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Federal Institutes – Brazil's Chance for a Broader Variety of VET Education?

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Abstract

Context: The reputation of Vocational Education and Training (VET) varies globally, often negatively influenced by perceptions of higher salaries and social recognition associated with academic professions. This study explores the reputation and perceptions of the public Brazilian VET system, particularly from the perspective of the Federal Institutes of Education, Science and Technology (FIs). Despite the necessity for skilled workers in Brazil, VET participation remains low, with high dropout rates in upper secondary VET.
Approach: This research aims to identify levers to improve the appeal of the Federal VET system to young adolescents and understand the challenges leading to their opting out of this pathway. Referring to the comprehensive model of participation in adult education and the skill ecosystem approach, the study examines individual and systemic factors influencing educational decisions. Data were gathered through 23 semi-structured expert interviews with rectors and faculty members across Brazil.
Findings: Findings reveal a positive perception of the FIs linked to comprehensive training and relevant professional knowledge. The availability of diverse educational programs within FIs aligns with rational choice theory, enabling individuals to maximise their utility. However, improving the standing of FIs requires a multi-perspective approach involving political cooperation and strengthening ties with the regional economy.
Conclusions: The establishment of a true skill ecosystem, with FIs as key contributors, is suggested as a pathway forward.

Keywords

reputation of VET, federal institutes, students' aspiration, Brazilian VET system

1 Introduction

Vocational education and training (VET) represent crucial pathways to facilitate access to the labor market, offering a diverse array of learning opportunities, particularly beneficial for young individuals lacking formal training (OECD, 2015). In the face of evolving challenges within both the labor market and the educational system, such as the increasing emphasis on professionalization, academization, and digitalization (Brunello & Wruuck, 2021; Guri-Rosenblit et al., 2007; Altbach et al., 2017; Cantwell et al., 2018), the significance of VET becomes

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increasingly pronounced. However, the reputation of VET, notably in regions like the global South, remains modest, with Brazil serving as a pertinent example. In 2023, a mere 11% of Brazilian students aged 15 to 24 were enrolled in vocational programs, contrasting strongly with the OECD averages of 37% and 65% for the respective age brackets (OECD, 2023). Perceived status hierarchies within education and the economic relevance attributed to various educational paths significantly influence decision-making among young individuals (Marginson, 2016; Iloh & Tierney, 2014). This paper explores the epistemological underpinnings of these determinants of action, emphasizing social disparities in educational participation and the attainment of formal qualifications (Kroneberg, 2011; Zimmermann, 2020). The study aims to pinpoint strategies to bridge the gap between young adolescents and the Federal VET system in Brazil while uncovering the underlying challenges deterring them from choosing this educational pathway.

To achieve this, we provide an overview of the Brazilian VET System, with a focus on the Federal Institutes (FIs) and their unique characteristics, elucidating how the proliferation of higher education has reshaped the educational landscape. Subsequently, we introduce a theoretical framework grounded in rational choice theory and the skill ecosystem approach to dissect educational decision-making processes. The empirical segment, based on 23 expert interviews with FI professionals, culminates in recommendations aimed at enhancing the reputation and appeal of the Federal VET system.

2 Brazil's VET system

In Brazil, vocational education and training (VET) can be provided by both public and private institutions within the educational system. Upper secondary VET integrates general and vocational subjects, facilitating access to tertiary education, while apprenticeships target 14–24-year-olds at the secondary education level, combining practical and theoretical training (Matai & Matai, 2000; Kauer, 2014). Both pathways aim at professionalization in specific occupations, enabling VET students to access any type of university due to their secondary level education (Kauer, 2014, 29).

The Brazilian VET system has evolved since the 1940s with two main streams. The public federal system, funded by the government, offers free education to all students, while the so-called S-System schools (labour training institutions), funded by specific levies, primarily require students to pay for their education (Almeida et al., 2014). As of 2018, the S-System, due to limited capacity in the federal system, accounted for approximately 41% of enrolments in VET programs (Brazil, 2020). The S-System includes nine institutions that provide vocational qualifications and access to leisure and cultural activities for workers (Maximo, 2020).

