

# THE INFLUENCE OF ENGAGEMENT IN VALUE CO-CREATION ON E-LEARNING EXPERIENCE AND STUDENT SATISFACTION: AN EMPIRICAL STUDY

WPŁYW ZAANGAŻOWANIA STUDENTÓW WE WSPÓŁTWORZENIE WARTOŚCI NA DOŚWIADCZENIE E-LEARNINGU I ZADOWOLENIE W ŚWIETLE BADAŃ WŁASNYCH

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## ABSTRACT

The objective of this paper is to investigate the impact of students' engagement in value co-creation on the perception of online learning experience and the effect of online learning experience on student satisfaction. The research method was a survey conducted on a sample of 532 respondents from a public business school. The findings show that increased students' engagement in value co-creation results in their improved perception of e-learning experience, which in turn influences student satisfaction. Thus, in order to facilitate the engagement of students in the value co-creation process, it is imperative to optimise the quality of dialogue, enhance the availability of pertinent information, promote intellectual stimulation, increase participation in scholarly pursuits, and foster opportunities for inter-student interactions. The study also complements the current body of knowledge on value co-creation in higher education with an online context.

**Key words:** value co-creation, e-learning, satisfaction, higher education

## ABSTRAKT

Celem niniejszego artykułu jest zbadanie wpływu zaangażowania studentów w działania współtworzące wartość na postrzeganie doświadczeń e-learningowych oraz na ich zadowolenie. Wykorzystaną metodą badawczą jest sondażowe badanie ankietowe przeprowadzone na próbie 532 respondentów będących studentami publicznej uczelni biznesowej. Wyniki badania pokazują, że im większe zaangażowanie we współtworzenie wartości, tym bardziej pozytywnie postrzegane są doświadczenia e-learningu, co z kolei oddziałuje na poziom zadowolenia studentów. Aby zaangażować studentów w proces współtworzenia wartości, konieczne jest optymalizowanie jakości dialogu, poprawa dostępności istotnych informacji, stymulowanie intelektualne, zwiększenie uczestnictwa w aktywnościach akademickich oraz tworzenie okazji do nawiązywania relacji między studentami.. Ważnym wkładem do nauki jest także poszerzenie dotychczasowego stanu wiedzy na temat współtworzenia wartości w szkolnictwie wyższym o kontekst online.

**Słowa kluczowe:** współtworzenie wartości, e-learning, zadowolenie, szkolnictwo wyższe

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## Introduction

Higher education (HE) sector is undergoing a transformation in several fields. One of them focusses on active forms of cooperation with key stakeholders. A group of particular importance is students, whose opinions are increasingly valued and who actively co-create the university offer (Dziewanowska, 2018; Elsharnouby, 2015). This aspect of transformation corresponds with the theoretical stream of value co-creation, which currently aspires to a paradigm status in the field of management (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2008). Another important area of transformation is rapidly progressing digitalisation of education

(Parker et al., 2011). An increasing acceptance of online courses in study programmes presents both opportunities and challenges to university stakeholders; and, overall, the quality of online education is questioned by many scholars (Allen & Seaman, 2011). Thus, studies of student satisfaction and the perception of the quality of online teaching and learning bring results that influence university strategy in a significant manner (Grace et al., 2012).

The objective of our study is to understand the role of students' participation in value co-creation practices (such as dialogue, information access and exchange, and intellectual and relational experiences) in academic activities and resulting emotional attitude. Thus, we aim to investigate the effect that the student engagement in value co-creation has on the assessment of online learning, as well as whether the perception of online learning experience influences students' satisfaction. The research model was tested using partial least square structural equation modelling (PLS-SEM) in a sample of 532 undergraduate and graduate business students.

The remaining parts of the paper are organised as follows: first, the theoretical background on value co-creation, perception of e-learning experience, and student satisfaction are presented. Next, the research method and results are presented, followed by the discussion of the results.

## **Theoretical Background and Hypotheses**

### **Value co-creation**

The concept of value originates from the business marketing literature; however, it has been successfully applied to the HE sector (Bowden & D'Alessandro, 2011; Diaz-Mendez & Gummesson, 2012; Dollinger et al., 2018). Value has been long studied in various contexts; thus, the concept is diversely understood. In this paper, we adopt a definition of value nested in the service-dominant logic (Vargo & Lusch, 2008), which states that the value is an improvement in system well-being that results from interactions among actors and application of resources (Vargo et al., 2008).

