Macrothink Institute™

International Journal of Learning and Development
ISSN 2164-4063
2023, Vol. 13, No. 3

Institutional Integration Factors That Impact Students' Academic and Intellectual Developments: A Case Study of Three Cambodian Rural Universities

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International Journal of Learning and Development
ISSN 2164-4063
2023, Vol. 13, No. 3

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Received: June 24, 2023 Accepted: July 29, 2023 Published: August 5, 2023

doi:10.5296/ijld.v13i3.21106 URL: https://doi.org/10.5296/ijld.v13i3.21106

Abstract

Following the end of the 28-year civil war in 1998, the number of Cambodian higher education institutions rose substantially to 125 over the next two decades (MoEYS, 2022). Furthermore, as a result of the ASEAN economic community's integration in 2015, Cambodia has been focusing more on enhancing its educational system in response to the rapid development of these educational institutions. As a result, the purpose of this study is to investigate the impact of institutional integration elements on students' academic and intellectual development in three rural universities in Cambodia. Despite numerous research undertaken in developed countries, only few cases have been conducted in least developed countries. This type of research has not been conducted, particularly in Cambodian context. That is why the research will be created and carried out to fill gaps in prior studies of industrialized and developing nations, particularly Cambodia, which has had difficult higher education institutions. This research would be helpful to improve educational experiences in Cambodian rural public universities. This research also helps to a better understanding of how institutional integration elements affect students' academic and intellectual development. The quantitative cross-sectional survey method was utilized in this investigation. A self-reported questionnaire was given out. The participants were 381 third-year students from three Cambodian rural institutions who were chosen at random using stratified random sampling. The data was analyzed using the partial least squares (PLS) and structural equation modeling (SEM) tools. According to the statistical findings, three hypotheses had a substantial influence on student's academic and intellectual growth, while one hypothesis was rejected. The findings suggest potential institutional variables for integrating students into social and academic activities to support their academic and intellectual efforts. Furthermore, Cambodian public higher

education institutions are encouraged to enhance their academics and academic-related concerns in order to prepare students to compete in regional and international markets. There are also limitations and suggestions for future research.

Keywords: Institutional integrations, academic and intellectual development, Partial Least Squares, Cambodia higher education institution, public rural university

1. Introduction

Higher education is critical to the nation's socioeconomic development in the twenty-first century. Higher education institutions in poor nations have academic development, retention, and graduation challenges (UNESCO 2011). Previous research has found that institutional integration is a strong predictor of student's academic and intellectual development and retention (Pascarella and Terenzini, 1980; French and Oakes, 2004). However, it becomes uncertain whether previous studies in developed nations can be compared to the current study in developing countries. Several research has been carried out in undeveloped countries. That is why the research has been designed and carried out to fill gaps in previous studies of developed and developing countries, particularly Cambodia, which has had troubled higher education systems (Sam, et al. 2012a; Sam, et al. 2012b; Sam, et al. 2013a; Sam, et al. 2013b; Sam, et al. 2013c; Dahles, 2017; Sen, 2022). Students' interactions with their classmates and faculty members, academically relevant things supplied by faculty, and institutional objectives and dedication all differ. Students' impressions of these elements may have a favorable impact on their academic and intellectual growth at university.

There are currently 125 Cambodian higher education institutions in 20 provinces and Phnom Penh, consisting of 48 public and 77 private universities. Between 2003 and 2021, the total yearly registration rate climbed more than fourfold, from 57,828 to 336,069 (MoEYS, 2022). As a result of this expansion, the government and other relevant stakeholders are highly worried about the academic development and graduation rates of Cambodian students. Recent research indicates that students' educational quality and graduation rate are declining (Chet, 2009; Noch, 2009; Vann, 2012; Ford, 2013; Heng et al. 2020). These issues suggest that there may be a reduction in the amount of academic and social integration of students toward their academic and intellectual development. Using the Partial Least Squares Structural Equation Modeling (PLS-SEM), this research contributes to understanding undergraduate students' institutional integrations. Using the PLS aids in identifying the relationships between the study's elements and how they affect students' academic and intellectual growth. There was a conceptual model suggested. As a result, the goal of this research is to explain these links in order to determine what steps to take to promote students' academic and intellectual aspirations in the Cambodian setting.

2. Theory and Research Model

In fact, institutional integration is widely studied and theorized concept in higher education research for almost 30 years ago. The concept of institutional integration has been developed by Tinto (1970). Tinto (1970) theorized that student made a decision to depart from a university is mainly influenced by a student's academic and social integration into the university. It means

that students could dropout from their studies because they cannot more actively involve in academic and social activities that can improve their knowledge and intelligence in the university. Based on Tinto's theoretical framework of academic and social integration, Pascarella and Terenzini 1980 developed the Institutional Integration Scale (IIS) with 30 items and 5 Likert scales to assess students' self-reported levels of social and academic integrations. Their article described how to develop the IIS has been cited over 2400 times. The IIS has been widely employed to operationalize the construct of integrations into the university in models of students' development, success, and persistence (Pascarella and Terenzini 1980; French and Oakes 2004; Breidenbach and French 2011).

The IIS has been revised by French and Oakes (2004); it contained 34 items and internal consistency reliability of the scale' scores were satisfactory (α=0.92 for total scores; α scores from 0.76 to 0.88 for each subscale). In this study, researchers adapted the IIS from French and Oakes (2004) because this new revised scale has high internal consistency reliability. Therefore, this is a discussion on the relationships among these variables, which provide support for testing the research hypotheses. Social integration includes peer-group interaction, faculty-student interaction. Academic integration includes faculty concern for student development and teaching, institutional goal and commitment.

