

Determining factors of organizational ambidexterity in academic performance in private higher education institutions

Fatores determinantes da ambidestria organizacional no desempenho acadêmico nas instituições de ensino superior privadas

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Abstract

Purpose: This research aims to measure the impacts of determining factors of organizational ambidexterity on academic performance in private higher education institutions (HEIs) in Brazil.

Originality/value: This study investigates predictive, mediating, and moderating relationships in a model that has yet to be explored in the literature.

Design/methodology/approach: This theoretical-empirical research uses questionnaires containing 172 Brazilian private HEIs and analyzes them through structural equation modeling.

Findings: The results indicated that entrepreneurial orientation positively influences academic performance directly or is mediated by organizational ambidexterity. Learning orientation does not directly influence academic performance, but the result is significant when mediated by organizational ambidexterity. Although not substantial, market turbulence shows a medium moderation in the relationship between ambidexterity and performance. The indirect path between entrepreneurial orientation and academic performance mediated by organizational ambidexterity was stronger than the direct path without the mediation of ambidexterity. In conclusion, ambidexterity is presented as a relevant construct to mediate entrepreneurial orientation and learning orientation in the performance of private HEIs in Brazil under conditions of market pressure.

Keywords: entrepreneurial orientation, learning orientation, organizational ambidexterity, academic performance, higher education institutions

Resumo

Objetivo: Esta pesquisa objetiva mensurar os impactos de fatores determinantes da ambidestria organizacional no desempenho acadêmico nas instituições de ensino superior (IESs) privadas no Brasil.

Originalidade/valor: Investigam-se as relações preditoras, mediadoras e moderadoras em um modelo ainda não explorado na literatura.

Design/metodologia/abordagem: Trata-se de uma pesquisa teórico-empírica com uso de questionários em 172 IESs privadas brasileiras, analisados com modelagem de equações estruturais.

Resultados: Os resultados indicaram que a orientação empreendedora influencia positiva e diretamente o desempenho acadêmico ou é mediada pela ambidestria organizacional. A orientação à aprendizagem não influencia diretamente o desempenho acadêmico, mas, quando mediada pela ambidestria organizacional, o resultado é significativo. A turbulência de mercado, embora não significativa, apresenta uma média moderada na relação entre a ambidestria e o desempenho. O caminho indireto entre a orientação empreendedora e o desempenho acadêmico mediado pela ambidestria organizacional mostrou-se mais forte em comparação ao direto, sem a mediação da ambidestria. Em conclusão, a ambidestria apresentou-se como um constructo relevante para mediar a orientação empreendedora e a orientação à aprendizagem para o desempenho das IES privadas no Brasil, sob condições de pressões de mercado.

Palavras-chave: orientação empreendedora, orientação à aprendizagem, ambidestria organizacional, desempenho acadêmico, instituições de ensino superior

INTRODUCTION

Higher education institutions (HEIs) play a significant role in training specialists, scientists, researchers, and high-level professionals, which the state and market require, and also in producing the latest information and knowledge for the benefit of national innovation systems, all of which is essential for the creation, exchange, and implementation of knowledge creation and sharing (Jardim et al., 2020). The challenge for educational institutions involves maintaining a strong sense of entrepreneurial dynamism (Nasereddin & Rababa, 2021; Yang et al., 2016) and learning orientation (Amrullah, 2021; Yang et al., 2018; Wahab & Ahmad, 2015) to balance radical and incremental innovative actions to ensure organizational performance (Yang et al., 2018) under pressures of market turbulence (Naheed et al., 2019; Waller et al., 2020).

Regarding HEIs and private colleges, the literature presents positive relationships between determining factors of organizational performance, namely: between entrepreneurial orientation and organizational ambidexterity (Kocak et al., 2017; Nasereddin & Rababa, 2021; Yang et al., 2016); between learning orientation and organizational ambidexterity (Yang et al., 2018); between entrepreneurial orientation and organizational performance (Meilani & Ginting, 2018; Migliori et al., 2019; Silveira-Martins et al., 2017); between learning orientation and organizational performance (Amrullah, 2021; Meilani & Ginting, 2018; Souza & Takahashi, 2019; Wahab & Ahmad, 2015); and between organizational ambidexterity and organizational performance (Alharafsheh et al., 2021; Pangarso et al., 2020; Yang et al., 2018).

Thus, the following research gaps were identified in HEIs: 1. the need to measure the mediating effect of organizational ambidexterity on entrepreneurial orientation and academic performance; 2. the need to measure the mediating effect of organizational ambidexterity on learning orientation and academic performance; 3. the interest in measuring the moderating effect of market turbulence on organizational ambidexterity and academic performance; and 4. the need to integrate these five constructs into a model that seeks to explain performance in HEIs.

