

# *Value Co-creation in the Classroom as an Antecedent of Student Engagement of Higher Education Institution*

## Cocriação de Valor em Sala de Aula como um Antecedente do Engajamento dos Estudantes de Instituição de Ensino Superior

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### ABSTRACT


The concept of the service-dominant logic can be understood from the context of higher education. In a classroom environment, students and professors can create value by contributing to better use of school subjects and, consequently, greater student engagement and better university results. In this sense, this study aimed to analyze the effects of value co-creation in the classroom as an antecedent of engagement in higher education students. Based on a sample of 320 university students in southern Brazil and using structural equation modeling, the results showed that value co-creation increases student engagement with the subject. The findings also provided empirical evidence by demonstrating that the type of method applied by the professor plays a moderating role in the relationship between co-production and student engagement with the subject. The results have implications for universities and professors by instigating the development of methods centered on value co-creation in students.


**Keywords:** Value co-creation, Co-production, Value in use, Engagement, Higher education, Active learning method.


### RESUMO


A concepção da lógica dominante de serviço pode ser compreendida a partir do contexto do ensino superior. Em um ambiente de sala de aula, alunos e professores podem cocriar valor contribuindo para um melhor aproveitamento das disciplinas e, conseqüentemente, maior engajamento dos alunos e melhor resultado para as universidades. Nesse sentido, o objetivo do presente estudo foi analisar o efeito da cocriação de valor em sala de aula como um antecedente do engajamento de estudantes do ensino superior. A partir de uma amostra de 320 estudantes de universidades da região sul do Brasil e utilizando-se de modelagem de equações estruturais, os re-

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**RESUMO**

sultados apontaram que a cocriação de valor aumenta o engajamento dos estudantes com a disciplina. As descobertas também forneceram apoio empírico, demonstrando que o tipo de metodologia aplicada pelo professor exerce um papel moderador na relação entre a coprodução e o engajamento do aluno com a disciplina. Os resultados têm implicações para as universidades e para os professores ao instigar o desenvolvimento de metodologias que sejam centradas na cocriação de valor do aluno.

**Palavras-chave:** Cocriação de valor, Coprodução, Valor em uso, Engajamento, Ensino superior, Metodologia ativa.

## Introduction

The service-dominant logic can be understood from the context of higher education (DOLLINGER; LODGE; COATES, 2018), as students can be co-creators of classroom dynamics and, consequently, of their learning. Bovill (2020) reported a growing interest in customers as partners in higher education, and in this context, partners and co-creation are used synonymously. Co-creation can contribute to the competitive advantage of educational institutions as students interacting in the learning process may have better satisfaction, performance, and become loyal to the institution (HOFSTATTER, 2010). The knowledge era requires higher education institutions to develop methods that are sensitive to the different rhythms of each individual, in which the important thing is not the teaching explanation, but the work of each student, either individually or in cooperation with others (GÓMEZ, 2002). The traditional teaching model is based on the transmission and assimilation of content and usually unable to provoke the reconstruction of the students' way of thinking and feeling (GÓMEZ, 2002). In addition, this model is often associated with passive learning (FIDALGO-BLANCO et al., 2017).

Active learning methods are broadly used in universities and transform students into the protagonist of their learning (ELSHARNOUBY, 2015; PAIVA et al., 2016), and these approaches transform the classroom environment and provide a greater exchange of knowledge and experiences between students and professors (DOLLINGER; LODGE; COATES, 2018). Various teaching-learning techniques have been employed to improve learning, making students play a crucial role in their own learning. Nevertheless, the value perceived by these individuals is only observed

when they are willing to participate in and contribute to the proposed activities (DOLLINGER; LODGE; COATES, 2018). A bibliometric analysis of active methods in the literature revealed that research on the theme increased as of 2016 (SEGURA-ROBLES; PARRA-GONZÁLEZ; GALLARDO-VIGIL, 2020).

Grönroos (2008) defined value for customers as being or feeling better after being assisted by a self-service or full-service process. Value-in-use, as the name implies, comes from consumers' value-generating processes and the focus shifts, therefore, from what a product or service (class) can offer a customer (student) to the interactions between the customer and organization (university) and, more specifically, front-line employees (professors) and the benefits arising from these processes. Each student presents peculiarities regarding learning preferences (OGUNMOKUN et al., 2021), and this scenario enables students to co-produce and co-create value with the service provider and generate an individual value (ZEITHAML et al., 2020; VARGO; LUSCH, 2016). In fact, concepts of co-production and co-creation, despite similar, are distinct (VARGO; LUSCH, 2016), and co-production presupposes a normative activity of the consumer during processes with the organization, being a formative component in value co-creation (BUSSE; SHULGA, 2018; RANJAN; READ, 2016). From the service-dominant logic perspective, the evaluation of value co-creation can be identified in different contexts and fields of knowledge (e.g., education) and engagement and learning experiences (VARGO; LUSCH, 2017).