2.1 Peer-Group Interactions

Peer-Group Interactions (PGI) are described as a student's opinion of having formed close relationships with classmates or individuals of nearly equal position in the university. According to Tinto (1993), the frequency of peer-group encounters produced a social system that led to student integration. In addition, the frequency of students' interaction with peers in extracurricular activities has positive influence on students' sense of autonomy and interpersonal skills (Smith and Griffin 1993; Kuh 1995; Martin 2000). Based on the studies by (Rhee et al. 2014), students who collaborate effectively in group working and learning can lead to intrinsic motivation, increased persistence, and intellectual growth. Similarly, peer group contact is the most important resource that influences students' academic and self-concept growth during their college studies (Astin 1993). He also suggests that pupils who have encountered and engaged with a large number of peers may be influenced in their academic growth. When students face academic or personal challenges, they need the support of their peers. According to Witkow & Fuligni (2011), students who receive peer support often have a satisfying change in their GPA. To summarize, if students believe that their classmates are assisting and working with them, they will be highly motivated to improve their academic performance. Following these reasoning, the following hypothesis is stated:

H1. Peer-group interaction would significantly influence academic and intellectual developments positively.

2.2 Faculty Student Interactions

One of the most significant factors that help students to achieve academic endeavour is the faculty- student interactions. Faculty student interactions (FSI) are defined as the perception of a student that faculty members have made close relationships and paid more attention on

students' academic development (Cotten and Wilson 2006). There are three popular theories about the interaction between the faculty and students in promoting students' development in the university: theory of student involvement (Astin 1984), theory of student's persistence or individual departure in higher education (Tinto, 1975), and theory of college impress (Pace, 1984). Faculty develops a better understanding of student learning, knowledge, competence, and willingness in the classroom if they have effectively communicated with their students (Konidari and Abernot 2006; McGregor 2007). Additionally, one of seven principles of good practices in undergraduate education indicates that faculty-student contact in and out of classrooms are most important factors that can motivate students to succeed in their academic development (Chickering and Gamson 1987). Previous studies reported that faculty-student interaction promoted students' "social and personal competence, higher-order cognitive skills, the knowledge integration across academic areas, and learning process reflection" (Reason et al. 2007). If students have the perception that the faculty members are paying more attention and supporting them, then it may high motivated to help them in improving their academic performance and intellectual growth. Thus, it is hypothesized that:

H2. Faculty-student interaction would significantly influence academic and intellectual developments positively.

2.3 Faculty Concern for Student Development and Teaching

Faculty concern for student development and instruction (FCS) is described as a student's view that faculty has given more attention to students' needs in and out of the classroom. Most importantly, staff members are eager to devote time to assisting students in improving their academic performance. According to Tinto (1975, 1993), universities should provide academic and social assistance to students in order to enhance retention and academic accomplishment so that they function well in their academic environment. Tinto (2004) states that instructors should provide students with expectations, supports, feedback, involvement, and a learning process that will boost their persistence and achievement. Meyer and Turner (2006) reinforce this viewpoint by claiming that student motivation in the learning process is an important strategy to increase student retention and development. Furthermore, faculty should present students with a positive psychological course that can help them boost "their personal resources and mental well-being" (Pluskota, 2014). As a result, if students believe that faculty performance and the teaching or learning environment are satisfactory, they will benefit academically and intellectually. Therefore, the following hypothesis is proposed:

H3. Faculty concern student development and teaching would significantly influence academic and intellectual developments positively.

2.4 Institutional and Goal Commitments

Institutional and goal commitments (IGC) are defined as the university's and students' motivation and tenacity. The level of motivation and academic support services supplied by the university to students is referred to as institutional commitment. The degree of a student's commitment or motivation to persist in their studies for graduation and academic progress is referred to as goal commitment. Students with strong goal commitment, for example, will

study hard, spend a lot of time on campus, participate actively in student groups or organizations, and connect with their friends, administrators, and faculty members on a regular basis (Tinto, 1993). In addition, Tinto (1999) maintains that institutions are strongly committed with a clear objective to increase a number of student success, especially, students who come from low economic and disadvantaged status, seem to be successful in achieving their goal at the end. Based on this, the following hypothesis is proposed:

H4. Institutional and goal commitments would significantly influence academic and intellectual developments positively.

2.5 Academic and Intellectual Developments

Academic and intellectual developments (AID) are the academic and intellectual outcomes of students after they have participated in social and academic activities at the university. Endo and Harpel (1982) defined adequate general knowledge, problem-solving development skills, critical-thinking development skills, intellectual progress goals, cultural activity participation, highest degree planned, and academic achievement as students' academic and intellectual outcomes. Many research on college student development have demonstrated the importance of connection with peers and faculty. According to Parscarella (1985), engagement with peers and instructors improves learning and cognitive growth as well as the quality of students' efforts. Furthermore, academic and intellectual outcomes are defined as children receiving passing grades and making intellectual advancement (Tinto, 1993). Astin (1999) defined academic and intellectual development as the students' post-academic involvement qualities such as knowledge, skills, critical thinking, attitudes, values, beliefs, and behavior, as well as the student's level of academic performance. As a result, if students believe that their academic experiences are enjoyable, they will do well in integrating into their academic and intellectual performances.

