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Contemporary Management Practice Applying the Dynamic Absorptive Capacity Measurement Model (PM^{4}AC) for Improved Business Sustainability

Rubén Dario Acosta-Velásquez [1], Jeffrey León-Pulido [2] , Alexander García-Pérez [1], William Stive Fajardo-Moreno [3,*] and Leonardo Espinosa-Leal [4]

1   Engineering Faculty, EAN University, Bogotá 110221, Colombia
2   Chemical Engineering Program, EAN University, Bogotá 110221, Colombia
3   Research & Transfer, EAN University, Bogotá 110221, Colombia
4   Department of Business Management and Analytics, Arcada University of Applied Sciences, Jan-Magnus Jansson Aukio 1, 00560 Helsinki, Finland
* Correspondence: wfajard74913@universidadean.edu.co; Tel.: +57-601-321-240-2492

Abstract: The Colombian industrial sector faces various problems, such as contributing to the development of business and innovation capacities to overcome the difficulties associated with poverty, low competitiveness and low complexity. A key challenge is to develop mechanisms that allow companies to adapt to a globalized competitive environment. In this regard, projects and their management represent an opportunity for greater flexibility. This work presents a model developed to quantify dynamic absorption, understood as the ability to identify the value of new external knowledge, absorb it as internal knowledge and apply it to serve business purposes. The measured indicator is adapted to a dynamic organization environment and provides a project with the ability to interact with and monitor variables. For modeling, variables observed across 148 small and medium-sized enterprises (SMEs), belonging to Colombian organizations, were collected using questionnaires and structural equation modeling (SEM) to determine analysis dimensions, and subsets of dynamic absorptive capacity as latent variables from this information. The dynamic absorptive capacity measurement model (PM^{4}AC) describes a normalized fit index (NFI), comparative fit index (CFI) and RMSEA of 0.935, 0.986 and 0.042, correspondingly. The contribution of this model is designed to improve and make available a new framework of business sustainability leadership, using the PM^{4}AC tool. Finally, the objective of this study is to provide a model developed to quantify the dynamic absorption capacity for SMES. Furthermore, as most of the research involves technology firms, we seek to better understand the business sustainability in SMEs.

Keywords: absorptive capacity; business process management; business intelligence; business process modeling; sustainable process management

1. Introduction

The concepts of dynamic capacity and resource-based vision allow us to conceptualize absorptive capacity [1]. This capability is defined as a company's ability to recognize the value of new and external information, process it and use it for business purposes, according to Cohen and Levinthal [2]. This concept has also been redefined over time [3]. It is recommended as a dynamic capability related to the creation and use of knowledge to enhance an organization's ability to gain and maintain a competitive advantage. On the other hand, absorptive capacity is defined as the dynamic capacity associated with the creation and use of knowledge [4].

The resource-based vision (RBV) was created with the aim of consolidating contributions related to a perspective that conceives companies based on their resources, providing a strategic option [5]. This vision focuses on understanding competitive advantage as

a result of the resources and capabilities that are owned and controlled by a single organization. Consequently, the search for a competitive advantage has focused on those resources that are within the organization [6], considering that the resources and capacities related to production are not homogeneous in all organizations [7]. The aforementioned lack of homogeneity allows companies with different capabilities to compete in the market, but companies with superior resources will earn the rents [8]. Based on the above, the resource-based vision facilitates the understanding of how organizations can achieve and maintain a competitive advantage over time [9].

The dynamic absorptive capacity is, in turn, composed of subsets and dimensions [3]. In this case, it is recommended to divide the absorptive capacity into two important groups: the first is the potential absorptive capacity, and the second is the actual absorptive capacity. Potential absorptive capacity refers to the ability of an organization to acquire and absorb external knowledge [10]. In this sense, the subsets are made up of dimensions, and they are presented in detail in Table 1.

Table 1. Absorptive capacity dimensions.

