Journal of International Economics and Management
Journal homepage: http://jiem.ftu.edu.vn

Testing the relationship between out-of-class student engagement and student learning outcomes: the case of business students in Vietnam

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Received: 28 June 2021; **Revised:** 01 November 2021; **Accepted:** 08 November 2021
https://doi.org/10.38203/jiem.021.3.0038

Abstract

The topic of student engagement has emerged by the end of the last century and has become an interesting research topic for its robust correlation with a large number of desirable and positive educational outcomes. While in-class student engagement has been largely studied, out-of-class student engagement seems to receive less attention. This study closes the gap in the literature by presenting evidence on the relationship between out-of-class engagement and student learning outcomes using two different datasets of 492 and 491 business students in Hanoi, the capital city of Vietnam. The structural equation modeling analyses using SmartPLS show significant effects of cognitive and agentic engagement on student learning outcomes. In addition, out-of-class agentic engagement is confirmed to be a separate and distinct subcomponent of student engagement.

Keywords: Agentic Engagement, Higher Education, Out-of-Class Engagement, Student Engagement, Student Learning Outcomes

1. Introduction

The topic of student engagement (SE) has emerged by the end of the last century and has become an interesting research topic in the last decade (Eccles and Wang, 2012; Kahu, 2013). The reason why SE has increasingly been of great interest to researchers in higher education is its association with students' academic achievements, student retention, school completion, social-emotional well-being as well as other long-term outcomes such as work success and lifelong learning (Astin, 1984; Finn, 1989; Newmann, 1992; Finn, 1993; Kuh, 2003; Pascarella and Terenzini, 2005; Christenson *et al.*, 2012; Lei *et al.*, 2018).

It is widely agreed that SE has "topped the list of important details" (Lawson and Lawson, 2013) regarding educational policy in the United States. SE "continues to be a business

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education focal point based on the significant relationship with learning outcomes" (Burch *et al.*, 2015). Additionally, it is confirmed that learning and succeeding in school requires active engagement (Institute of Medicine, 2003).

There is, however, little consensus on the conceptualization of SE (Furlong *et al.*, 2003; Fredricks *et al.*, 2004). A single consent is that SE is a multifaceted, multidimensional, and meta-construct conceptualization (Fredricks *et al.*, 2004; Kahu, 2013; Burch *et al.*, 2015).

SE in higher education is generally accepted to cover two main contexts of in-class or academic and out-of-class or non-academic environments (Finn, 1989; Fredricks *et al.*, 2005; Gunuc and Kuzu, 2015). While in-class SE has been largely analyzed, out-of-class SE seems to receive less attention. According to Trinh (2020), among the seventeen most widely used definitions of SE, sixteen definitions mention in-class context while only ten of them mention out-of-class context. Nonetheless, for students in higher education, an out-of-class environment is found to be crucial to contribute to their development (Finn and Voelkl, 1993; Audas and Willms, 2001; Trowler, 2010).

Increasing student learning outcomes is the most important goal of higher education institutions (Melton, 1996). Students have become the center in curriculum design, teaching, and extracurricular activities. Universities are shifting from teaching goals to paying attention to student learning outcomes (Kuh, 2001b; Coates, 2010).

The number of studies in SE and student learning outcomes is also limited in Vietnam. A few studies related to SE have investigated the impacts of SE on student satisfaction (Tung and Ngoc, 2016), student participation (Huy, 2015), or perceived service values and life goals (Tran, 2019). Nonetheless, no study has investigated the relationship between out-of-class SE and student learning outcomes at higher education institutions in Vietnam to see how the non-academic environment contributes to development of students. Thus, investigation into constructs of SE, the instrument of out-of-class SE, and its impacts on learning outcomes for Vietnamese students will help expand the understanding of this topic.

This study has two purposes. First, it reviews the subconstructs of out-of-class SE and its instrument. Second, it examines impacts of out-of-class SE on student learning outcomes, with a focus on business students. The analysis shows significant effects of cognitive and agentic engagement on student learning outcomes. In addition, out-of-class agentic engagement is confirmed to be a separate and distinct subcomponent of SE.

The remainder of this paper is as follows: The next section reviews the literature related to SE and out-of-class engagement of students at higher education and the linkage between out-of-class SE and student learning outcomes; Section 3 provides a conceptual framework with eight hypothesis, followed by a description of measurement instruments and data collection method; Section 5 presents research findings, which is followed with discussion in Section 6 and conclusions in Section 7.

2. Literature review

2.1 Student engagement and out-of-class student engagement

There are different definitions of SE. This concept was initially mentioned as time on task (Tyler, cited in Kuh (2009)) and quality of effort (Pace, cited in Kuh (2009)). Astin (1984) introduces student involvement to indicate the level of physical and mental energy that students spend on educational experiences. Other studies have continued to develop new aspects related to SE and student interaction with schools in educational activities, including social and academic integration (Tinto, cited in Ghori (2016)), participation-identification (Finn, 1993), and SE (Kuh, 1991; Pascarella *et al*., 2004).

While SE has become more popular, its various definitions have been suggested with similar components but not entirely consistent (Furlong *et al*., 2003; Fredricks *et al*., 2004; Appleton *et al*., 2008; Fredricks and McColskey, 2012). Fredricks *et al.* (2004) argue that this is a complex, multidimensional concept, and its conceptualization is still far from reaching an overall agreement. Other authors also propose that further research should focus on clarifying this concept and its components, and on measuring these components (Glanville and Wildhagen, 2007; Fredricks and McColskey, 2012; Sinatra *et al*., 2015; Lei *et al*., 2018).

In this study, SE is analyzed at the higher education level, with a focus on the out-of-class environment. The concept of SE is adopted from Kuh *et al.* (2007), which is conceptualized as "students' involvement in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes". Out-of-class SE is operationalized as components of SE in the out-of-class context.

Regarding subconstructs of SE, recent studies either employ a three-component or a four-component approach. The three-component approach often views students as passive recipients of impacts from the external environment (Brooks *et al*., 2012; Crick, 2012). Their reactions are categorized as: (i) cognitive, which is conscious engagement and engagement in learning; (ii) behavioral, which is participation in social and community activities; and (iii) emotional, which is affection (Fredricks *et al*., 2004; Yazzie-Mintz, 2007; Appleton *et al*., 2008).

