CERN IdeaSquare Journal of Experimental Innovation, 2025; 9(1): 23-35
DOI: https://doi.org/10.23726/cij.2025.1571

ORIGINAL ARTICLE

The Importance of an Inclusive Technology Transfer Office Culture in Linking University and Industry

Lillian do Nascimento Gambi,[1*] Koenraad Debackere,[2]

[1]Federal University of Viçosa, Rodovia MG-230 – Km 7, 38810-000 Rio Paranaíba, Brazil; [2]Koenraad Debackere, KU Leuven Research & Development, Waaistraat 6 - box 5105, 3000 Leuven, Belgium
*Corresponding author: lillian.gambi@ufv.br

ABSTRACT

Cultural differences among the stakeholders in the university-industry collaboration space are highlighted as one of the most important barriers in the technology transfer (TT) process. The Technology Transfer Office (TTO) emerges as an important bridging institution dealing with them. Starting with a systematic literature review, this study identifies research addressing the topic of TTO and culture. It analyses, through a case study, the main characteristics of the organizational culture of a well-established and successful TTO using the Competing Values Framework. Results show that only limited scientific work emphasizes the nature of organizational culture of the TTO. In addition, the empirical findings show that the culture of the TTO should be an inclusive one spanning an interrelated and ambiguous set of cultural characteristics that embrace the culture of its various stakeholders in a pragmatic, professional, and service-oriented manner. In doing so the TTO bridges information and interpretation asymmetries among its multiple stakeholders.

Keywords: Organizational culture; technology transfer office; innovation; collaboration.

Received: September 2024. Accepted: May 2025.

INTRODUCTION

University and industry (U-I) collaboration is important to promote innovation and, consequently, national competitiveness and economic growth (Baglieri et al. 2018). However, according to Resende et al. (2013), the U-I technology transfer (TT) processes are complex. On the one hand companies do not fully understand and appreciate the best ways to innovate and collaborate with universities. On the other hand, universities do not have a clear understanding of what innovations companies need and at what speed they should be delivered. Given the importance of the topic, the scientific literature has showed a significant increase in the number of studies encompassing U-I TT in recent years (Bengoa et al. 2021). Moreover, the interest in understanding culture effects in this context has gained attention (Gambi and Debackere, 2025), as several studies (e.g. Bjerregaard, 2010, Grzegorczyk, 2019, Huyghe and Knockaert, 2015) have exposed the cultural differences between U-I stakeholders as an important barrier for a successful TT process.

Considering the pervasive cultural differences among the stakeholders involved in the TT process, the Technology Transfer Office (TTO) is supposed to assume an important, institutional role in bridging the cultural gaps between academia, industry and other TT stakeholders. Consequently, analysing the characteristics of the organizational culture (OC) of TTO is helpful to understand how it could operate better as an effective boundary spanner between the stakeholders in U-I interactions. We explore whether and how, to be effective, the TTO may have to assimilate culture dimensions relevant to the stakeholder worlds. And hence, instead of being an agent with a single dominant culture profile, may have to adopt a more balanced, amalgamated culture profile. Based on the above considerations, the following research question arises: *How to design an organizational culture allowing a TTO to act as an effective institutional bridge spanning the cultures of university and industry?*

Although culture is widely mentioned in the literature on TT, its study is rather fragmented. Often, cultural elements are not explored appropriately, and there is a lack of conceptual definition regarding culture and its elements (De Wit-de Vries et al. 2019). Gambi and Debackere (2025) in their comprehensive literature review encompassing culture and technology transfer conclude that culture is not centrally addressed in most of the studies on technology transfer, and there is a lack of clear definition of the dimensions and characteristics that constitute culture.

This study aims to advance those insights by focusing on TTOs and their organizational culture. Therefore, a systematic literature review is performed. We identify scientific work that addresses the functioning of the TTO and articulates the characteristics of its organizational culture and their rationale. These characteristics are systematized using a well-known and

widely used model of organizational culture, i.e., the Competing Values Framework (Cameron and Quinn, 2006). In addition, a preliminary exploratory case study is developed in a well-established and successful European TTO to empirically study its cultural characteristics, comparing the findings with the literature review.

Our exploratory study illustrates the need for a TTO culture to span and to integrate the multiple culture types present in the Competing Values Framework (CVF) typology to be effective.

THEORETICAL BACKGROUND

U-I collaborations have evolved significantly in recent decades, driven by firms' needs to accelerate innovation through outsourcing R&D and accessing the results of scientific research and by universities increasing their entrepreneurial efforts to accomplish their third mission (Uršič and Valič, 2024). Consequently, TT has gained considerable attention from academics and practitioners, uncovering factors influencing the success of the TT process. Among these factors, organizational culture (OC) is often mentioned in the literature as a barrier and a facilitator for the TT process (Gambi and Debackere, 2025).

It is widely recognized that OC is related to the development of innovation capabilities, and hence to innovation success (Büschgens et al. 2013; Kuhn and Bhatiasevi, 2024). Firms that are recognized for their ability to generate new technologies often emphasize their unique cultural characteristics (Büschgens et al. 2013). Achieving successful innovation is a complex process involving the development of a variety of organizational characteristics such as flexibility, creativity, and adaptability. Incorporating them into the organizational culture is critical to fostering an environment that promotes innovation (Kuhn and Bhatiasevi, 2024). OC is broadly understood as a set of shared values, attitudes, and assumptions that influence the behaviors and attitudes of employees and, thus, the way an organization operates and its excellence (Schein, 1984, Cameron and Quinn, 2006, Huyghe and Knockaert, 2015).

The TT process involves several stakeholders such as researchers and inventors, university administration, industry, investors, policymakers, TTOs to name a few; each one of them with different roles, key interests and goals. According to Siegel et al. (2003a, 2003b, 2004) and Bjerregaard (2010), the differences in goals, motivations, and behaviors, combined with the diverse organizational environments in which each of the many stakeholders (e.g. scientists, university administrators, firms, governments) involved in the technology transfer process operate, do create misalignments and misunderstandings about how the process should be managed.