Potential Absorptive Capacity		
Dimension	**Definition**	**Background**
Acquisition	A company's ability to locate, identify, assess and acquire external knowledge that is critical to its operations.	Lane and Lubatkin [10], Zahra and George [3], Liao et al. [11]
Assimilation	Company capacity to absorb external knowledge. This capacity can also be defined as the processes and routines that allow new knowledge acquired to be analyzed, processed, interpreted, understood, internalized and classified.	Szulanski [12], Zahra and George [3]
Realized Absorptive Capacity		
Transformation	Ability to develop and refine internal routines that facilitate the transfer and combination of prior knowledge with newly acquired or assimilated knowledge.	Kogut and Zander [13], Van den Bosch, Volberda, and de Boer [14]
Exploitation	Organizational capacity that allows companies to incorporate, assimilate and transform the knowledge acquired into their operations and routines.	Lane and Lubatkin [10], Zahra and George [3]

Source: [15].

Based on the above, the dynamic absorption capacity has been analyzed in the context of project management in cases such as Biedenbach and Müller Ref. [16], who managed to establish that absorption capacity can contribute to the performance of research and development (R&D) projects, taking into account external influences as a learning factor. Likewise, Popaitoon and Siengthai [17] explored in their research said capacity as a moderating effect of human resources and its relationship with project performance. Additionally, Bjorvatn and Wald [18] were able to conclude that absorption capacity plays a critical role in complex projects, quantifying its importance at 23.1%.

Sustainable competitive advantage in an organization occurs when it creates value and cannot be matched by any of its current or potential competitors, and when those other organizations are unable to generate the benefits of that strategy [7]. In this sense, the resource-based vision focuses on the way to achieve a competitive advantage, manifesting in the form of specific capabilities and assets, as well as the ways that allow for their protection, which are essential for the performance of the company [10]. In this sense, Kor and Mahoney [11] presented capabilities as dynamic and focused on the development of impacts and their repercussions on the economic performance of the organization.

According to Eisenhardt and Martin [9], the term dynamic capabilities refers to organizational processes that facilitate the integration, reconfiguration, procurement and release of resources to match or generate market change. Considering the above, dynamic

capabilities are referred to as routines and strategies for achieving renewed configurations of resources to the extent that markets emerge, crash, fragment, evolve and disappear. These capabilities are key in an environment where stakeholder preferences are volatile, customer characteristics are not stable and technologies to meet customer demands are constantly evolving [12].

Moreover, project management is explored through the concept of dynamic capabilities, considering the flexibility it brings to organizations due to its temporary nature and the possibility of adapting to changes in its environment Refs. [19–21]. It has also become an important issue for today's businesses [22–24] and, in very specific cases such as those involving national impact projects, this type of project is associated with national competitiveness and a significant socioeconomic impact [25]. In this sense, the concept of project management incorporates different key dimensions of performance, such as effectiveness, sustainability and risk management [26,27]. Specifically, the dimension of sustainability has an impact on other variables, such as costs and efficiency, in addition to performance itself [28].

In this sense, this research seeks to explore the application of the dynamic absorption capacity in project management, for which it uses structural equation modeling (SEM) in order to quantitatively validate the relationships proposed by the authors who developed the concept. The basis of the SEM technique is to determine the causal relationships between the constructs [29]. SEM is an extended version of the general linear framework that is used to explain the relationships of observed and latent variables through a causal hierarchy proposal, which is based on how likely it is that a variable causes other variables. In addition to this, it also allows the measurement to be estimated and excludes its effect from the relationships between latent variables, which allows the effectiveness test of the variables to be more precise [30].

Derived from the above, two highly significant contributions of SEM models are the ability given to researchers to assess the validity of the scales formulated by researchers, and the defining of how to measure a latent variable Ref. [31]. In the case of this research, these two benefits are used to propose a model that measures the dynamic absorption capacity based on the relationships proposed by the authors who previously contributed to this topic. This work is structured by first analyzing the firms and the relationship between dimensions and sustainability leadership practices via dynamic absorptive capacity measurement. Second, this work presents the study of realized absorptive capacity. Third, PCA in project management is described. Fourth, the outline that supports the integration of the outcome of DACM and equation modeling is presented. Finally, a discussion of the contributions of the paper to a case study in Colombia is outlined.