Studies on the four-component approach propose that besides reactions from the environment, students can actively participate and contribute to the education process, which can be categorized as agentic engagement and is taken as the fourth component of SE (Reeve and Tseng, 2011). Through student's agency, this fourth component is shown to contribute to the learning outcomes of students (Lawson and Lawson, 2013), and is confirmed to be "a distinct and an important construct" (Reeve, 2012; Sinatra *et al*., 2015; Jang *et al*., 2016).

In this study, a four-component approach is employed to measure and analyze SE as this approach better fits with students in higher education for their mature development.

2.2 Student engagement theories and learning theories

During the last three decades, SE theories have been developed to explain school successful performance and divided into two main lines. The first line consists of studies related to engagement theory (ET) and closely linked to drop-out prevention and at-risk students (Astin, 1984; Finn, 1993; Newmann *et al.*, 1992; Christenson *et al.*, 2008). The second line includes studies related to psychological motivation theories, such as the self-determination theory and the flow theory (Bandura, 1986; Deci and Ryan, 2000; Skinner and Pitzer, 2012; Eccles and Wang, 2012; Shernoff *et al.*, 2014).

Astin (1984) defines student involvement as "the investment of physical and psychological energy (of the student) in academic experience". He describes a highly involved student as someone who spends more time studying, shows more effort in doing homework, and/or interacts more frequently with other students and teachers. He assumes such involvement would lead to student learning and development. This theory provides a foundation for the behavioral component in the concept of SE. However, the main drawback of this theory is that it does not explain the mechanism of SE and does not show how it interacts with other factors in the educational environment. Therefore, many researchers have started to move away from the education-based theories to the psychological and management theories to explain SE and further investigate its constructs, precursors, and outcomes (Burch *et al.*, 2015).

The self-determination theory is originally a theory of human motivation and personality in social contexts (Deci and Ryan, 2012). The core idea of this theory is about human intrinsic motivation to explore, to learn, and to possess knowledge of what surrounds them. This theory has set a theoretical ground to understand SE as human social behavior and explained different mechanisms through which students have different levels of engagement or disengagement in the school context (Reeve *et al.*, 2004; Vansteenkiste *et al.*, 2008; Reeve, 2012).

In the flow theory, according to Nakamura and Csikszentmihalyi (2002), flow is a "state of deep absorption in an activity that is intrinsically enjoyable", as one can observe artists or athletes focusing on their play or performance. Based on this flow theory, one must simultaneously experience concentration, interest, and enjoyment in an activity for flow to occur (Csikszentmihalyi, cited in Shernoff *et al.* (2014)). According to this theory, SE is affected by class and school environments as well as other contextual and personal factors. Students are the key actors of this mechanism in which they boost their concentration and interest to a certain level where flow occurs and turns into their deep engagement in learning activities (Shernoff *et al.*, 2014). This theory provides strong support for the agentic component in the SE concept as it confirms the proactive role of students in their engagement process.

Based on these theories, this research will take the approach of a four-typology concept of SE in examining the relationship between out-of-class SE and student learning outcomes of business students in Vietnam.

Besides the SE theories, Kolb's experiential learning theory (ELT) explains SE impacts on learning outcomes, in which learning is defined as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb *et al.*, 1999). The learning cycle in ELT consists of four stages, which are concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb (1984) proposes that in the first stage, concrete experiences are the basis for observations and reflections in the second stage. Such reflections help to form abstract concepts in the third stage, from which new understanding and meaning of action can be drawn and lead to application in a new situation in the fourth stage. A new cycle can start to create new experiences and new knowledge.

The social learning theory proposed by Bandura and Walters (1977) provides another explanation of how people learn new patterns of behavior through participating in direct experience, observing others' experience, or watching others' modeling practices. They assert that as a thinking organism, a person has special cognitive skills that allow him/her to gain new knowledge or to shape his/her behavior by differentiating consequences followed of a given action, where favorable consequences will reinforce his/her behavior pattern and unfavorable consequences will prevent him/her to repeat similar pattern.

Those learning theories provide possible and relevant mechanisms for SE in general and out-of-class SE in particular to facilitate the learning process as well as learning outcomes of students at higher education institutions.

2.3 Out-of-class student engagement

At universities, students have more opportunities to interact with the broad school community, not just limiting within their classroom, as they need to prepare for the real-life environment. Hence, SE in higher education is often associated with the school community (Fullarton, 2002; Bryson, 2010).

Out-of-class engagement or non-academic engagement refers to the engagement with the school community, participation in social activities, and sense of belonging and valuing university of students (Hausmann *et al.*, 2007; Gunuc and Kuzu, 2015).

Participation in university activities or behavioral engagement in the out-of-class context is observed in students' participation in non-academic activities, membership of clubs and student associations, involvement in sports, and other extra-curricular activities (Finn, 1989; Willms, 2003). Regarding feelings of belongingness or attachment to school, this emotional component refers to feelings of being accepted and valued by their peers, and by others at their school, and a sense of being a part of the school environment (Voelkl, 1996; Willms, 2003). The other cognitive aspect of engagement refers to valuing school, which is concerned with "whether or not students value school success - do they believe that education will benefit them personally and economically" (Voelkl, 1996).

In the out-of-class context, agentic engagement can be operationalized as initialization of or proactive participation in extra-curriculum activities and in school governance (Finn, 1993). This fourth construct of SE is yet a new dimension and has not been broadly examined as the other three types of a construct (Sinatra *et al.*, 2015). Further research is still needed to validate this construct in different contexts.

Reeve (2013) categorizes these four dimensions based on two forms of engagement. He concludes that "a difference among these four forms of engagement lies in (i) proactive and reactive behaviors, and (ii) internal and external responses". Agentic engagement is the only proactive form of engagement. It is defined as the students' initiated activities, which is different from the other three reactive forms of behavioral, emotional, and cognitive engagement. At the same time, emotional and cognitive engagement are internal forms of engagement as they are not easily observable. Behavioral and agentic engagement are categorized as external forms because students demonstrate these forms of engagement in an explicit and observable manner. These forms of engagement are summarized in Figure 1.

