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## Abstract

The study used descriptive research design to identify factors that explain persistence of BS Agriculture (BSA) students in the University of the Philippines Los Baños during their first year of college as they moved on to the next year level towards degree completion. In addition to self-administered questionnaire, Key Informant interviews were also conducted. Findings reveal that institution-related factor particularly the institution's commitment to academic excellence constitutes most to the experiences of agriculture students. Analysis of Variance reveals a significant difference in the persistence of BS Agriculture students across year levels. The results of the study point out that, as per responses of the students as well as the faculty and administrators interviewed, the University has not gone far enough to ensure that BSA students are supported in an efficient manner. The University of the Philippines, being the National University has much opportunity to make positive changes in persistence of these special populations of agriculture students. Thus, it needs to take steps toward making more of a commitment to student success

## Keywords

agriculture education, degree completion, determinants, persistence, Philippines

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This study is sponsored by the UPLB Basic Research Program of the Office of the Vice-Chancellor for Research and Extension, University of the Philippines Los Baños

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## **Determinants of Student Persistence in Completing BS Agriculture Degrees in the University of the Philippines**

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### **Abstract**

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### **Introduction**

The agricultural sector plays a crucial role in the economic progress of the Philippines despite the plan to make it an industrialized economy since year 2000. As an agricultural country, the Filipinos cannot ignore the importance of agriculture. Inasmuch as most of its citizens still live in rural areas and support themselves through agriculture. But sadly, agriculture is becoming the least appealing career choice among young people nowadays. The students want jobs that are urban in nature, into information technology, arts and science. In short, those that can land them in any office work. Truly they do not find agricultural studies interesting.

Agriculture education is just one of dozens of "undersubscribed" courses, or those college programs that have low enrolment and graduation rates, as opposed to "oversubscribed" courses such as nursing, business administration, and teacher education (CHED, 2016). Data from the Commission on Higher Education (CHED) for school years 2001-2002 to 2013-2014 showed that courses on disciplines such as Agriculture and its related fields have consistently low enrolment figures. All consistently below 100,000 annually (CHED, 2015).

The Philippine government-hosted Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) confirmed that enrolment in agriculture and related courses has been declining by an average of 1.5 percent every year (Fernandez, 2015). For instance, the enrolment in agriculture courses at the University of Philippines Los Baños has declined over the past 30 years. A decrease from 51% of the total student population in 1980 to only 4.7% in 2012 (Pedroza, 2015).

How to attract the best young people to this industry is one such challenge. In fact, increasing food production in this

country over the next few years and producing some of the renewable energy needed is quite attainable. We can do this whilst continuing to care for the environment and preserving our precious landscapes and wildlife. We can encourage more people to spend time and money enjoying and learning about the countryside and what it has to offer. But it will be a big question on how to get them interested in this field. We surely need the best people managing our crops and our livestock to achieve all this. We need fresh ideas from new generations of agricultural practitioners. As what we have learned in the last few months is an uncertain financial future.

Besides, the need to cope with climate change, how to make certain that agriculture and its related industries attract the best potential entrants out of a decreasing pool of young people is more serious problem that we need to address. How can we help this special population of students who find interest in the field of agriculture to pursue their chosen degree until completion? We will not succeed unless we put our best effort to explore the best possible option to face up these challenges ahead of us now.

### **Purpose and Objectives**

The purpose of this study is to unearth the determinants of student persistence in completing their bachelor's degree in agriculture in a state university in the Philippines. It specifically determined the factors that explain persistence of BS Agriculture students; identified the issues connected to the persistence of BS Agriculture students; and analyzed the difference in persistence of BS Agriculture students across year levels.

### **Models of Student Persistence**

Student persistence has been the subject of academic investigation since

1960s (Braxton, 2009). The following theories explain some of the factors that are instrumental to student persistence:

**Alexander Astin's input-environment-outcomes model** explains how various environmental factors influence the student persistence that is whether their academic aspiration increases or decreases under varying environmental conditions (Astin 1991, in Ortega-Dela Cruz, 2015-2016). Input refers to student attributes during the time of entering college. These input characteristics further explain how students' attributes and backgrounds contribute to their ability to persist. Environment refers to institutional interventions, including educational programs and student scholastic experiences (Astin, 1991 in Murray, 2006). Environmental variables that might influence student success include: institutional characteristics, type and quality of students' peer group, faculty traits, the entire curriculum including formal and hidden curriculum, availability of financial aid services, major field of choice, residence, and student involvement; whereas, outcomes are the student's characteristics after exposure to the environment, which in this study is referring to the student persistence in completing their BS Agriculture degree.