The use of active methods by professors can stimulate a sense of engagement in students with the subjects (BERBEL, 2011). Engagement is a psychological state that occurs due to clients' interactive and co-creative experiences with an agent (BRODIE et al., 2011), to the extent that the more students are engaged with a subject, the more they may contribute to the activity and, consequently, their learning and satisfaction with the service encounter (GRILLO et al., 2014). Given this scenario, this study is based on the concept that the student, by playing an active role in the classroom, contributes to the value co-creation of education in universities. Thus, this paper aimed to analyze the effects of value co-creation in the classroom as an antecedent of engagement with 320 higher education students in southern Brazilian universities, and the findings revealed that the formative elements of value co-creation help increase student engagement.

Therefore, this paper is organized as follows: the following section briefly discusses the students' engagement with the subject, value co-creation in the classroom, and student co-production and engagement. Next, the explanation of the research methods is presented, followed by the discussion of the results, theoretical and educational implications, and finally, an outline of future research directions.

## Theoretical framework

### STUDENT ENGAGEMENT WITH THE SUBJECT

The concept of engagement is recent in the marketing literature. For example, Brodie et al. (2011) explored the theoretical foundations of consumer engagement (CE), and according to their theoretical analysis, there are five fundamental propositions in the service-dominant logic that were used to develop a general definition of CE (VARGO; LUSCH, 2004). According to the authors, CE concerns a psychological state that occurs due to customers' interactive and co-creative experiences with an agent. In this sense, the concepts of "involvement" and "participation" can be seen as antecedents of CE.

Hollebeek, Glynn, and Brodie (2014) noticed a gap in the literature and sought to produce more managerial knowledge and theoretical insights and developed and validated a scale of consumer brand engagement (CBE). The authors defined CBE as a cognitive, emotional, and behavioral activity positively related to the brand by the consumer, and consumer engagement manifests itself in cognitive, affective, and behavioral dimensions (DESSART; VELOUTSOU; MORGAN-THOMAS, 2016). Vivek et al. (2014) developed a three-dimensional concept of the consumer engagement construct (composed of mindful attention, enthusiastic participation, and social connection) and reported a positive relationship with the perceptions of value, benevolence, future intentions, and affective commitment to the organization.

Furthermore, Vivek et al. (2014) reported that it is only by initiating and managing ongoing connections with customers that brands and companies can expect deeper engagement with customers, leading to lasting relationships. Engaged customers help other customers recognize their needs and help them see how a brand can meet them, blurring the boundaries between a company's role and a customer's

part and creating a more credible voice for the brand. The authors above corroborate the understanding of CE as a process that transcends their involvement with organizations and brands, and one context popularly studied by researchers interested in the service theme is higher education. For Grillo et al. (2014), classrooms have been interpreted as a service encounter environment that is highly conducive to value co-creation. In this sense, engagement emerges as a slingshot that makes the student, through interactive processes with the professor and fellow students, assist in their own learning and improve the classroom service encounters.

### **VALUE CO-CREATION IN THE CLASSROOM**

Value co-creation offers organizations and their network of actors significant opportunities for innovation by integrating resources offered by the actors (FROW et al., 2015). According to the service-dominant logic perspective, the role of customers has transitioned from a passive audience to active participation in the co-creation of the service experience, with the value being co-created by multiple actors and always including the beneficiary (customer) (VARGO; LUSCH, 2016) facilitated by an active community of scholars throughout the world. Along its evolutionary path, there has been increased recognition of the need for a crisper and more precise delineation of the foundational premises and specification of the axioms of S-D logic. It also has become apparent that a limitation of the current foundational premises/axioms is the absence of a clearly articulated specification of the mechanisms of (often massive-scale. Therefore, the joint action of students, professors, and university staff leads to better results than those generated by the traditional model of the institution as the only generator of value for the user (student) (DOLLINGER; LODGE; COATES, 2018; FROW et al., 2015).

Dollinger, Lodge, and Coates (2018) presented the first conceptual model of value co-creation in higher education. Their model includes the components of value co-creation, co-production, and value-in-use and can be used to guide professors and administrative personnel in the higher education context. Ranjan and Read (2016) reported that value co-creation is a two-dimensional concept that includes value co-production (the value proposition created on the consumer side) and value-in-use (the concept underlying the dominant service logic). Moreover, Dollinger, Lodge, and Coates (2018) also used the analysis of Ranjan and Read (2016) for

value co-creation and applied a distinct understanding of co-creation for the higher education sector by modifying the two dimensions of co-creation (co-production and value-in-use). In this sense, the authors' goal was to analyze how value co-production affects the value it sees or uses rather than how the student co-produced value propositions within higher education.

