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Absorptive Capacity and Organizational Performance: A study of MSMEs in Strategic Alliances

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Introduction

Smaller firms have restricted managerial experience, less structured procedures and fewer resources than large firms (Audretsch & Belitski, 2021). However, having a well-developed Absorptive Capacity (AC) improves the firms performance (FP) (Engelen et al., 2014; Fritsch & Santos, 2015) and has a positive impact on the success of strategic alliances (SSA) (Flatten et al., 2011). Firm-level absorptive capacity refers to a business' ability to identify relevant external knowledge, assimilate that knowledge, and exploit it commercially (Cohen & Levinthal, 1990).

In turn, strategic alliances improve the AC of these firms (Hamdani et al., 2017) and impact their growth and competitive advantage (Ireland et al., 2002). Strategic alliances are understood as: "cooperative agreements between partners aimed at pursuing mutual strategic objectives" (Das & Teng, 2003, p. 287). Smaller firms have tried to participate in strategic alliances to access resources and knowledge (Emami et al., 2021) and to improve their performance (Lin & Lin, 2015). However, this type of firm has difficulty forming strategic alliances (Franco & Haase, 2015) precisely because of its restrictions.

Given the relevance of MSMEs to the economy (Sebrae, 2021), and the challenges that smaller businesses face regarding access to resources and knowledge (Lin & Lin, 2015), there is a need for further studies on factors that may impact the organizational performance of these firms. Likewise, the importance of conducting more studies on strategic alliances in SMEs is highlighted in the literature (Agostini & Nosella, 2017; Emami et al., 2021; O'Dwyer & Gilmore, 2018). Further studies on AC in SMEs have been indicated (Cajuela & Galina, 2020; Cassol et al., 2020). In this sense, this study will use the theoretical perspective of the resource-based view to understand the relationship between AC and the performance of MSMEs that have strategic alliances and answer the following research problem: What is the relationship between AC and organizational performance that have strategic alliances?

This study generates different theoretical contributions by exploring the relationship between AC and the performance of MSMEs, as well as the role of strategic alliances in MSMEs in an emerging economy country such as Brazil. Emerging economy countries differ from developed countries in terms of the social, political and economic environment (Wright et al., 2005). Micro, small and medium-sized enterprises (MSMEs) are increasingly entering the global market (Guimarães & Azambuja, 2018), representing a large part of the private industry in emerging economies (Beyer & Fening, 2012). From a managerial perspective, this study is expected to generate relevant contributions and information, bringing new insights to MSME managers about engagement in strategic alliances and expanding the firm's existing knowledge base to generate competitive advantage. From a public policy perspective, this study is expected to contribute to more support for MSMEs, so that they can expand their knowledge base, improve AC and form partnerships capable of generating development.

Theoretical review and hypothesis proposition

The concept of AC originates from the following logic: a firm can appropriate and reconfigure knowledge to face instability and market changes, resetting its internal processes and routines (Cohen & Levinthal, 1990; Lane et al., 2006; Zahra & George, 2002). A business' absorptive capacity is its ability to identify, assimilate, and commercially exploit external knowledge, thus comprising three dimensions: identifying, assimilating, and exploiting external knowledge (Cohen & Levinthal, 1990). AC is cumulative, depends on the firm's pre-existing knowledge base and can be increased. In the Resource-Based View, the enterprise is seen as a set of resources that include all assets, capabilities, organizational processes, information, and

knowledge. It uses these resources (that are valuable, rare, irreplaceable and difficult for competitors to imitate) to create value and better serve the market, thus achieving a sustained competitive advantage for the firm (Barney, 1991).

Knowledge stands as a resource and ability of firms to absorb, transform and apply knowledge to improve their performance in their environment, which is unstable (Cohen & Levinthal, 1990; Lane et al., 2006). When a business' AC is well developed, a firm has the ability to recognize the value of new information, assimilate it, and use it for business purposes. In addition to the firm's direct relationship with the external environment, AC depends on the transfer of knowledge between and within its subunits. Thus, a business' AC needs the AC of its individual members (Cohen & Levinthal, 1990).

Thus, two characteristics guide the AC: it is cumulative, because the higher a firm's AC is, the easier it will be to increase it. The AC has an effect on shaping future expectation, allowing for more accuracy in predicting the nature and potential of technological advances. Another important issue is that, with a more developed AC, a firm perceives and exploits better the opportunities of the environment (Cohen & Levinthal, 1990). In this study, we consider that AC has a multidimensional character: acquisition, assimilation, transformation and application (Zahra & George, 2002) (Table 1).

Table 1. Absorptive capacity and its dimensions

Absorptive capacity	AC Dimensions	Definition
Potential	Acquisition	It refers to the firm's ability to locate, identify, and acquire knowledge that are external to the firm (Todorova & Durusin, 2007; Zahra & George, 2002).
	Assimilation	They are processes and routines of a firm to analyze, process, understand and internalize the acquired external knowledge (Cohen & Levinthal, 1990; Todorova & Durusin, 2007; Zahra & George, 2002).
Executed	Transformation	Ability to combine new knowledge with the knowledge that already exists in the business, adapt, and refine this knowledge thus facilitating it to be transferred to others (Cohen & Levinthal, 1990; Todorova & Durusin, 2007; Zahra & George, 2002).
	Application	It refers to the commercial application of externally acquired knowledge. They are the routines that allow the firm to improve, expand and create new skills, operations and knowledge, from the incorporation of acquired and transformed knowledge (Cohen & Levinthal, 1990; Todorova & Durusin, 2007; Zahra & George, 2002).