3. Significance of the Study

This study may be beneficial for improving educational experiences at Cambodian public universities. This research also helps to a better understanding of how institutional integration elements affect students' academic and intellectual development. Furthermore, it assists future researchers in conducting additional studies based on other institutional characteristics pertinent to social and academic integrations at the student and institutional levels. It may be useful for prospective students in preparing themselves before enrolling in the course at one of that country's higher education institutions. This study will be valuable to policymakers, educational administrators and planners, and relevant ministries in developing future national and institutional initiatives. As a result, the outcomes of this study are expected to offer insight into how to improve the graduation rate, academic-related programs, and education services at the country's universities and colleges.

4. Conceptual Frameworks

The variable in this study are elucidated in Figure 1. The independent variables include peer-group interaction, faculty-student interaction, faculty concern for student development and teaching, and institutional goal and commitment. The academic and intellectual developments

act as dependent variable. Conceptual frameworks of the study based on student integration (Tinto, 1975). Four independent variables influence on one dependent variable.

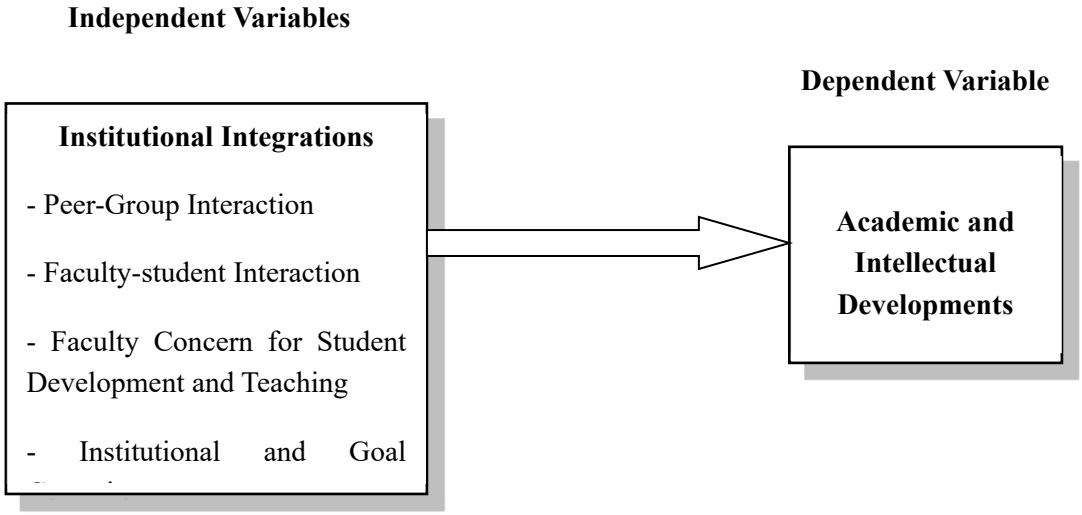

Figure 1. Conceptual framework

5. Aims of the Present Study

This study aims at explaining the influence of institutional integration factors towards students' academic and intellectual developments in the third year of rural public universities in Cambodia. The proposed model was tested by using the Partial Least Squares Structural Equation Modeling (PLS-SEM) which indicates how the model fits the sample population data.

6. Hypotheses

From the literature review, the following hypotheses were developed:

H1: Peer-group interaction would significantly influence academic and intellectual developments positively.

H2: Faculty-student interaction would significantly influence academic and intellectual developments positively.

H3: Faculty concern student development and teaching would significantly influence academic and intellectual developments positively.

H4: Institutional and goal commitments would significantly influence academic and intellectual developments positively.

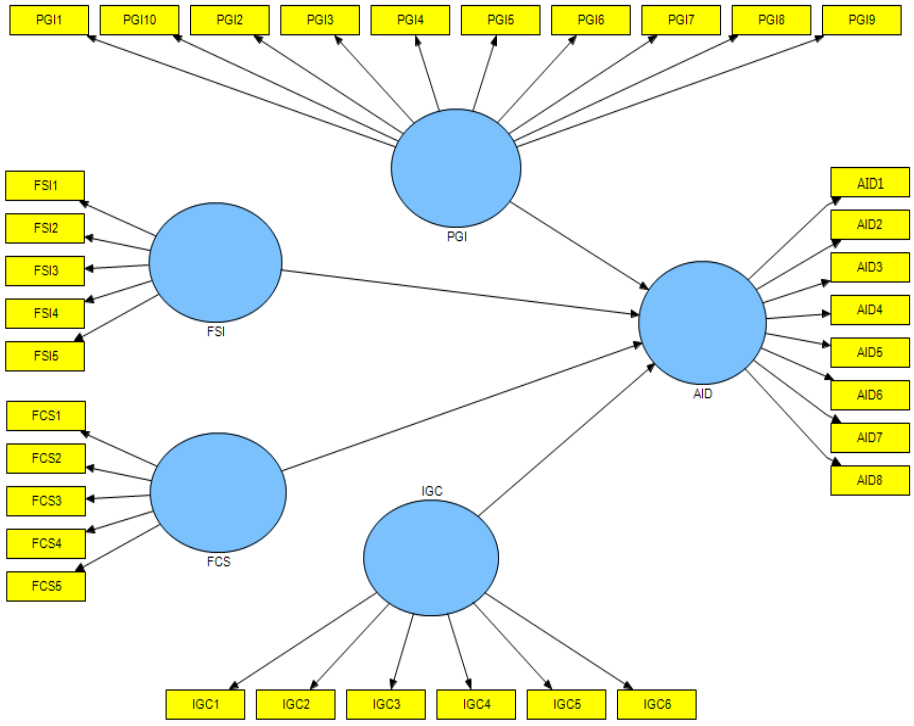

Figure 2. Research model

7. Methodology of the Study

7.1 Participants

Participants were third-year undergraduate students at three Cambodian public universities under the supervision of the Ministry of Education, Youth, and Sports. Researchers have followed the equation of Krejcie and Morgan (1970). The total population in this study is 13, 200 students from three rural public universities. So, according to the equation of ratio and proportion, a total of 381 students participated in this study. Females comprised 49 % of the sample in the study compared to 51 % for males. These numbers are consistent with the national gender demographic for undergraduate students in Cambodian higher education institutions. In addition, 49, 60 % of students were majored in Applied Science (Information Technology, Agricultures, and Engineering), and 50, 40 % were majored in Social Science (Khmer Literature, English literature, Business Administration, Laws, and Economics).