In this context, Galan-Muros and Plewa (2016) show that trust, commitment and shared goals are the most important factors in facilitating U-I collaboration. In addition, they conclude that neither barriers nor drivers affect all technology transfer activities in the same way. Along similar lines, Huyghe and Knockaert (2015) studied how organizational culture and climate influence entrepreneurial intentions among scientists. They conclude that there are different determinants of formal and informal mechanisms to support TT activities. For instance, while in departments with strong formal entrepreneurial support, scientists are more likely to engage in mechanisms like patent filing, licensing or spin-off creation, in departments with strong social networks scientists are also more likely to share knowledge informally.

Gopalakrishnan and Santoro (2004) treat knowledge and technology transfer as different constructs and argue that TT is best supported by flexible cultures while knowledge transfer is supported by a more stable and controlled culture. In this context, Perkmann et al. (2019) and Villani et al. (2017) highlight the need for institutional bridging arrangements when culturally different, even orthogonal, work cultures must collaborate. This is the case in U-I contexts where the dimensions of academic freedom and scientific inquiry, professional support organization, and industry discipline must co-exist without impeding one another to achieve the desired outcomes.

To overcome the challenges posed by such cultural differences, the TTO emerges as a central agent to bridge and reduce the cultural gaps in U-I collaboration (Huyghe et al. 2014, O'Kane, 2018). TTOs play a central role in supporting scientists and helping them to commercialize the innovations generated at their universities (Siegel et al. 2007). For this reason, universities have made efforts to formalize the creation and institutionalization of TTOs whose activities have important social and economic implications. This resonates with Allen's seminal work (1977) on the critical role of communication and information in fostering knowledge transfer in support of innovation, TTOs can act as a gatekeeper (or gateway) organization between the worlds of science and business. Studies on such institutional boundary spanning can be found in Diez-Vial and Montoro-Sanchez (2020), Santos-Françoso and Vonortas (2023), and Van Looy et al. (2024).

Although many studies highlight the importance of culture in the context of TT, the literature is sparse with the dimensions and characteristics of OC presented in a rather scattered way and overlapped with other interconnected aspects such as people which refers to the development of human capital (e.g. Soares and Torkomian, 2021) and governance which is related to the organizational structure of the organization (e.g. Brescia et al. 2016; Debackere and Veugelers, 2005). We focus

on OC as a set of shared values, attitudes, and assumptions that influence the way a TTO operates.

Several models of OC have been described in the literature, including the Competing Values Framework (CVF) (Quinn and Rohrbaugh, 1983, Cameron and Quinn, 2006), which is a tool widely used in management studies providing a meaningful approach to systematically capture different characteristics of OC (Zu et al. 2010). The CVF is based on two central dimensions: the control versus flexibility, and the internal versus external dimension. The juxtaposition of these two dimensions generates four cultural profiles, namely: clan, adhocracy, hierarchy and market culture, each one characterized by specific characteristics.

Adhocracy culture has creativity and adaptation to the external environment as its main characteristics; a clan culture is characterized by flexibility and a focus on internal organization with a sense of belonging, trust and participation as prominent features; a hierarchical culture is focused on internal efficiency and control, where following rules and regulations is highly valued. Finally, a market culture is focused on the external environment and has efficiency and control as characteristics (Cameron and Quinn, 2006).

Using the CVF, for instance, Kuhn and Bhatiasevi (2024) show that even in firms located in countries with contrasting national cultures, the adhocracy culture is the best OC profile for fostering organizational innovation. In addition, the authors show that hierarchical culture tends to have a negative impact on innovation in countries characterized by high power distance.

METHOD AND DATA

A Systematic Literature Review (SLR) was performed following the four-phase flow diagram presented by Moher et al. (2009), namely: Phase 1 – Identification: specific keywords were used to define the search string *(("technology transfer office*" OR "technology-transfer office" OR TTO* OR KTO* OR UTTO* OR "university technology transfer office*" OR "knowledge transfer office*" OR "knowledge-transfer office*") AND cultur*)* aiming to identify the articles in the Scopus and Web of Science databases. According to Martín-Martín et al. (2018) and Falagas et al. (2008) and supported by a plethora of bibliometric works (for a recent and comprehensive overview, we refer to Glänzel et al., 2019), Scopus and Web of Science are among the most comprehensive and reliable academic databases due to their extensive coverage and rigorous indexing criteria. This study only considered articles and reviews published in the following research domains: *Management, Business, Economics, Operations Research, Development Studies, Public Administration, and Social Sciences* (Gambi and Debackere, 2025, Bengoa et al. 2021); Phase 2 – Screening: articles were screened using the inclusion/exclusion criteria defined by the authors; Phase 3 – Eligibility: title, abstract and keywords, and introductory section of the documents were assessed for eligibility; and Phase 4 – Included: full-text documents considered in the qualitative analysis. Figure 1 summarizes the 4 phases for conducting the SLR.

The quality of the papers included in the qualitative synthesis was assessed based on the inclusion/exclusion criteria defined by the authors considering the scope of this study. Aiming to avoid selection bias, only studies that meet all the inclusion criteria were included in the review (Tranfield et al. 2003). Details of the inclusion/exclusion criteria are presented in the Appendix.

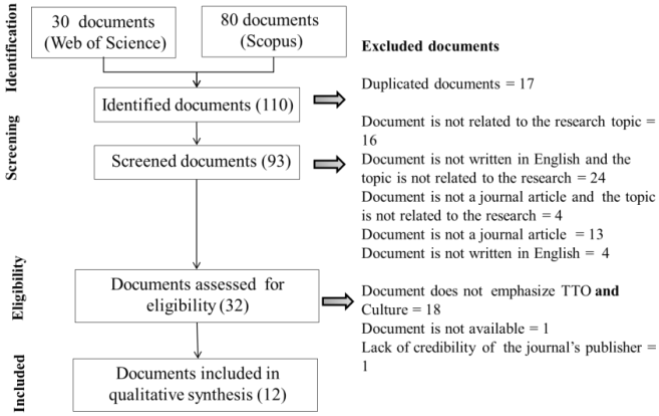

Fig. 1. Phases for conducting the SLR (Adapted from Moher et al. 2009).