Source: Prepared by the author (2024).

Organizational performance, measurement and its main challenges

The organizational performance is constituted by the achievement of the organization's objectives and goals involving financial and non-financial indicators. The organization's effectiveness lies in its ability to achieve these planned objectives and goals, while surviving and using essential resources and adjusting to changes in their environment (Fernandes et al., 2007). Thus, financial, non-financial, internal and external, quantitative and qualitative, short- and long-term indicators must be included (Souza-Pinto et al., 2014).

Smaller companies use few indicators and financial indicators are more used than non-financial ones. However, using financial indicators alone is not enough for firms that compete globally (Souza-Pinto et al., 2014). From the perspective of firms, performance may be associated with the achievement of the objectives determined in relation to the market and the products (Westhead et al., 2001). The ideal would be to measure performance by integrating the financial and non-financial dimensions (customers, internal learning and growth processes), after a connection with the firm's objectives and strategy (Souza-Pinto et al., 2014).

The AC moderates and mediates the relationship between other variables that positively influence the performance of firms (Fritsch & Santos, 2015). AC is cumulative and uses

external knowledge to promote internal innovation. AC's goal is to apply externally acquired information for business purposes, and this leads to the thought that AC is related to firm's performance (FP) (Cohen & Levinthal, 1990). The AC of firms has a positive impact on the innovative performance of SMEs (Fritsch & Santos, 2015), on the development of new products, on market performance, and on financial performance (Kim et al., 2014). AC has a positive effect on organizational performance (Fritsch & Santos, 2015; Hitt et al., 2000).
Hypothesis 1: Absorptive capacity positively influences organizational performance.

Strategic Alliances

There are characteristics in an alliance that make it strategic, such as: the alliance is the result of a coherent set of decisions; it is used to develop sustainable competitive advantage; it has a long-term impact on the organization; it is a means of responding to the opportunities and threats from the external environment; it is based on the organization's resources showing its strengths and weaknesses; it affects operational decisions; it involves all levels of the organization and all its activities; it is influenced by the (cultural and political) context (Eiriz, 2001). Strategic alliances, in the perspective of the resource-based view, can be defined as a long-term cooperative arrangement, at the strategic level, between firms, to improve their competitiveness and performance by sharing resources and risks (Inkpen & Tsang, 2007).

Pharmaceutical retail firms practice some specific types of strategic alliances such as: franchises, benefits programs, exclusive suppliers, independent pharmacy associations (cooperatives), outsourced benefits plans, purchase alliances with other retail firms in the same industry and alliances between compounding pharmacies and drugstores (Ribeiro & Prieto, 2013), and also the Popular Pharmacy Program with the Brazilian Government (Aragão Junior, 2012). Smaller firm form alliances to achieve greater market share and complementary resources to meet their needs. Strategic alliances are a source of growth and competitive advantage (Russo & Cesarini, 2017).

Establishing strategic alliances is a delicate process, as there is a high failure rate (Emami et al., 2021; Russo & Cesarini, 2017). The alliance fails when firms pay more attention to their own goals, rather than conducting detailed and careful analysis and evaluation when selecting their partners. Opportunistic behavior, which leads only one of the firms to achieve its individual goal, is another factor that does not generate success for the alliance (Russo & Cesarini, 2017). To integrate two or more independent firms and form an alliance, a great deal of effort is required.

To measure the performance of alliances, many studies used two factors: alliance survival and evaluation of participants' success (Gulati, 1998). Thus, the success of an alliance comes from a balanced, but not equal, exchange of benefits and resources between partners. Each partner enters the alliance with their own goals, but the degree of improvement and achievement of these goals by both companies shows the success of the alliance (Whipple & Frankel, 2000). There are also other criteria to evaluate the performance of alliances: managers' opinions, duration/stability, stock market reactions to the formation of alliances, etc. (Dussauge & Garrette, 1995).

Many factors influence the success of strategic alliances: having a precise definition of rights and duties, contributing specific strengths, establishing the necessary resources, deriving the objectives of the alliance from the business strategy, rapid implementation, and rapid results (Hoffmann & Schlosser, 2001). Having a high absorptive capacity is important for the strategic alliance to be successful (Hamdani et al., 2017). For companies to be able to access external knowledge, the AC must be higher (Flatten et al., 2011). The knowledge acquired and absorbed by the firm is reflected in the success of the strategic alliance, in terms of efficiency and innovation, developing the business deals for the firm (Hamdani et al., 2017).

Hypothesis 2: Absorptive capacity positively influences the success of strategic alliances.