Value is phenomenological, multidimensional, emergent and always co-created (Vargo et al., 2017). Additionally, the process of value co-creation is defined as 'joint collaborative activities by parties involved in direct interactions, aiming to contribute to the value that emerges for one or both parties' (Grönroos, 2012, p. 1520).

In the HE context, the above characteristics of value and value co-creation are of particular importance as they entail a shift from a traditional approach of 'marketing to consumers' towards a 'marketing with stakeholders' (Vargo & Lusch, 2008). First, there are many actors participating in the process of value co-creation, not limited to examples such as students, lecturers, administrative staff, and officials, but also encompassing external stakeholders, such as government, companies and parents. However, the core relationship occurs between the student and the lecturer (Diaz-Mendez & Gummesson, 2012), and this perspective is adopted in this paper. Moreover, value is constantly negotiated between the participants of the process, who bring their own operant resources and use the platform of products and services offered by the HE institutions (Prahalad & Ramaswamy, 2004) that include study programmes, learning experiences, examinations and more. Finally, co-creation experiences are subjective, unique to each participant and affected by cognitive, affective, temporal and contextual influences (Akaka et al., 2015). That includes the influence of other participants and situational factors.

Researchers so far have focussed on various aspects of value and its co-creation. While some of them focus on a narrow understanding of value such as the perceived value of HE (Lai et al., 2012), others investigate value from a co-creation perspective (Bowden & D'Alessandro, 2011; Diaz-Mendez & Gummesson, 2012; Smorvik & Vespestad, 2020). Student engagement is a particularly important factor contributing to the co-creation of the value of educational experience (Maxwell-Stuart et al., 2018). It is defined as 'the extent of involvement in a range of educationally purposeful in-class and out-of-class activities' (Dean et al., 2016, p. 327), and it refers to the amount of psychological and physical energy students spend on their university experiences (Clynes et al., 2020). There are various indicators of student engagement: cognitive (e.g. entering deeply into learning on their own), affective (e.g. being interested), conative (giving energy and time) and relational (Dunne & Derfel, 2013). Academic

engagement is considered a good predictor of personal development and learning outcomes, and it is related to general satisfaction with college (Zhao & Kuh, 2004). Moreover, actor engagement is considered a microfoundation of the value co-creation experience (Storbacka et al., 2016).

There have also been attempts to understand value co-creation process in HE from an empirical perspective (Dollinger et al., 2018). Two research approaches are present in the literature: one is based on Yi and Gong's (2013) proposal combining participation and citizenship behaviour (Elsharnouby, 2015), while the other is based on the Ranjan and Read (2016) model combining co-production and value in use as key components of the value co-creation process (Authors, 2018; Dollinger et al., 2018). In this paper, we use the latter of these, with the following components of the value co-creation process: dialogue and access to information as evidence of co-production, involvement, intellectual stimulation and relational aspect as elements of engagement in value in use creation. This model fits the HE context well and incorporates key processes relevant to online learning experience.

**H1:** Student's engagement in value co-creation is positively related to e-learning experience.

## **e-Learning experience perception and student satisfaction**

The quality of teaching has become a focal aspect for many HE institutions (Yang et al., 2018) as they have been under scrutiny from both consumers and governmental bodies. Quality teaching enables students to engage in quality learning (Byrne & Flood, 2003; Yin et al., 2014), and it is an important determinant of learning experience and outcomes (Prieto-Rodriguez et al., 2016). Due to its strategic importance, many HE institutions have implemented policies and instruments designed to assure the desired quality of teaching and learning (Yin et al., 2014).

Studies conducted so far have proven that students are able to evaluate various aspects of teaching quality in a multidimensional and reliable manner (Byrne & Flood, 2003). Dimensions of student experience that are studied include good teaching, clear goals and standards, appropriate

workload and assessment, and perceived skills obtained through the course (Yin et al., 2014). Good teaching refers to teacher interaction and presentation and the quality of feedback given to students, while clear goals and standards reflect whether students are aware of what is expected of them. An appropriate workload allows an assessment of students' perception of the reasonability of the amount of work they need to do, and an appropriate assessment focusses on the extent to which students are encouraged to understand the material rather learn by rote (Asonitou et al., 2018; Byrne & Flood, 2003).