In this sense, the following question arises: what are the effects of determining factors of organizational ambidexterity on academic performance in private HEIs in Brazil? Thus, the general objective of the research is to measure the impacts of determining factors of organizational ambidexterity on academic performance in private HEIs in Brazil.



Regarding theoretical relevance, the study proposes a theoretical model that includes entrepreneurial and learning orientation with antecedents of organizational ambidexterity for better academic performance. According to Balasubramanian et al. (2020), Ledo et al. (2021), and Peloso et al. (2020), the market turbulence construct was included in the model as a moderating latent variable.

Furthermore, understanding this phenomenon is intended to help private HEIs differentiate themselves in the market and help educational authorities, such as the Ministry of Education (MEC), to understand how HEIs should strategically position themselves and formulate public policies.

HYPOTHESES AND THEORETICAL MODEL

Entrepreneurship-oriented organizations change and shape the environment and are willing to commit resources to exploit uncertain opportunities. These explore new and creative ideas that can lead to changes in the market in a proactive manner, ahead of the competition, in anticipation of future demand (Kanaan-Jebna et al., 2021). HEIs have a set of resources that allow them to obtain competitive advantages to meet the demands of the new knowledge-based economy (Balasubramanian et al., 2020; Perkmann et al., 2013). Within the resource pool, the pre-eminence of knowledge as a valuable resource generates a shift in HEI expectations to include the commercialization of research alongside traditional teaching and basic study activities. These resources include the capacity for innovation, expressed as organizational ambidexterity, which is characterized as the state of adaptation of the organization of exploration (radical) and exploitation (incremental) processes at the same time and, encouraged by entrepreneurial orientations, allowing organizations to innovate, create new businesses and renew their operations (Cegarra-Navarro et al., 2021).

However, entrepreneurial orientation is an antecedent for exploration and exploitation strategies, both in terms of product development, as well as in market choice and sense-making capabilities (Lisboa et al., 2016; Martins et al. 2019), promoting technological orientation with an impact on exploration and exploitation strategies (Kocak et al., 2017). In a Jordanian university, Yang et al. (2016) found a positive relationship between entrepreneurial orientation and organizational ambidexterity in private schools in Indonesia, Nasereddin and Rababa (2021) and presented the following hypothesis:



- H1: Entrepreneurial orientation has a positive and significant impact on organizational ambidexterity.

Generating and applying new knowledge and ideas imply product, process, or service innovation (Calantone et al., 2002; Huang & Li, 2017). To this end, learning orientation reflects the values and beliefs of a team that influence the behavior of team members to create, share, and apply knowledge (Huang & Li, 2017; Hult et al., 2004; Wang, 2008).

Research by Yang et al. (2018), which involved the participation of private high schools in Indonesia, confirms the hypothesis of the positive influence of learning orientation on ambidextrous ability. In this sense, the following hypothesis is made:

- H2: Learning orientation has a positive and significant impact on organizational ambidexterity.

Entrepreneurial orientation is classified as a critical organizational process that impacts organizational performance (Amin, 2015; Lumpkin & Dess, 1996; Miller, 1983) and business performance, which is considered the core direction of corporate strategic management (Masa'deh et al., 2018).

To measure academic performance in HEIs, Sciarelli et al. (2020) adopted perceptual measurements of organizational performance in each of the following four dimensions: student outcomes, faculty/staff outcomes, institute outcomes, and society outcomes. The positive relationship between entrepreneurial orientation and performance was supported by Silveira-Martins et al. (2017) at the Federal Institutes of Education in Brazil; Migliori et al. (2019), in a study with 174 managers and academics from 162 Italian universities, and in the work of Meilani and Ginting (2018) in a study that involved the participation of 123 HEIs in Indonesia. Thus, there is the following hypothesis:

- H3: Entrepreneurial orientation has a positive and significant impact on performance.

Learning-oriented companies are willing to question their well-run organizational systems and update fundamental operating philosophies. These attitudes, formed by behaviors and strategies, should lead to superior performance in the long term (Calantone et al., 2002; Kumar et al., 2020).



Learning orientation is important for achieving goals and improving performance. In the business context, research has shown a positive relationship between learning orientation and performance (Baker & Sinkula, 2007; Yannopoulos et al., 2012).

The following studies in HEIs supported positive relationships between learning orientation and performance (Amrullah, 2021; Meilani & Ginting, 2018; Souza & Takahashi, 2019; Wahab & Ahmad, 2015). In this way, the following hypothesis is established:

- H4: Learning orientation has a positive and significant impact on performance.

The literature presents evidence suggesting that companies that can master both exploration and exploitation capabilities (organizational ambidexterity) can achieve competitiveness and superior performance (He & Wong, 2004; Kafetzopoulos, 2020; O'Reilly & Tushman, 2013; Pertusa-Ortega & Molina-Azorín, 2018).