Table 1. Profile of respondents

Demographic/characteristics	Category	Frequency N=381	Percentage (%)
Institution	University A	144	37.76
	University B	120	31.69
	University C	117	30.55
Gender	Male	194	51.00
	Female	187	49.00
Age	Below 20	30	7.87
	20-21	180	47.24
	22-23	135	35.43
	Above 23	36	9.45
Area	Applied Science	189	49.60
	Social Science	192	50.40

7.2 Procedure

In order to measure the influence of institutional integration factors on students' academic and intellectual development, researchers distributed a survey to 381 students at three rural public universities in Cambodia. Researchers used a purposive research method to select three rural public universities in the Northern and Eastern parts of Cambodia including Battambang, Svay Rieng, and Prey Veng provinces. And then, researchers have stratified main campus of three public universities: National University of Battambang (University A), National University of Chea Sim Kamchaymear (University B), and Svay Rieng University (University C). Next, researchers have stratified random faculties according to the department that have been selected. Finally, from the selection of the faculties and departments, researchers have stratified students as population of the study. Students were randomly selected from each faculty and department. The participation was entirely voluntary and anonymous. Respondents have about 30 minutes to respond to the questionnaires. Researchers were collected data at the mutually agreeable time from the student sample population.

7.3 Instruments

The instrument was composed of two parts. The first part was 34 items with 5-point Likert Scale, ranging from 1 (strongly disagree) to 5 (strongly agree). It was used to collect the data in measuring the latent variables of PGI (10 items), FSI (5 items), FCS (5items), IGC (6 items), and AID (8 items). In second part, participants completed question related to demographics. In addition, items were adapted based on the operationalization of each latent variable as

summarized in Table 2. The Institutional Integration Scale was adopted from French and Oakes (2004). The components of this scale are questions that assess the relationship among peer-group interaction, faculty-student interaction, faculty concern for student development and teaching, institutional goal and commitment, and academic and intellectual developments. The reliability reported by French and Oakes (2004) was PGI =0.84, FSI =0.89, FCS=0.88, IGC=0.76=, and AID =0.82.

An exploratory factor analysis was conducted during the pilot test to reduce the number of items employed in the present study. The factor analysis revealed five factors and labeled as: (1) peer-group interaction, (2) faculty-student interaction, (3) faculty concern for student development and teaching, (4) institutional goal and commitment, and (5) academic and intellectual developments; the Cronbach Alpha for the modified 34 –items of these five factors was PGI= 0. 84, FSI= 0.72, FCS= 0.74, IGC= 0.80, and AID = 0.81 respectively.

Additionally, the validity of the survey's translation was examined. First, the instruments were translated and to verify them, they were back-translated technique as recommended by Deutscher (1973:165). The instrument was translated back-to-back from English to Khmer language. The purpose of translating the instrument is to help respondents have a clear understanding of the statements when they respond to the questionnaire. The researcher has emailed the instrument to two language experts. This is done for validity, as the translated version of the instrument needs to establish linguistic equivalence with the English version of the instrument. After receiving the translated version of the instrument, the researchers compared it with the original instrument and the differences were resolved through discussion with experts.

Table 2. Operationalization of the latent variables and examples of the items

Latent Variable	**Manifest Variable**	**Operationalization**	**Item (example)**
PGI	Peer Group Interaction	The extent to which students are able to interact with their peers in order to achieve their academic and intellectual development.	I've formed close personal bonds with other students at my university.
FSI	Faculty Student Interaction	The extent to which students have interacted with the faculty members in the university.	At least one faculty member at my university has become a close personal friend of mine.
FCS	Faculty Concern Student Development and Teaching	The extent to which faculty paid more attention on students' development and teaching.	The majority of faculty members I've spoken with are really interested in

			teaching at my university.
IGC	Institutional and Goal Commitment	The extent to which students have main goal and high commitment to develop their academic and intellectual performance during their studies at the university.	It is important to me to graduate from my university.
AID	Academic and Intellectual Development	The extent to which students perceive that they have developed their academic and intellectual development during their studies at the university.	My academic experience has had a positive influence on my intellectual growth and thinking.

7.4 Data Analysis

This study employed PLS-SEM to analyze the data based on structural equation modeling techniques recommended by Chen et al. (2003); Genfen and Straub (2005). There were two reasons to apply this statistical analysis. First, PLS-SEM has more potential compared to CB-SEM which is not much assumption to be followed, the most importantly; the fewer indicators can be conducted. PLS-SEM required less demand on the underlying data distribution and sample sizes; it was also applicable with both reflective and formative indicator analysis (Chin 1998a; Chin and Newsted 1999). For CB-SEM, sample sizes are required based these criterions: 100 =poor, 200=fair, 300=good, 500=very good, and 1000 or more= excellent suggested by Comrey and Lee (1992).