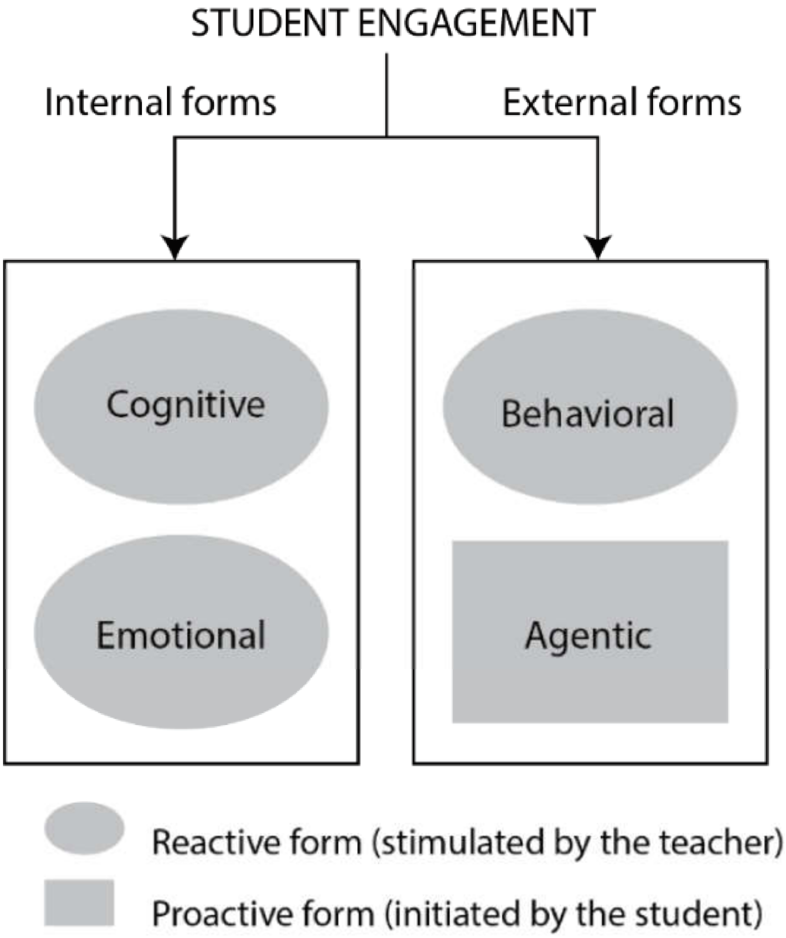

Figure 1. Forms of student engagement

Source: Montenegro (2019)

3. Measurement instruments and hypothesis development

3.1 Out-of-class student engagement measurement

A suitable instrument to measure SE should be used for undergraduate students. This instrument should cover three to four constructs of SE and explicitly include out-of-class engagement.

Those constructs should measure behavioral, emotional, and cognitive engagement in out-of-class contexts.

Regarding agentic engagement, there are available items to measure in-class engagement in the instrument developed by Reeve and Tseng (2011). The relevant measurement item description of out-of-class agentic engagement can be found in Finn's four-level taxonomy of student's participation (Finn, 1989). A qualitative study was implemented to develop new items to measure out-of-class agentic engagement. In this study, three experts in the field of students' behaviors were invited to in-depth interviews. A focus group interview of eight business students was taken place to develop new items of out-of-class student agentic engagement. Findings from this study show that: 1) interactions between students and their friends, faculty, and school on social network, for example Facebook, are mentioned as an aspect of engagement; and 2) active participation in extracurricular activities can be displayed in the form of membership of club management board and event organizers. Therefore, seven items were developed for out-of-class agentic measurement, in which one item was adopted from Finn (1989) and the other six were extracted from findings of the study. A final list of 24 items was collected from suitable instruments. It consists of the followings: 1) five items of out-of-class cognitive component including items from OC1 to OC5; six items of out-of-class emotional component including items from OE1 to OE6; six items of out-of-class behavioral component including items from OB1 to OB6; and seven items of out-of-class agentic component including items from OA1 to OA7.

3.2 Student learning outcomes and their measurement

The question of how to measure student learning outcomes is not easily solved. Bloom's taxonomy on learning suggests three domains of learning objectives or learning outcomes: 1) the cognitive domain (thinking); 2) the affective domain (feeling); and 3) the psychomotor domain (doing) (Carter, 1985). Romiszowski (cited in Carter (1985)) points out a major defect of Bloom's Taxonomy, which is "the absence of a distinction between knowledge and skill". An alternative taxonomy suggested by Romiszowski (cited in Carter (1985)) and by Binsted and Snell (cited in Carter (1985)) differentiated between types of learning: (1) cognitive learning (knowledge); (2) skill learning; and (3) affective learning (feelings and attitudes).

With a clear focus on student learning outcomes in higher educations, Frye (1999) emphasizes that "student learning outcomes encompass a wide range of student attributes and abilities, both cognitive and affective, which are a measure of how their college experiences have supported their development as individuals". In which, cognitive outcomes refer to "acquisition of specific knowledge and skills, as in a major". Affective outcomes refer to students' development in "values, goals, attitudes, self-concepts, world views, and behaviors". This has become a popular approach in assessing student learning outcomes in higher education (Duque and Weeks, 2010).

In their study of student learning outcomes with specific disciplines, Duque and Weeks (2010) apply this approach to develop an instrument to assess undergraduate student learning outcomes based on students' self-report of cognitive and affective learning outcomes. The instrument was first developed to assess learning outcomes of students in geography, and then replicated for that of students in business administration. In this study, the measurement of student learning outcomes will be replicated from the measurement instrument developed by Duque and Weeks (2010) with six items to measure cognitive learning outcomes, which are from Cog1 to Cog6, and eight items to measure affective learning outcomes, which are from Aff1 to Aff8. "I understand knowledge and concepts relating to my major" is a sample item to measure cognitive learning outcomes. "I have my self-confidence" is a sample item to measure affective learning outcomes.