Based on this review, an exploratory case study was developed based on Yin (2018) to explore the research question. The study was conducted in a well-established TTO located in Europe, which was founded in 1972, at a major comprehensive university. The selection and adoption of such a purposeful case enables an in-depth study to obtain rich and meaningful information (Magistretti et al. 2023). Data were collected through interviews (lasting about 70 minutes each) with two senior, key employees (A and B) of the TTO, both with more than 15 years of experience and in-depth insight spanning the various specialty areas relevant to TT. Both interviewees started their careers as a researcher, doing doctoral and post-doctoral work. Consequently, they have experienced the world of science. After the scientific stage of their career, they gained experience with innovative business organizations. This rich background made them ideal participants to our exploratory study TTO culture. Respondent A now is an Investment Manager, Respondent B Head of the Government Funding. The interviews were conducted in two steps. First, an open-ended questionnaire was used in which the interviewees answered questions such as: cultural characteristics considered relevant to promote or jeopardize the TT

process; organizational practices to mitigate the cultural differences among the different stakeholders of the TTO, etc. Second, a closed-ended questionnaire based on the Organizational Culture Assessment Instrument (OCAI) from the CVF (Cameron and Quinn, 2006) was used to identify the main characteristics of the organizational culture of the TTO. The OCAI assesses organizational culture by measuring six key dimensions, namely: dominant characteristics, organizational leadership, management of employees, organization glue, strategic emphasis and success criteria. For each dimension, respondents distribute 100 points across four statements, each one representing one of the four culture types. OCAI's statements were adapted according to the context studied (e.g.: *TTO emphasizes understanding the industry needs and link them to future research, TTO emphasizes scientific competition. Winning in making new scientific discoveries is dominant*). The CVF framework results in four possible profiles to describe a typical organizational culture. Clan cultures focus on internal relationships to foster a collaborative work environment. Adhocracy cultures emphasize external opportunities and dynamic environments. Hierarchical cultures build on rule-based internal organization, control and consistency. Market cultures view external competitiveness and market success as their core building blocks. The Appendix summarizes the semi-structured questionnaire and the OCAI adapted to the TTO context.

RESULTS

Qualitative Synthesis of SLR

Table 1 presents general information on the documents included in the qualitative analysis, summarizing the main findings related to culture.

Table 1. Articles extracted from SLR.

Author(s) (Year). Article title	Source Title	Research Method	Perspective of Culture	Main findings (related to culture)
Compagnucci and Spigarelli (2024). *Improving knowledge transfer and innovation services: A roadmap for Knowledge Transfer Offices*	*Journal of Innovation & Knowledge*	Survey Research	Organizational culture	TTOs should act as an agent of change to manage and solve the cultural differences among their stakeholders. Focusing on promoting a culture of innovation and knowledge sharing.
Grzegorczyk (2019). *The role of culture-moderated social capital in technology transfer – insights*	*Technological Forecasting & Social Change*	Case Study	National culture	National culture influences the behavior of people involved in technology transfer and the style of management and communication in the TTO.
Hayter and Feeney (2017). *Determinants of external patenting behavior among university scientists*	*Science and Public Policy*	Survey Research	Organizational culture	The culture of collaboration with TTO is important for facilitating patenting behaviors among researchers.
Kreiling and Bounfour (2020). *A practice-based maturity model for holistic TTO performance management: development and initial use*	*The Journal of Technology Transfer*	Survey Research	Organizational culture	TTOs need to foster innovation through shared practices among their stakeholders and develop a collaborative and adaptable organizational culture.
Kreiling et al. (2020). *University technology transfer organizations: Roles adopted in response to their regional innovation system stakeholders*	*Journal of Business Research*	Case Study	Organizational culture	A culture of responsiveness and agility is fundamental for the TTO, which has as one of its roles being an agent of cultural change aiming to institutionalize the third mission of the universities.

Pohlmann et al. (2024). *Inbound and outbound strategies to overcome technology transfer barriers from university to industry: a compendium for technology transfer offices*	*Technology Analysis & Strategic Management*	Literature Review	Organizational culture	The TTOs' culture needs to foster openness and knowledge sharing between academia and industry.
Siegel et al. (2003a). *Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study*	*Research Policy*	Case Study	Organizational culture	TTOs tend to develop a bureaucratic organizational culture marked by inflexible and conservative practices, requiring better social networks and staffing practices to address informational and cultural barriers.
Siegel et al. (2003b). *Commercial knowledge transfers from universities to firms: improving the effectiveness of university–industry collaboration*	*The Journal of High Technology Management Research*	Case Study	Organizational culture	TTOs must overcome its bureaucratic culture and foster a more flexible culture through network building, staffing development, and incentive alignment.
Siegel et al. (2004). *Toward a model of the effective transfer of scientific knowledge from academicians to practitioners: qualitative evidence from the commercialization of university technologies*	*Journal of Engineering and Technology Management*	Case Study	Organizational culture	TTOs culture must focus on network building to facilitate effective communication and collaboration with different stakeholders.
Uctu and Essop (2022). *Technology transfer models of universities and public research organisations in South Africa: changes before and after the IPR-PFRD Act of 2008*	*Journal of Technology Management & Innovation*	Survey Research	Organizational culture	The TTO's culture must be adaptative, thus a culture of flexibility and continuous improvement is necessary.
Uršič and Valič (2024). *Technology Transfer Offices for Better Management of The University-Industry Collaboration: Comparison of Slovenia, Italy, And Malta*	*Journal of Technology Management & Innovation*	Case Study	National culture	TTOs are influenced by its cultural context since the national culture influences the attitudes towards entrepreneurship (e.g. risk aversion, fear of failure).
Wright (2013). *Communication and cultural change in university technology transfer*	*Journal of Technical Writing and Communication*	Case Study	Organizational culture	TTOs that have a more established culture of cooperation with business are generally more successful in technology transfer.