Alharafsheh et al. (2021) evaluated 176 HEI managers in Jordan; Pangarso et al. (2020) identified links between organizational ambidexterity and sustainable competitive advantage in a study with 530 managers and staff, 478 academics and 52 non-academics from HEIs in Indonesia, and Yang et al. (2018) studied private high schools in Indonesia. They concluded that ambidexterity had a positive influence on performance. Thus, there is the following hypothesis:

- H5: Organizational ambidexterity has a positive and significant impact on performance.

Entrepreneurial oriented actions are exploratory in nature, which usually means uncertain returns (March, 1991; Wiklund & Shepherd, 2011), while organizational ambidexterity is seen as a type of dynamic capability that is developed gradually over time through interaction with the environment (O'Reilly & Tushman, 2008; Raisch et al., 2009). The effect of the mediating role of ambidexterity has already been defended in scientific research (Gibson & Birkinshaw, 2004; Jurksiene & Pundziene, 2016; Pangarso et al., 2020). Thus, the following hypothesis is formulated:

- H6: Organizational ambidexterity mediates the relationship between entrepreneurial orientation and performance.



Although previous research has recognized that learning orientation positively impacts performance (Baker & Sinkula, 2007; Yannopoulos et al., 2012), a direct relationship does not appear to be empirically conclusive. As Hult et al. (2004) suggested, the possibilities of learning orientation can be mediated by factors that directly impact performance.

As noted in the previous theoretical analysis, H3 links learning orientation with organizational ambidexterity, and H4 links organizational ambidexterity with performance. In this sense, the discussion suggests that the relationship between learning orientation and academic performance can be mediated by organizational ambidexterity.

While learning orientation provides basic elements to achieve the benefits of new products, ambidexterity can enable the transformation of learning orientation into viable learning activities to achieve a favorable performance of new products and or services (Huang & Li, 2017). Thus, the following hypothesis is developed:

- H7: Organizational ambidexterity mediates the relationship between learning orientation and performance.

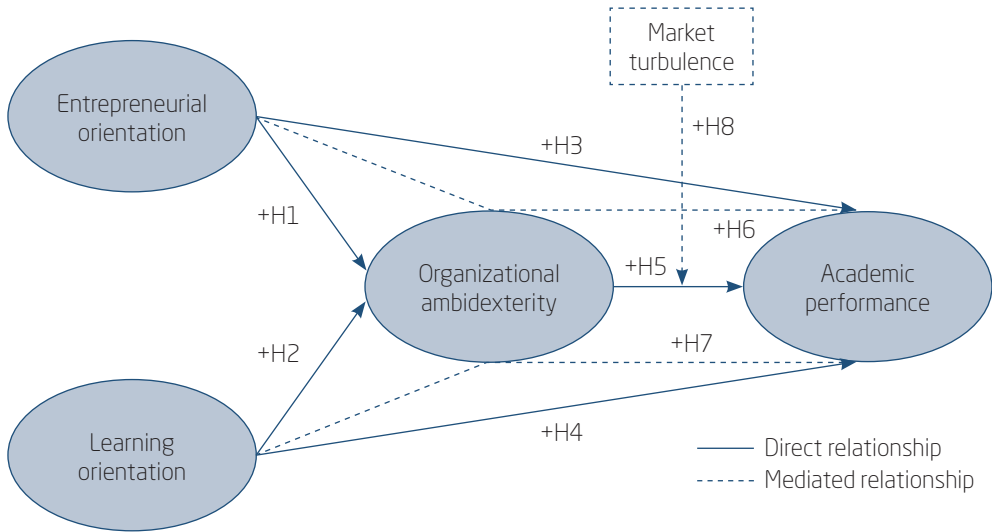
Turbulence can be defined as a situation in which events, demands, and support interact and change in highly variable, inconsistent, unexpected, or unpredictable ways (Ansell, 2017), implying the difficulty of organizational planning (Moon, 2020). Thus, turbulent markets continually create new business opportunities due to rapid changes in customer bases and customer expectations, so the window of opportunity through which a company can gain a competitive advantage is narrower than in other more stable markets, and the variation of possible outcomes is greater (Peters et al., 2019). These conditions increase uncertainty and require risk-prone, innovative, and proactive company actions in order to remain competitive in the market (Rosenbusch et al., 2013).

To survive in turbulent environments, companies must become receptive to changes in current and new customer preferences (Hanvanich, 2006). Thus, in turbulent environments, market turbulence is expected to influence the relationship between innovation strategies and performance (Liao et al., 2018; Naheed et al., 2019). In this case, the following hypothesis is suggested:

- H8: Market turbulence positively moderates the relationship between organizational ambidexterity and performance.