The Brazilian Professional Education landscape has seen significant growth, with numerous new campuses established in recent decades alongside the university sector (Kauer 2014). This growth aligns with a societal shift where higher education is viewed as a means for social and economic mobility, particularly among the middle class (Kauer, 2014). The FIs, which are public, tuition-free, and government-funded, play a crucial role in this expansion. Courses range from short initial qualifications to integrated secondary technical programs, and even master's and PhD programs, a concept known as 'verticalization' (Matai & Matai, 2000). The creation of the Federal Professional Education Network, with FIs at its core, mirrors international trends in expanding higher and professional education and increasing policy transfers. This network aims to meet the demands of post-secondary education and its connection to the labor market while addressing the need for social mobility. The FIs are spread across various states and regions, including rural areas, with 85% of their 654 campuses located inland (Kauer 2014). Still, private education is generally considered better than public, resulting in a higher enrolment rate at private universities in comparison to the FIs (Schwarzman & Paiva, 2014). Furthermore, the period between 2019 and 2022 saw significant budget cuts and austerity measures that

adversely affected the FIs, limiting funding for their operations, infrastructure, and research (Kauer, 2014). This also affected the students' enrolment negatively, leading to lower participation and less students joining VET education. As Brazil undergoes political changes, the impact on the funding and functioning of educational institutes in general remains to be seen.

In summary, Brazil's VET system is characterized by a dual approach involving government-funded public institutions and the private S-System's paid programs. The expansion of FIs and the adoption of cooperative education models are key strategies aimed at improving access to VET and its quality in Brazil for all social classes. These initiatives reflect the country's efforts to balance public and private educational provision, ensuring broader access to VET and addressing the socioeconomic needs of its population. However, with the decreasing number of students enrolling at FIs, students' educational aspirations might be a hint towards the necessity of increasing the attractiveness of FIs.

3 Students' educational aspiration

Despite high demand, public VET in Brazil faces challenges in reputation (OECD, 2023). Education and inequality in Brazil pose significant challenges due to its diverse socio-economic landscape, reflecting broader societal disparities (Menezes Filho & Kirschbaum, 2019; Bertolin et al., 2022). VET participation in Brazil is notably lower than OECD averages, with a high 11% dropout rate in upper secondary VET (OECD, 2023). Although there has been a 6.4 percentage point increase in upper secondary professional education enrolment over the last decade, the growth rate remains insufficient to meet Brazil's educational needs, albeit showing improvement in 2020 (Educação, 2021).