3.3 Hypothesis development

Positive impacts of SE on student learning outcomes have been evidenced in various studies (Pace, 1982; Astin, 1984; Chickering and Gamson, 1987; Kuh, 1991; Newmann *et al.*, 1992; Finn, 1993; Kuh, 2001a; Pascarella and Terenzini, 2005; Carini *et al.*, 2006). Other studies show that SE is positively correlated with higher achievement (Connell and Wellborn, 1991; Finn, 1993; Marks, 2000; Lei *et al.*, 2018). In these studies, SE is defined as "in-class SE", which refers to a direct relationship between SE and student learning outcomes (Pianta *et al.*, 2012; Lei *et al.*, 2018).

In the context outside of the classroom, SE in higher education is different compared to SE in schooling at lower levels, especially for campus engagement or social life. Students in higher education are matured to be responsible for their development and they have a clearer vision of their future careers. Holland and Andre (1987) find immediate and positive effects of participation in secondary activities on students' self-concept, moral development, and academic achievement, which belong to both affective and cognitive learning outcomes. Similar effects can be expected for their participation in extra-curriculum activities.

For business students, their major often relates to knowledge of "all profit-seeking activities and enterprises that provide goods and services necessary to an economic system" (Boone *et al.*, 2019, p. 2) in which operational efficiency is crucial (Bandara *et al.*, 2007). The acquisition of knowledge will contribute to student cognitive learning outcomes of their major. At higher education institutions, students are encouraged to participate in different non-academic activities or extra-curriculum activities, ranging from sports to cultural events in peer tutor to voluntary programs, and with different roles, ranging from participants to organizers.

The organization of a student event in higher education institutions is similar to that in a non-profit organization. When participating in an event, students exercise out-of-class behavioral engagement. They may observe and reflect on how an event is run, compare it with the process and other related knowledge that they have learnt in their class. In the role of members of an organizing committee, students exercise out-of-class agentic engagement, where they are members of a functional team, such as financial, promotional, logistics or content team. During the process of preparing and running the event, they may experience successful or unsuccessful performance. They then reflect the experience to draw lessons and link those lessons to abstract conceptualization of the related knowledge. Therefore, depending on their role in the event, they may experience different stages in the experiential learning cycle and gain differently. Therefore, the first two hypotheses are stated as follows:

H1: Out-of-class behavioral engagement has a positive impact on student cognitive learning outcomes.

H2: Out-of-class agentic engagement has a positive impact on student cognitive learning outcomes.

Regarding cognitive learning outcomes or academic achievement, Newmann *et al.* (1992) suggest that participation in extracurricular activities helps students to increase their sense of belonging, which in turn may increase "their commitment to academic". Roeser *et al.* (cited in Juvonen *et al.* (2012)) find that student participation with peers is associated with stronger school belonging and better academic performance.

Willms (2003) argues that "students' sense of belonging at school and acceptance of school values, and a behavioral component pertaining to participation in school activities [...] is necessary for students to feel being accepted and valued by their peers, and by others at their school". This feeling in turn supports their school success (Willms, 2003), while those who do not have such a sense of belonging and attachment will become alienated or disaffected and have poorer academic achievement (Finn, 1989; Finn, 1993; Voelkl, 1996). The next hypothesis is, hence, stated as follows:

H3: Out-of-class emotional engagement has a positive impact on student cognitive learning outcomes.

Out-of-class cognitive engagement is the aspect of positive attitude and valuing school that "whether or not students value school success - do they believe that education will benefit them personally and economically" (Voelkl, 1996). Willms (2003) proposes that students' attitudes towards their schools and their participation in non-academic activities are expected to strongly affect their learning decisions. Positive attitudes toward their schools will have positive impacts on their learning effort and on their learning outcomes. The next hypothesis is stated as follows:

H4: Out-of-class cognitive engagement has a positive impact on student cognitive learning outcomes.

Participation in extracurricular activities also means experiencing a social environment within universities and interacting with peers. This out-of-class context provides a broad and diversified environment for students to develop other necessary non-academic attributes for their development (Fullarton, 2002). Other studies also mention different aspects of student affective learning outcomes through their participation in non-academic activities. Antonio *et al.* (2004) find that frequent interactions with diverse peers improve the social self-concepts of college students. Kuh (1995) emphasizes that "out-of-class experiences influence student learning and personal development" by increasing gains in social competence, autonomy, confidence, and self-awareness.

When participating in school activities, students socially interact with their peers and experience social learning. By observing others' successful behaviors, students will shape their behavior accordingly. They may find that a student who is confident often participate in different events with different roles. They may assimilate such a behavior. The students who act as active members may experience different non-academic problems, such as time management, problem solving, conflict solving, communication as well as coordination. They observe other team members' problems and solutions. Based on their observation and reflection, students build up hypotheses of what works and what does not work, from which they will shape their pattern of behaviors accordingly. Therefore, the next two hypotheses are stated as follows:

H5: Out-of-class behavioral engagement has a positive impact on student affective learning outcomes.

H6: Out-of-class agentic engagement has a positive impact on student affective learning outcomes.

Student's sense of belonging is affected by experiences in their community and school. By having this out-of-class emotional engagement, students feel being accepted by their peers and whether or not they feel lonely in their school (Willms, 2003). It is found that peer-to-peer interaction is important to students' learning (Pekrun and Linnenbrink-Garcia, 2012). When interacting with others, students can better reflect their experience, which help them to better understand themselves, their needs and problems as well as their personal strengths and limitations (Díaz-Iso *et al.*, 2019). When the need for belonging is not satisfied, student may experience diminished motivation, impaired development, and may lead to alienation (Voelkl, 2012). Therefore, the next hypothesis is stated as follows:

H7: Out-of-class emotional engagement has a positive impact on student affective learning outcomes.

School valuing is students' feeling that school and school outcomes are worthwhile, in which students find their personal importance and/or practical importance (Voelkl, 2012). Based on the SDT theory, Deci *et al.* (1991) conclude that for students to be actively engaged in the school academic and non-academic activities, they must value learning, achievement, and accomplishment even when they are not really interested in that topics or activities. This does not mean that they must find it interesting, but they will become "willing to do it because of its personal value". By having out-of-class cognitive engagement, students are able to develop their self-awareness and other social competences. Mahatmya *et al.* (2012) note that increased cognitive SE may show benefits for the continued maturation of cognitive and socioemotional developmental tasks. Therefore, the last hypothesis is stated as follows:

H8: Out-of-class cognitive engagement has a positive impact on student affective learning outcomes.