Strategic alliances have a positive impact on organizational performance (Emami et al., 2021; Ferreira & Franco, 2017; Nwokocha & Madu, 2020). They significantly and positively impact in terms of financial, operational and organizational performance SMES in Iran (Emami et al., 2021) and on the innovative performance of Chinese companies (Sun et al., 2022). Improvement in the financial performance of partners is one of the motivations to forming alliances (Ariño, 2003).

Hypothesis 3: The success of strategic alliances positively influences organizational performance.

The literature supports that organizational performance is affected by AC (Engelen et al., 2014, Fritsch & Santos, 2015; Oliver et al., 2011) and by the success of strategic alliances (Emami et al., 2021; Ferreira & Franco, 2017; Nwokocha & Madu, 2020). While AC improves the performance of alliances, firms need alliance partners to increase their AC (Hitt et al., 2000) and consequently improve the performance of strategic alliances (Oliver & Garrigos, 2009; Flatten et al., 2011) and their organizational performance (Emami et al., 2021; Ferreira & Franco, 2017; Nwokocha & Madu, 2020).

AC improves the performance of the strategic alliance in terms of efficiency and innovation, impacting its performance. At the same time, the effects of access to the alliance's knowledge and experience on AC are positive, and they improve the AC of companies (Hamdani et al., 2017). Strategic alliances have a positive and important relationship between AC and firm performance, regardless of firm size (Flatten et al., 2011).

Hypothesis 2-3: The success of strategic alliances mediates the relationship between absorptive capacity and organizational performance.

Characteristics such as size and age of the firm can influence the development of AC (Flatten et al., 2011) and the relationship with third parties (Gruber, 2004). To control these effects, age and size of the company were considered as moderating variables. These two variables can influence the AC of firms, the length of time of operation in the market (Luo & Deng, 2009) and the size of the company (Lane et al., 2006). Young companies need to face challenges such as constraints related to learning and resources (Stinchcombe, 1965), as well as range of appropriate business strategies (Gibson & Cassar, 2002). Management tools that can be easily used in older firms may not meet the needs of younger firms (Gibson & Cassar, 2002). Furthermore, the effect of AC on the success of the strategic alliance may be different between young firms and older ones with more technology. This is relevant to the strategic alliance (Mowery et al., 1996). Younger firms are more flexible and less formalized than older ones (Gruber, 2003) and this can be an advantage for a firm to make better use of resources (Schoonhoven et al., 1990). Regarding the relationship with partners, young companies may have more difficulties, since they do not have sufficient experience, for example, in relation to the market (Romanelli, 1989).

Hypothesis 4: The time of operation *moderates* the relationship between absorptive capacity and organizational performance mediated by the success of strategic alliances.

AC is cumulative and depends on the AC of its individual members. Thus, the size of the firm reflected in the number of employees influence the formation of AC (Cohen & Levinthal, 1990). Smaller firms have restricted managerial experience, less structured procedures and fewer resources than large firms (Audretsch & Belitski, 2021), as well as greater difficulty in accessing resources and knowledge (Aldrich & Auster, 1986). These firms are characterized by the lack of heterogeneity in relation to the organization's employees (McGrath, 1996), which has a positive influence on the firm's AC (Cohen & Levinthal, 1990).

Hypothesis 5: The size of the firm *moderates* the relationship between absorptive capacity and organizational performance, mediated by the success of strategic alliances.

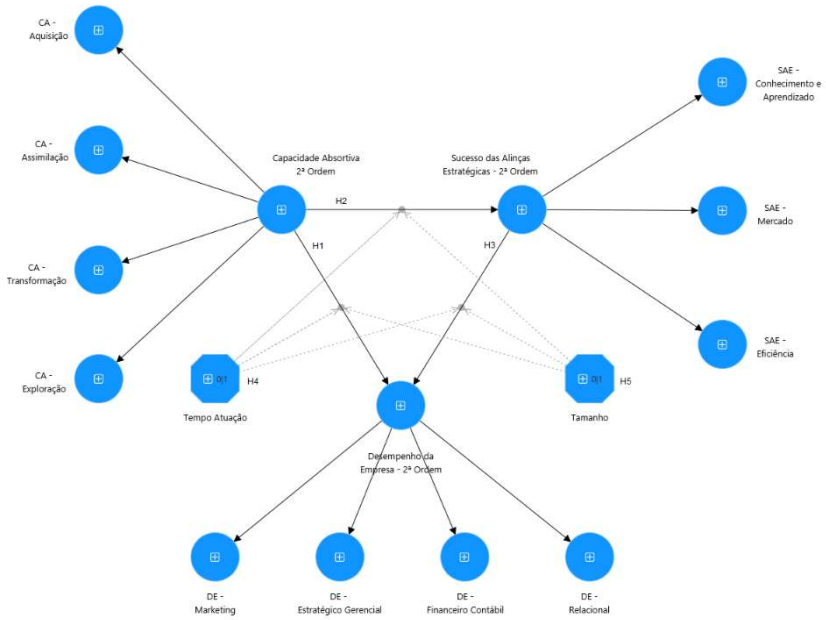

Figure 1. Research Model
Source: Software SmartPLS ® 4.0.8.6 (Ringle et al., 2022).