Second, PLS analysis is now commonly used in conducting social science research and provide a significant way of analyzing survey data (Chin, 1998b; Chin et al., 2003; Genfen and Straub 2005; Genfen et al. 2000). This study employed the reflective measurement model only because there weren't items appropriate for formative measurement. In order to analyze the psychometric properties of the reflective measurement, researchers assessed the reliability and validity in order to achieve their consistency. There are three types of validity which is the construct, convergent, and discriminant validity. Researchers also assessed the structural model for hypotheses testing. There are three types of this testing such as path coefficient in term of direct effects (β); coefficient of determination (R^2), and the global measure of global goodness of fit.

8. Findings

The parameter estimates of the research model based on the PLS analysis are illustrated in Figure 3, and summarized the parameter estimates of measurement model in Table 4. Table 3 is the descriptive statistics for each variable. The high mean scores for each variable show that the respondents have perceived high values. The small value of Standard Deviation reflects of the small deviation of the mean score from the actual score. This shows the data is good to proceed with hypothetical analysis.

Table 3. Descriptive Statistics for each variable (N=381)

Latent Variable	Number of Items	Likert Scale	Mean	SD
PGI	10	1-5	3.76	0.76
FSI	5	1-5	3.78	0.86
FCS	5	1-5	3.67	0.79
IGC	6	1-5	4.17	0.69
AID	8	1-5	3.85	0.75

8.1 Reliability Analysis

Reliability is the extent of how reliable is the measurement model consistently in measuring intended latent variables. The Cronbach's Alpha is employed to access the inter item consistency of the measured variables. Table 4 shows that all alpha values are above 0.60 regarded as satisfactory as suggested by Nunally and Bernstein (1994). Composite reliability values from 0.80 to 0.88 are considered as significant as recommended by Gefen (2000) whereas values beyond 0.60 indicate a lack of reliability. However, composite reliability values of 0.60 to 0.70 are considered acceptable in exploratory research (Fornell and Larcker 1981). Thus, the results provided support to conclude that the measurements for each latent variable were reliable.

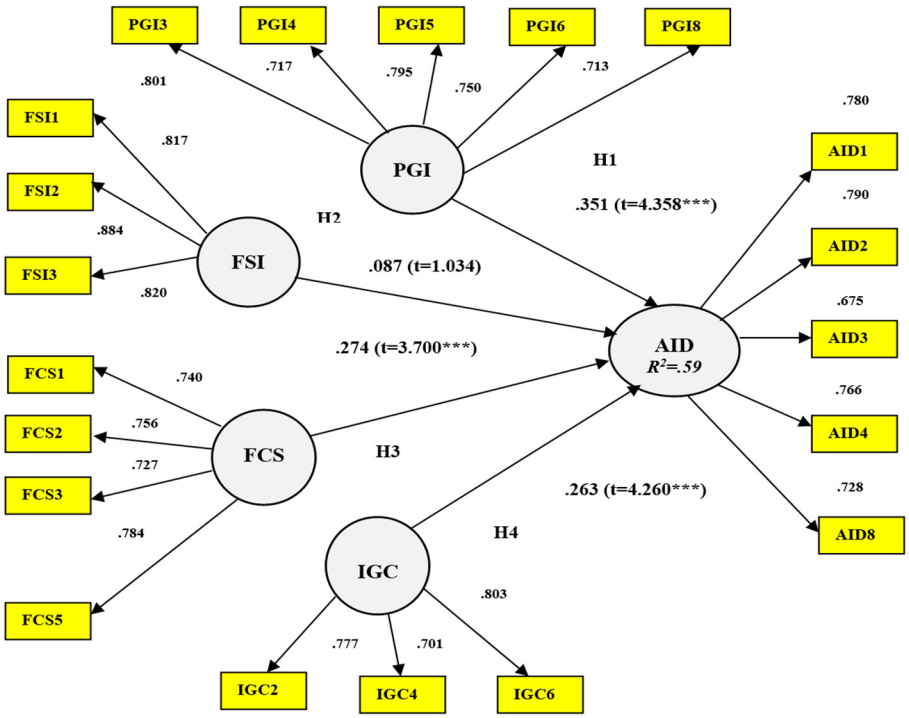

Figure 3. Result of partial least squares analysis

8.2 Construct Validity

According to Sekaran and Bougie (2010), construct validity testifies to how well the results obtained from the use of the measure fit the theories supported the constructs of interest. Construct validity can be examined through convergent and discriminant validity.

Table 4. Loadings and cross loadings

	Academic and Intellectual Development	Faculty Concern for Student Development	Faculty – Student Interaction	Institutional and Goal Commitment	Peer-Group Interaction
AID1	0.780	0.456	0.536	0.438	0.584
AID2	0.790	0.506	0.368	0.344	0.512
AID3	0.675	0.402	0.309	0.416	0.506
AID4	0.766	0.523	0.451	0.402	0.436
AID8	0.728	0.541	0.525	0.521	0.556
FCS1	0.473	0.745	0.521	0.270	0.472
FCS2	0.502	0.756	0.537	0.375	0.466
FCS3	0.402	0.727	0.452	0.227	0.435
FCS5	0.564	0.784	0.461	0.309	0.486
FSI1	0.432	0.482	0.817	0.366	0.493
FSI2	0.557	0.615	0.884	0.312	0.521
FSI3	0.496	0.537	0.820	0.386	0.553
IGC2	0.499	0.367	0.439	0.777	0.480
IGC4	0.390	0.282	0.229	0.701	0.254
IGC6	0.403	0.242	0.256	0.803	0.303
PGI3	0.574	0.424	0.488	0.295	0.801
PGI4	0.487	0.474	0.393	0.386	0.717
PGI5	0.525	0.507	0.546	0.334	0.795
PGI6	0.574	0.467	0.478	0.427	0.750
PGI8	0.460	0.476	0.437	0.329	0.713