**Vincent Tinto's theory of student departure** asserts that integration into formal (academic performance) and informal (faculty/staff interactions) academic systems and into formal (extracurricular activities) and informal (peer-group interactions) social systems are keys to student persistence. Tinto argues that the institution shares this responsibility for helping students achieve academic and social integration (Tinto, 1993 in Tinto 2006-2007). Therefore, positive encounters in both formal and informal academic and social settings lead to a

greater likelihood of retention. Tinto uses the term integration to describe the extent to which students 'fit' into the institution's community. As the integration increases it strengthens the student's commitment to both their personal goals and to the institution through which these goals may be achieved (Pascarella and Terenzini, 2005 in Reisinger, 2016). Conversely, negative interactions and experiences inhibit integration and may prevent students from becoming members of the academic or social community.

### Conceptual Framework

The following framework, based on the work of Astin (1991), and Tinto (1993; 2006-2007), provides an all-inclusive model for studying student persistence.

Figure 1 shows the determinants of student persistence which comprise three categories: student-related factors, institution-related factors, and classroom-related factors. These student-related factors including demographic characteristics, academic performance, as well as personal, academic and career disposition determine students' succeeding experiences upon entering the college through their interactions with the institution-related and classroom-related factors. The institution-related factors include the type (i.e., the level of degree accreditation of the State University as determined by the Commission on Higher Education such as Level IV) and processes being implemented by the institution as well as academic and co-curricular procedures. Whereas, the classroom-related factors add up to the individual student experience in relation to the quality of instruction and curriculum they receive from their educational institution. All of these interplay in the persistence of agriculture students towards degree completion.

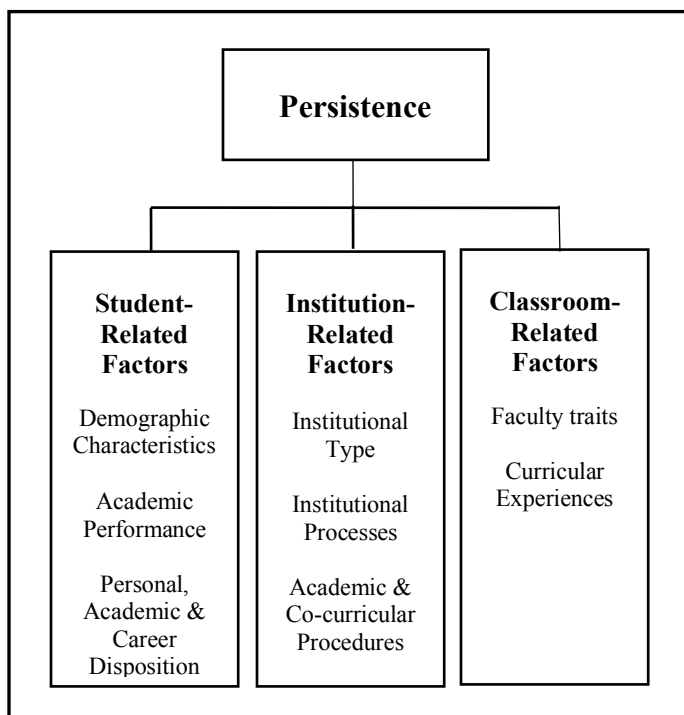


Figure 1. Conceptual framework of the determinants of student persistence

## Methodology

### Research Design

This study used the descriptive research design to address determinants that explain why agriculture students persist in pursuing their Bachelor of Science in Agriculture course towards degree completion. It utilized interviews and survey questionnaire to gather data regarding students' demographic characteristics and their perceptions on the factors that relate to their persistence.

### Study Participants

The sample consisting of the BS Agriculture students for the second semester of the academic year 2014-2015 were randomly selected. This study seeks to identify determinants of student persistence

during their first year of college as they moved on to second year, third year and fourth year by the selected demographic characteristics including age, sex, enrolment status and major.