2. Systematic Review of the Literature

For the development of the literary revision, it is necessary to carry it out in five phases: the planning, search, selection, quality evaluation and data extraction. With this, relevant documents were obtained, generating the fundamental aspects of this investigation. The first of them is the relationship between project management and the performance of organizations; the second concerns the dynamic capacities; thirdly is the absorption capacity; and the final aspect is the absorption capacity in project management, all of which are presented below.

2.1. Planning

The planning of the systematic review of the literature was carried out by defining an iterative process in which the information requirements were defined in terms of the scope of the investigation. This process included the research questions, the inclusion and exclusion criteria of the articles, their quality evaluation and the search, retrieval and synthesis strategy of each of the components of the seminal research literature. Due to its iterative nature, the systematic review process of the literature allowed new sources to be

incorporated as the process progressed. Since new reference authors were identified in the articles reviewed, this allowed the sources to be progressively enriched.

2.2. Search

In the search for information, we started from the definition of the sources. In this case, we chose to consider Scopus as an information resource, which is a scientific database that public and private organizations can access through subscription [31]. In this case, this resource was selected since the information it contains is considered more reliable, although it includes a smaller number of documents than other systems, such as [32]. Once the documents that were related to the subject of this work were identified, the Taylor and Francis, Sage Journals, Sciencedirect, Jstor, Springer, Emerald, Scielo and RedAlyC databases were used to obtain the documents and thus review their content in detail. Affiliations with respect to the developed research were considered.

To obtain the documents, a search equation was built that was aligned with the intention and scope of the research questions and the search equation was built from keywords on the subject of project management and the ability of absorption. These keywords were articulated with Boolean operators in order to try to refine the search; thus, the documents that were obtained as a result adjusted to the information requirements. This search equation was used in Scopus, providing several iterations in which operators and capitalization variations were incorporated so that the search equation improved its precision in the results presented in Table 2. The defined search equation is presented.

Table 2. Sources and keywords.

Key Terms	7	Boolean Operators	OR AND LIMIT TO	Date Range	2010 to 2019
(TITLE-ABS-KEY ("Absorptive Capacity") AND TITLE-ABS-KEY ("Project Management") OR TITLE-ABS-KEY ("project management") OR TITLE-ABS-KEY ("absorptive capacity") OR TITLE-ABS-KEY ("Absorptive capacity") AND TITLE-ABS-KEY (measurement) OR TITLE-ABS-KEY (measurement)) AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "ENVI") OR EXCLUDE (SUBJAREA, "MEDI") OR EXCLUDE (SUBJAREA, "BIOC") OR EXCLUDE (SUBJAREA, "CENG") OR EXCLUDE (SUBJAREA, "MATE") OR EXCLUDE (SUBJAREA, "EART")) AND (LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015) OR LIMIT-TO (PUBYEAR, 2014) OR LIMIT-TO (PUBYEAR, 2013) OR LIMIT-TO (PUBYEAR, 2012) OR LIMIT-TO (PUBYEAR, 2011) OR LIMIT-TO (PUBYEAR, 2010))					

Source: The authors.

As results of the operation of the search equation in Scopus, 59 documents were obtained that corresponded to records of potentially relevant scientific articles, which were stored in the EndNote bibliographic manager.

2.3. Selection

To purge the documents found, a two-phase process was carried out. In the first phase, the 59 documents were completely reviewed to verify their belonging in the investigation. In this phase, seven documents were discarded for dealing with issues related to other areas. In the second phase, with the 52 documents that passed the review of the first phase, a process was carried out to recognize the authors who were cited as references and to thus identify documents related to the subject studied. In this exercise, the results comprised a total of 273 documents, including the 52 articles from the original review. In this exercise, the VosViewer software was used to identify the relationships of authors between the documents.