Bold valued are loadings for items which are above the recommended value of 0.5

Table 5. Results of the measurement model

Latent variable	Manifest variable	Loading	*CA	**CR	*t* value	***AVE
PGI	PGI1	(0.681)	(0.84)**0.80**	(0.86)**0.87**	(9.13)	(0.55) **0.57**
	PGI2	(0.642)			(6.30)	
	PGI3	0.801			20.60***	
	PGI4	0.717			9.43***	
	PGI5	0.795			19.40***	
	PGI6	0.750			(10.23)	
	PGI7	(0.499)			(3.76)	
	PGI8	0.713			18.65***	
	PGI9	(0.672)			(8.13)	
	PGI10	(0.642)			(8.54)	
FSI	FSI1	0.817	(0.70)**0.75**	(0.81)**0.88**	21.59***	(0.66) **0.71**
	FSI2	0.988			47.39***	
	FSI3	0.820			22.04***	
	FSI4	(0.658)			(8.45)	
	FSI5	(0.542)			(3.18)	
FCS	FCS1	0.745	(0.74) **0.79**	(0.83) **0.84**	11.57***	(0.59) **0.57**
	FCS2	0.756			15.16***	
	FCS3	0.727			10.69***	
	FCS4	(0.685)			(11.13)	
	FCS5	0.784			20.54***	
IGC	IGC1	(0.400)	(0.60)**0.74**	(0.85) **0.80**	8.42***	(0.54) **0.58**
	IGC2	0.777			14.02***	
	IGC3	(0.626)			4.65	
	IGC4	0.701			9.42	
	IGC5	(0.556)			5.72	
	IGC6	0.803			13.48***	

AID	AID1	0.780	(0.81)**0.81**	(0.86) **0.86**	16.77***	(0.54) **0.56**
	AID2	0.790			15.17***	
	AID3	0.675			9.14***	
	AID4	0.766			18.45***	
	AID5	(0.637)			8.40	
	AID6	(0.628)			11.02	
	AID7	(0.617)			6.17	
	AID8	0.728			13.81***	

*CA represents Cronbach's Alpha (α). **CR represents composite reliability. CR= (square of the summation of the factor loadings)/ {(square of the summation of the factor loadings) + (square of the summation of the error variances)}. ***AVE represents average variance extracted. AVE= (summation of the square of the factor loadings)/ {(summation of the square of the factor loadings) + (summation of the error variances)}

Parentheses represent the parameter estimates before items deleted. Parameter estimates after item deleted (*in bold*). *p<.10 (t-value>1.64); **p<.05 (t-value>1.96); *** p<.01 (t-value>2.58).

8.3 Convergent Validity

Convergent validity is the extent of the degree in which multiple items to measure the same concept are in agreement. For convergent validity, researchers examined the average variance extracted (AVE), and Composite Reliability (CR). Standardized loadings indicate the strength of the relationship between construct and its indicators. AVE measures the amount of variance captured by the indicators relative to the measurement error.

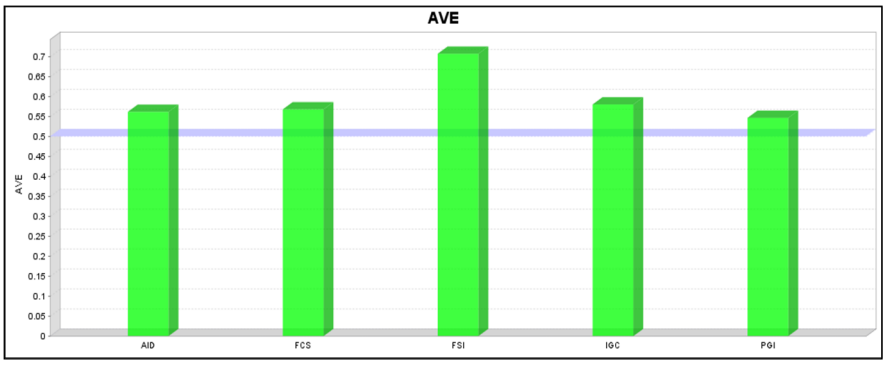

Figure 4. the cutoff value of the average variance extracted (AVE)

VE value of 0.50 and higher indicates a sufficient degree of convergent validity (Fornell and Larcker 1981); it means that latent constructs share more variance with assigned indicators than with other latent variable in the structural model. Figure 4 shows that AVE has the range of 0.56 to 0.71. These valued were greater than the cutoff value of 0.5 recommended by Fornell and Larcker (1981); Bagozzi and Yi (1988).

Composite reliability (CR) measures the internal consistency reliability; it based on standardized factor loadings and error variances (Raykov, 1997). Figure 5 shows that composite reliability has the range of 0.80 to 0.88; these valued were higher than 0.708 suggested by Hair et al. (2014).