Recently, HE institutions have placed increasing importance on student satisfaction (Grace et al., 2012), and it has been frequently pronounced within university mission statements and marketing strategies (Elliot & Shin, 2002). Satisfaction has been conceptualised in many ways; however, there are two common elements (Grace et al., 2012): it is an emotive variable emerging from an evaluative response to product and non-product performance (Tanner, 1996); and it is an outcome variable of service quality perception (Cronin et al., 2000). In HE context, course quality reflects students' perception of all course aspects, while student satisfaction results from the evaluation of course- and non-course-related aspects. Thus, student satisfaction can be defined as a 'student's emotional and behavioural response to course appraisal' (Grace et al., 2012), and it is considered a measure of the overall student experience (Gibson, 2010). Studies show that student satisfaction is linked to students' motivation and retention (Elliot & Shin, 2002), persistence (Allen & Seaman, 2011; Gibson, 2010), self-confidence (Letcher & Neves, 2010), word-of-mouth communication and willingness to donate to the university as alumni (Parahoo et al., 2013).

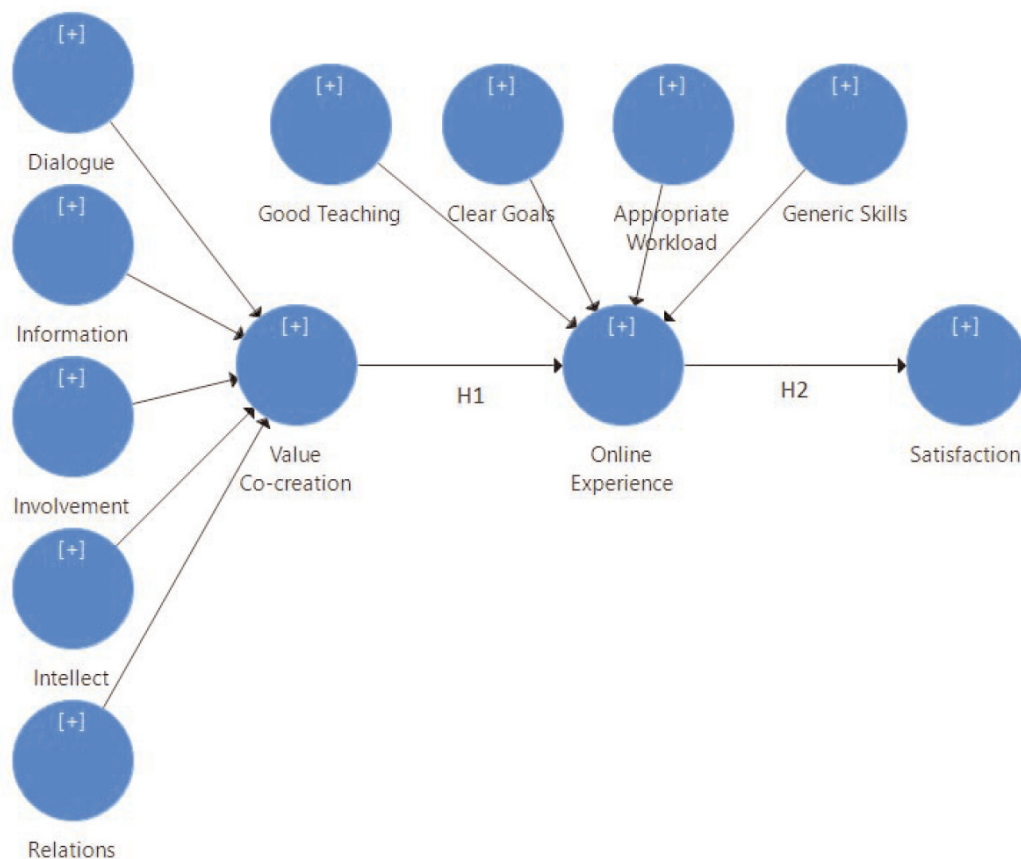
Over that last decade, many HE institutions have accepted online courses as a legitimate component of their programmes in response to a growing student demand for online learning (Parker et al., 2011). This trend has become progressively more popular due to an increased access to the Internet (Bates, 2019), and the convenience and flexibility typically associated with participation in online courses (Croxtton, 2014), as well as a growing need for lifelong learning among the population (Parahoo et al., 2016). However, despite the growing popularity of online learning, many educators question its value, rigour and overall quality (Allen & Seaman,