RESEARCH METHOD

This research has a quantitative approach, given the need to collect primary data to answer the research problem, and an exploratory-descriptive approach. In the context of MSMEs, the pharmaceutical retail sector was chosen to apply this research. In Brazil, this industry has shown constant growth since the 2000s (Mattos et al., 2022; Ribeiro & Prieto, 2013). The highly pulverized environment of pharmacies requires strategic measures to compete with large chains, which have more resources, skilled labor, greater bargaining power, greater market access, rapid growth, and lower costs (Mantovani & Crispin, 2013; Ribeiro & Prieto, 2013).

As the context of MSMEs was chosen for the research, we collected data from 116 MSMEs in the pharmaceutical retail (pharmacies), distributed in 21 cities in the State of Mato Grosso. The pharmaceutical retail sector was chosen because it has many strategic alliances, making it a vast field for study. The survey was conducted from March to July 2023, only with pharmacies that are in strategic alliances. The number of 116 pharmacies was the maximum number of firms whose managers agreed to answer the questionnaire. It is important to highlight that, as they participated in the research, only pharmacies qualified as micro, small or medium-sized firms and also with some kind of strategic alliance, so the sample is not traceable. A field research was carried out to collect the data while using a structured questionnaire. The questionnaires were applied in person, using the *Google Forms* tool to collect the answers.

As a research instrument, a structured questionnaire was used having 4 dimensions: (1) profile of the respondent manager of the MSME and the alliance; (2) absorptive capacity of MSMEs in four dimensions; (3) success of strategic alliances in three dimensions and (4) performance of MSMEs in four dimensions.

The construction of the questionnaire followed the methodological guidelines and scientific rigor to ensure that the research has valid conclusions to answer the research problem. The questionnaire was validated with experts with knowledge on the topics addressed and with conditions to contribute to improving it. Subsequently, a test round was carried out with a small representative sample of the respondents to confirm that the respondents understood the questionnaire and if they had doubts when answering it. Subsequently, the questionnaire was revised, finalized and made available for data collection. The AC constructs, strategic alliances and organizational performance were measured using a seven-point Likert scale (answers between 1 for Never and 7 Always). To ensure that the items of the instruments were

homogeneous and reflected the same implicit construct, internal consistency tests were performed by confirmatory factor analysis for the existing constructs, and exploratory factor analysis, for the adapted ones, following Hair et al. (2021).

Description of operational variables:

Independent variable: AC. This construct is measured in four dimensions: acquisitions, assimilation, transformation and exploration (Zahra & George, 2002), using the scales validated by Flattel et al. (2011). In Brazil, the scale was translated, adapted and applied by Koerich et al. (2015), who identified that AC has a positive effect on organizational performance. The seven-point *Likert* scale ranges from Never to Always.

Mediating variable: SSA. A questionnaire with three dimensions was used: knowledge/learning, market and efficiency. To evaluate these dimensions, we used items from the research instrument of Ferreira and Franco (2017), who obtained that strategic alliances impact organizational performance. The seven-point *Likert* scale ranges from Strongly disagree (1) to Strongly agree (7).

Dependent variable: FP. It was evaluated through a questionnaire having four dimensions (marketing, strategic/managerial, relational and financial) for a more complete evaluation of MSMEs, considering the difficulties encountered to collect financial data with objective measures in smaller firms (Covin & Slevin, 1989). This research uses subjective data to evaluate the financial dimension of the organizational performance. There is a high correlation between subjective measures and objective measures of performance (Flatten et al., 2011).

To evaluate the marketing dimension, we used two items from the research instrument of Ratnawati et al. (2018) and one item from Flatten et al. (2011). All the items we used to evaluate the strategic/managerial and relational dimensions were extracted from the work of Ferreira and Franco (2017). The financial dimension was evaluated from two items used by Emami et al. (2021) and Flaten et al. (2011); one item used by Flaten et al. (2011), and one item by Emami et al. (2021). For the financial dimension, we asked managers to answer the questions regarding their main competitor, following the study by Flatten et al. (2011). The *seven-point Likert* scale had a variation between Totally dissatisfied (1) and Totally satisfied (7).

Moderating variables: the research used the firm size and age as moderating variables to analyze the impact of AC on the performance of MSMEs and the mediating role of strategic alliances. Also, the study considered the size classification carried out by Sebrae, which is based on the number of employees. The firm age was obtained through a free-response questionnaire. Then, we divided MSMEs into two groups according to their age: up to 15 years = younger firms and over 15 years = older firms

Data analysis: after collection, the data were analyzed using the Software SmartPLS® 4.0.8.6. To this end, a partial structural model was created, based on variances (*Partial Least Squares Structural Equation Modeling – PLS-SEM*).