Figure 1 presents the detailed conceptual model with the hypotheses that will be investigated.

Figure 1
Conceptual research model



Thus, the model above advocates that HEIs with positive variations in entrepreneurial orientation and levels of organizational learning influence the level of organizational ambidexterity, with the relationship between organizational ambidexterity and academic performance moderated positively by market turbulence. Thus, the model seeks to explain the internal (market orientation, learning orientation, organizational ambidexterity, and innovation capacity) and external (market turbulence) factors as determinants of academic performance in private HEIs in Brazil.

METHODOLOGY

Research typology

This is an epistemologically positivist research that, applied to the context of the Social Sciences, assumes that the researcher objectively obtains data, remaining external to the research process and independent of the research object (O’Gorman & MacIntosh, 2015).

As for the method, this is characterized as inductive, a process that starts from particular data to lead to conclusions whose content is much broader than the initial premises (Marconi & Lakatos, 2019). Regarding the approach, this is quantitative research, more appropriate for the Social Sciences, with the use of questionnaires which allow for the testing of hypotheses using statistical techniques (Marconi & Lakatos, 2019; Richardson, 2014).

Data collection

The sample comprises private HEIs and is divided into faculties, university centers, and universities. According to Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP, 2021), 2,457 private HEIs operate in Brazil, divided into universities (112 public and 91 private), university centers (12 public and 310 private), faculties (140 public and 1752 private) and federal institutes and Federal Centers for Technological Education (Cefets) (40 public and none private). Therefore, there are 2,153 private HEIs in Brazil, thus representing 87.6% of HEIs in Brazil. To estimate the minimum sample size, we used the G*Power application, a free software to calculate statistical power, considering that the theoretical model demonstrates academic performance as the construct that most present antecedents, in this case, three arrows. Therefore, the test was performed considering an f^2 of 0.15 and the number of predictors equal to three. Performing the test for a power of 0.80 resulted in the value of 77 cases as a minimum sample. Hair et al. (2019) estimate this to be two to three times the ideal value, in this case, between 154 and 231 responses.

From October 2021 to March 2022, 2,457 emails were sent to the head manager (rector, vice rector, pro-rectors or directors) of all private HEIs in Brazil using Google forms. Of the total emails sent, 172 responses were obtained.

For evaluating each construct, a seven-point Likert-type scale is used, ranging from strongly disagree to strongly agree. The entrepreneurial orientation and learning orientation scales were used in Brazil by Morais et al. (2020). The organizational ambidexterity scale was used in the work of Soares and Reis (2020). A performance scale was adapted from Sciarelli et al. (2020) to measure academic performance. The scale by Jaworski and Kohli (1993), applied in Brazil in research by Ferreira et al. (2021), was used to measure the market turbulence construct. The scales mentioned above are shown in Table 1.

Table 1
Measurement scales

Construct	Questions	Authors
Entrepreneurial orientation	E001 – New courses and/or educational services were launched.	Morais et al. (2020)
	E002 – Modifications were made to existing courses and/or educational services.	
	E003 – The HEI has anticipated the actions of competitors.	
	E004 – The HEI has maintained a competitive posture regarding its competitors.	
	E005 – The HEI has been looking for high-risk projects with high benefits.	
	E006 – The HEI has maintained a bold and aggressive posture to maximize opportunities.	
Learning orientation	L001 – Belief in the organization’s ability to learn is fundamental for development.	Morais et al. (2020)
	L002 – The cooperation between teachers, coordinators, and directors is a normal working attitude.	
	L003 – Considers teacher learning to be an investment, not a cost.	
	L004 – Belief that learning is a fundamental value for the development of the Institution.	
	L005 – The team spirit strongly prevails.	
	L006 – Belief that to stop learning means to jeopardize the future of the Institution.	
	L007 – Internal communication shares and always keeps the lessons learned alive.	
Organizational ambidexterity	ET01 – Improved the quality of the existing service.	Soares and Reis (2020)
	ET02 – Improved the flexibility of what is offered.	
	ET03 – Reduced its operating costs.	
	ET04 – Improved its income (<i>i.e.</i> , improved financially).	
	EX01 – Created and introduced a new generation of services.	
	EX02 – Expanded its range of services offered.	
	EX03 – Explored and conquered new markets.	
	EX04 – Technologically evolved.	