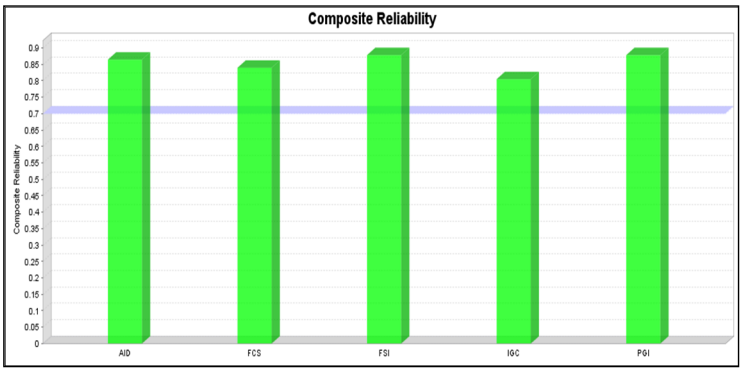

Figure 5. cutoff value of composite reliability

In short, PGI, FSI, IGC, and AID were validly measured by their respective manifest variables based on the parameter estimates and statistical significance.

8.4 Discriminant Validity

The discriminant validity of the measurement refers to the degree to which items differentiate among constructs. For discriminant validity, researches employed tow measures to assess it such as the square root of AVE and the correlation of latent constructs.

$$DV = \sqrt{AVE}$$

According to Afthanorthan and Ahmad (2013), the correlation value for each construct should be lower than the square root of AVE in order to obtain the validity of measurement model. According to Fornell and Larcker (1981), the items should load heavily on their respective structures. Furthermore, the average variance shares between each construct and its measures must be bigger than the variance shared between the constructs. Table 5 demonstrates that the square roots of AVE are bigger than the correlation values across rows or columns. The findings revealed that discriminant validity was justified. Finally, the structural model demonstrated adequate convergent and discriminant validity.

Table 5. Discriminant Validity of the measurement model

Latent Variable	AID	FCS	FSI	IGC	PGI
AID	0.75				
FCS	0.65	0.75			
FSI	0.59	0.65	0.84		
IGC	0.57	0.40	0.42	0.76	
PGI	0.70	0.62	0.62	0.47	0.57

Diagonals *(in bold)* represents square root of AVE while the other entries represent the squared correlation.

8.5 Path Coefficient

In this study, researchers examine the structural model: the direct effect of PGI, FSI, FCS, and IGI on AID. A path coefficient's magnitude indicates the strength of the relationship between three latent variables. Urbach and Ahlemann (2010) argue that the path coefficient should exceed 0.1 to account for a certain impact within the model. Details about direct effects are presented in table 6.

8.6 Direct Effects

Table 6 shows that PGI has positive and direct effect on AID (β=0.351, p<0.01). In fact, the relationship between PGI and AID was considerate strong based on the beta value. FCS was found to have positive and significant direct effect on AID (β=0.274, p<0.01), and IGC has influential predictor with positive and significant direct effect on AID (β=0.263, p<0.01). In sum, the result provided support for H1, H3 and H4. In contrast, FSI was not significant predictor of AID (β=0.087, p<0.54). Therefore, H2 were not supported.

Table 6. Summary of path coefficients and hypotheses testing

Hypothesis	Relationship	Beta	SE	*t* -value	Decision
H1	PGI → AID	0.351	0.081	4.358***	Supported
H2	FSI → AID	0.087	0.084	1.034 (ns)	Not Supported
H3	FCS → AID	0.274	0.074	3.700***	Supported
H4	IGC → AID	0.263	0.062	4.260***	Supported

Beta=regression weight. SE=standard error. The *t* –values were obtained through using a bootstrapping algorithm with 1200 cases and 500 samples.

*p<.10; **p<.05; *** p<.01

8.7 Coefficient of Determination (R^2)

In PLS, a structural model can be evaluated using coefficient of determination (R^2), and path coefficients. The first important criterion for assessing the PLS structural model is to evaluate each endogenous latent variable's coefficient of determination (R^2). R^2 measures the relationship of latent variable's explained variance to its total variance; a value of R^2 around 0.670 is considered substantial; values around 0.330 are average and values of 0.190 and lower are considered weak Chin (1998). Fig 3 shows that PGI, FSI, FCS, and IGC explain approximately 59% of the variance in AID (R^2=0.590). Therefore, value of 0.590 was greater than the cutoff value of 0.190, and it was considered as substantial.

8.8 Global Goodness of Fit

Goodness of Fit (GoF) is a single measure to evaluate PLS modeling result and defined as the geometric mean of the average communality and average R^2 values for endogenous variables (Tenenhaus et al. 2005; Shintaro 2012). GoF is employed to determine the overall predictive power of the model by accounting for the performance of both measurement and structural parameters (Chin 2010). This study obtained a GoF value of 0.52 that was exceeding the cutoff value of 0.36 for large effect size of R^2 (Wetzels et al. 2009) using the following formulate:

$$GoF=\sqrt{\overline{AVE}}\times\sqrt{\overline{R^2}}$$

The result indicated that the overall model has excellent explanatory power in comparison to the baseline values (GoF_{small}=0.10, GoF_{medium}=0.25, GoF_{large}=0.36). The GoF value further provides the adequate support to validate the research model globally.

9. Discussion

The study backs up students' perceptions of the impact of institutional integrations on academic and intellectual growth by testing hypotheses using partial least squares (PLS) approaches. The paper also examines the goodness of measurement model through assessing the validity and reliability of the measures. The finding showed that convergent and discriminant reliability was acceptable. Both the Cronbach alpha values and composite reliability were satisfactory with cutoff value criteria stipulated by other establishes researchers. Hence, the measures in the model were illustrated to be reliable. Based on the findings of the hypotheses, students-who are satisfy and more actives in social and academic activities- may have higher perception on their academic and intellectual development. The positive perceptions of peer-group interaction directly influence academic and intellectual developments. The findings of this study revealed that peer-group interaction have relationship with a dependent variable. This finding is consistent with Tinto's theory (1993) suggested that students have better peers tends to improve their own academic performance. It is also consistent with previous research findings from Smith and Griffin (1993); Kuh (1995); Martin (2000); Ammermueller and Pischke (2006); Ding and Lehrer (2006).