## CO-PRODUCTION AND STUDENT ENGAGEMENT WITH THE SUBJECT

Value co-production indicates the expected actions of consumers during interactions with the company, and it is up to the student to perform or not these activities (VARGO; LUSCH, 2016). Co-production refers to partial activities performed by the user (RANJAN; READ, 2016), and the active participation (co-production) of the consumer during such interactions with companies is a component of value co-creation (AURELIO; ORLANDO; MASSIMILIANO, 2017). These interactivity processes are observed in the context of university service provision by analyzing the dynamics existing in the classroom between professors and students. In this environment, students create value as they can present questions and personal contributions, seminars, group work, make suggestions to the evaluative process of the subject and general functioning of the university via ombudsman and evaluations, and participate, in general, during classes (MAVONDO; TSARENKO; GABBOTT, 2004).

Ranjan and Read (2016) described that the concept of value co-creation has two primary conceptual dimensions: co-production and value-in-use, and each of these dimensions has three underlying conceptual factors. The co-production dimension is formed by the elements of shared knowledge, equity, and interaction, while the value-in-use dimension is composed of the elements of experience, personalization, and relationship. **Shared knowledge** is the basis of competitive advantage and economic growth (VARGO; LUSCH, 2004). For Dollinger, Lodge, and Coates (2018), sharing knowledge between companies and consumers occurs through several mechanisms that enable organizations to collect and analyze the opinions and knowledge of consumers in relation to the value proposition. Customer knowledge management leads to better insights into emerging market opportunities, improved established processes, and more significant value creation for the company, shareholders, and consumers (GIBBERT; LEIBOLD; PROBST, 2002).

The role of the organization is to serve as a value enabler (GRÖNROOS, 2008). In this sense, by providing customers with value-facilitating products and services as input resources to customers' value creation processes, the company indirectly engages in customer value creation. **Equity** is, therefore, necessary for value co-creation processes to occur, and in a higher education context, it means students have equal access to share their knowledge both in company-consumer and student-student relationships (DOLLINGER; LODGE; COATES, 2018). Therefore, service-based business logic will include interactions between the university and students in its market offerings (GRÖNROOS, 2008), and the relationship is one of the fundamental pillars of this conception (VARGO; LUSCH, 2004). Given this context, for co-production to occur in higher education, equity (access) and knowledge sharing between students and professors (who represent the university as frontline employees), and even between students, through interactions, is necessary (DOLLINGER; LODGE; COATES, 2018).

The common denominator of the central focus on the customer relationship is a vision of exchange driven by the benefits perceived by the consumer (VARGO; LUSCH, 2004). Concerning co-production, equity (access) is required for students' knowledge to be shared with professors and other students in the classroom (interactions). Student engagement, therefore, can occur through interactive and co-creative experiences with the university. Given the above, the hypothesis of this study is:

**H<sub>1</sub>:** *Co-production has a positive effect on student engagement with the subject.*

## VALUE-IN-USE AND STUDENT ENGAGEMENT WITH THE SUBJECT

Co-production is not enough to describe the value co-creation process (DOLLINGER; LODGE; COATES, 2018), and this discussion also requires consumers' value propositions of products and services and how they are used. If co-production is the process that occurs between users and organizations in designing and delivering the value proposition of products and services, value-in-use can be understood as the value attributed by users once they start using the co-produced product or service (DOLLINGER; LODGE; COATES, 2018). In a service encounter, users employ their skills and knowledge to co-create value, and as described by Vargo and Lusch

(2004), people have physical and mental operating resources, albeit they are limited to meeting all their needs. Therefore, these individuals must exchange their different services based on these skills. In marketing, in terms of continuous processes, the consumer is always involved in the production of value (VARGO; LUSCH, 2004). Ranjan and Read (2016) identified three elements that make up value-in-use: experience, personalization, and relationship.

Consumers' experience with their value propositions is vital for both the organization and consumers (DOLLINGER; LODGE; COATES, 2018). Value is in the experience of co-creation, which stems from the consumer's interactions with all the elements inherent in the consumption process (PRAHALAD; RAMASWAMY, 2004). Hence, value creation is defined by the experience of specific consumers and at specific points in time and place in the context of a specific event. Considering these characteristics, individuals and their interactions will define both the experience and its value. Dollinger, Lodge, and Coates (2018) stated that student experiences could be an important mechanism for understanding educational service quality.