(continues)

Table 1 (conclusion)

Measurement scales

Construct	Questions	Authors
Market turbulence	MT01 – Student preferences are constantly changing.	Jaworski and Kohli (1993)
	MT02 – The institution’s set of students changes more easily.	
	MT03 – HEI experiences high variation compared to its competitors.	
	MT04 – New Educational Institutions entered the market.	
Academic performance	AP01 – Significantly decreased the university dropout rate.	Sciarelli et al. (2020)
	AP02 – Increased the enrollment rate.	
	AP03 – An improvement in the number of high-merit students opting for HEI was observed.	
	AP04 – A significant increase in the satisfaction of professors and employees of the HEI was observed.	
	AP05 – An improvement in the scientific performance of the faculty was observed.	

A translation and back translation stage was not necessary (Cassepp-Borges et al., 2010). To adapt the scale to the context of HEIs, the researchers relied on three PhD professors in administration who conducted quantitative research on HEIs with the support of a university center located in the Northeast region.

To calculate ambidexterity, the model proposed by Hughes et al. (2021) was used, whose formula provides an innovation ambidexterity quality score, which is adjusted by the degree of imbalance present in the company. In these organizations that exhibit high exploration and exploitation, there is little or no imbalance, and, therefore, the value of organizational ambidexterity remains high. When respondents favor a specific activity over another, the organizational ambidexterity value is adjusted to correct this imbalance (Hughes et al., 2021). The formula is given by the sum of the difference between the exploration values multiplied by the exploitation values and the square root of the square of the difference between the exploration and exploitation values.

Pre-test

For validation of the research instrument, the questionnaire was applied during the month of October, 2021, to a group of 40 HEIs that presented the

same characteristics of the intended population for the research (Richardson, 2014).

After collection for the pre-test, a reliability or internal consistency test of the applied instrument was performed (Cooper & Schindler, 2016). The reliability coefficient that assesses the consistency of the entire scale was verified, with Cronbach’s alpha being the most widely used measurement.

The generally accepted lower limit for Cronbach’s alpha is 0.70 and may start from 0.60 in exploratory research (Hair et al., 2019), as shown in Table 2.

Table 2
Pre-test internal reliability

Construct	Cronbach’s alpha (N = 40)
Entrepreneurial orientation (EO)	0.874
Learning orientation (LO)	0.859
Organizational ambidexterity (OA)	0.722
Market turbulence (MT)	0.702
Academic performance (AP)	0.825

The pre-test did not require corrections and, as there were no changes to be made, the answers were incorporated into the database. The questionnaire was sent to all private HEIs in Brazil through corporate emails, containing a link to the Google forms (reference within a hypertext document that links to another document) of the research (Malhotra, 2011).

Data analysis

Data were initially entered into an Excel spreadsheet version 2010 and then transported to the SPSS application from IBM version 20 to analyze descriptive data, hypothesis testing, and inferential and multivariate statistics.

SmartPLS version 3.3.3 was used to verify the hypotheses, which is a software for structural equation modeling, using the partial least squares path modeling method.

The study performed several procedures to reduce the risk of possible bias. In an exploratory factor analysis, Harman’s single factor test was performed, and no factor exceeded 50% of the total variance, which indicates a low risk of common method bias (Podsakoff et al., 2003).

In addition, a two-sample t-test was conducted on responses to the dependent variable (academic performance) of survey early responders (86 respondents) and late responders (86 respondents) to check for any potential non-response bias. The null hypothesis indicates that the population means are equal. The t-test resulted in a value of -1.085535 with $p\text{-value} = 0.279225$; that is, the null hypothesis is no longer rejected for a $p\text{-value} > 0.05$.

Therefore, no significant difference between early and late responses could be identified at the 5% level, implying a low risk for the presence of non-response bias (Schnellbacher & Heidenreich, 2020). In addition, study participants were assured that all information would be confidential, mitigating the risk of social desirability bias (Podsakoff et al., 2003).

FINDINGS

Descriptive analysis

Table 3 shows the results of the descriptive analysis of the sample, which had a representativeness of the faculties of 57% of the total.

Table 3
Descriptive data

Variable	Item	N	N (%)
Type	Faculty	98	57.0
	University center	44	25.6
	University	30	17.4
Region	North	17	9.9
	North-east	72	41.9
	Center-west	14	8.1
	South-east	40	23.3
	South	29	16.9
Number of undergraduate courses	Up to 20 courses	108	62.8
	More than 20 courses	64	37.2

(continues)

Table 3 (conclusion)**Descriptive data**

Variable	Item	N	N (%)
Time of operation	Up to 10 years	25	14.5
	From 11 to 20 years	68	39.5
	From 21 to 30 years	21	12.2
	From 31 to 40 years	7	4.1
	More than 40 years	51	29.7

Most participating HEIs are from the Northeast region (41.9%). Regarding the courses offered, 62.8% of the HEIs offered up to 20 undergraduate courses, and, in terms of operating time, they can be divided into two groups, one group with up to 20 years of experience and the other group with more than 20 years of experience. The founding period varied between 1 and 119 years, with an average of 29.3 years.