2011). Previous studies of online learning investigated its success and failure factors (Bolliger & Halupa, 2018) and determinants of student performance and satisfaction (Kuo et al., 2013). Research suggests that students respond positively to online courses (Judson et al., 2017) and that online learning works best when planned and combined with other forms of learning (Besser et al., 2020).

H2: Perception of e-learning experience is positively related to student's satisfaction.

Figure 1 presents a theoretical model that is proposed and tested in this study.

**Figure 1. Theoretical model**



Source: own elaboration.

## Methods

### Sample and data

The study was conducted in 2021 in a large public university in Poland, with the use of an online surveying tool placed at a Moodle platform used for online teaching. The research sample comprises 532 undergraduate and graduate business students, who participated in the study for course credits. The collected surveys were checked for missing data and the right answer to the trap question placed towards the end of the questionnaire. After this step, 15 surveys were excluded from further analysis.

Of the sample, 67.3% were female and 32.4% male (Table 1), and while 69.4% of the respondents were aged under 24 years, only 5.8% were aged over 30 years; the oldest study participant was 48 years. The majority of participants were graduate students.

**Table 1. Respondents profile**

Variable	Categories	N	%
Gender	Female	358	67.3
	Male	174	32.4
Education level	Undergraduate	185	34.7
	Graduate	347	65.3
Age (years)	18–23	369	69.4
	24–29	132	24.8
	30 and more	31	5.8

Source: own elaboration.

### Measures

To measure the variables included in our theoretical model, we used validated scales adapted from the existing literature.

To measure value co-creation, we used the scale developed by Dziewanowska (2018), which is suited for the HE context. According to this model, the value co-creation consists of five factors: dialogue between



student and institution, being informed about institution policy, involvement and intellectual and relational aspects of studying experience.

The e-learning experience was measured with the course experience questionnaire (CEQ), which we adapted to the online context (Ramsden, 1991; Wilson et al., 1997). The questionnaire comprises of five factors: good teaching, clear goals and standards, appropriate workload, appropriate assessment, and generic skills.

The items for satisfaction measurement were based on the study of Oliver (1980), and they reflect general satisfaction, word of mouth and intention of further participation in online courses.

## Data analysis

PLS-SEM was employed to validate the measurement and to assess the structural model. The calculations were made with the use of SmartPLS 3.0 software (Ringle et al., 2012). The PLS method is suitable to test models that are exploratory, and does not require multivariate normal data distribution (Ringle et al., 2012). Moreover, it allows the use of 2nd-order constructs, which are present in our study. Both value co-creation and e-learning experience are conceptualised as higher order measures, composed of several 1st-order factors. The SEM procedure consists of two stages: assessment of the measurement model and interpretation of the structural model (Anderson & Gerbing, 1988).

## Results

### Measurement model

Convergent validity of reflective 1st-order measures was assessed by the size of individual item loadings on the 2nd-order constructs (Gefen & Straub, 2005). The analysis leads to the removal of three items forming an 'appropriate assessment' factor from the e-learning experience scale. The loadings of these items were below 0.5. All remaining indicators have factor loadings above 0.650. We have decided to keep seven items with factor

loadings between 0.650 and the threshold of 0.70, as the indicators with loadings of 0.4–0.7 should only be deleted if their exclusion from the model increases the composite reliability (CR) to more than 0.7. (Hair et al., 2017). In the case of our model, the Cronbach's alpha, CR and average variance extracted (AVE) reached values above 0.7, which suggest that the measurement model is reliable (Fornell & Larcker, 1981) (Table 3).