Personalization refers to the uniqueness of the product or service's actual or perceived use process, which depends on the individual characteristics of the consumer, and the personalized proposition expands the dimension of the value perceived by the consumer (RANJAN; READ, 2016). Consumers can use consumption to feel good about their uniqueness and themselves (DEBERRY-SPENCE, 2008), and when value-in-use is perceived by the customer, value creation becomes a continuous and personalized process that emphasizes experiences (GRÖNROOS; VOIMA, 2013). Relationship plays a key role in connecting organizations and their customers (DOLLINGER; LODGE; COATES, 2018). Co-creation involves searching for mutually beneficial relationships between marketing professionals and customers, enabling them to collaborate in the production process (BONSU; DARMODY, 2008). In the context of higher education, it concerns the relationships between students and professors, which should enable the sharing of knowledge aimed at value co-creation. The student may have different value propositions from their relationship with the professor (DOLLINGER; LODGE; COATES, 2018).

Therefore, the value-in-use concept is the value that the consumer attributes to the service in its value co-creation process since the actors cannot create value alone but rather propose it (VARGO; LUSCH, 2016). Furthermore, the classroom



environment has been interpreted as highly conducive to value co-creation (GRILLO et al., 2014), which can occur from students' engagement. Given the above, it is assumed that:

$H_2$ : *Value-in-use has a positive effect on student engagement with the subject.*

## **MODERATING EFFECT OF THE TEACHING METHOD**

This study evaluated two types of teaching methods: active learning and non-active learning methods. The active method corresponds to more interactive classes than traditional ones and consists of seminars, research, and case studies, among other activities, while the non-active method suggests lecture classes in their entirety. Notably, both methods offer value, albeit the active method presupposes more significant student involvement. The service-dominant logic assumes that the organization should make the value offer and the consumer will accept (or not) to co-create value with the organization (VARGO; LUSCH, 2016). However, the non-active method is expected to generate a greater impact of co-production on engagement.

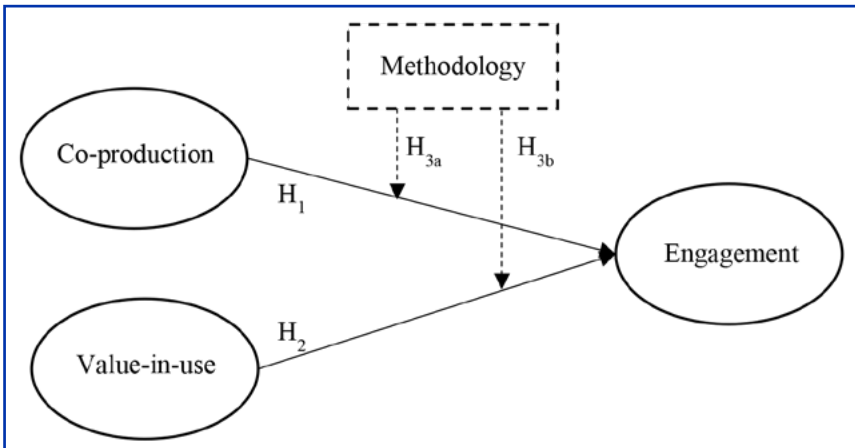
Consumers want to participate in the processes of the company and constantly seek an active role (PRAHALAD; RAMASWAMY, 2004), and this is because, through co-creation, the different knowledge and resources that students possess help them interact with university faculty members to create more integrated and superior outcomes than if only one group tried to satisfy the needs of the other (DOLLINGER; LODGE; COATES, 2018). Co-production and value-in-use require more student involvement in the value creation process of the subject (RANJAN; READ, 2016), and by using an active method, the role of the student is suppressed by the method, making his participation secondary to the method.

The sole use of the active method generates greater student engagement in the discipline (MATZEMBACHER; GONZALES; DO NASCIMENTO, 2019), although it eliminates the protagonist of the role of the student. Thus, when applying the active method, the student must play an active role and not the role of the protagonist in co-production in the subject. When a non-active method is applied, the role of students becomes passive and encourages them to seek greater preponderance in the subject. Thus:

*The method employed moderates the effect between (a) value-in-use  
**H<sub>3</sub>**: and (b) co-production on student engagement. The proposed  
relationships are more salient for non-active than active methods*

The hypotheses presented, which configure the theoretical model of this paper, are shown in Figure 1.

**Figure 1** Conceptual model



## Methodology

### DATA COLLECTION AND SAMPLING

The data collection of this empirical study had a cross-sectional cut. The survey was conducted from June to August (2019) and covered three different Brazilian universities in southern Brazil. The survey was based on voluntary participation and all responses were anonymous. A preliminary version of the data collection instrument was pre-evaluated by a group of students asked to provide feedback on the clarity, comprehensiveness, adequacy, face validity, and readability. To obtain the sample, we initially used a mailing system made available by the university and, due to the low adhesion rate of the respondents, a second strategy was adopted that consisted of manually collecting surveys in classrooms. The valid sample ob-

tained consisted of 320 undergraduate and graduate students, and the study was carried out in private institutions in Rio Grande do Sul State. The sample profile is listed in Table 1.