Measurement analysis

To evaluate reflective measurement models, it is necessary to examine the indicator loads. Loadings above 0.708 are recommended, as they indicate that the construct explains more than 50% of the variance of the indicator, providing acceptable reliability for the item (Hair et al., 2019).

Subsequently, the reliability of the internal consistency was evaluated using the composite reliability (CR) of Jöreskog (1971). Reliability values between 0.60 and 0.70 are considered “acceptable in exploratory research”, values between 0.70 and 0.90 range from “satisfactory to good”. Values of 0.95 and higher are more problematic, as they indicate that the items are redundant, reducing construct validity (Diamantopoulos et al., 2012; Hair et al., 2019). Likewise, Cronbach’s alpha (CA) was used to verify internal reliability, with required values similar to composite reliability (Hair et al., 2019). As shown in Table 4, the indicators were considered adequate as they were within the required reliability interval.

As a result, the convergent validity of each construct measure was verified. Convergent validity is the extent to which the construct converges to explain the variance of its items. The metric used to assess the convergent validity of a construct is the average variance extracted (AVE) for all items of each construct. An acceptable AVE is 0.50 or higher, indicating that the

construct explains at least 50% of the variance of its items (Bido & Silva, 2019; Hair et al., 2019). According to Table 4, the results demonstrated the convergent validity of each construct.

Table 4
Reliability and validity of constructs

Constructs	Item	Outer loading	CA	CR	AVE	VIF
Entrepreneurial orientation			0.877	0.909	0.627	
	E001	0.675				1.51
	E002	0.657				1.52
	E003	0.865				3.23
	E004	0.889				3.76
	E005	0.741				2.18
	E006	0.887				3.66
Learning orientation			0.884	0.909	0.588	
	L001	0.739				1.85
	L002	0.761				1.98
	L003	0.787				2.43
	L004	0.784				2.73
	L005	0.821				2.39
	L006	0.651				1.62
Organizational ambidexterity			0.851	0.881	0.500	
	ET01	0.712				1.83
	ET02	0.742				2.07
	ET04	0.719				2.03
	EX01	0.821				2.72
	EX02	0.809				2.63
	EX03	0.681				1.96
EX04	0.720				1.86	

(continues)

Table 4 (conclusion)

Reliability and validity of constructs

Constructs	Item	Outer loading	CA	CR	AVE	VIF
Market turbulence			0.701	0.752	0.531	
	MT01	0.711				1.45
	MT02	0.968				1.48
	MT03	0.704				1.21
Academic performance			0.872	0.907	0.665	
	DA01	0.652				1.44
	DA02	0.852				2.66
	DA03	0.891				3.15
	DA04	0.862				2.52
	DA05	0.796				1.87

Variance inflation factor (VIF) indicators resulted in values lower than 5 (Hair et al., 2019). The four items that had factorial loads lower than 0.708 (OE01, OE02, OA06 and DA01) were maintained by the decision of the researchers because they presented values very close to those required as well as the fact that the AVE, Cronbach’s alpha, and the composite reliability met the required values, however, the ET03 and TM04 indicators were excluded because they had a factorial load of 0.308 and 0.304 respectively (Bido & Silva, 2019; Hair et al., 2019).

The next step refers to the discriminant validity, which was measured using the Fornell and Larcker (1981) criterion. This method states that the construct shares more variance with its indicators than with any other construct (Hair et al., 2019) – see Table 5.

Table 5

Discriminant validity

Construct	OA	AP	EO	LO
Organizational ambidexterity	1.000			
Academic performance	0.709	0.815		
Entrepreneurial orientation	0.740	0.649	0.792	
Learning orientation	0.564	0.437	0.541	0.766

According to Table 5, the shaded values are higher than those below or on the same line, demonstrating discriminant validity.

Structural analysis

Model quality assessment is based on its ability to predict endogenous constructs. The following criteria facilitate this evaluation: Coefficient of determination (R^2), cross-validation redundancy (Q^2), and path coefficients and effect size (f^2). The R^2 is a measurement of the model’s predictive accuracy that represents the exogenous variable’s combined effect on the endogenous variable(s). This effect ranges from 0 to 1, with 1 representing complete predictive accuracy and Q^2 meeting the criterion > 0 (Hair et al., 2019), which were met (see Table 6).