Sociodemographic data of managers, MSMEs and strategic alliances

Sociodemographic profile of MSME managers: items such as position in the firm gender, age group, education were addressed. As for occupation within the company, 50.86% of managers were also owners of the firm, while 49.14% were employees. 75% of these respondents held a management position, while 35.34% held another position, but also assumed the role of manager of the firm. 56.9% of the survey respondents were women and 43.10% were men. Regarding age, the vast majority of these managers (40.52%) were between 38 and 48 years old; 33.62% were between 28 and 38 years old; followed by 12.93% who were between 18 and 28 years old; 12.07% between 48 and 58 years old and 0.86% (only one participant) was over 59 years old. Regarding education, 44.83% of managers graduated from university; 35.34%

have a postgraduate degree, followed by 18.97% who completed high school, and only 0.86% (one respondent) held a Master's degree.

Profile of the MSMEs (pharmacies) that participated in the research: we found out that the 116 MSMEs, in total were distributed in 21 cities over the State of Mato Grosso. The participating MSMEs were located in the following cities: 13.79% in the city of Tangará da Serra; 11.21% in Sinop; 11.21% in Lucas do Rio Verde; 11.21% in Barra do Bugres; 7.76% in Colíder; 6.9% in Sorriso; 6.03 in Tapurah; 6.03 in Diamantino; 5.17% in Nova Mutum; 4.31% in Nova Olímpia; 2.59% in Itaúba; 2.59% in São José do Rio Claro; 1.72% in Arenápolis; 1.72% in Nobres; 1.72% in Nova Santa Helena; and 1.72% in Terra Nova do Norte. The cities of Alto Paraguay, Cuiabá, Nortelândia, Peixoto de Azevedo, Rosário Oeste had only one respondent (0.86%) each.

97.41% of the sample of MSMEs participating in the research worked only as a drugstore and 2.59% also worked with medication handling. Regarding the size of the company, 78.45% were classified as microenterprise (with up to nine employees), 18.97% as small enterprise (between ten and forty-nine employees), and 2.59% as medium enterprise (between fifty and ninety-nine employees). As for the firm age, 27.59% were in operation for 6-10 years; 26.72% for 1-5 years; 25.86% for 11-20 years; 8.62% for 21-30 years; 6.03% for over 30 years; and 5.17% for up to one year of age.

Profile of the main strategic alliances of MSMEs: data on the profile of strategic alliances practiced by MSMEs were collected. This profile refers to the main alliance practiced by MSMEs. It was found that 62.93% of the MSMEs who answered the survey had alliances with two or more firms, while 37.07% had an alliance with one single firm. The MSMEs, with more than one alliance, chose only one to answer the questionnaire. As for the duration of these alliances, 88.79% of respondents said they did not have a pre-established deadline for termination, and the duration extends until one of the partners decides to terminate the partnership, while 11.21% established a deadline for the duration of the partnership. Regarding the formalization of alliances, 86.21% of the SMEs respondents formalize their alliances through contracts, while 13.79% of SMEs do not formalize alliances through this means.

Analysis of the Results

To analyze the relationship between the proposed scales and the control variables (*length of time* the firm has been in that business and the **size** of the firm) (Figure 1), a partial structural model was created, based on variances (*Partial Least Squares Structural Equation Modeling – PLS-SEM*), following the steps proposed by Dias Lopes et al. (2020) and adapted from Hair et al. (2021), namely: a) specification of the structural model; b) specification of the measurement model; c) estimation of the path model; d) evaluation of the measurement model; e) evaluation of the structural model; and f) interpretation of the results and conclusions. Time of operation: Up to 15 years x Over 15 years, and the size: Micro x Small and Medium sizes.

Structural Equation Modeling (SEM)

The structural model was stabilized after two iterations. The following criteria were adopted to evaluate the fit of the PLS-SEM model: *Standardized Root Mean Square Residual* (SRMR), *square Euclidean distance* (d_{SED}), *geodesic distance* (d_G) and *Normed Fit Index* (NFI). The results confirmed that the suggested structural model fit the data with acceptable indices, such as SRMR = 0.066, d_{SED} = 4.031, $d_{G=}$ 0.752, NFI = 0.833 (Henseler, Hubona et al., 2016). The SRMR value was less than 0.08 (Henseler, Ringle et al., 2016) and the NFI value was above the suggested value of 0.8 (Hu & Bentler, 1998). This indicates that the model fit the data.

Analysis of internal consistency and convergent validity: to ensure that dimensions are being measured properly (Hair et al., 2021).

Table 2. Cronbach's Alpha, composite reliability and average variance extracted

Size	Cronbach's Alpha	Composite reliability	Extracted Average Variance
Absorptive Capacity - 2nd Order	0.929	0.938	0.521
Firm's Performance - 2nd Order	0.938	0.930	0.589
Success of Strategic Alliances - 2nd Order	0.925	0.932	0.587

Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

Table 2 shows that the proposed model has adequate internal consistency, whose values of α and ρ_c are greater than 0.9, and consistent convergent validity (VME > 0.5). That is, the indicators are effectively capturing the essence of the dimension and are not being influenced by measurement errors or other unrelated dimensions (Shuai et al., 2022).

The discriminant validity was analyzed using Cross Factor Loads, Fornell-Larcker Criterion (1981) and Heterotrait-Monotrait Ratio (HTMT). Initially, the original factor loads of the indicators presented adequate correlations with their original dimensions, which is ($\lambda \geq 0.6$). As for the crossed factor loads, the correlations of the indicators of the other dimensions are lower than those of the original dimensions, therefore the model presents discriminant validity.