Pohlman et al. (2024) state that the organizational culture of the university which is mainly focused on knowledge generation rather than its commercialization, is one of the main barriers to the technology transfer from academia to business, posing challenges when considering the CVF profiles that prevail differently in academia and industry. Changes in the policies and infrastructure of the university can help create a supportive environment for scholars to foster their interest in commercializing activities. However, this is far from enough as the acceptance of TT depends largely on the culture that prevails in the organization, including its behavioral patterns and attitudes (Wright, 2013, Uctu and Essop, 2022). Uctu and Essop (2022) analyzed models of TT in South African TTOs after the implementation of policies introduced in the country in

2008 aimed at accelerating TT processes from the public to the private sector. They show that there is no empirical evidence that these activities have increased as expected since then, and argue that other strategies beyond policy implementation are needed to promote cultural change in universities.

Based on its dual nature (business and university), the TTO has an important role in bridging the gaps between both academia and industry, acting as an effective institutional boundary spanner (Pohlmann et al., 2024; Siegel et al. 2003a, 2003b, 2004). Pohlmann et al. (2024), for instance, argue that through different strategies, such as connecting academics to companies ("outbound strategy"), and promoting entrepreneurial culture among researchers ("inbound strategy"), universities can take advantage of this dual nature of the TTO to increase the effectiveness of TT, and deal with cultural differences, thereby encompassing at least some dominant CVF culture profiles. Kreiling and Bounfour (2020) state that TTOs need to foster relationships among the different stakeholders and encourage innovation through shared practices while developing an adaptable organizational culture.

Pohlmann et al. (2024) also highlight that this ambidextrous nature of the TTO can also be a barrier if its role is not clearly identified, again resonating with the challenges the CVF profiles introduce when it comes to cultural boundary spanning. In this context, Siegel et al. (2003a) argue that the TTOs need to have legitimacy to be an effective agent in overcoming cultural differences between various U-I stakeholders. The legitimacy facilitates communication between different actors, makes activities compatible with each other, and ensures that the different objectives regarding TT will be reached. In addition, the literature shows that TTOs managed by staff who also have experience in the private sector can better deal with the cultural gaps between U-I stakeholders (Uctu and Essop, 2022).

In addition, the presence of role models (Wright, 2013) may also contribute to the cultural change needed within academia. Siegel et al. (2004) found that academics who are involved in entrepreneurial activities tend to have higher scholarly productivity than their peers. Therefore, since motivation in academia is strongly related to scholarly productivity, the presence of role models is important to promote the development of an entrepreneurial culture among academics, helping to span boundaries indicated by the CVF profile typology.

Grzegorczyk (2019) analysed the impact of national culture on the creation of social capital and how culture influences TT practices between two extreme culture types (individualist versus collectivist), and concluded that culture influences how different TT managers build and manage their relationships, how trust is established and the extent to which values, norms and mindsets are shared among the different actors involved in the TT process. For example, collectivist cultures, encompassing clan culture dimensions, benefit from strong dominant linkages that encourage a sense of belonging and loyalty, while individualist cultures, indicative of market culture dimensions, benefit from weaker dominant linkages that favor access to non-redundant information (Grzegorczyk, 2019).

Similarly, Uršič and Valič (2024) developed a comparative study in TTOs located in Malta, Slovenia and Italy. They found different attitudes towards entrepreneurship related mainly to risk aversion, fear of failure, and competition depending on the cultural context of the country.

Authors like Siegel et al. (2004) and Wright (2013) argue that social capital can also contribute to the development of an informal pattern of communication that can foster and accelerate TT. Empirical studies by Siegel et al. (2003a, 2004) show that academics and practitioners value personal relationships more than contractual relationships. Similarly, Wright (2013) argues that the informal networks through friendships and relationships with colleagues, for example, favor informal communication that flows much more efficiently than formal communication. These findings are in line with the earlier work on knowledge flows by Allen (1977). They are indicative of adhocracy culture.

Summarizing, as Pohlman et al. (2024) who state that the dual nature of TTO, as it is also embedded within the hierarchical culture of a university, can be both a barrier and a facilitating aspect, Grzegorczyk (2019) also states that social capital can provide both benefits and barriers to the success of TT, depending on the dominant cultural characteristics of each of the parties involved in the TT process. Therefore, managers should be aware of the role of culture in building networks and managing relationships for successful TT.

In addition, Siegel et al. (2004) identified a lack of understanding of the culture, practices and motivations of the different stakeholders in the TT process as a barrier. Therefore, there is a need for mutual understanding of these aspects so that the different actors involved in TT can improve their relationships and achieve better results from their interactions. This should lead to a better understanding of the cultural boundaries to span and how to do this. According to Siegel et al. (2004), there are many differences between the actions and motivations of scientists and managers. For example, while academics aim to publish their findings and gain recognition within the academic community, companies aim to keep technology in-house to gain strategic advantage and increase profits.

Siegel et al. (2003b) argue that organizational practices in the university could mitigate the conflict caused by differences in the cultural characteristics among scientists, companies and administrators. Very often, university administrations are seen as bureaucratic and inflexible, characteristic of a hierarchical culture, where strict rules result in daily practices that are incompatible with the speed at which

an innovation needs to be released and commercialized by firms. Thus, the more the university is seen as a bureaucratic and inflexible place, the more scientists tend to avoid the formal TT process (Siegel et al. 2004). In this context, the role of the TTO is to act as a bridge, a boundary spanning organization, accelerating TT between U-I, and shortening the path from knowledge generation to commercialization (Siegel et al. 2003b). The roadmap for improving knowledge transfer proposed by Compagnucci and Spigarelli (2024) highlights OC as an important characteristic of the TTO. According to the authors, TTOs should contribute to fostering a cultural change towards an entrepreneurial culture, and act proactively in managing and solving the cultural heterogeneity among their stakeholders. This resonates with the boundary spanning challenges that emerge from the CVF culture typology.

Exploratory Case Study

The European TTO studied, to further explore and articulate the insights derived from the literature review and the CVF framework has been in operation for more than 50 years in a comprehensive university and is considered a benchmark (Steenkamp, 2023).

