for a cross-sector analysis. Also, attention should be drawn to new sources of technology, such as green tech, and how multinational companies are sharing and transferring technology among subsidiaries. Furthermore, considering that this study provides a preliminary indication of the relationship between organizational values and technology transfer, we suggest expanding the sample so that robust quantitative analyses can be carried out. Future studies could also explore the creation of guidelines or theoretical models to help companies succeed in the technology transfer process.

References

- Abu, Z., Aun, I., & Oluwasanmi, O. (2018). Technology transfer and entrepreneurial development in the value chain system of the Nigerian oil and gas industry. *Pacific Journal of Science and Technology*, 19(1), 50-54.
- Adebayo, O., Olagunju, K.O., Ogundipe, A., Salman, K. K., & Francis, P. (2017). Scaling-up agricultural innovation for inclusive livelihood and productivity outcomes in sub-saharan Africa: The case of Nigeria. *African Development Review*, 29(2), 121-134.
- Amalia, Lia & Marpaung, Ronald, (2019). The Impact Of Work Culture, Competence and Motivation On The Performance Of Permanent Employees In Telaga Hikmah Palm Oil Mill. *Advances in Economics, Business and Management Research*, volume 100 International.
- Bengoa, A., Maseda, A., Iturralde, T., & Aparicio, G. (2021). A bibliometric review of the technology transfer literature. *The Journal of Technology Transfer*, vol. 46. No.5, 1514–1550. <https://doi.org/10.1007/s10961-019-09774-5>
- Bolatan, G. I. S. & Gozlu, S., (2018). The impact of technology transfer performance on quality performance. *Proquest - Ege Academic Review*, Volume 18.
- Burgelman, R. A., Christensen, C. H., & Wheelwright, S. C. (2004). *Strategic management of technology and innovation*. (4th ed.). Boston: McGraw Hill.
- Deitos, M. L. (2002). *A Gestão da Tecnologia em pequenas e Médias Empresas*. Cascavel: Edunioeste.
- Efrat. K. (2014). The direct and indirect impact of culture on. *Technovation*. 34, 12-20, <http://dx.doi.org/10.1016/j.technovation.2013.08.003>

- Good, M., Knockaert, M., Soppe, B., & Wright, M. (2019). The technology transfer ecosystem in academia. An organizational design perspective. *Technovation*, 82-83, 35-50. <https://doi.org/10.1016/j.technovation.2018.06.009>
- Kriemadis, T., Pelagidis, T., & Kartakoullis, N. (2012). The role of organizational culture in Greek businesses. *Emerald - Journal of Business* Vol. 7 No. 2.
- Lager, T., & Hassan-Beck, H. (2021). Managing Inter-Firm Process Technology Transfer: Success Factors and Organisational Perspectives. *International Journal of Innovation Management*, 25(02), 2150018. <https://doi.org/10.1142/S1363919621500183>
- Lehmann, E.E. & Seitz, N. (2017). Freedom and innovation: a country and state level analysis. *The Journal of Technology Transfer*, 42(1).
- Lemon, M. & Sahota, P. S. (2004). Organizational culture as a knowledge repository for increased innovative capacity. *Technovation*, 24, 483-498.
- Miesing, P., & Tang, M. (2018). Technology transfer institutions in China: A comparison of value chain and organizational structure perspectives. *Journal of Technology*, 3(3), 15-57.
- Özçelika, Gaye; Aybasb, Meryem & Uyargilc, Cavide. (2016). High Performance Work Systems and Organizational Values: Resource-based View Considerations. *Procedia - Social and Behavioral Sciences*, 235, pp.332-341
- Pinto, L. A.B. (2006). *A relação entre a cultura organizacional e os mecanismos de transferência de tecnologia na Metalúrgica Santa Cecília S/A*. Dissertação apresentada ao Programa de Pós-Graduação em Engenharia de Produção. Ponta Grossa: UTFPR.
- Santos Silva, L. C, Kovalski, J. L, Gaia, S., & Sampaio, A. S. (2015). Processo de transferência de tecnologia entre Universidade-Indústria por intermédio dos núcleos de inovação tecnológica. *Interciência*, 40(10), 664-669.
- Schwartz, S. H. (2006). Há aspectos universais na estrutura e no conteúdo dos valores humanos? In. M. Ros & V.V. Gouveia (Eds.), *Psicologia social dos valores humanos: desenvolvimentos teóricos, metodológicos e aplicados* (pp. 55-85). São Paulo: Senac.
- Setiawan, R. C; Susanti, E. & Syan, T. Y. R. (2019). The Effect of Organizational Culture on Technology Transfers and Company Performance. *Science, Engineering and Social Science*. Vol. 3, No. 3. pp.32-37
- Strategy and Brasil. (2017). Prêmio Valor Inovação Brasil 2017. Disponível no site <https://www.strategyand.pwc.com/br/inovacao-brasil#Ranking> acessado.
- Tamayo, A. (2007). Impactos dos valores da organização sobre o estresse ocupacional. *Revista de Administração Contemporânea*, 1(2), pp. 20-33, maio/ago.
- Vargas, M. I. R. (2013). Underlying dimensions and organizational values in organizational learning: Strategy for capacity building in developing countries. *J.Technol. Manag. Innov*, (8).

Vasconcelos, E. (1992). Integrando P&D à área de produção da empresa. In: *Gerenciamento da Tecnologia: um instrumento para a competitividade empresarial*. São Paulo: Editora Edgard Blucher Ltda.

Viera, M. S. O. C. & Gomes, D. C. (2013). Valores organizacionais numa instituição pública de ensino do RN. *HOLOS*, 3(29), 77-89.