**Table 1** Sample description

|                |                      | Frequency | Percentage |
|----------------|----------------------|-----------|------------|
| Level          | Graduation           | 303       | 94.7       |
|                | Postgraduate         | 17        | 5.3        |
| Tipo           | Technologist         | 70        | 21.9       |
|                | Graduation           | 28        | 8.8        |
|                | Bachelor             | 205       | 64.1       |
|                | Master/Doctorate     | 17        | 5.3        |
| Methodology    | Expository Classes   | 180       | 56.3       |
|                | Active Methodologies | 91        | 28.4       |
|                | Research             | 17        | 5.3        |
|                | Seminar              | 32        | 10.0       |
| Gender         | Male                 | 122       | 38.1       |
|                | Female               | 191       | 59.7       |
|                | Non-binary           | 7         | 2.2        |
| Marital status | Not married          | 237       | 74.1       |
|                | Married              | 63        | 19.7       |
|                | Divorced             | 5         | 0.6        |
|                | Others               | 15        | 4.7        |

## MEASUREMENTS

The construction of the data collection instrument was designed based on a literature review. Co-creation in the classroom was measured by two second-order reflective constructs: *i)* value-in-use and *ii)* co-production and based on Ranjan and Read (2016). Co-production is composed of three first-order constructs: shared knowledge (4 items), equity (4 items), and interactions (4 items). Value-in-use is com-

posed of three first-order constructs: experience (3 items), personalization (4 items), and relationship (4 items). Ranjan and Read (2016) conceptualized co-creation as a formative measure.

However, we chose to adopt a reflective measurement model, and other authors have also used the reflective approach for first-order constructs (e.g., MERZ; ZARANTONELLO; GRAPPI, 2018), and it is also observed that co-creation causes the consumer to evaluate several correlated factors, thus justifying a reflexive choice (BUSSER; SHULGA, 2018). Howell, Breivick, and Wilcox (2007) considered that formative measures are more subject to interpret problems and that constructs are not formative or reflective in nature. Finally, formative measures are usually less related to each other and represent the composition of the individual items in the whole (HAIR et al., 2018).

The measurement of engagement, which was established based on data by Vivek et al. (2014) and Grillo et al. (2014), is composed of three first-order constructs: enthusiasm (4 items), attention (4 items), and social interaction (4 items). The constructs were translated from English into Portuguese by two experts and adapted to the context of the study. A 5-point Likert scale was used, where 1 expressed “strongly disagree” and 5 meant “strongly agree” (WANG; KROSNICK, 2020). The students were initially asked to use a single subject as a reference when answering the survey, and the questionnaire also included an initial question about the predominant method in the subject considered and, finally, questions about the profile of the respondents.

## DATA ANALYSIS

The hypotheses of the research model were tested using the partial least squares (PLS) technique, which is a variance-based structural equation modeling (SEM) method. The PLS assesses the reliability and validity of the measures of theoretical constructs (structural model) and estimates the relationships between these constructs (measured model). Therefore, the PLS-SEM is the most appropriate technique for this study: *i*) the objective of this study was to predict dependent variables; and *ii*) the research model is considerably complex according to the type of relationships in the hypotheses (first- and second-order) (HAIR et al., 2016). In addition, the software SmartPLS 2.0 was used for data analysis (HAIR et al., 2016).

## Results

### MEASUREMENT MODEL

According to Hair et al. (2016), the measurement model should be evaluated initially by detecting data validity and reliability, and the results are presented in Table 2. Data reliability was attested based on composite reliability (CR) and Cronbach's Alpha ( $\alpha$ ), and most of the constructs presented a value above .70, as recommended by Hair et al. (2016). These authors also demonstrated that exploratory studies accept values above .60 for the Alpha (relationship). Since this is the first application in a sample of Brazilian students, this value was accepted because the CR presented an acceptable result. The convergent validity was attested from the value of the variance extracted greater than .50, and acceptable values of factor loadings were also noted to attest to convergent validity (HAIR et al., 2016).