Table 6
Predictive validity

Construct	R^2	Adjusted R^2	Q^2
Organizational ambidexterity	0.582	0.577	0.567
Academic performance	0.536	0.527	0.344

Table 7
Hypothesis results

Correlation	Hypothesis	Coefficient	f^2	P value	Supported
EO → OA	H1	0.615	0.644	0.000	YES
LO → OA	H2	0.231	0.091	0.000	YES
EO → AP	H3	0.263	0.069	0.001	YES
LO → AP	H4	0.006	0.001	0.931	NO
OA → AP	H5	0.497	0.228	0.000	YES
EO → OA → AP	H6	0.310		0.000	YES
LO → OA → AP	H7	0.116		0.000	YES
Moderation MT → OA and AP	H8	0.080	0.013	0.571	NO

As shown in Table 7, the path coefficients and the significance level (p-value) were used to test the hypotheses. The direct effects of hypotheses

H1 ($\beta = 0.615$, $p = 0.000$), H2 ($\beta = 0.231$; $p = 0.000$), H3 ($\beta = 0.263$; $p = 0.000$), and H5 ($\beta = 0.497$; $p = 0.000$) were evaluated and supported at a 95% confidence level. Hypothesis H4 ($\beta = 0.006$, $p = 0.931$) presented a result that demonstrates a lack of support for this hypothesis due to a lack of significance ($p > 0.05$). The results of hypotheses H6 and H7 indicate the mediating effect of organizational ambidexterity on the relationship between entrepreneurial orientation and academic performance ($\beta = 0.310$; $p = 0.000$) and between learning orientation and performance ($\beta = 0.116$; $p = 0.000$). Hypothesis H8 evaluated the moderating role of market turbulence in the relationship between organizational ambidexterity and academic performance. As the result was not significant, the hypothesis was rejected. However, if the significance is disregarded, the value of $\beta = 0.080$ with $f^2 = 0.013$, when it comes to the moderating effect, Hair et al. (2019) suggest Kenny's (2015) classification: $f^2 = 0.005 = \text{small}$; $f^2 = 0.010 = \text{medium}$; $f^2 = 0.025 = \text{large}$. Therefore, the moderating effect in this study is medium and not significant.

DISCUSSION

H1, which predicts the positive relationship between entrepreneurial orientation and organizational ambidexterity, was supported, in line with the study by Yang et al. (2016) for a Jordanian university and in regard to private schools in Indonesia researched by Nasereddin and Rababa (2021).

Regarding H2, this study finds a positive relationship between learning orientation and organizational ambidexterity, confirming the finding in the research by Huang and Li (2017), which had the participation of 336 respondents representing Taiwanese companies. In the same sense, this result confirms the work carried out by Yang et al. (2018) in a study involving 140 private high schools with more than 100 students enrolled and located in West Kalimantan, Indonesia. When institution members are engaged in learning, they can improve their ambidextrous capacity for exploration and exploitation of knowledge (Huang & Li, 2017).

H3, which defends the positive relationship between entrepreneurial orientation and academic performance was found to be supported. This result is in line with the research developed by Meilani and Ginting (2018), Migliori et al. (2019), and Silveira-Martins et al. (2017). Entrepreneurial orientation is an organizational attitude that emphasizes innovativeness, risky projects (risk-taking), and a propensity for pioneering innovations

(proactivity) that anticipate competition (Miller, 1983). In this sense, entrepreneurial orientation is a significant antecedent of performance (Migliori et al., 2019).

Regarding H4, which supports the positive relationship between learning orientation and academic performance, this was not supported. This result is in line with Yang et al. (2018), who rejected the same hypothesis with schools in Indonesia, but not in line with the research on HEIs by Amrullah (2021), Meilani and Ginting (2018), and Wahab and Ahmad (2015) that supported the hypothesis. In terms of learning orientation, leaders of HEIs who have an assessment of the quality of activity and decision-making and have a perception of learning as an investment, not a cost, are able to see learning as the main instrument to ensure the survival of the organization so that they have an impact on improving its performance (Amrullah, 2021). In the context of higher education, the implementation of learning orientation encourages positive situations such as commitment to learning, openness to new ideas, and a shared vision (Meilani & Ginting, 2018). It should be noted that in H7 below, it is seen that learning orientation, when mediated by organizational ambidexterity, influences academic performance.

Hypothesis H5, which reinforces the positive relationship between organizational ambidexterity and academic performance, was supported. The results are similar to the work by Yang et al. (2018) in private high schools in West Kalimantan, Indonesia, and by Alharafsheh et al. (2021) and Pangarso et al. (2020) with HEIs. The results show that the concept of ambidexterity is applicable in the context of HEIs (Pietsch et al., 2022). As examples of innovations in HEIs, we can mention artificial intelligence, augmented reality, big data, blockchain, internet of things, sensing, virtual reality (Dovleac & Cărmădaru, 2023), and innovations ecosystems (Hachmeister, 2022).