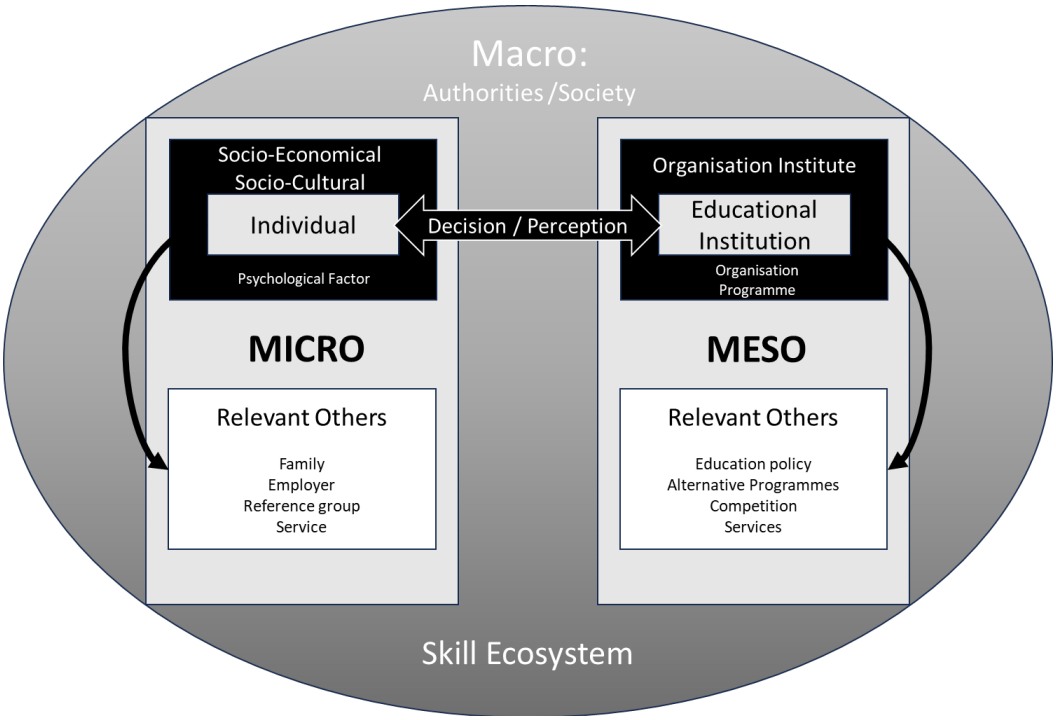
These challenges stem from structural, cultural, economic, and policy-related factors such as lack of awareness, societal stigma, biases within the educational system, inadequate career counselling, resource constraints, economic disparities, limited employer engagement, policy complexities, and regional inequalities (Cabrera & La Nasa, 2000; Barnes-Teamer, 2003; de Oliveira Silva et al., 2020). Educational decisions are influenced significantly by socio-cultural factors like parental influence and peer dynamics (Hofmann et al., 2014), aligning with the skill ecosystem approach, with latter influencing the local labormarket and therefore also influencing an individual's career choice by the jobs available. These factors hint towards the individual level with the socioeconomic and cultural dimensions as a crucial factor as to why students avoid further education. As FIs play a crucial role in offering free education across various disciplines, this might address the aversion of individuals to join further education. Still, participation in free public education is low, whilst the demand for public university placements consistently exceeds availability (Kauer, 2014). This raises questions about why students opt for fee-based education in the S-system when free alternatives like FIs exist. Against this background, the aim of this paper is to answer the following research question: Which individual and systemic factors influence Brazil's students' educational decisions, and how can the Federal system be modified to become a more attractive option for the students?

4 Theorising educational participation

Within this chapter, we outline students' educational aspirations to offer a first theoretical explanation regarding the rather low participation in educational programs offered by the FIs. To theorise educational choices, we refer to the comprehensive model of participation in adult education as well as the skill ecosystem approach.

According to Boeren et al. (2010), three levels of the market are relevant for the analysis of educational participation, visualised in Figure 1.

Figure 1
Factors on Students educational participation, adapted from Boeren et al. 2012



Individual Choice (Micro-Level)

- *Socioeconomic and cultural dimensions*: These dimensions define the need for education. Generally, the lower an individual's educational level is, the greater the need for education is. This relation is linked to both human capital theory, where individuals aim to maximize their value by upgrading their skills (Boeren et al., 2010), and rational choice theory, which explains participation as a preference-driven action with the individual aiming to maximize utility (Opp, 2013). Furthermore, perceived status hierarchies within education and the economic relevance attributed to various educational paths significantly influence decision-making among young individuals (Marginson, 2016; Iloh & Tierney, 2014). This highlights the heritage and local backing of individuals as crucial factors for participation in educational activities (e.g. Hofmann et al. 2014)
- *Costs: Both direct and indirect costs play a crucial role in choosing educational activities.* Boeren et al. (2010) outline direct costs such as enrolment fees and payments to participate in educational activities. Indirect (hidden) costs include childcare or neglected household duties due to participation in educational activities. These factors align with the cultural background and the family's financial stability as crucial impact factors on educational pathways.
- *Benefits:* Benefits are one of the main indicators influencing an individual's decision to choose educational activities. If the educational activity is perceived as important and beneficial, individuals are more likely to participate. However, if they prioritize private life, social contacts, etc., over educational activities, they might not participate. This also aligns with rational choice theory (Opp, 2013), where participation is driven by behaviour, subjective perceptions, and preferences for different actions.