4. Data collection method

There are several methods to measure SE. Self-report survey is considered the most common method for assessing SE (Fredricks and McColskey, 2012). Using self-reports from students is a common practice to assess different aspects of education quality, especially at the undergraduate level (Kuh, 2001; Fredricks and McColskey, 2012). The main reason is that certain valuable outcomes of higher education cannot be measured by achievement tests, such as attitudes and values or gains in social and practical competence.

4.1 Choosing a suitable scale

The scale used in student self-report is the 7-level Likert Scale. This scale is used in many surveys in the UK, such as Motivation and Engagement Scale - University/College (MES-UC) (Martin, 2009), Student Satisfaction Survey at some universities such as Oxford Brooks University (Ghori, 2016), the University of Central England in Birmingham (Kane *et al.*, 2008), and other universities in the UK (Williams and Cappuccini-Ansfield, 2007).

In comparison to the 5-level Likert scale, the 7-level Likert scale is more complex and allows respondents to give their answers closest possible to their feelings, thus showing the differences between levels and creating a seamless scale (Williams and Cappuccini-Ansfield, 2007). Martin (2009) use a 7-level Likert scale and find it suitable for specific evaluation with college students. With this scale, 1 and 7 represent strongly disagree and strongly agree, respectively. A high score represents a high level of engagement or high level of outcomes and competencies.

4.2. Sample size

Hair *et al.* (2018) suggest that the ratio of observations to variables should be from 5 to 10. Other researchers prefer a ratio of 20 observations for each variable. There are 38 variables in the questionnaire in this study. Thus, the desirable sample size is from 380 to 760.

This study intends to use two datasets for separately running the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). These two analyses should not be run on the same set of data (Hinkin *et al.*, 1997; Appleton *et al.*, 2006; Fokkema and Greiff, 2017) to avoid overfitting data problem. Given the fact that the completion rate of survey is not high, a total of 1,400 printed questionnaires were distributed to collect data for the research.

4.3 Data collection

The sampling method is quota sampling. Questionnaires were sent to ten universities in Hanoi that provide courses in business and management, of which 300 to the first university (National Economics University), 200 to the second and the third universities (Hanoi University of Business and Technology, and Hanoi University), and 100 to other seven universities. In these universities, we asked some lecturers to help collect data or came directly to those classes to collect data.

On the first page of the questionnaire, there is an introduction providing explanation of the research purpose, type of informants and information collection, confidential policy, statement of consent and instruction of completing the questionnaire. The respondents were informed to tick in the consent box to show their consent. It takes about 15 minutes to complete the questionnaire. The data collection time was from early March 2021 to early April 2021.

There are invalid responses, which are either blank or half-blank responses, responses with more than five missing data in a row, responses filling in with a single choice across all different questions, or responses filling in with a purposefully ordered pattern. These invalid responses were removed from the dataset.

After being coded into an Excel file, data were cleaned up using max, min, mean, standard deviation (SD) for each observation. The values of max, min, and mean must be within the range of 1 to 7. Any observation with SD = 0 was eliminated from the dataset. The outliers were removed based on the Mahalanobis distance. The final dataset comprises of 983 valid responses.

4.4 Data description

The number of respondents from ten participating universities is presented in Table 1.

Table 1. Number of respondents from ten universities in Hanoi

University	n	%
National Economics University	266	27.1
Hanoi University of Business and Technology	149	15.2
Hanoi University	116	11.8
Banking Academy	74	7.5
Foreign Trade University	87	8.9
Vietnam University of Commerce	41	4.2
Hanoi University of Science and Technology	71	7.2
Hanoi Open University	75	7.6
Economic School, Hanoi National University	59	6.0
University of Economics - Technology for Industries	45	4.6
Total	983	100.0

Source: Compiled by the author

The total sample was then divided into two separate datasets. All odd observations were selected for Dataset 1. All even observations were put in Dataset 2. Table 2 presents statistics of the two datasets.

Table 2. Descriptions of two datasets

	Dataset 1		Dataset 2	
	n	%	n	%
Gender				
Male	135	27.4	127	25.9
Female	334	67.9	341	69.5
Prefer not to say	10	2.0	10	2.0
Missing	13	2.6	13	2.6
Total	492	100.0	491	100.0
Age				
17-18	26	5.3	21	4.3
19	109	22.2	100	20.4
20	125	25.4	137	27.9
21	175	35.6	172	35.0
>=22	53	10.8	56	11.4
Missing	4	0.8	5	1.0
Total	492	100.0	491	100.0
Study year				
Year 1	100	20.3	91	18.5
Year 2	135	27.4	141	28.7
Year 3	179	36.4	172	35.0
Year 4	67	13.6	78	15.9
>=Year 5	2	0.4	1	0.2
Missing	9	1.8	8	1.6
Total	492	100.0	491	100.0

Source: Compiled by the author

Both datasets are dominated by female students, of which 67.9% is in Dataset 1 and 69.5% is in Dataset 2. Those ratios are normal among students in business and management, where female students are often the majority. Both datasets contain students from Year 1 to Year 4.

5. Findings

5.1 Exploratory factor analysis

In this part, an EFA was used to explore the factor dimensions as well as to reduce the set of observed variables to a smaller, more parsimonious set of variables (Hinkin *et al.*, 1997) for Dataset 1.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.934**
Bartlett's Test of Sphericity	Approx. Chi-Square	9117.288
	df	276
	Sig.	0.000

Source: The author's calculation

The KMO value presented in Table 3 is 0.934, which is greater than 0.7, and the Bartlett's test of sphericity is significant. For this EFA, the extraction method used is the principal component analysis, with Eigenvalue greater than 1. The rotation method is Varimax and the absolute value of small coefficients to be suppressed is 0.4 (Hair, Black *et al.*, 2009).