Interviews

The interviewees have a clear understanding that the TTO is a service organization whose main role is to help academics to turn their research into commercial relevance and applications. This is rooted in its culture, which is translated into what respondent "A" called a *service mind culture*. At the same time, "A" pointed to the importance of the TTO also dealing with the other stakeholders such as firms and governments. "A" states that it is important for people working in the TTO to also develop a *pragmatic mindset*, which helps to deal with government and regulatory issues, for example.

The combination of this *service* and *pragmatic mindset* is reflected in the practices adopted by the TTO. For instance, when hiring staff, the focus is on people with different backgrounds, with expertise in both business and academia, because according to the respondents it helps to understand differences in culture between both. This is clear in this quote:

> If you have worked in business, you know the culture in business, if you have worked in academia, you know the culture in academia, if you have done both you can understand both worlds.

The TTO has a multidisciplinary staff (e.g. legal specialists, business developers, spin-off experts, investor managers, patent specialists, etc.) who can provide comprehensive support to the different stakeholders. These findings are consistent with the studies of Siegel et al. (2003a, 2003b, 2004) who argue that it is important to have interdisciplinary teams and members who have expertise in both business and academia.

This response is interesting because it demonstrates the interviewees' awareness of the cultural differences between stakeholders and highlights some of these characteristics. While at the university, researchers tend to develop individualistic behaviors, for example, to pursue a higher number of publications or to focus on scientific productivity to be promoted "individually", in companies, the activities occur in a more team-based manner to achieve a collective target. These differences in motivations and actions noted by respondent "A" are consistent with the findings of the studies of Siegel et al. (2003a, 2003b, 2004).

It is important to note that even within the same group of stakeholders, it is possible to identify the presence of differing subcultures. For instance, it has been highlighted that in general the motivation of academics is to be academically productive. However, as respondent "B" points out, there are also professors, research groups and departments with more entrepreneurial characteristics. The presence of such subcultures is clear in this quote:

> In the same way, we have at the university, professors, researchers, and research teams that are very entrepreneurial. They are really thinking: "I am doing licenses.", "I am doing collaboration with that company?", "I am going to create a spin-off". […] I do not like the black and white. Of course, there is a lot of difference between university and companies, but there are also a lot of similarities.

According to the interviewees, the awareness of the cultural differences of the stakeholders is important and necessary for the TTO to develop good practices for the successful TT process and to be an effective bridge to accommodate the different cultural characteristics of the stakeholders.

OCAI results

The interview findings are supported by the results of the OCAI. Both staff members have the same perception regarding the characteristics of the organizational culture of the TTO. This can be seen from the nearly equal results (from both respondents) presented in Figure 2. According to Cameron and Quinn (2006), based on the CVF, most organizations tend to develop a dominant culture profile. However, based on our exploratory research, the TTO seems to capture the characteristics of the four cultural profiles of the CVF in almost the same way (Figure 2).

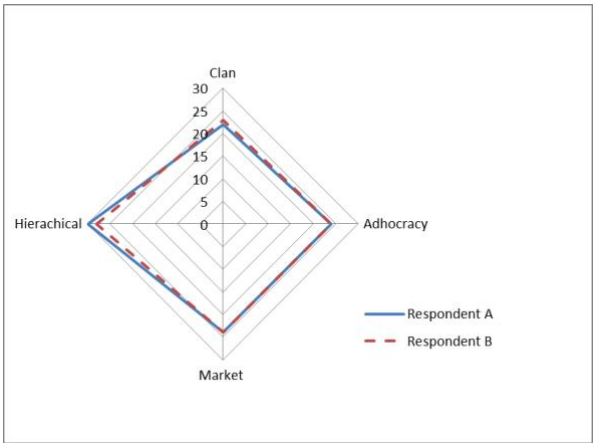

Fig. 2. Respondent's perception of the TTO organizational culture

This is interesting because given the different stakeholders a TTO must deal with, and their specific characteristics, the culture of the TTO should encompass and embrace an interrelated and ambiguous set of cultural values. For instance, a hierarchical culture has more centralized and controlled processes, while an adhocracy is more flexible and risk-taking (Cameron and Quinn, 2006). Considering the different stakeholders involved in the TT process, the TTO should develop, for example, characteristics of a hierarchical culture to be able to deal with stakeholders with a more controlled culture, and characteristics of an adhocracy culture to deal with stakeholders with a more flexible culture.

Synthesis

Follow-up of the case study results with members of the senior management of the TTO informs us that they pay significant attention to a culture that fosters and bridges the dimensions of academic freedom, professional organization, entrepreneurial mindset, and corporate discipline, resonating with and spanning the CVF typology. Table 2 summarizes the findings from the literature review coupled to the exploratory case study, systematizing the results according to the different cultural characteristics defined in the CVF and their respective cultural profiles that were highlighted throughout the literature review.

Table 2. Organizational culture profile and cultural characteristics of the TTO

Organizational culture profiles[1]	Characteristics	TTO Culture	References
Clan Culture Focus on internal relationships, flexibility, and development of the human resources to foster a collaborative work environment.	People-oriented, collaboration, trust, supportive leadership, employee commitment and development.	Building relationships and networks among stakeholders, knowledge sharing, development of a supportive environment, encouraging multi-stakeholder collaborations.	Grzegorczyk (2019), Hayter and Feeney (2017), Kreiling and Bounfour (2020), Kreiling et al. (2020), Siegel et al. (2003a), Siegel et al. (2003b), Siegel et al. (2004), Uršič and Valič (2024).
Adhocracy Culture Focus on external opportunities and dynamic environments. Generation of new ideas and responsiveness to market changes are prioritized.	Innovation-oriented, adaptability to change, transformation, agility, creative environment, entrepreneurial behavior.	Encouraging openness to new ideas and methods to improve technology transfer process, proactive in identifying new opportunities, and foster an entrepreneurial environment.	Compagnucci and Spigarelli (2024), Grzegorczyk (2019), Pohlmann et al. (2024), Wright (2013), Uršič and Valič (2024).