Table 3. FL and HTMT Criteria

Size	$\sqrt{VME}$	Pearson Correlation Matrix		
		AC - 2nd Order	FP - 2nd Order	SSA - 2nd Order
AC - 2nd Order	0.722	1.000		
FP - 2nd Order	0.768	0.658	1.000	
SSA - 2nd Order	0.766	0.640	0.655	1.000
		LS (HTMT)$_{97.5\%}$		
FP - 2nd Order		0.811		
SSA - 2nd Order		0.804	0.921	0.891

Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

Table 3 shows that the smallest square root of the VME (0.722) is higher than the highest correlation between the 2nd order dimensions (SSA vs FP, r = 0.655), therefore, the CFL was confirmed. As for the HTMT criterion, the values of the upper limit of the HTMT estimate was less than 1.0. Therefore, for both criteria, the model presented discriminant validity, with conditions for evaluating its structural behavior.

Evaluation of the structural model: the multicollinearity between the dimensions was evaluated using the VIF (*Variance Inflation Factor*); explanation coefficient – ^{R2}; and predictive relevance $^{-Q2}$. Table 4 shows that the model does not present multicollinearity problems (VIF < 5), as the explanation coefficients have strong effects ($R^2 > 0.19$), and the predictive relevance of the endogenous dimensions showed a strong degree ($Q^2 > 0.25$).

Evaluation of the hypotheses and moderation: the hypotheses proposed in the initial model will be presented and evaluated, as well as the interference of the control variables (moderators), time and size in the model.

Table 4. Analysis of multicollinearity, explanation coefficient and predictive relevance

Exogenous Dimensions	Endogenous Dimensions (VIF)	
	C FP - 2nd Order	SSA - 2nd Order
AC - 2nd Order	3.205	1.820
SSA - 2nd Order	2.795	
R^2	0.732 (0.000)	0.394 (0.000)
Q^2	0.352	0.273

Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

Table 5. Proposed hypotheses and their moderations

	Direct Relationships	B	SD*	Stat. T	p-value
H1	**AC – 2nd ord. → FP - 2nd ord.**	**0.201**	**0.074**	**2.730**	**0.024**
H2	**AC – 2nd ord.→ SSA - 2nd ord.**	**0.687**	**0.130**	**5.270**	**0.000**
H3	**SSA – 2nd ord. → FP - 2nd ord.**	**0.757**	**0.140**	**5.408**	**0.000**
H4a	Tem * AC – 2nd ord. → FP - 2nd ord.	0.001	0.173	0.008	0.993
H4b	Tem * AC – 2nd ord. → SSA - 2nd ord.	-0.070	0.228	0.307	0.759
H4c	**Tem * SSA – 2nd ord. → FP - 2nd ord.**	**-0.379**	**0.179**	**2.124**	**0.034**
H5a	Tam * AC – 2nd ord. → FP - 2nd ord.	0.006	0.244	0.031	0.975
H5b	Tam *AC – 2nd ord. → SSA - 2nd ord.	-0.156	0.171	0.913	0.361
H5c	Tam * SSA – 2nd ord. → FP - 2nd ord.	0.026	0.209	0.130	0.896
	Indirect Relationships				
H2-3	AC → SSA → FP	0.519	0.167	3.116	0.002