The initial result of the EFA for out-of-class SE shows that four components are identified based on the criteria of the Eigen value of greater than 1 with 69.295% of total variance explained. The total number of components is four as expected. The total variance explained is greater than 50% (Joseph F Hair *et al.*, 2018).

The initial factor loadings from an EFA of all 24 items to measure out-of-class SE contained some minor cross loadings in the rotated component matrix. OA1 and OA2 were first removed from analysis to re-run the EFA. The absolute value of small coefficients to be suppressed was set at 0.5 to focus on components with strong loadings. The next run of EFA showed that OC5 and OA7 should be removed. The final rotated component matrix was achieved with six items of out-of-class behavioral engagement, six items of out-of-class emotional engagement, four items of out-of-class cognitive engagement, and four items of out-of-class agentic engagement. The total variance explained slightly increases to 72.463%.

The EFA results confirm the four subcomponents of out-of-class engagement, where out-of-class agentic engagement is a separate component of the structure. The measurement instrument of out-of-class agentic engagement is also reduced to four items with strong loadings for each item, ranging from 0.508 to 0.874.

5.2 Internal consistency assessment

The reliability of the scale is tested based on the Cronbach's Alpha. The results are presented in Table 4.

All values of Cronbach's Alpha of OB, OE, OC, OA are greater than 0.8. Thus, the measurement items is reliable (Hair *et al.*, 2009). In each sub-construct, most of Cronbach's Alphas if item deleted were smaller than the main Cronbach's Alphas, except the three cases of OE6, OC4, and OA6. Hair (2016) indicates that a scale item should be deleted if it is below 0.4. Therefore, all scale items of the measurement are retained.

Besides, all corrected item-total correlations are greater than 0.5. It means they are highly interrelated and likely to measure the same construct. Hence, the items used to measure the components of out-of-class SE are reliable.

Table 4. Item-total statistics of each component

Item-total statistics				
	Scale mean if item deleted	**Scale variance if item deleted**	**Corrected item-total correlation**	**Cronbach's Alpha if item deleted**
OB Cronbach's Alpha		0.899		
N of Items		6		
OB1	23.32	49.740	0.744	0.878
OB2	23.51	50.193	0.760	0.875
OB3	22.84	53.073	0.649	0.892
OB4	22.69	52.919	0.746	0.878
OB5	23.16	50.512	0.777	0.873
OB6	23.02	53.014	0.681	0.887
OE Cronbach's Alpha		0.917		
N of Items		6		
OE1	24.76	40.074	0.777	0.901
OE2	24.89	39.482	0.782	0.900
OE3	24.91	40.171	0.765	0.903
OE4	24.97	38.971	0.860	0.889
OE5	25.12	39.728	0.792	0.899
OE6	24.45	43.274	0.621	0.921
OC Cronbach's Alpha		0.868		
N of Items		4		
OC1	17.16	9.937	0.763	0.813
OC2	17.24	9.488	0.813	0.791
OC3	16.92	10.323	0.776	0.811
OC4	17.36	10.990	0.547	0.0901
OA Cronbach's Alpha		0.839		
N of Items		4		
OA3	11.23	25.695	0.738	0.766
OA4	11.63	25.699	0.702	0.0783
OA5	10.51	26.967	0.699	0.784
OA6	10.13	30.184	0.553	0.845

Source: The author's calculation

5.3 Confirmatory factor analysis

Hair *et al.* (2011) differentiate the usage between covariance-based structural equation modeling (CB-SEM) and partial least squares structural equation modeling (PLS-SEM). When the research objective is predicting, identifying relationships between constructs, or estimating causal models, PLS-SEM is the preferred method. The SmartPLS version 3.3.2 developed by Ringle *et al.* (2015) was used to process the data.

To avoid overfitting data problem (Hinkin *et al.*, 1997; Appleton *et al.*, 2006; Fokkema and Greiff, 2017), the outer model, which is the measurement model, and the inner model, which is the structural model, of the structural equation model (Henseler *et al.*, 2009) were evaluated with Dataset 2. In the first round, CFA was run with the option of Connect all LVs for initial calculation and PLS option of factor weighting scheme, using consistent PLS algorithm (PLSc) (Gaskin, 2017).

5.3.1. Evaluation of the outer models

The process of evaluating the outer models, which are the measurement models, involves indicator reliability assessment, internal consistency assessment, construct validity, convergent validity or average variance extracted (AVE), and discriminant validity (Fornell-Larcker criterion, cross-loading, HTMT criterion) (Hair Jr. *et al.*, 2016; Ab Hamid *et al.*, 2017).

The results of indicator reliability, internal consistency and construct validity assessment are presented in Table 5.

Table 5. Composite reliability (CR), average variance extracted (AVE), the square root of the average variance extracted (in bold), and correlations between constructs (off-diagonal)

	Composite reliability	Average variance extracted (AVE)	Affective LO	Cognitive LO	OA.SE	OB.SE	OC.SE	OE.SE
Affective LO	0.920	0.590	0.768					
Cognitive LO	0.914	0.641	0.593	0.801				
OA.SE	0.847	0.589	0.317	0.344	0.768			
OB.SE	0.880	0.550	0.348	0.425	0.775	0.742		
OC.SE	0.858	0.604	0.489	0.493	0.243	0.472	0.777	
OE.SE	0.907	0.619	0.428	0.490	0.437	0.650	0.726	0.787

Source: The author's calculation

Composite reliability (CR) is preferred to evaluate internal consistency reliability. In contrast to Cronbach's Alpha, CR does not assume equally weighted indicator loadings. CR should be above 0.6 in exploratory research and above 0.7 but not higher than 0.95 (Hair *et al.*, 2018). In this model, all CR values range from 0.847 to 0.920, which are greater than 0.7 and less than 0.95 (Lowry and Gaskin, 2014). Therefore, the measurement models are reliable.

The convergent and discriminant validity of the measurement model is evaluated based on the AVE and square root of each construct's AVE. Convergent validity, which is measured by average AVE, should be at least 0.50 (Hair *et al.*, 2018). Discriminant validity is the extent to which a construct is truly distinct from other constructs. Fornell and Larcker (1981) suggest to compare the AVE values for any two constructs with the square of the correlation estimate between these two constructs, in which the variance-extracted estimates should be greater than the squared correlation estimate to ensure discriminant validity.