**Table 2** Measurement model

| Items   | Factor loading   |
|---|--|
| <b>Co-production</b>  |  |
| <b>Shared Knowledge</b>   | <b>CC = .907 AVE = .764 <math>\alpha</math> = .846</b> |
| The teacher was open to my ideas and suggestions about its existing methodology                                       | .858   |
| The teacher provided sufficient illustrations and information to me to understand                                     | .896   |
| I would effort to share my ideas and suggestions with the professor in order to help it improve their teaching method | *  |
| The teacher provided suitable environment and opportunity to me to offer suggestions and ideas                        | .868   |
| <b>Equity</b>   | <b>CC = .917 AVE = .735 <math>\alpha</math> = .880</b> |
| The teacher had an easy understanding about my preferences  | .832   |
| The methods applied in the professor's class are aligned with my requirements (i.e. the way I wish them to be)        | .849   |
| The teacher considered my role to be as important as its own in the teaching process                                  | .894   |
| We shared an equal role in determining the final outcome of the process   | .853   |

| <b>Interaction</b>  | <b>CC = .869 AVE = .636 <math>\alpha</math> = .794</b> |
|---|--|
| During the process I could conveniently express my specific knowledge   | .863   |
| The teacher conveyed to his students the relevant information related to the teaching method used.  | .894   |
| The teacher allowed sufficient student interaction in his teaching method and applied process (class development, assistance to other students, etc.)                 | .889   |
| In order to get maximum benefit from the applied method, I had to play a proactive role during my interaction (i.e., I have to apply my skill, knowledge, time, etc.) | .459   |
| <b>Value-in-Use</b>   |  |
| <b>Experience</b>   | <b>CC = .838 AVE = .639 <math>\alpha</math> = .713</b> |
| It was a memorable experience for me  | .880   |
| Depending upon the nature of my own participation, my experiences in the process might be different from other students   | .622   |
| It was possible for a student to improve the learning process by experimenting and trying new things  | .868   |
| <b>Personalization</b>  | <b>CC = .832 AVE = .558 <math>\alpha</math> = .732</b> |
| The benefit, value, or fun from the teaching method depended on the student and the teacher usage condition   | .604   |
| The teacher tried to serve the individual needs of each of their students   | .830   |
| Different students, depending on their taste, choice, or knowledge, involve themselves differently in the learning process  | .670   |
| The teacher provided an overall good experience, beyond the learning benefit  | .853   |
| <b>Relationship</b>   | <b>CC = .803 AVE = .509 <math>\alpha</math> = .675</b> |
| The teacher's facilitation is necessary for student to fully enjoy the content  | .558   |
| I felt the teacher's dedication in exposing the proposed content.   | .785   |
| There was usually a group, a community, or a network of students who are a fan of the teacher   | .694   |
| The teacher was renowned because its students usually spread positive word about it in their teaching method on social networks                                       | .792   |

| <b>Engagement</b>   |  |
|---|--|
| <b>Enthusiasm</b>   | <b>CC = .893 AVE = .676 <math>\alpha</math> = .838</b> |
| I spend a lot of my discretionary time thinking about the subject.                      | .749   |
| I am enthusiastic about the subject.  | .877   |
| I will miss the subject classes when they are over.                                     | .886   |
| I feel good in the classroom environment.   | .768   |
| <b>Attention</b>  | <b>CC = .914 AVE = .726 <math>\alpha</math> = .874</b> |
| I pay a lot of attention to anything about this subject.                                | .827   |
| I like to know more about this subject.   | .858   |
| I devote a significant amount of attention to this subject.                             | .856   |
| I focus on aspects related to this subject.   | .866   |
| <b>Social Interaction</b>   | <b>CC = .837 AVE = .569 <math>\alpha</math> = .740</b> |
| Generally, I like to get involved in class or group discussions in this subject.        | .798   |
| I like to interact with like-minded people in this subject's classes.                   | .805   |
| In general, I really enjoy exchanging ideas with other people in this subject or group. | .843   |
| The opinions of my colleagues influence me on my perception of the subject.             | .529   |

**Notes:** \* Item excluded by low factor loading (>.1).

To test the discriminant validity of the constructs, the Fornell-Larcker criterion was used (Table 3). Note that the value of the root of the average variance extracted (AVE) was, in general, higher than the correlation between constructs (FORNELL; LARCKER, 1981). The cross-loading criterion was also tested, and in this method, the factor loading of an item must be higher in its construct than in others (HAIR et al., 2016). Notably, the models used here are hierarchical and reflective (i.e., a high correlation between items and constructs is expected) (HAIR et al., 2018). Nevertheless, based on both suggested criteria for modeling variance-based regressions, the discriminant validity of the data is obtained.