As our model comprises three 2nd-order formative constructs (value co-creation, e-learning experience and stress), the item weights were calculated to confirm their convergent validity. The item weights for all 1st-order constructs were significant (Table 2). The VIF values for 2nd-order constructs are below 3.0, suggesting that multicollinearity should not be a matter of concern (Hair et al., 2017). The discriminant validity of the model was tested with square roots of AVE for each construct as well as HTMT ratio of correlations.

**Table 2. Item weights for 1st-order constructs**

2nd-order construct	1st-order construct	Weights	t-value	p
Value co-creation	Dialogue	0.399	26.356	0.0001
	Information	0.344	24.956	0.0001
	Involvement	0.155	8.781	0.0001
	Intellect	0.321	27.015	0.0001
	Relations	0.147	5.787	0.0001
e-Learning experience	Good teaching	0.407	32.010	0.0001
	Clear goals and standards	0.306	27.401	0.0001
	Appropriate workload	0.171	13.792	0.0001
	Generic skills	0.373	27.989	0.0001

Source: own elaboration.

**Table 3. Convergent validity and reliability of the measurement model**

2nd-order constructs	1st-order constructs and items	Factor loadings	α	CR	AVE
Value co-creation	<b>Dialogue</b>				
	I think my university understands my needs	0.879	0.835	0.901	0.752
	In my opinion, my university treats me seriously	0.853			

Cont. Table 3

2nd-order constructs	1st-order constructs and items	Factor loadings	$\alpha$	CR	AVE
	I think my university actively attempts to satisfy my needs	0.869			
	<b>Information</b>				
	I feel well-informed	0.864	0.795	0.880	0.709
	I can easily access information that is important to me	0.826			
	My university uses the right channels of communication	0.836			
	<b>Intellectual stimulation</b>				
	Studying broadens my horizons	0.883	0.790	0.878	0.706
	Studying helps me develop myself	0.869			
	Studying forces me to think	0.763			
	Involvement				
	I am involved in my studies	0.612	0.725	0.819	0.609
	I spend more time studying than most people	0.764			
	I put minimum effort into my studies*	0.932			
	<b>Relations</b>				
	I like spending free time with my friends from the university	0.887	0.793	0.877	0.706
	The most important aspect of studying are people whom I meet	0.735			
	In the future, I intend to keep in touch with people I got to know while studying	0.889			
e-Learning experience	<b>Good teaching</b>				
	The teaching staff of these online courses motivate students to do their best work	0.656	0.820	0.870	0.529
	Staff put a lot of time into commenting on students' work during online courses	0.670			
	The staff make a real effort to understand difficulties students may be having with online courses	0.735			

**Cont. Table 3**

2nd-order constructs	1st-order constructs and items	Factor loadings	$\alpha$	CR	AVE
	Teaching staff normally give helpful feedback on how you are going with your online courses	0.768			
	Our lecturers are extremely good at explaining things to us during online courses	0.772			
	Teaching staff work hard to make subjects interesting during online courses	0.752			
	<b>Appropriate workload</b>				
	The workload during online courses is too heavy*	0.799	0.762	0.862	0.675
	We are generally given enough time to understand the things we have to learn during online courses	0.838			
	The sheer volume of work to be got through in online courses means you can't comprehend it all thoroughly*	0.827			
	<b>Clear goals and standards</b>				
	It's always easy to know the standard of work expected during online courses	0.796	0.794	0.866	0.618
	You usually have a clear idea of where you're going and what's expected of you	0.811			
	It's often hard to discover what's expected of you in online courses*	0.784			
	The staff make it clear right from the start what they expect from students in online courses	0.753			
	<b>General skills</b>				
	Online courses have helped me to develop my problem-solving skills	0.770	0.831	0.877	0.545
	Online courses have sharpened my analytic skills	0.784			
	Online courses have helped develop my ability to work as a team member	0.657			

Cont. Table 3

2nd-order constructs	1st-order constructs and items	Factor loadings	$\alpha$	CR	AVE
	As a result of doing online courses, I feel more confident about tackling unfamiliar problems	0.832			
	Online courses have improved my written communication skills	0.697			
	Online courses have helped me develop the ability to plan my own work	0.673			
	Unable to control the important things in your life	0.786			
	Nervous and stressed	0.809			
	Could not cope with all the things that you had to do	0.806			
	Angered because of things that were outside your control	0.665			
	Difficulties were piling up so high that you could not overcome	0.740			
Satisfaction	I will gladly participate in other online courses	0.927	0.924	0.952	0.867
	I will recommend taking online courses to other people	0.950			
	I am satisfied with online courses I took	0.917			

Source: own elaboration.