Hierarchical Culture Focus on internal organization, emphasizing control and consistency through established processes and procedures.	Control-oriented, formal rules, emphasizing formal rules, process, uniformity and efficiency.	Following established procedures and complying with regulations related to technology transfer. Emphasis on regulatory compliance and keeping operational uniformity and control.	Siegel et al. (2003a), Siegel et al. (2003b), Uctu and Essop (2022), Uršič and Valič (2024).
Market Culture Focus on external competitiveness and market success. Performance and results-oriented culture.	Results-oriented, competing place. Emphasizing profitability and goal accomplishment.	Focusing on industry alignment and the commercialization of scientific and research outputs. High commitment to funding strategies.	Kreiling and Bounfour, (2020), Kreiling et al. (2020), Siegel et al. (2003a), Siegel et al. (2003b), Uršič and Valič (2024).

Note[1]: Adapted from Cameron & Quinn (2006)

Table 2 summarizes the inclusive culture of the TTO, balancing and synthesizing the characteristics related to the four cultural profiles of the CVF. Thus, depending on the cultural characteristics of the stakeholders with whom the TTO is interacting, it can exploit those characteristics of its culture that are best aligned with those of the stakeholders it is dealing with. Table 2 and Figure 2 thus suggest that the TTO must assimilate and integrate culture dimensions that are characteristic of its various stakeholder worlds. This heterogeneity needs to be well understood and well managed. It is deemed essential to implement the boundary spanning role of the TTO. It enables the TTO (1) to navigate the tensions arising from the internal versus external focus involved in completing successful transfer activities, spanning the worlds of science and business, as well as (2) to cope with the compliance needs of the hierarchical culture of the university and the entrepreneurial culture of the market, rooted in a deep understanding of the control and flexibility requirements in both contexts.

REFLECTIONS AND CONCLUSIONS

Reflections

This study builds on and contributes to the extant TTO literature by explicitly addressing characteristics of the organizational culture of the TTO using the CVF as a guiding principle. As a result, managers involved in the TT process can become more profoundly aware of the required cultural characteristics of their organization, aligning them with a better understanding of the ones of their different stakeholders. The results, although preliminary, show the importance for the TTO to understand and to assimilate the cultural characteristics of its different stakeholders and to embrace paradoxical cultural characteristics to bridge the differences among them and improve the success of TT processes.

The findings show that the culture of the TTO should be an inclusive and multipolar one that embraces the culture of its various stakeholders in a pragmatic, professional and service-oriented manner. In doing so the TTO bridges information and interpretation asymmetries (addressing both known and unknown unknowns) among stakeholders. As Siegel et al. (2004) note, *"[…] many of the issues associated with technology transfer are both ambiguous and highly contentious" (p.117).*

An inclusive and multipolar TTO culture as evidenced by the OCAI and CVF results is instrumental in avoiding moral hazard problems and addressing selection challenges present in R&D contexts where intangible assets and incomplete contracts prevail (see Choi, 2001). It allows the TTO to gauge, to appreciate and to address the incentive systems of both worlds. The TTO thereby fosters the transparency required to avoid undesired behaviors, e.g., not respecting intellectual property rights or publication rights, and selection biases whereby relevant partners may be ignored.

In a broader sense, given the current emphasis in academia and society on interdisciplinarity, the TTO, as it emerges from this study, is a boundary spanning, transdisciplinary organization. Our exploratory research on TTO culture provides a first step in a journey towards understanding the characteristics of a transdisciplinary culture in academia.

The findings provide actionable insights for managers of the TT process, as they must deal with organizations that are culturally different. U-I collaboration is a powerful source of innovation. However, it needs to be profoundly understood, as it depends not only on the individual actors in the innovation system, both individual and institutional (faculty, university administrations, business, government), but also on their efficient connectivity. Therefore, understanding the different cultural dimensions and archetypes discussed in this paper and applying them to the development of an inclusive culture is fundamental to the success of technology transfer strategies. In doing so, the TTO bridges the information and interpretation asymmetries amongst the actors involved in the TT process.

Actions to be considered by the TTO are varied. First, the TTO must build awareness of the behavioral and organizational implications of the CVF types. It has an educational, coaching role towards its staff and relevant stakeholders. Second, it can install boundary spanners that move and navigate fluently between the different cultures. Here the function and the role of liaison officers come to mind. Third, it can articulate and communicate the multipolar cultural perspective originating from the CVF throughout its governance and strategy, and the execution thereof. To that end, we propose the CVF lens to be used when developing and implementing the TTO's operational and organizational routines and procedures.

Conclusions

This study offers a first experiment at unravelling the dimensions of a performant TTO culture. Its limitations mainly relate to the research method used. As the case study was performed in a single organization, and with extensive interviews with two respondents given the experimental, exploratory nature of the present study. However, the convergence between the two interviews and the answers to the CVF questionnaire supports the internal validity of the insights obtained on the existence and the role of an amalgamated TTO culture. Given our research agenda, the need for internal validity should dominate now. Future research should include multiple case studies to allow comparisons between multiple TTOs. In addition, applying the OCAI and CVF to other stakeholders in the technology transfer process, such as academics and firms, will allow a still more comprehensive understanding.

ACKNOWLEDGEMENTS

The authors thank the financial support provided by Coimbra Group through the Scholarship Programme for Young Professors and Researchers from Latin American Universities.

REFERENCES

Allen, T.J. (1977), *Managing the flow of technology*, The MIT Press.

Baglieri, D., Baldi, F. and Tucci, C.L. (2018), University technology transfer office business models: one size does not fit all, *Technovation*, 76-77(SI): 51-63.

Bengoa, A., Maseda, A., Iturralde, T. and Aparicio, G. (2021), A bibliometric review of the technology transfer literature, *Journal of Technology Transfer*, 46(5): 1514-1550.

Bjerregaard, T. (2010). Industry and academia in convergence: Micro-institutional dimensions of R&D collaboration. *Technovation*, 30(2): 100-108.

Brescia, F., Colombo, G., and Landoni, P. (2016). Organizational structures of Knowledge Transfer Offices: an analysis of the world's top-ranked universities. *The Journal of Technology Transfer,* 41: 132-151.

Büschgens, T., Bausch, A. and Balkin, D. B. (2013) Organizational culture and innovation: a meta-analytic review, Journal of Product Innovation Allen, T.J. (1977), *Managing the flow of technology*, The MIT Press.