* SD = standard deviation
Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

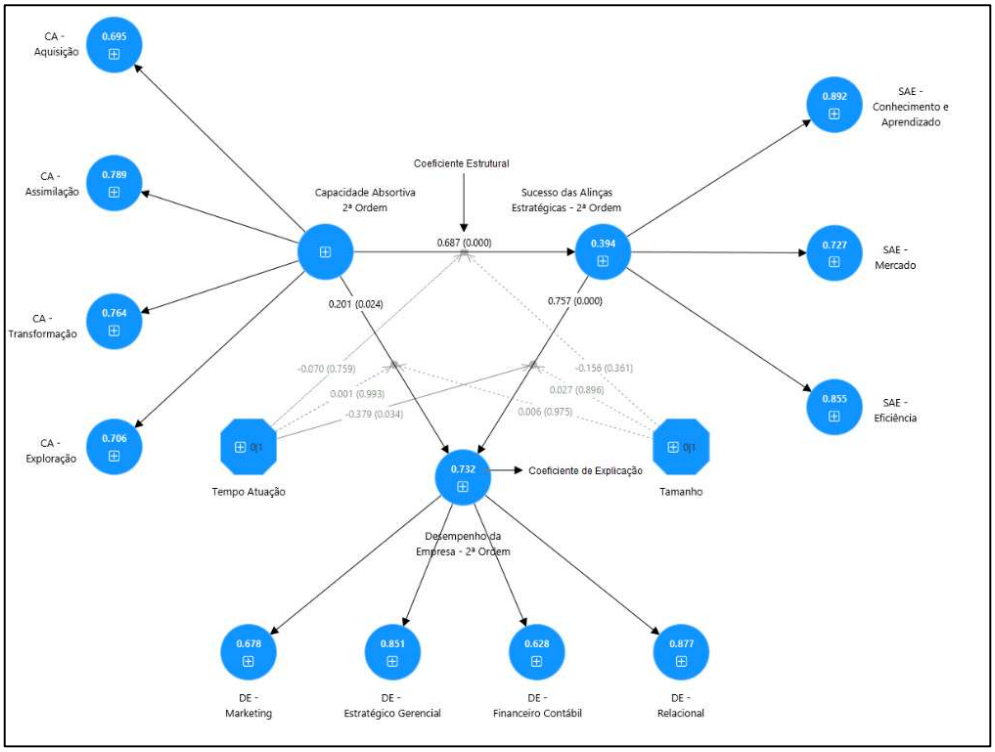

Figure 2. Final structural model.
Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

Table 5 and Figure 2 show that the three proposed hypotheses were confirmed, as well as that the success of the strategic alliances mediates the relationship between absorptive capacity and the performance of the firms ($p < 0.05$), H 2-3. The firm's time in the market negatively influences the SSA relationship with FP($\beta = -0.379$), indicating that the moderating variable changes the relationship between the dimensions, reversing or disfavoring the relationship between SSA and FP, H4. To this end, this relationship will be evaluated separately, that is, after an analysis comparing between the length of time they have been operating (Multigroup Analysis – MGA) (Henseler, Ringle et al., 2016) (Table 6). This test was used to compare the betas between the times, but there was no significant difference between them ($p > 0.05$). Firms with up to 15 years in the market and those with more than 15 years

showed positive and significant relationships ($p < 0.05$) between the success of the strategic alliances and their performance. Therefore, significant moderation did not reverse or disfavor the relationship.

Table 6. Comparison between the time spans firms have been operating (H6)

	Direct Relationships	B	SD*	Stat. T	p-value
Up to 15 years (n = 86)	SSA – 2nd ord. → FP - 2nd ord.	0.734	0.086	8.496	0.000
Over 15 years (n = 30)	SSA – 2nd ord. → FP - 2nd ord.	0.624	0.239	2.609	0.009
Difference	Up to 15 – Over 15	0.110	---	---	0.715

* SD = standard deviation
Source: Software SmartPLS® 4.0.8.6 (Ringle et al., 2022).

Finally, it was found that the size of the firm did not moderate the relationships proposed in the structural model ($p>0.05$), H5.

Discussion

There is a positive relationship ($p<0.05$) between absorptive capacity and organizational performance of MSMEs. Thus, AC appears as a determining factor for the organizational performance of MSMEs. The research hypothesis H1: Absorptive capacity positively influences organizational performance was confirmed, and this result is in accordance with the conclusions found in the literature (Engelen et al., 2014; Flatten et al., 2011; Fritsch & Santos, 2015; Hitt et al., 2000; Koerich et al., 2015; Oliver et al., 2011). The AC has a positive effect on the organizational performance of SMEs, because the higher the AC of a firm, the better it explores external knowledge and achieves more success when dealing with this knowledge, impacting the performance (Flatten et al., 2011).

Having a high absorptive capacity is important for the strategic alliance to be successful (Flatten et al., 2011; Hamdani et al., 2017). Therefore, the results of this study corroborate the conclusions of the literature, considering the second proposed hypothesis, H2: Absorptive capacity positively influences the success of strategic alliances, as it was confirmed ($p<0.000$). Firms with well-developed AC deal better with external knowledge (Flatten et al., 2011; Hitt et al., 2000), as this knowledge once acquired and absorbed is reflected in the success of strategic alliances, which become more efficient and innovative to develop more businesses (Hamdani et al., 2017).

In accordance with the results obtained by other authors (Sun et al., 2022; Emami et al., 2021), hypothesis H3: The success of strategic alliances positively influences organizational performance was confirmed ($p<0.000$). From the perspective of the resource-based view, a firm's network of relationships is an important source of inimitable resources that generate value (Gulati et al., 2000). This result, found in our empirical research, is another factor for MSMEs to form alliances, aiming at a better performance.

Testing the relationship of the success of strategic alliances between AC and organizational performance found that the success mediates that relationship ($p < 0.05$), thus confirming the research hypothesis H2-3. This result corroborates the conclusion of Flatten et al. (2011), who concluded that the success of strategic alliances has a mediating effect between AC and organizational performance. Likewise, AC is important for firms to access external knowledge and for strategic alliances to be successful (Flatten et al., 2011; Lee et al., 2012). Strategic alliances improve the company's AC (Hamdani et al., 2017). This favors organizational learning, giving the alliance and partners access to new knowledge (Inkpen, 2007).

Organizational knowledge is a valuable resource, and an organization's learning ability is critical for it to be competitive. In turn, experience in forming and managing alliances is a valuable resource that generates competitive advantage (Doz, 1996; Gulati, 1998). The alliance

is used as a strategic resource to acquire knowledge and develop capacities (Inkpen, 2007). However, a firm will only be able to access the partners' knowledge and succeed in its strategic alliances once the AC is well-developed (Flatten et al., 2011; Hamdani et al., 2017).