Finally, of the 273 documents, 146 articles that had citations were considered, since citations are one of the most important indicators in scientometrics because they measure the quality of publications [33].

2.4. Quality Evaluation

The documents that resulted in the selection stage were evaluated in light of four criteria defined in the study by Kitchenham et al. (2010). These criteria were: appropriate definition of inclusion and exclusion criteria; inclusion of relevant bibliography; validity of the studies included; and adequate descriptions of the data. The compliance evaluation was carried out on each of the documents. As a result, 82 documents met the defined requirements, and the results from the search to the quality evaluation are presented in Table 3.

Table 3. Document evaluation for systematic review.

Phase	Search	Reference Author's Analysis	Selection	Evaluation
Documents	59	273	146	82

Source: The authors.

2.5. Data Extraction and Synthesis of Results

For the extraction of information, the research questions were used to direct the process. Additionally, a bibliographic record was used as an instrument, in which the data of the 82 articles that passed the evaluation phase were consolidated. The record was composed of the following fields: title, year, journal, authors, problem, population, objective, main concepts, type of research, conclusions and discussion. This systematization of the information allowed for a more detailed analysis of the structure of the theoretical framework of this work. For the four axes that were defined, the first of them focused on the relationship between project management and the performance of organizations. This provided a general framework of the impact that the discipline represents for organizational management. The second axis focused on addressing the concept of dynamic capabilities as a fundamental factor towards building a sustainable competitive advantage. The third axis made a deepening in the type of dynamic capacity that is of interest to the present work, as well as the dynamic capacity of absorption. Finally, the fourth and last axis were related to the two fundamental concepts of the investigation: the absorption capacity and the management of projects. This theoretical framework of reference was the basis for the proposal of the model for the measurement of the dynamic absorption capacity in project management (PM^{4}AC) in its first version.

3. Research Questions and Methodology

According to the previously mentioned references, the absorption capacity in project management is presented as an alternative for the adaptation of organizations to dynamic environments, such as those demanded by current markets. Taking this into account, determining the magnitude of this ability is crucial to carrying out a diagnosis and formulating plans that allow for the strengthening of said capacity in order to remain current in the market. The variables considered for the research are the dynamic absorption capacity in project management as a dependent variable, and the variables observed in the behavior of the organizations as independent variables, which are the basis for the model proposed in the research.

a   Is it possible to determine the magnitude of the dynamic adsorption capacity in project management?

b   How can the dynamic absorption capacity be measured in project management?

The methodology proposed for this research was descriptive and correlational, using quantitative and qualitative methods which makes it mixed. In order to structure the research, the following phases were proposed:

- First phase—Characterization and definition: In this first phase, the identification of the particularities of the organizations under study was carried out. To achieve this, surveys were applied in the organizations that are a part of the sector selected as the object of study, and the information from such surveys was considered. Available in secondary sources that offer data on the organizations, a profile containing the general characteristics of said organizations was built with this information. The characteristics that identify the organizations under study were quantitative and qualitative variables, which later became the basis for the definition of the components of the proposed model. It is expected that the components of the model are constructed from two perspectives: the first with a descriptive approach, in which the characterization variables are used to identify relationships with the absorption capacity; and the second with a predictive approach to determine the absorption capacity in project management from the variables that determine it.

Subsequently, a systematic review of the literature was carried out, supported by a search equation with the keywords that yielded the reference documents in the Scopus and Web of Science databases, to define the variables that allowed the structuring of the concepts of the study's proposed model.