All AVE values range from 0.55 to 0.641, which are greater than 0.5. All square roots of each construct's AVE range from 0.742 to 0.801, which are greater than the correlations with other latent constructs, except for OA.SE at 0.768. Therefore, the convergent validity of the measurement model is established (Fornell and Larcker, 1981).

The Heterotrait-Monotrait (HTMT) may serve as an additional criterion to test discriminant validity (Henseler *et al.*, 2015). HTMT is the average of the heterotrait-heteromethod correlations relative to the average of the monotrait-heteromethod correlations. An HTMT value smaller than 1 shows that the true correlation between the two constructs should differ (Alarcón *et al.*, 2015).

Table 6. Heterotrait-Monotrait (HTMT) ratio of correlations

	Affective LO	**Cognitive LO**	**OA.SE**	**OB.SE**	**OC.SE**
Affective LO					
Cognitive LO	0.592				
OA.SE	0.309	0.337			
OB.SE	0.343	0.421	0.766		
OC.SE	0.489	0.492	0.238	0.470	
OE.SE	0.429	0.490	0.414	0.642	0.725

Source: The author's calculation

All values in Table 6 are less than 1, showing that all constructs should differ. Therefore, the discriminant validity is established (Henseler *et al.*, 2015).

5.3.2. Evaluation of the inner models

Cautions should be established when reporting and using goodness-of-fit indices in evaluating model fit in PLS-SEM (Henseler and Sarstedt, 2013; Hair *et al.*, 2017). The process of evaluating the inner models often involves standardized root mean square residual (SRMR) and a t-test for the inner loading paths using bootstrap with consistent PLS Bootstrapping with 1,000 subsamples and PLS option of factor weighting scheme (Gaskin, 2017).

The SRMR of the saturated model for original sample is 0.066, which is smaller than the conservative cut-off value of 0.08. The SRMR of the estimated model is 0.085, which is smaller than 0.1. The model captures the data quite well and has a good fit (Hu and Bentler, 1999).

The second running of PLS Consistent bootstrapping produces the t-statistics for path coefficients. Among the eight paths of the structural model, the three paths from out-of-class agentic engagement (OA.SE) to affective learning outcomes and from out-of-class cognitive engagement (OC.SE) to both affective and cognitive learning outcomes have t-test values of greater than 1.96 and significant p values. Therefore, these paths are significant and meaningful in the overall structural model.

Since all the assessments for the outer models are good and the inner models provide significant path coefficients, the overall model is considered satisfactory and can be used to explain and predict the dependent latent constructs.

5.4 Results

To test the eight hypotheses of the model, SmartPLS (Ringle *et al.*, 2015) is used to run again with path focus by choosing PLS option of path weighting scheme and unchecking of connect all LVs for initial calculation. The structural path model is presented in Figure 2.

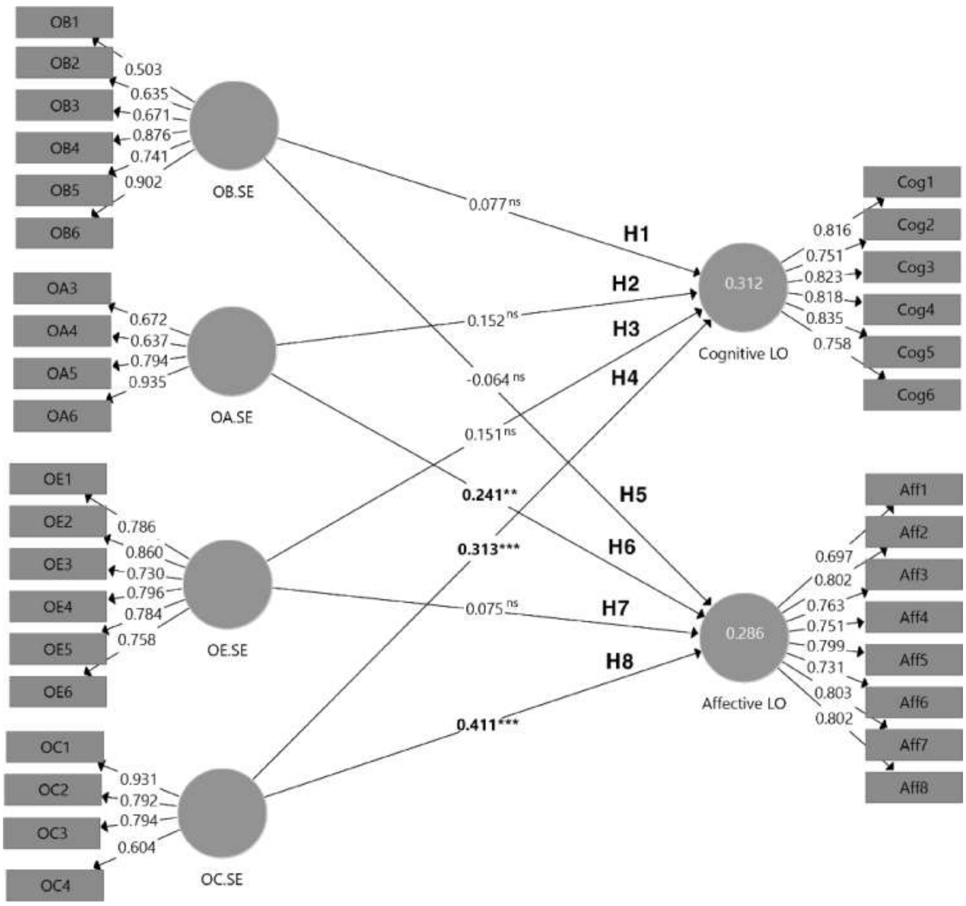

Figure 2. Structural model from path coefficients

Source: The author's calculation

Hypothesized paths are said to be supported when the model indicates strong and significant paths in the expected direction (Lowry and Gaskin, 2014). Table 7 offers results of the hypotheses tests, including path coefficients (regression weights) and t-values.