Cameron, K. S. and Quinn, R. E. (2006), *Diagnosing and changing organizational culture: based on the competing values framework*, John Wiley & Sons, Inc. San Francisco.

Choi, J.P. (2001), Technology transfer with moral hazard, *International Journal of Industrial Organization,* Vol. 19, Issues 1-2: 249-266.

Compagnucci, L and Spigarelli, F. (2024) Improving knowledge transfer and innovation services: A roadmap for Knowledge Transfer Offices, Journal of Innovation & Knowledge, 9 (4). 100577.

De Wit-de Vries, E., Dolfsman, W.A, van der Windt, H.J., and Gerkema, M.P. (2019), Knowledge transfer in university-industry research partnerships: a review. J*ournal of Technology Transfer,* 44 (4): 1236-1255.

Debackere, K. and Veugelers, R. (2005), The role of academic technology transfer organizations in improving industry science links, *Research Policy*, 34(3): 321-342.

Diez-Vial, I., Montoro-Sanchez, A. (2020), International gatekeepers: how to integrate domestic networks and international relations, *International Business Review,*29, 101751.

Falagas ME, Pitsouni EI, Malietzis GA. and Pappas G. (2008) Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. FASEB J. 22(2):338-42.

Galan-Muros, V. and Plewa, C. (2016), What drives and inhibits university-business cooperation in Europe? A comprehensive assessement, *R&D Management*, 46(2): 369-382.

Gambi, L.D.N. and Debackere, K. (2025), A literature-based view on technology transfer and culture, *Benchmarking: An International Journal*, 32(3): 880-916.

Glänzel, W., Moed, H.F., Schmoch, U. and Thelwall, M. (Eds.) (2019), *Springer Handbook of Science and Technology Indicators.* Springer Publishers.

Gopalakrishnan, S. and Santoro, M.D. (2004), Distinguishing between knowledge transfer and technology transfer activities: the role of key organizational factors, *IEEE Transactions on Engineering Management,* 51(1): 57-69.

Grzegorczyk, M. (2019), The role of culture-moderated social capital in technology transfer – insights from Asia and America, Technological Forecasting and Social Change, 143: 132-141.

Hayter, C.S and Feeney, M. K. (2017) Determinants of external patenting behavior among university scientists, *Science and Public Policy*, 44(1):111–120.

Huyghe, A. and Knockaert, M. (2015), The influence of organizational culture and climate on entrepreneurial intentions among research scientists, *Journal of Technology Transfer,* 40(1): 138-160

Huyghe, A., Knockaert, M., Wright, M. and Piva, E. (2014). Technology transfer offices as boundary spanners in the pre-spin-off process: the case of a hybrid model. *Small Business Economics*, 43(2): 289-307.

Kreiling, L., Bounfour, A. (2020). A practice-based maturity model for holistic TTO performance management: development and initial use. *Journal of Technology Transfer* 45: 1718–1747.

Kreiling, L., Serval, S., Peres, R., Bounfour, A. (2020) University technology transfer organizations: Roles adopted in response to their regional innovation system stakeholders, Journal of Business Research, 119: 218-229.

Kuhn, S., and Bhatiasevi, V. (2024). The Impact of Organizational Culture on the Innovation and Performance of SMEs: A Comparative Study between Germany and Thailand. *Global Business Review*. https://doi.org/10.1177/09721509241246558

Magistretti, S., Sanasi, S. Dell'Era, C. & Ghezzi, A. (2023) Entrepreneurship as design: A design process for the emergence and development of entrepreneurial opportunities. *Creativity and Innovation Management.* 32(1): 5-21.

Martín-Martín, A., Orduna-Malea, E., Thelwall, M., López-Cózar, E. D. (2018) Google Scholar, Web of Science, and Scopus: A systematic comparison of citations in 252 subject categories, Journal of Informetrics, 12(4): 1160-1177.

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D.G. and Prisma Group. (2009), Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement*, PLoS Medicine*, 6(7): 1-6.

O'Kane, C. (2018), Technology transfer executives' backwards integration: An examination of interactions between university technology transfer executives and principal investigators, *Technovation*, 76–77: 64-77

Perkmann, M., McKelvey, M., and Phillips, N. (2019). Protecting scientists from Gordon Gekko: How organizations use hybrid spaces to engage with multiple institutional logics. *Organization Science*, 30(2): 298-318

Pohlmann, J. R., Ribeiro, J. L. D. and Marcon, A. (2024) Inbound and outbound strategies to overcome technology transfer barriers from university to industry: a compendium for technology transfer offices, *Technology Analysis & Strategic Management*, 36(6): 1166-1178.

Quinn, R. and Rohrbaugh, J.A. (1983), Spatial model of effectiveness criteria: towards a competing values approach to organizational analysis, *Management Science*, 29(3): 363-377.

Resende, D.N, Gibson, D. and Jarrett, J. (2013). BTP—Best Transfer Practices. A tool for qualitative analysis of tech-transfer offices: A cross-cultural analysis, *Technovation*, 33(1): 2-12.

Santos-Françoso, M., Vonortas, N.S. (2023), Gatekeepers in regional innovation networks: evidence from an emerging economy, *The Journal of Technology Transfer,* 48: 821-841.

Schein, E.H. (1984), *Coming to a new awareness of organizational culture*, Sloan Management Review, 25(2): 3-16.

Siegel, D.S., Waldman, D. and Link, A. (2003a), Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study, *Research Policy*, 32(1): 27-48.

Siegel, D.S., Waldman, D.A., Atwater, L.A. and Link, A.N. (2003b), Commercial knowledge transfers from universities to firms: improving the effectiveness of university–industry collaboration, *The Journal of High Technology Management Research*, 14(1): 111-133.

Siegel, D.S., Waldman, D.A., Atwater, L.E. and Link, A.N. (2004), Toward a model of the effective transfer of scientific knowledge from academicians to practitioners: Qualitative evidence from the commercialization of university technologies, *Journal of Engineering and Technology Management*, 21(1-2):115-142.