- Second phase—Modeling: In this phase, the conditions and variables that affect the absorption capacity in project management were determined to carry out the integration of the variables for the construction of the measurement model of the dynamic absorption capacity in project management, as well as the definition of the relations and the scheme of operation of the same.
- Third phase—Validation: This phase allowed the model to be submitted for the consideration of the academic community through two channels: the first with the submission of preliminary research results for publication; and the second through the contrast of the results of the model with instruments that allow for the evaluation of its coherence and the validation of the model.
- Fourth phase—Documentation, analysis and discussion of results: To finalize the methodology, the results were documented, analyzed and submitted for consideration by the scientific community through the presentation of a book proposal that describes the built model. In this sense, the doctoral thesis that will be carried out in this investigation was also concluded.

Conceptualizing the Absorptive Capacity in Organizations

In this study, an absorptive capacity measurement model called PM^{4}AC is proposed, which attempts to determine absorptive capacity by analyzing the performance of projects implemented in an organization. For the construction of the model, the determination of the basic information begins, in which a tool is proposed and which consists of two parts. The first part contains the characteristics of the organization, and the second part contains 36 statements, including two subsets, absorptive capacity potential and realization, and the four dimensions of capacity to absorb, acquire, assimilate, transform and utilize. These are the datasets that allowed absorptive capacity to be identified as a latent variable. The constructed questionnaire was validated by Cronbach's alpha technique with a score of 0.9, so the questionnaire can be considered reliable because the item homogeneity is higher than 0.70 [33].

Dynamic capabilities govern how an organization develops, augments and blends. Traditional capabilities and competencies are added to: identify and assess opportunities and threats; take advantage of opportunities and reduce threats; and continue being competitive by reconfiguring the tangible and intangible assets of a company [34].

Figure 1 shows the general framework of operation of dynamic capabilities, which highlights that organizations have the ability to detect, assimilate, transform or reconfigure capabilities, and thus build and maintain a competitive advantage [35]. Dynamic capacities are unrepeatable; in this way, they are characterized by having the power to change other capacities in the organization [36].
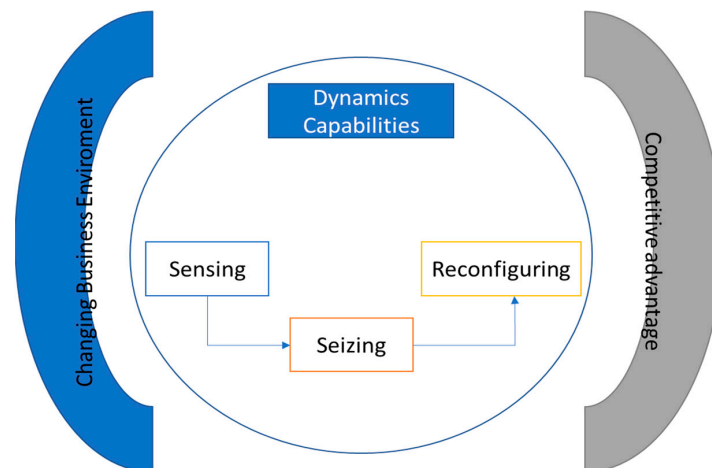
Figure 1. Theoretical framework of dynamic capabilities. Adapted from: Choi, Cho, Han Seung, Kwak Young, and Chih [37].