**Table 3** Discriminant validity

| Constructs                    | M    | SD  | 1           | 2           | 3           | 4           | 5           | 6           | 7           | 8           | 9           |
|-------------------------------|------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>1 – Attention</b>          | 4.01 | .82 | <b>.852</b> |             |             |             |             |             |             |             |             |
| <b>2 – Knowledge</b>          | 4.20 | .89 | .378        | <b>.874</b> |             |             |             |             |             |             |             |
| <b>3 – Enthusiasm</b>         | 3.58 | .96 | .599        | .543        | <b>.822</b> |             |             |             |             |             |             |
| <b>4 – Equity</b>             | 3.91 | .93 | .391        | .772        | .523        | <b>.857</b> |             |             |             |             |             |
| <b>5 – Experience</b>         | 4.08 | .81 | .370        | .664        | .527        | .670        | <b>.799</b> |             |             |             |             |
| <b>6 – Interaction</b>        | 4.18 | .75 | .420        | .759        | .555        | .796        | .706        | <b>.798</b> |             |             |             |
| <b>7 – Social interaction</b> | 3.57 | .84 | .405        | .187        | .391        | .234        | .279        | .285        | <b>.754</b> |             |             |
| <b>8 – Personalization</b>    | 4.20 | .72 | .407        | .713        | .568        | .737        | .643        | .696        | .251        | <b>.747</b> |             |
| <b>9 – Relationship</b>       | 3.97 | .77 | .348        | .636        | .565        | .639        | .631        | .662        | .261        | .681        | <b>.713</b> |

**Notes:** Diagonal values in bold are the square root of the Average Variance Extracted; those values below represent the correlations between constructs.

### STRUCTURAL MODEL

The structural model data is described in Table 4, and all first-order constructs showed significance, thus confirming the structure of co-production, value-in-use, and engagement. Once the data structure is confirmed, the testing of the proposed hypotheses is performed through validity and reliability. According to Hair et al. (2016), the bootstrapping technique (5000 resamples) should be used to generate standard errors and t-statistics, allowing the statistical significance of the relationships considered in the model to be evaluated. Hypothesis 1 highlights that co-production increases engagement, and according to the study results ( $\beta = .184, t = 2.02; p < .05$ ), hypothesis 1 is confirmed. Similarly, value-in-use generates a positive and significant impact on engagement ( $\beta = .427, t = 4.80; p < .001$ ), thus confirming hypothesis 2. Both variables explained 35% of student engagement with the subject. The control variables tested (age, semester, and gender) showed no significant differences ( $p = ns$ ).



**Table 4** Hypothesis test

|                                   | Relação                    | B    | SE   | $\beta$ | t-value | Sig. | R <sup>2</sup> |
|-----------------------------------|----------------------------|------|------|---------|---------|------|----------------|
| <b>2a order<br/>Co-production</b> | Shared Knowledge           | .903 | .016 | .903    | 58.09   | .001 | .815           |
|                                   | Equity                     | .939 | .008 | .938    | 117.28  | .001 | .881           |
|                                   | Interaction                | .924 | .011 | .923    | 84.05   | .001 | .853           |
| <b>2a order<br/>Value-in-use</b>  | Experience                 | .853 | .020 | .853    | 43.84   | .001 | .727           |
|                                   | Personalization            | .896 | .013 | .897    | 68.48   | .001 | .803           |
|                                   | Relationship               | .879 | .015 | .879    | 59.98   | .001 | .772           |
| <b>2a order<br/>Engagement</b>    | Enthusiasm                 | .859 | .017 | .861    | 50.53   | .001 | .739           |
|                                   | Social interaction         | .665 | .042 | .667    | 15.93   | .001 | .442           |
|                                   | Attention                  | .866 | .019 | .866    | 45.77   | .001 | .750           |
| <b>Hypothesis 1</b>               | Co-production ← Engagement | .184 | .091 | .182    | 2.02    | .050 | .302           |
| <b>Hypothesis 2</b>               | Value-in-Use ← Engagement  | .427 | .089 | .430    | 4.80    | .001 | .341           |

**Notas:**  $p < .05$ . =  $t(05, 4999) = 1.645$ ;  $p < .01$ . =  $t(01, 4999) = 2.327$ ;  $p < .001$ .  $t(001, 4999) = 3.092$ . R<sup>2</sup> = determination coefficient.

The third hypothesis was tested by performing regressions by groups (active vs. non-active method) to subsequently compare the regressions (HAIR et al., 2016). The relationship between value-in-use and engagement showed no significant difference ( $p = ns$ ) in both methods, leading to the rejection of H<sub>3a</sub>. Nonetheless, the relationship between co-production and engagement showed different results according to the teaching method applied ( $p < .001$ ). For the active method, the results were insignificant ( $\beta = .064$ ,  $t = .647$ ;  $p = ns$ ), hence presenting support for H<sub>3b</sub>.