However, faculty-student interaction has not significantly influence academic and intellectual

developments in Cambodian context. This finding is contrast with previous studies in developed countries that conducted by Konidari and Abernot (2006); McGregor (2007); Reason et al. (2007). The result of FSI suggests that students might have problems with faculty interaction because of cultural sensitivities and educational system. Like Asian students, Cambodian students seem to be afraid and inactive to communicate with faculty, and they were low levels of class participation (Pit and Ford 2004; Chen et al. 2007; Heng 2014). Pit and Ford (2004) asserted that Cambodian students rarely ask questions to their teachers during the teaching hours; their negative attitudes may be a barrier of interaction with the faculty. As a relatively recent research approach in Thailand by Kerdpon D. (2009), Thai students have faced problems to communicate with faculty. For example, one student shared his interaction in class with a faculty member who intimidates saying "I am afraid to ask questions. When faculty asks, 'Do you understand?' I don't feel comfortable responding candidly. I will say 'I do understand' even if I don't." In study carried out by Thang, Azarina (2007) have found that the majority of Malaysian students in public and private universities have experienced "teacher-centered learning methodology" and lacked "personal autonomy". They were always "negatively passive participation" in classroom. These findings are similar with the research results mention that Asian students have low level of in-class participation (Tani 2005, Dasari 2009).

Faculty concern student development and teaching directly influence academic and intellectual developments positively. This indicates that faculty support has a direct effect on students' development. This finding is consistent with Tinto's theories (1975, 1993). Institutional and goal commitments directly influence academic and intellectual developments positively. This result is consistent with Tinto's theory (1993). In sum, four hypothesized relationships were supported by data. In this model, four independent variables were significantly influent a dependent variable.

10. Limitation

This study is not free from limitation. There were some weaknesses in the present study. About 59% of variance left unexplained in the research model. This indicates that there are other factors to be involved in influencing academic and intellectual development (AID), but researchers did not include in this study. Only three remote public universities in Cambodia's north and east are participating in the study. It is recommended that other provincial or remote universities be chosen for study. Researchers are limited to sample sizes of 381 students who studied in third years of the academic year 2021-2022. Third year students could be expected that they were enough mature for answering the questionnaire based on their academic experiences and knowledge. The questionnaire is adapted from a developed country, and thus, there were concern about educational system and cultural bias. Researchers employed PLS-SEM as statistic tool of data analysis with medium sample sizes. It is suggested that Covariance Based Structural Equation Modeling (CM-SEM) should be applied with large simple size in order to conduct the confirmatory factor analysis (CFA) in the further research.

11. Implication

This study has important implications for faculty members and students. The result of the study shows the important influence of social and academic integration on the students' academic

and intellectual development. Faculty members have to be aware that they have main duties to interact with students and to help them to achieve their academic endeavors and development. In such matter, faculty members and universities have to initiate to make many social and academic programs including curricular and extra-curricular activities in order to allow students have opportunities for develop their interactions and relationship. This study also has important implications for policy and practice both institutional and student levels; especially, to achieve the policy on Cambodian higher education vision 2030 (MoEYS, 2014).

At the institutional level, Cambodian universities need to focus on supporting their faculty members so that the faculty members are able to sacrifice their times and energies for students both in –class and out-of-class academic activities. Affordable salary and incentive policies should be reformed and offered for university lecturers; universities need to provide lecturers' professional development programs and motivation in order to encourage them to transfer their knowledge and more interactions with students. Universities also need to focus on providing special courses and programs and socializing opportunities for students. These programs have influenced on the students' academic and intellectual progress. Universities also have moral obligation to help students to reach their personal goal commitment for their academic achievement, prospective employment, and further education.

At the student level, students have to sacrifice their times and energies to be more engaged in academic and social activities provided by their universities. Students have to aware that academic and intellectual endeavors resulted from their hard working, goal commitment, and persistence in both inside and outside classrooms of academic related activities. Moreover, they have to find possible ways to interact with peer-groups and faculty members or lecturers so that they have opportunities to discuss, to share, and to exchange ideas as well as to increase networking with the others. The most importantly, they should spend times to involve in volunteerism activities such as school association, local community, and social works.

12. Conclusions

Finally, this study has supplied information about the impact of institutional integration on students' academic and intellectual growth. This study gives some important information for future institutional policies and performance restructuring for students, faculty members, policymakers, educational administrators and planners, and relevant universities. It is suggested that students' academic and intellectual development could be improved through improving students' peer –group and faculty interactions, and through faculty members' attention and responsibility as well as universities and students' goal commitments to achieve their academic excellence. In other word, universities have to find ways to improve the interactions or relationships, faculty support, and students' goal commitment or motivations if they want to increase of the number of students' academic and intellectual development. Future research should focus on other variables such as social support, self-efficacy, learning environment, and facilities that could be influenced on students' development in Cambodian context.

Acknowledgments

The authors would like to offer their heartfelt gratitude to everyone who helped, supported, and guided them in making this manuscript a success. They would also like to express their heartfelt gratitude to the Royal Government of Cambodia for funding the Higher Education Improvement Project (HEIP) at the National University of Battambang (NUBB) and the 21st Century Teaching Skills of Erasmus+ Capacity Building in Higher Education.

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