Dynamic capabilities can be categorized into different types. In accordance with [38], four generic types of dynamic capabilities can be identified: (1) observation and external evaluation; (2) internal renewal of resources; (3) acquisition of external resources; and (4) internal reconfiguration of resources. In Figure 2, the two main dimensions that give rise to dynamic capabilities are shown: the first refers to the balance of processes between existing and future activities; and the second dimension, for its part, refers to the way in which these processes are carried out. In this case, the processes can be carried out internally or externally.
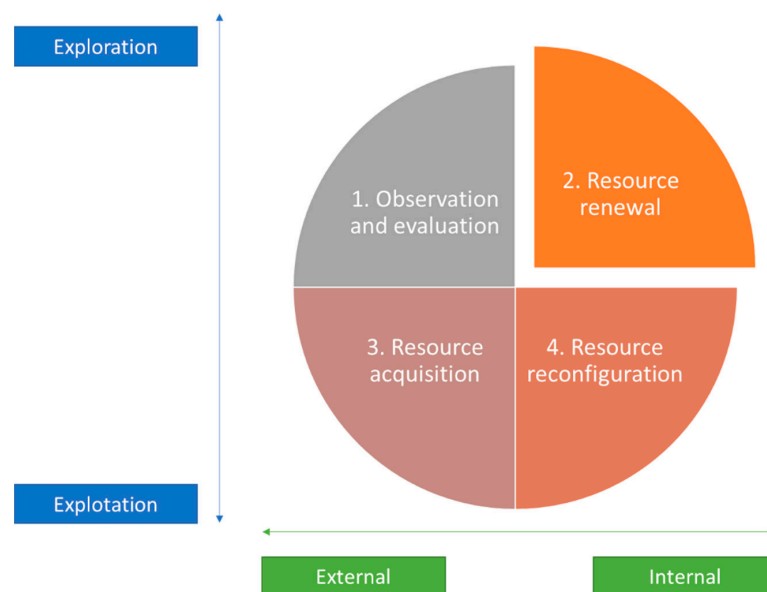
Figure 2. Dimensions and generic types of dynamic capabilities. Adapted from: Madsen [39].

4. SMEs Firm Identification

Sustainable innovation within SMEs is of vital importance, be it socially or economically. However, not all innovations have an impact or role in the process. Therefore, an identification of SMEs was carried out. The questionnaire was used to collect information from 148 organizations that responded to the program managers associated with the organizations at the time of the study. These organizations belong to the same Colombian industrial sector. After obtaining the information, structural equations were modeled, which made it possible to identify dimensions, subsets and receptivity as latent variables from observations recorded in the questionnaire. To ensure that only variables that have

a high impact on the determination of dynamic absorptive capacity were considered, a principal component analysis was performed to determine their factor loadings.

5. Results

As a result of the principal component analysis (PCA) for each dimension, the factor loadings of the variables that will be used in the model were determined, and the results are shown in Table 4.

Table 4. Variable factor loadings absorption capacity for each dimension.

Acquisition		Assimilation		Transformation		Exploitation	
Factor 1		Factor 1		Factor 1		Factor 1	
PAD2	0.787	PAS10	0.854	RTR6	0.843	REX7	0.799
PAD6	0.761	PAS9	0.832	RTR7	0.810	REX6	0.791
PAD8	0.755	PAS2	0.795	RTR2	0.742	REX5	0.696
PAD5	0.733	PAS11	0.791	RTR4	0.739	REX1	0.642
PAD7	0.732	PAS8	0.773	RTR3	0.706	REX2	0.636
PAD3	0.731	PAS3	0.756	RTR1	0.695	REX4	0.631
PAD1	0.660	PAS6	0.742	RTR5	0.666	REX3	0.523
PAD4	0.656	PAS7	0.703				
		PAS14	0.685				
		PAS5	0.670				
		PAS4	0.663				
		PAS12	0.659				
		PAS1	0.651				
		PAS13	0.532				

Source: The authors.