\* items with reversed coding AVE, average variance extracted; CR, composite reliability.

## Structural model

After confirming that our model has satisfactory reliability and validity, we have estimated the parameters of the structural model. The predictive power was estimated with R<sup>2</sup> scores and appeared to be high, as its values are 0.304 for e-learning experience and 0.456 for satisfaction (Hair et al., 2012). To assess the significance of path coefficients, the bootstrapping technique with 5,000 subsamples was used (Henseler et al., 2009). As we

hypothesised, the value co-creation positively affects e-learning experience (path coefficient = 0.551,  $t = 17.054$ ,  $p < 0.0001$ ), supporting H1. Moreover, the e-learning experience is significantly related to satisfaction (path coefficient = 0.676,  $t = 28.729$ ,  $p < 0.0001$ ), which provides empirical support for H2 (Table 4).

**Table 4. Path coefficients**

	Original sample (O)	Sample mean (M)	STDEV	t statistics ( O/STDEV )	p values	95% CI (bias corrected)		Hypothesis	Support
						Lower	Upper		
Value co-creation ? e-learning experience	0.551	0.551	0.032	17.054	0.0001	0.496	0.604	H1	Yes
e-Learning experience ? satisfaction	0.676	0.675	0.024	28.729	0.0001	0.635	0.712	H2	Yes

Source: own elaboration.  
STDEV, standard deviation.

## Discussion

Our study adds to the growing body of knowledge on value co-creation and e-learning in HE institutions. The results show that students' engagement in value co-creation was positively related to their perception of e-learning experience (H1 is supported), which is in line with previous findings (Maxwell-Stuart et al., 2018). Further, this supports the findings of Smorvik and Vespestad (2020), who showed that value co-creation can contribute to students' perception of learning. However, most previous studies were focussed on in-class education and our study extends these results into the online context.

The significance of H2 ( $p < 0.0001$ ) supports the assumption that the perception of e-learning experience influences student satisfaction. This result is in line with results of studies focussed on services (e.g. Cronin et al., 2000). Kuo et al. (2013) found that learner-instructor interaction and learner-content interaction are predictors of student satisfaction in relation to an online course. This is also supported in our study, as certain sub-dimensions of e-learning experience (i.e. good teaching, appropriate workload, clear goals, and standards) refer to similar matters. The results of our study reinforce the findings of Besser et al. (2020) that student satisfaction with online learning is higher when it is planned and combined with other forms of learning. The general perception of e-learning experience and student satisfaction were rather low in our study, which is also in line with the findings of Bowden and D'Allessandro (2011), who claim that it is the pedagogy, and not the technology, that matters most in classrooms, and further emphasises the need for reflection upon the learning process. These findings emphasise the importance of active participation in various practices performed by actors in the HE ecosystem (Diaz-Mendez & Gummeson, 2012) and confirm the influence of the engagement in value co-creation on student satisfaction in line with the study of Dollinger et al. (2018).

## Conclusions and Limitations

The topic of co-creation of value is currently popular and applied to various markets. It is undisputed that, in the case of HE, we are dealing with a specific educational service whose effects strongly depend on the level of involvement of participants in this process. This article focusses on the processes taking place on the side of students in an online environment. It has been shown that increased student engagement translates into positive results in the form of a good perception of the learning experience, as well as increased satisfaction. These results carry practical implications: universities should undertake actions that encourage students to increase

their engagement through open dialogue and providing current information, as well as caring for building and maintaining relationships between themselves and lecturers as well as among themselves. This means that it is necessary to come out of the 'ivory tower' and approach our key stakeholders in order to better address their needs.

The study is not without certain limitations that could suggest further areas of research. Firstly, it is based on student declarations, and this may not fully represent an actual situation. Thus, other methods should be used, such as observation, student testimonials, and experiments. It was also conducted at a single HE institution, and a comparative study among various institutions and various countries should be undertaken to bring about a better understanding of the studied phenomena.

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