Boeren et al. (2010) emphasize the importance of balancing these three indicators, as well as considering the psychological dimension, which includes whether one's attitude towards

education is positive or negative. This attitude results from motivation, confidence, and previous experiences.

Educational Supply (Macro-Level)

Educational institutions and their programs define the supply. However, this does not mean that specific programs meet the demands of every individual but rather provide a broad offer to meet the overall needs horizontally. Furthermore, these educational programmes focus primarily on the middle class as a target group, in terms of (participation) fees, certain enrolment conditions and certain social and cultural capital to support educational participation (Boeren et al., 2010). This creates an interdependency between individual factors and their influence on participation in the facilities versus the offer of enrolment for an often overlooked group of people. The design of the school and the atmosphere are also key elements in an individual's decision to participate in an activity at a particular institution (Mortimore et al., 1988). The atmosphere and the design of the providers are, in turn, subject to other stakeholders, such as the requirements of the economy, which in turn provide the impetus for the training programme and are supported by the providers, such as authorities, who will be outlined in the following chapter.

Authorities (Meso-Level)

These entities (e.g. government) regulate demand and supply, interacting with both to serve as a balance mediator. Crucial factors are regulation and mediation: Authorities play a crucial role in regulating and mediating between demand and supply. They provide financial stimuli, reduce indirect costs, offer services, and implement policies that affect both individuals and educational institutions. This regulation ensures that the educational market functions efficiently and equitably.

Skill ecosystem (Holistic Level)

From a holistic perspective, educational choices and professional development is influenced by the surrounding ecosystem, including all three above levels. The skill ecosystem approach (Finegold, 1999; Brown, 2022) emphasizes a holistic view of education and professional development shaped by local ecosystems. It integrates labor market needs with policy-driven educational supply, addressing skill challenges globally and locally. This approach is triggered by influential companies and fosters continuous support and interdependence among actors. Unlike short-term training theories, it adopts a comprehensive perspective, including long-term strategies like job restructuring. A key criterion for a skills ecosystem is the economic environment and the business models of the respective companies. The business environment structures the ecosystem and includes product market conditions, competitive strategies, company networks and financial systems (Buchanan et al. 2001, 22; Buchanan et al. 2017).

The skill ecosystem approach is a long-term, evidence-based and collaborative approach to identifying and addressing skills needs (Kilpatrick et al. 2007). This approach opens up new perspectives for skills development and the design of education and labour market strategies by recognising the dynamic and geographical nature of highly skilled competencies and considering how contextual and institutional factors influence the acquisition and application of skills (Brown 2022). A key aspect is the focus on the whole industry system (Alcorso 2006): Sustainable outcomes are achieved when the stakeholders involved focus not only on training, but also on the constraints to productivity and performance in the work environment and industry. It also emphasises increased cooperation between groups and organisations linked by business relationships to address common challenges - particularly workforce development (Alcorso 2006). This cooperation can range from simple information sharing to the coordination of labour requirements, such as mechanisms to redistribute labour (Briggs et al. 2022).

While primarily developed for the global North, its application in the global South faces challenges like cultural differences but offers insights into regional educational choices and qualifications. Brown (2022) e.g. analysed agricultural training programmes in India and showed how contextual factors influence the use of skills. The results showed that older men from the upper classes older upper-class men had more positive relationships with trainers and received greater benefits than other groups. The skill ecosystem approach differs from other theories such as the human capital theory (see Becker 1964) and the signalling theory (see Spence 1973) in that it goes beyond focussing exclusively on the supply side. In contrast to the one-sided human capital theory, this approach recognises that not all skills are equally usable on the labour market and therefore includes the demand side (Capsada-Munsech & Valiente 2020). In contrast to purely static approaches, it also considers how social and institutional environments influence the utilisation of skills (Brown 2022). Instead of focussing on short-term measures such as training, this approach takes a holistic approach with long-term measures (e.g. workplace design) (Kilpatrick et al. 2007).