Among the variables, the AMOS complement of SPSS was used for modeling, assuming a scenario that considered all the variables of the questionnaire. The above takes into account the relationships documented in the literature, which was highlighted as a precursor to this study. The model obtained after ignoring low significance variables is as follows (see Figure 3).
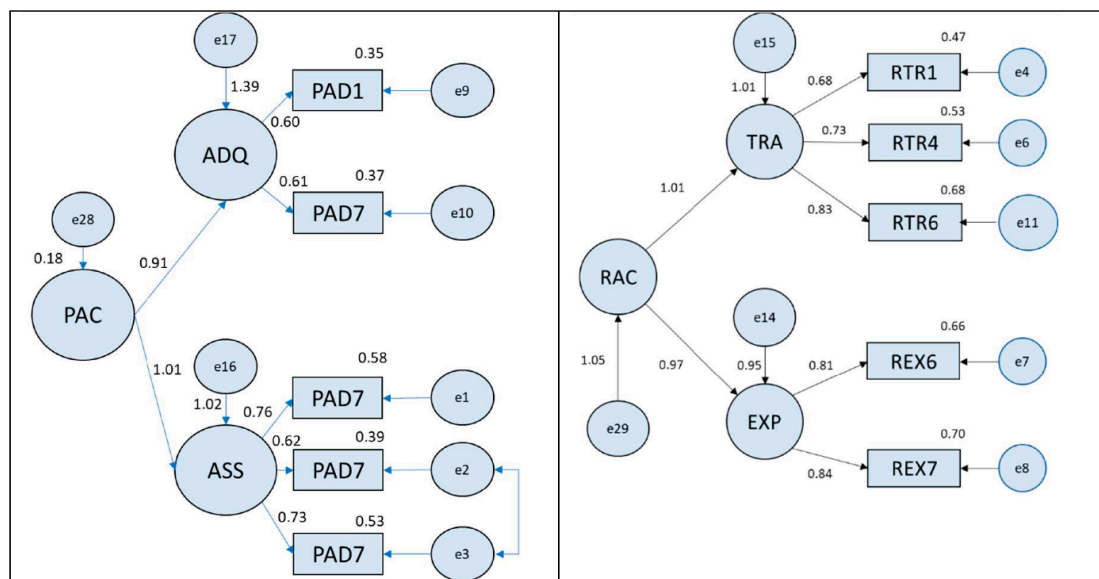
Figure 3. Model Obtained, Adapted from: PM^{4}AC Model [10].

The model that was obtained after not considering the variables with low significance considers the following components:

a   Latent variables; the latent variables of the model are the following: dynamic absorption capacity in project management (AC), dynamic potential absorption capacity (PAC), realized dynamic absorption capacity (RAC), acquisition dimension (AQD), dimension simulation (ASS), transformation dimension (TRA) and exploitation dimension (EXP).

b   Observed variables; the set of observed variables of the model is made up of: PAD1, PAD7, PAS1, PAS2, PAS10, RTR1, RTR4, RTR6, REX6 and REX7.

c   Measurement errors.

d   Regression coefficients.

e   Variation coefficients.

To check the fit of the model, the measured standardized fit index (NFI), comparative fit index (CFI) and RMSEA were evaluated. Table 3 shows the results and their interpretation.

To validate the model (Table 5), a comparison between semi-structured interviews asking about the magnitude of dynamic absorptive capacity and model results was used to determine whether they matched. Table 6 shows the results.

Table 5. Validation PM^{4}AC model.

Dimension	Interview Outcome	Alignment with the Measure of PM^{4}AC is Presented?
Acquisition	The information gathered in the interviews allowed us to see that the descriptions of the practices implemented by the organization corresponded to the assimilation dimension, with respondents saying they were at a high level.	Yes
Assimilation	The socialization of lessons mentioned by respondents represents practices that enable knowledge management in organizations; these types of actions represent mechanisms for the assimilation dimension. Respondents classified it as high.	Yes
Transformation	Kaizen outcomes are expressions of how an organization uses its social relationships to improve the commercialization benefits of products or services resulting from the projects it implements. This is a typical assimilation dimension. Respondents rated this level as high.	Yes
Exploitation	Demonstrating the experience of a successful project to clients is part of the routine of developing a project that leads to a new product or service, an act defined in the development dimension. Respondents rated this performance as high.	Yes
Potential and realized absorptive capacity	Estimated commercial application of new knowledge in the organization is between 80% and 90% and must be classified as high.	Yes
Absorptive capacity	Respondents mentioned incidents that responded to the definition of acceptance in project management when the service of knowledge acquired through the organization referred to business applications.	Yes

Source: The authors.

Table 6. Model fit measurements.