As for the research hypothesis H4: the time of operation **moderates** the relationship between absorptive capacity and organizational performance mediated by the success of strategic alliances, was not confirmed. Older firms were expected to have more AC (Cohen & Levinthal, 1990) and thus be able to learn better from their alliance partners (Luo & Deng, 2009). It was also expected that the age of the firm would moderate the influence of the AC on strategic alliances and performance. Thus, the older the company, the greater the moderation effect on the relationships proposed in the research model.

However, this result was not validated in the research. Initially, the firm's time in the market negatively influences the SSA relationship with FP ($\beta = -0.379$). This indicates that the moderating variable changes the relationship between the dimensions, reversing or disfavoring the relationship between SSA and FP. In younger firms the relationships proposed in the structural model would be stronger than in older firms. Therefore, it is necessary to evaluate this relationship separately, that is, after an analysis comparing the length of time they have been operating (Multigroup Analysis – MGA) (Henseler, Ringle et al., 2016). This test was used to compare the betas between times (H6), but there was no significant difference between them ($p > 0.05$). That is, firms with up to 15 years in the market and those with more than 15 years presented positive and significant relationships ($p < 0.05$) between the success of the strategic alliances and their performance. Therefore, significant moderation did not reverse or disfavor the relationship. In this last analysis, the age of the firm did not moderate the relationships proposed in the structural model.

When analyzing the research hypothesis H5, contrary to expectations, the size of a firm had no influence on the relationships proposed in the structural model. Regardless of the size, strategic alliances had a mediating effect between AC and SME performance. Therefore, the hypothesis H5: the size of the firm *moderates* the relationship between absorptive capacity and organizational performance, mediated by the success of strategic alliances, was not confirmed. This result is in line with Flatten et al. (2011), who concluded that the size of a firm had no influence on the mediation relationship between the success of strategic alliances and performance. In this study, it was expected that there would be some influence of the size of a firm on the relationship since AC is cumulative and depends on the absorption capacity of its individual members. Thus, the size of the firm reflected in the number of employees influence the formation of AC (Cohen & Levinthal, 1990). However, it is not just the number of employees, but the knowledge base that the firm has that will determine how much of this external knowledge it will be able to assimilate and explore (Lane et al., 2006).

Conclusion

The objective of the study was to analyze the relationship between AC and the performance of MSMEs that have strategic alliances. The research, based on the theory of vision and on resources and results from the proposed structural model, reveals that the AC of MSMEs has a positive effect on a firm's performance. This result corroborates the conclusions found in the literature (Engelen et al., 2014; Flatten et al., 2011; Fritsch & Santos, 2015; Hitt et al., 2000; Koerich et al., 2015; Oliver et al., 2011). We also found that the AC of the firms studied here had a positive impact on the success of their strategic alliances. This is in line with the studies that indicate that having a high absorptive capacity is important for the strategic alliance to be successful (Flatten et al., 2011; Hamdani et al., 2017; Hitt et al., 2000; Izushi, 2003; Oliver & Garrigos, 2009).

In turn, we found that the success of strategic alliances has a positive effect on the performance of MSMEs. In agreement with other authors, who found that the success of

strategic alliances has a positive impact on financial, operational and organizational performance (Emami et al., 2021); the performance of SMEs (Ferreira & Franco, 2017; Flatten et al., 2011); and financial performance (Arinõ, 2003).

At the same time, it was confirmed that the relationship between AC and the performance of MSMEs is mediated by the success of strategic alliances. This result is in line with the conclusion of Flatten et al. (2011). This author concluded that the success of strategic alliances has a mediating effect between AC and the performance of MSMEs. Complementing the study by Flatten et al. (2011), the mediation effect was maintained even in different nationalities, different economies and different sectors. Therefore, it contributes to the literature, highlighting the connection between the three constructs. The relevance of these results shows that in a globalized and competitive business environment, both AC and the success of strategic alliances are essential for MSMEs to create a sustainable competitive advantage.

However, a limiting factor found was in reducing the research bias, asking two people from each firm to answer the questionnaire, the manager and another employee. This initiative was not successful, as only managers answered the questionnaires. Therefore, at the beginning of the data collection, it was decided to work only with the managers as respondents. It also should be noted that collecting data in MSMEs was not an easy task, even if applying the questionnaire in person, as there was a lot of resistance from the managers to accepting to participate in the survey. Even with this difficulty, it is necessary to carry out more research involving SMEs, due to their particularities and resource constraints.

In short, this study was carried out in the context of pharmaceutical retail in an emerging-economy country. Future research could analyze this topic in other contexts (economies, countries, sectors, and firms of different sizes), to check if the results would be the same. These results cannot be generalized. Therefore, more research should be carried out, so that more robust conclusions can be obtained on the subject. It is also suggested, for future research, to carry out a research on the same subject and compare MSMEs and large firms. In addition, more research should be carried out in MSMEs, with the aim to understand the best practices to increase the AC. Finally, the formation of strategic alliances, in the various industries of MSMEs, is another path to be considered for future research.

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