**DISCUSSION**

The first contribution of this study is to demonstrate the effectiveness of a similar measurement model of Ranjan and Reads (2016). This expands the opportunity for different measurements in future research. Another contribution was demonstrating that the shaping constructs of co-creation influence student engagement,

and several behaviors arising from engagement could be observed and were beneficial to the company, including intrinsic value, extrinsic value (VIVEK et al., 2014), and feedback (GRILLO et al., 2014). A chain is identified in which, from the incentive to co-create value, in addition to the already known benefits, such as satisfaction and attitudinal loyalty of the consumer (COSSÍO-SILVA et al., 2016; FRIO; BRASIL, 2016), greater student engagement will be generated and, consequently, other gains to the company.

The results also show that a non-active teaching method leads students to a greater search for co-production to engage in the subject and improve overall performance. It is noted that the student, in general, does not seek a passive role but an active one in the teaching processes, and this view should prevail in the relations of value co-creation (PRAHALAD; RAMASWAMY, 2004; VARGO; LUSCH, 2016). For this reason, higher education institutions must have a deep understanding of the shared responsibility between the participants (students and professors) and further emphasize the importance of student responsibility by playing an active role in defining the value of their experiences (DOLLINGER; LODGE; COATES, 2018).

## Conclusion

This study sought to analyze the effects of classroom value co-creation as an antecedent of engagement in higher education students and identified how students co-create value to improve the classroom experience. Teaching has never been perceived as a stand-alone product and has always been a co-created interaction between students and professors and, therefore, a relationship-based foundation (KELLEY; DONNELLY JR; SKINNER, 1990). According to the data presented herein, students' co-creation behaviors (co-production and value-in-use) help increase engagement with the subject, and the increased engagement of students in the subject improves their momentum and performance. The model details explicitly how value co-creation can add value to engagement in the subject, both for the professors and students on whom the institution relies (DOLLINGER; LODGE; COATES, 2018).

Furthermore, the analysis was based on co-creation data, which is an axiom of service-dominant logic. Notably, Vargo and Lusch (2016) believe that service-dom-

inant logic is moving towards developing a general market theory, and this study contributes to such a perspective. Moreover, our findings point to a trade-off, as the analysis data indicated that faculty members and institutions must choose between encouraging consumer value co-creation or applying active methods for subject engagement. The results point out that the impacts of value co-creation on engagement will only be achieved via non-active methods. The effects of value-in-use repeat the results for both methods.

From a methodological standpoint, this study expands the possibilities of using the scale of Ranjan and Read (2016), and we could observe that it has been tested and validated using reflective rather than formative measurements, as originally conceived. Likewise, co-production and value-in-use can be used independently and also reflectively, and the data presented herein corroborated the framework proposed by Vivek et al. (2014) for measuring engagement. This framework had already been validated in Brazil and, once again, demonstrated its effectiveness and structure (GRILLO et al., 2014). Furthermore, these models showed efficacy when analyzed in the context of classrooms and student participation.

## MANAGEMENT IMPLICATIONS

The research results help university managers and professors by demonstrating that the incentive for value co-creation can be beneficial to a better dynamic of the subject. The value is co-created by a network of actors, in which case the university must make the offer to be evaluated by the students (VARGO; LUSCH, 2016), thus corresponding to a contribution for both. Hence, our findings encourage professors and managers of educational institutions to stimulate students to co-create value, giving them the role of protagonists and increase their engagement with the subject. Moreover, the active method did not generate greater engagement in students seeking more participation in the processes, given that their perception of value is generated from their participation in the subject.

Despite the relevance and recent evidence identified in the use of active methods (GUERRA; TEIXEIRA, 2016, ELSHARNOUBY, 2015; PAIVA et al., 2016), some professors and subjects require more traditional study methods. By encouraging the student to co-create value through interaction and autonomy, institutions tend to present more engaged students.

## LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This study is the first to evaluate the role of student value co-creation in engagement, considering the type of teaching method employed. However, this creates several limitations that should be explored in further studies, including cross-sectional collection in only one subject. Further research should compare results across subjects with the same content and different teaching methods. In addition, we did not control the types of subjects (theoretical, applied, etc.), and controlling this variable may lead to different results in new analyses. We only considered student engagement as a dependent variable. Future studies could investigate the impacts of co-creation and teaching methods on student performance (AGUNDES; LUCE; RODRIGUEZ ESPINAR, 2014), shedding new light on their role in students' education.

Data from this study were collected from academics of regional institutions, and research should be carried out to expand and control the type of university (community, public or private). Moreover, new studies should consider applying experimental methods using subjects of the same nature and with the same professor, although with different teaching methods (active vs. non-active method), making it possible to test the causality between the co-creation of value and methods employed.

The conceptions of value co-creation and engagement were chosen for the present study (RANJAN; READ, 2016; VIVEK et al., 2014), and we noted that there are other forms of measuring these constructs. In addition, this survey was exclusively based on hierarchical models. New studies should seek to test the relationships identified here with other measurement models and unidimensional constructs in order to understand the replicability of the results.

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