Table 7. Results of hypotheses tests

Hypotheses and corresponding paths	Expected sign	Path coefficient	t-value	P Values
H1: Out-of-class behavioral student engagement → student cognitive learning outcomes	+	0.077	0.84	0.401ns
H2: Out-of-class agentic student engagement → student cognitive learning outcomes	+	0.152	1.736	0.083ns
H3: Out-of-class emotional student engagement → student cognitive learning outcomes	+	0.151	1.506	0.132ns
H4: Out-of-class cognitive student engagement → student cognitive learning outcomes	+	0.313	3.904	0.000***
H5: Out-of-class behavioral student engagement → student affective learning outcomes	+	-0.064	0.59	0.555ns
H6: Out-of-class agentic student engagement → student affective learning outcomes	+	0.241	2.713	0.007**
H7: Out-of-class emotional student engagement → student affective learning outcomes	+	0.075	0.795	0.427ns
H8: Out-of-class cognitive student engagement → student affective learning outcomes	+	0.411	5.239	0.000***

Source: The author's calculation

The test results show that regression weights of out-of-class cognitive engagement (OC. SE) are 0.313 with $p < 0.001$ on the relationship with cognitive learning outcomes (H4) and 0.411 with $p < 0.001$ on the relationship with affective learning outcomes (H8). Therefore, Hypothesis H4 and Hypothesis H8 are supported.

The regression weight of out-of-class agentic engagement is 0.241 with $p < 0.01$, suggesting that out-of-class agentic engagement has positive impacts on student affective learning outcomes. Therefore, Hypothesis H6 is supported.

The relationships between the other subcomponents of out-of-class engagement and student learning outcomes are not significant. In addition, the path coefficients of those relationships are also small, ranging from 0.064 to 0.152. These values are much smaller than the range of 0.241 to 0.411 for the significant coefficients.

Table 8. Adjusted R square

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P Values
Affective learning outcomes (Aff.LO)	0.280	0.292	0.046	6.146	0.000***
Cognitive learning outcomes (Cog.LO)	0.307	0.319	0.041	7.426	0.000***

Source: The author's calculation

Chin (cited in Lowry and Gaskin (2014)) suggests that significant structural paths with R square close to 0.20 indicate that the model has meaningful predictive power. With adjusted R square of 0.280 for Aff.LO and 0.307 for Cog.LO, the independent variables of out-of-class SE subcomponents can explain 28.0% of the variation of affective learning outcomes and 30.7% of the variation of cognitive learning outcomes. Therefore, this model has good predictive power. The results confirm the role of out-of-class SE in relationship with business student learning outcomes in Vietnam.

6. Discussions

In this research, the EFA result has confirmed the four subcomponents of out-of-class SE, where out-of-class agentic engagement was a separate component of SE. Together with the validation of this agentic engagement in the in-class context by Reeve and Tseng (2011), the study provides evidence and validation of this component in the out-of-class environment for business students in Vietnam.

The findings show that out-of-class SE has significant positive impacts on student learning outcomes, suggesting that students can take advantage of participating in non-academic activities at university. This environment allows them to apply what they learn in class, observe experience of others as well as to learn from others' modeling practices. The findings highlight the positive impacts of out-of-class cognitive engagement on both cognitive and affective student learning outcomes. As students have greater sense of their development tasks, it will be beneficial by reinforcing their valuing of school and practical importance of school achievement (Voelkl, 2012).

The other important aspect of out-of-class SE is agentic engagement, which has positive impacts on affective learning outcomes. As directed by the Kolb's experiential learning theory, when students experience different stages in the learning cycle and reach to active experimentation stage, they can fully take advantage of their learning experience, which results in better affective learning outcomes.

By confirming these impacts of out-of-class SE on both student's cognitive and affective learning outcomes, the study shows that apart from what is learnt in the classroom, students gain from participating in the out-of-class environment. This engagement better prepares students for their participation in the social and professional environment upon their graduation. This finding matches with previous studies by Newmann *et al.* (1992), Finn (1993), Kuh (2001a), and Pascarella and Terenzini (2005). This finding is also interesting with the new component of agentic engagement of the out-of-class engagement. In comparison to the traditional role of behavioral engagement, the significant impacts of out-of-class agentic engagement have shifted the role of students from a passive role to a proactive role and asserted the role of students as key actors of their learning (Nakamura and Csikszentmihalyi, 2002).

The findings do not show any impacts of out-of-class behavioral and emotional engagement on student learning outcomes. This finding is different from other studies showing that "there is much potential for school environments to have a broad influence on students' development and growth" (Yusof *et al*., 2017).

The results of this study provide education practitioners with possible interventions via improving SE in the out-of-class context to increase student learning outcomes. For university managers in the business field, out-of-class SE can become a supplementary framework to facilitate students' complete development. For researchers, this study contributes to better understanding the impacts of out-of-class SE on student learning outcomes in business field.

This study has certain limitations. Firstly, the measurement instrument of out-of-class SE contains some newly developed items which have not been tested in other contexts. Further testing of this measurement instrument is strongly recommended. Secondly, the sample was only collected in Hanoi. A more diversified sample would help to confirm the test results. Thirdly, future study may explore and investigate similar impacts of out-of-class SE for students in other disciplines.

7. Conclusions

In this research, agentic engagement was proposed as a subconstruct of SE in the out-of-class context of higher education. An exploratory factor analysis on a sample of 492 students has confirmed the four separate components of out-of-class engagement, where out-of-class agentic engagement is a distinct subconstruct. The measurement instrument of out-of-class SE was successfully tested as a valid and reliable instrument with both convergence and differentiation criteria.

The findings from this study show statistically significant positive impacts of out-of-class cognitive and agentic engagement on student learning outcomes at higher education. The impacts of out-of-class behavioral and emotional engagement were, however, not significant. Such findings contribute to the current knowledge on SE and out-of-class engagement. Further studies and testing of this relationship in different contexts, both theoretically and empirically, is recommended for future research.

Despite the limitations, this study contributes to the SE literature by proposing agentic engagement in out-of-class SE and validating this subcomponent in the context of business and management students in Vietnam. The findings from research on the relationship between out-of-class SE and student learning outcomes suggest that it would be useful to continue examining this relationship in other contexts.

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