This study focuses on the institutional and political framework conditions within the skill ecosystem, crucial for understanding the Brazilian VET system.

5 Methodology and sample

The results presented in this paper originate from an explorative qualitative study, which investigates the Brazilian society's perception of the FIs, considering their capillarity in the country. We developed a qualitative exploratory research design to analyse an under-researched area of the public VET system. We focus on the general perception of the Brazilian public VET system by the educational representatives at the FIs, as they are important advisers for young people regarding their educational pathways as well as the teachers working with those students at FIs who often have a close relationship to the students and support their interests, aspirations and choices. Aligning with the deductive-inductive intertwine, we conducted a literature review on current research regarding the Brazilian VET system and students' choices and developed a theoretical framework for the analysis and a respective interview guideline. We collected qualitative data by conducting expert interviews with selected educational representatives at the FIs. Expert interviews were chosen to gain specialised knowledge and a deep understanding from an insider perspective within the FIs. By interviewing the educational representatives in their institutional contexts, we take a problem-orientated perspective. The interviewees' knowledge is strongly linked to their professional role and is based on privileged access to information (cf. Meuser & Nagel 2009, 467ff.). They especially qualify as a group of stakeholders with valuable expert knowledge because the FIs cover the full range of educational degrees available in the Brazilian educational system, from secondary general education up to master's degrees and even the option for PhDs.

We carried out n=23 semi-structured expert interviews in Portuguese with 4 rectors and 19 faculty members from different regions and backgrounds across Brazil. Ten interviewees were male and 13 females. All Brazilian regions were included in the sample, with the Southeast region being more significant in numbers (South n=4; Southeast n=7, Centre West n=5, North-east n=4, North n= 3) due to the demographic representativeness and the number of FIs in this region. We anonymized, transcribed and translated the interviews from Portuguese to English. The data was analysed via structured qualitative content analysis in alignment with Kuckartz (2022) by identifying both inductive and deductive categories. A communicative validation of the analysis results took place at various points in the evaluation process.

6 Results

The positive reputation of FIs aligns with individuals' rational choice to maximize their utility. In this context, our results show that parents' attitudes towards VET also influence young

people's educational decisions (cf. Alavi et al., 2012). Furthermore, the availability of diverse educational programs within the same institution provides individuals with a range of (horizontal) choices to maximize their utility.

The organizational structure of FIs, allowing educational pathways from primary to higher education (verticalization), resonates with the availability of diverse educational levels within the same institution. This provides individuals with a vertical range of choices to maximize their utility. Moreover, this vertical integration from a holistic perspective optimizes resources, including infrastructure and faculty expertise (e.g. Buchanan et al., 2017).

Our results show positive perceptions of the quality of education the FIs offer, mainly linked to comprehensive training and relevant knowledge for professional contexts. In general, there is recognition of the importance of faculty and student satisfaction, considering the institutions' relevance within their local context, not only for technical qualification but also for helping people to form their principles and values. Nevertheless, the comprehensive and long-term improvement of the standing of FIs requires a multi-perspective approach in cooperation with the relevant political actors (Jambo & Pilz, 2018). This political discussion and the current changing situation within Brazil offer opportunities to intensify the ties between the FIs and the regional economy. This could lead to the establishment of a true skill ecosystem, with FIs being one of its main contributors.

6.1 Micro factors

Students choose the FIs primarily because of socio-cultural and economic factors such as proximity to home and the associated low costs. This relates to direct (e.g. travel) costs as well as the sunk costs such as looking after relatives and supporting the family. The focus is also on one's own interests and the realisation of these, as the following quote illustrates:

> I believe that you have a technical background, and you have a profession that you can practice when you go to college, especially in the same area of activity, for example, become a technician. Do you like drawing, architecture? Become a building technician before doing architecture, Jeneci, okay? I remember very well that the students who attended a federal technical school in the area of mechanics must have ture, they were much, much more, they were much further ahead than the engineering students …. (VETinBrasil_JeSe09)

In this context, the maximisation of benefits is emphasised above all, while the (educational) costs should be kept as low as possible in line with the idea of rational choice. This benefit is also based on access to education without hurdles, in comparison to public schools, but also with the idea of being able to work part-time and pursue other activities due to the short transfer routes. The FIs offer students degrees of freedom here, which is why they are favoured. This makes the offered educational options accessible to less privileged classes in particular and enables education and support for these marginalised groups.