Siegel, D.S., Veugelers, R. and Wright, M. (2007), Technology transfer offices and commercialization of university intellectual property: performance and policy implications, *Oxford Review of Economic Policy*, 23(4): 640-660.

Soares, T. J., and Torkomian, A. L. (2021). TTO's staff and technology transfer: Examining the effect of employees' individual capabilities. *Technovation*, 102, 102213.

Steenkamp, R. J. (2023), Technology transfer perspectives: The KU Leuven case study, *South African Journal of Industrial Engineering*, 34(2): 49-60.

Tranfield, D., Denyer, D. and Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British journal of management*, 14(3), 207-222.

Uctu, R., and Essop, H. (2022). Technology transfer models of universities and public research organisations in South Africa: changes before and after the IPR-PFRD Act of 2008. *Journal of Technology Management & Innovation*, 17(1), 71–83.

Uršič, E.D. and Valič, T.B (2024). Technology Transfer Offices for Better Management of The University-Industry Collaboration: Comparison of Slovenia, Italy, And Malta. *Journal of Technology Management & Innovation*, 19(2): 43–53.

Van Looy, B., Grabowska, M., Vlaisavljevic, V., Lecocq, C., Debackere, K. (2024), Growth of biotechnology clusters over several decades: through pioneering, variety, and entrepreneurial science, *Nature Biotechnology*, 42: 20-25.

Villani, E., Rasmussen, E. and Grimaldi, R. (2017). How intermediary organizations facilitate university-industry technology transfer: A proximity approach. *Technological Forecasting and Social Change*, 114: 86-102.

Yin, R. K. (2018). *Case Study Research: Design and Methods*, Sixth edition, Los Angeles: SAGE.

Wright, D. (2013). Communication and Cultural Change in University Technology Transfer. *Journal of Technical Writing and Communication*, 43(1): 79-101.

Zu, X., Robbins, T.L. and Fredendall, L.D. (2010), Mapping the critical links between organizational culture and TQM/six sigma practices, *International Journal of Production Economics*, 123(1): 86-106.

APPENDIX

I) SLR – Inclusion/exclusion criteria

Topic	Inclusion criteria	Exclusion criteria
Duplication	It is not a duplicate document	It is a duplicate document
Source	Document is an indexed (Scopus and/or Web of Science) article journal	Document is not an article journal (e.g. book, book chapter, conference paper)
Research Domains	Management, Business, Economics, Operations Research, Development Studies, Public Administration, and Social Sciences	Research areas not covered by the inclusion criteria
Language	Documents is written in English	Documents written in a language other than English
Time	No time restrictions applied	
Access	Full-text is available	Full-text is not available
Methodological rigor	The study use systematic and transparent methodological procedures	The study does not use systematic and transparent methodological procedures
Topic	The document is related to Technology Transfer and culture	The document is not related to Technology Transfer and culture
Focus	The document emphasizes Technology Transfer Office and Culture: Culture (national and/or organizational) is clearly addressed; It is possible to clearly identify characteristics and dimensions of culture (national and/or organizational); The context of TTOs and culture are both addressed.	The document does not emphasize TTO and culture: Culture is not clearly addressed; It is not possible to identify characteristics and dimensions of culture; The context of TTOs and culture is not addressed.

Note: One of the articles, although indexed in Scopus and Web of Science, was not included in the qualitative synthesis due to the questionable credibility of its publisher.

II) Case Study

Part A – Open-ended questions

- How would you describe organizational culture in general? And the TTO culture specifically? What is special about what you expect a TTO culture to be?
- What are the main cultural characteristics that you consider relevant to foster or jeopardize the TT?
- What are the impacts of the cultural characteristics on a successful TT process?
- What do you consider as the most important cultural differences among the stakeholders (TTO, university and industry) in the TT? In practice, how these differences impact the TT process?
- What organizational practices could mitigate the cultural differences among the different stakeholders of the TTO?
- Differences in organizational culture are often cited in the literature as a barrier and a constraining factor that could influence a successful U-I collaboration. Based on your experience why the organizational culture is commonly considered as a barrier and a constraining factor on the TT?

Part B – OCAI adapted from Cameron and Quinn (2006) to the TTO context

A- Clan Culture
B- Adhocracy Culture
C- Market Culture
D- Hierarchical Culture

Dominant characteristics
A. The TTO is a very personal place. It is like an extended family. People seem to share a lot of themselves.
B. The TTO is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.

C. The TTO is very results oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.
D. The TTO is a very controlled and structured place. Formal procedures generally govern what people do.

Organizational leadership

A. The leadership in the TTO is generally considered to exemplify mentoring, facilitating, or nurturing
B. The leadership in the TTO is generally considered to exemplify entrepreneurship, innovation, or risk taking.
C. The leadership in the TTO is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.
D. The leadership in the TTO is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.

Management of employees

A. The management style in the TTO is characterized by teamwork, consensus, and participation.
B. The management style in the TTO is characterized by individual risk taking, innovation, freedom, and uniqueness.
C. The management style in the TTO is characterized by hard-driving competitiveness, high demands, and achievement.
D. The management style in the TTO is characterized by security of employment, conformity, predictability, and stability in relationships.

Organizational glue

A. The glue that holds the TTO together is loyalty and mutual trust. Commitment to this organization runs high.
B. The glue that holds the TTO together is commitment to innovation and development. There is an emphasis on being on the cutting edge.
C. The glue that holds the TTO together is the emphasis on achievement and goal accomplishment.
D. The glue that holds the TTO together is formal rules and policies. Maintaining a smooth-running organization is important.

Strategic Emphases

A. The TTO emphasizes human development. High trust, openness, and participation persist.
B. The TTO emphasizes understanding the industry needs and link them to future research
C. The TTO emphasizes scientific competition. Winning in making new scientific discovers is dominant.
D. The TTO emphasizes permanence and stability. Efficiency, control, and smooth processes are important.

Criteria of success

A. The TTO defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.
B. The TTO defines success on the basis of having the most unique or newest products. It is a product leader and innovator.
C. The TTO defines success on the basis of the applicability of research to the market.
D. The TTO defines success on the basis of efficiency of knowledge production and diffusion.