Regarding H6, which refers to the mediation of organizational ambidexterity between entrepreneurial orientation and academic performance, this was supported; that is, a partial mediation occurred since the direct effect and the indirect effect were significant (p -value < 0.05) (Bido & Silva, 2019). The total indirect effect resulted in $\beta = 0.310$, while the direct effect presented $\beta = 0.583$, and in this case the direct effect between EO and AP presents a better path. In HEIs with an entrepreneurial orientation, the crucial role of organizational ambidexterity and its positive influence on their performance has been widely recognized in public and private universities, as ambidexterity stimulates the development of innovation processes and

ensures successful performance (Cabeza-Pullés et al., 2020). The ability to achieve some level of organizational ambidexterity, seeking both exploration and exploitation, is necessary to develop new knowledge and achieve efficiency (March, 1991), stimulate innovation and ensure successful performance (He & Wong, 2004).

The results show that in H7, learning orientation, when mediated by organizational ambidexterity, starts to have a significantly positive relationship with academic performance, revealing the indirect effect of learning orientation on academic performance through ambidextrous ability, that is, it is a total mediation for presenting a non-significant direct relationship (p value > 0.05) and a significant indirect relationship (p value < 0.05) (Bido & Silva, 2019). The total indirect effect resulted in $\beta = 0.116$, while the direct effect had $\beta = 0.120$. In this case, the direct effect between OA and AP has a higher coefficient, and the result was insignificant ($p > 0.05$); in this case, the indirect path is the best path.

Therefore, organizational ambidexterity is important to promote learning orientation. By adding the mediating variable, learning orientation increases its influence, generating a significant indirect effect on academic performance. A good learning-oriented ability will enhance organizational ambidextrousness, and this will support the improvement of academic performance (Alharafsheh et al., 2021; Yang et al., 2018). That is, high learning orientation is most useful when project teams also have high ambidextrous ability, and this ability leads to a positive effect on performance (Huang & Li, 2017).

Finally, market turbulence was used to verify its moderating influence on the relationship between organizational ambidexterity and academic performance. Although insignificant, the result points to a medium and positive moderation, suggesting that ambidexterity increases as market turbulence increases (Bido & Silva, 2019). A justification for the non-significance may be because the survey data was collected in 2021, in which the effect of the Covid-19 pandemic had already been mitigated in this sector and/or market turbulence was a phenomenon common to all HEIs. However, it could also be due to the size of the sample that there could be a bias in the effect of market dynamism. On the other hand, it is known that HEIs had to quickly reposition themselves to maintain organizational survival during and after the pandemic.

A limitation of this research is due to the lack of studies with HEIs based on the constructs of this research for a deeper discussion to be carried out.

When addressing the research's limitations, we highlighted the inability to generalize its results and the lack of studies with HEIs based on the

constructs of this research to conduct a more in-depth discussion. This means that the conclusions are applied only to the investigated sample, since the time horizon refers to a cross-sectional analysis. Although the subject of the research was the head manager of the HEI, there was only one response per institution investigated. In addition, the study considered three dimensions of entrepreneurial orientation: proactivity, risk taking, and innovation. In regard to further possible limitations, institutional environment variables were not considered since the rules are generic to HEIs and could be captured through the items of the market turbulence variable.

CONCLUSIONS

This study contributes to the literature since it presents an integrative model that suggests how entrepreneurial orientation, learning orientation, and organizational ambidexterity are connected in their influence on academic performance under the moderating effect of market turbulence. This, in turn, highlights the importance of organizational ambidexterity in academic performance, which can be summarized as innovation is a promising business strategy.

Furthermore, this study suggests to HEI managers that organizational ambidexterity is a relevant mediator between both entrepreneurial orientation and learning orientation and academic performance. Looking to the future, it is likely that if market turmoil continues to influence the higher education sector, institutions are advised to invest in developing their entrepreneurial and learning orientations and to create incremental and radical innovations.

Finally, the results indicated that learning orientation does not directly influence academic performance, but when mediated by organizational ambidexterity, the result is significant. Entrepreneurial orientation positively influences academic performance directly or indirectly, mediated by organizational ambidexterity. The direct path between entrepreneurial orientation and academic performance was weaker in relation to the indirect path mediated by ambidexterity, while the indirect path between learning orientation and academic performance resulted in significance, and in the direct path there was no significance. Thus, we highlight the importance of mediating organizational ambidexterity. Although not significant, market turbulence shows a medium moderation in the relationship between ambidexterity and performance.



Future research should be conducted with more environmental domains, such as market dynamism and technological turbulence, which are important moderators of organizational performance, and could also investigate the same topic considering other dimensions of entrepreneurial orientation, such as autonomy and competitive aggressiveness. In addition, the current study is cross-sectional, but it is suggested that studies be carried out longitudinally in the future. Another suggestion is to include variables from the institutional environment and measure the model using control variables such as type, size, and length of time of service, using invariance analysis and multigroup analysis.

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