On the other hand, these exact degrees of freedoms reduce the FIs attractiveness to potential students. Empty classrooms due to high absentee rates, bureaucratic hurdles due to state funding, but also the strong specialisation of the individual FIs and their orientation mean that students do not take advantage of the opportunities offered by the FIs.

Ambivalent to the promotion of weaker educational strata, private universities are favoured by higher educational strata. This goes hand in hand with the gain in status that an individual achieves by completing and obtaining a degree at a private university. Individual interviewees also stated that employment at a private university was an attractive option for them and that the FIs were their second priority. Nevertheless, once teachers join the FI system, they perceive FIs as a very positive option with a wide range of opportunities, particularly specialisation but

also compatibility with other commitments, e.g. “I thought it was something like that, like, I didn't imagine that there was also this possibility (…)” (VETinBrasil_MaSe04).

6.2 Mesofactors

Individual educational choices are also influenced by the cultural environment (family, friends, local economy). Families who have had positive experiences with FIs tend to send their children to such institutions, whereas families with no experience are rather sceptical. Here, the cross-references between the two system levels (micro and meso) assumed in the above theoretical model emerge, in that the family has a significant influence on the educational decisions of individuals.

Cultural reasons also lead students to use the nearby FIs as an educational option, as they have an interest in supporting the local economy and entering the labour market there.

> …is an instrument of opportunity for people who want to develop in this area, and who need to professionalise themselves for the job market, have that possibility at this institution. (VETinBrasil_JaSe05)

The statement clearly shows that local job requirements influence individuals' educational choices. From the holistic perspective of the skill ecosystem approach, local companies define the labour requirements, and educational institutions, in turn, serve these.

7 Conclusion

This study sheds light on the reputation and perception of the Brazilian VET system, focusing on the FIs. While the FIs are perceived positively for their comprehensive training and relevant professional knowledge, several challenges hinder their attractiveness to students. Addressing societal perceptions, improving accessibility, strengthening industry collaboration, and investing in quality and resources are essential strategies to enhance the appeal of the VET pathway. The broad coverage of VET programmes is a unique selling point of the FIs offer especially, enabling qualifications for all levels and making education tangible. On the other hand, this new approach is a controversial offer to the existing, but private and thus only open to the privileged class offers. Considering that public schools in Brazil are responsible for around 50 million students (Verhine & Vinhaes, 2018), FIs are a suitable alternative to broaden VET education and thus qualify it across the board. This results from the possibility of creating an offer according to individual interests and under the aspect of maximising benefits and the requirements of the prevailing job market. To address the disparities between the public and private educational sectors, even more resources such as internet access, libraries and computers will also be made available in public institutions, which should potentially counter educational heterogeneity even more strongly (e.g. Educucao, 2021). Thus, an offer can be created that no longer promotes local preferences but supports individual qualification considering one's own interests (e.g. OECD, 2015). Supporting a skill ecosystem with economic players inducing their needs and FIs as key contributor, this approach could support the development of a skilled workforce and promote social and economic mobility in Brazil. Corporate investment in further training is also necessary to improve the interplay of aspects for achieving a skills ecosystem. In addition to the companies themselves, policymakers are also called upon to create the necessary education and labour market policy framework to realise these options for action. Policymakers should not neglect issues such as providing information on educational opportunities, job quality and career opportunities, labour market participation and qualifications. This highlights the necessary interaction between different players for a functioning skills ecosystem. Overall, the design elements based on the skill ecosystem approach are closely interrelated, and the political framework conditions and activities have a significant influence on

the success of such an approach. The high degree of interdependence between the ecosystem actors from Finegold's (1999) original definition is, therefore, also evident in the Brazilian context.

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