Model Fit Measurement	Outcome	Interpretation
Normed fit index (NFI)	0.935	This metric assesses the decline in the hypothetical model's $\chi2$ statistic relative to the base model [40]. According to the results obtained, the minimum value of 0.90 is exceeded.
Comparative fit index (CFI)	0.986	This metric is one of the relative indicators of increased usage and behavior [41]. It also varies between 0 and 1: a value of 0.9 is the minimum required to protect the model [42,43]. The obtained results are implemented for the proposed model.
RMSEA	0.042	This is a measure of the size of the model error and is an indicator of a good fit, with values less than 0.05 [41]. This is achieved in the proposed model with a result of 0.042.

Source: The authors.

6. Discussion

Based on the results of the PM^{4}AC model, aspects that contrast with the findings of the lead author on the topic can be identified, the first argument being presented in [31]. Proposing that dynamic capacity contributes to the sustainability of SMEs, related research has made it possible to determine that the average measure of dynamic absorptive capacity of organizations with high income levels is 6.84, while the average acceptance of dynamic absorptive capacity of low-income organizations is 5.49. Both measurements are between 1 and 10. These results support the authors' contribution.

The second argument is proposed by [3]. This confirms that the absorption capacity is divided into two important groups: power absorption capacity and actual absorption capacity. In this regard, structural equation modeling (SEM) can confirm this aspect, as the results obtained from the evaluation of the model tuning measures show that each of the components contained therein represent an essential part of the scheme. These elements work as a whole to adequately measure the absorption dynamic capacity. The results of the fit measurements and their interpretations are shown in Table 3.

The authors should discuss the results and how to interpret them in terms of previous studies and working hypotheses. Results and their implications should be discussed in the broadest possible context. It can also point to future research directions.

As a third argument, the findings of [2,3,44,45] suggest that a subset of potential receptivity is associated with dimensions of appropriation and assimilation. Likewise, the subset of realized absorptive capacities is related to the transformation and utilization dimensions. Principal component analysis yields a determination of the correspondence of dimensions to subsets, a determination of the contribution of each measured variable and a confirmation of the membership of each variable in a dimension and each dimension in a subset. Table 2 shows the contribution of each variable to the dimension assigned to it.

Compared to the results of authors who have previously studied dynamic absorptive capacity, the arguments presented previously allowed us to determine the contribution of the PM^{4}AC model, which provides a more quantitative approach to the magnitude of this capacity in tissues. A high level of dynamic resiliency represents an opportunity to adapt to the rapidly changing environment facing organizations today, where projects are provided as an adaptation mechanism. In this case, the skills of the project manager are crucial to achieving the goals.

7. Conclusions

The analytical approach applied in this study is based on the structuring of four stages, namely characterization and definition, modeling, validation and documentation, analysis and discussion of the results, which constitutes a structured approach that allows for a more comprehensive approach to the PM^{4}AC model. Construction provides basic elements in each model so that the model performance results obtained are valid, according to statistical criteria. In this sense, the quantitative approach to research provides an element of judgment that reduces subjectivity and facilitates analysis.

The success of the projects in the analyzed organizations presents a medium level of 7.69, on a scale of 1 to 10. In the details of the measurements, companies with an income range of less than COP 1500 million showed a level of 7.71, while companies with an income range of more than COP 71 billion recorded a level of 7.82. This result is a difference that represents 1.38%, which may require as a difference of little magnitude.

The contribution of the PM^{4}AC model can be seen as a product of new insights and innovations in the discipline. It does not focus on current empirical evidence in the field of knowledge, it can be used by global organizations to estimate their dynamic assimilation of project management skills and can be used as a starting point to strengthen external resources. The process of acquiring knowledge and using it for commercial purposes is conducted through project development. The PM^{4}AC model has, in its structure, the possibility to measure each subset and dimension, which allows for targeted improvements

to each of its components, just as the statements that allow its measurements guide the company's efforts.

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