### Sampling Procedures

The study employed the stratified random sampling with proportional allocation of the respondents. The student respondents from second year to fourth year level represent 47.7 percent of the total research population. This was done to give opportunity for the population considered in the study to be selected randomly.

Table 1 shows the proportional distribution of 210 student respondents with a total research population of 441 students from second year to fourth year level.

Table 1  
*Distribution of Research Participants*

Year Level	Population of BS Agriculture	Respondents of the Study
2 <sup>nd</sup>	121	58
3 <sup>rd</sup>	147	70
4 <sup>th</sup>	173	82
Total	441	210

Source: Office of the Registrar, UPLB 2<sup>nd</sup> Semester, AY 2014-2015 (Excluding freshmen and transferees)

### Data Gathering Instrument and Procedure

The study utilized perception survey questionnaire to measure the student persistence. In particular, persistence refers to the student aspiration to complete a four-year bachelor degree in agriculture. Persistence factors are composed of fifteen-item (15) student-related, seventeen-item (17) institution-related, and eighteen-item (18) classroom-related factors, a total of 50 perception statements in all. These indicators were all based on the theories, models particularly of Astin and Tinto and other pertinent literatures that explain why student persist in college. The instrument was validated by experts and was pilot tested to 10 BS Agriculture students who were not part of the respondents.

Aside from the student's self-administered questionnaire, which received a 100 per cent response rate, a survey was also administered to the faculty, research and extension professional staff (REPS) and administrative staff. A total of 105 members of the academe and administration answered the questionnaire. The sample was based on the number of respondents who actually returned the questionnaire to the researcher. The survey got about 95 per cent response rate.

Key informant interviews using structured open-ended questionnaires were

also conducted. The interviews were based on the availability of the identified respondents. The study include 25 program graduates, selected faculty members and administrators including the course adviser, college secretary, institute directors, dean, as well as the office of student affairs director. The interviews ask for their perspectives on the factors that support and hinder persistence of students in completing BSA degree.

### Data Analysis

The study used the Statistical Package for the Social Sciences (SPSS) software version 16 in analysing the data. This study employed descriptive statistics (i.e., frequencies) to analyse the items related to personal, academic and career disposition and also the perceptions of student-respondents regarding institutional processes, academic and co-curricular procedures, faculty traits and curricular experiences. The study also used the analysis of variance (ANOVA) to analyse the differences in persistence of BS Agriculture students across year levels. Content analysis was done to analyse qualitative data gathered from the KI interviews.

### Results and Discussion

This section presents the detailed discussion of results. Quantified data were tabulated, analysed and interpreted. For better understanding, the data are presented in tabular form and generalizations were developed to determine the factors that explain persistence of BS Agriculture students towards degree completion.

Table 2 shows the demographic characteristics of the student respondents in terms of age, sex, major, enrolment status, and self-assessment of academic performance in terms of grade point average. There are 210 student-respondents in all; 96 or 46 percent are male and 114 or 54 percent are female. Majority of these full-time students are between 18 to 20 years of

age. Three (3) students or 1.4 percent are specializing on Agricultural Systems, 42 or 20 percent on Agronomy, 57 or 27 percent on Animal Science, 24 or 11.4 percent on Crop Protection and Plant Pathology, 20 or 10 percent on Entomology, 32 or 15 percent on Horticulture and another 27 students or 13 percent on Soil Science. Only 5 students or 2 percent belong to other specialization including Agricultural Extension and Weed Science. In terms of college academic performance, 127 students or about 60 percent of the respondents' grade point average fall on the grade range between 2.01-2.49. This means that most agriculture students have good perception of their academic performance.

Table 2

*Demographic Characteristics of BS Agriculture Students*

Age	Year Level						All Levels	
	2 <sup>nd</sup>		3 <sup>rd</sup>		4 <sup>th</sup>			
17	6		0		0		6	
18	41		7		0		48	
19	10		43		10		63	
20	0		15		39		54	
21	1		2		19		22	
22	0		2		7		9	
23	0		1		3		4	
24 >	0		0		4		4	
n	58		70		82		210	
Sex	M		F		M		F	
	29	29	34	36	33	49	96	114
n	58		70		82		210	
Major								
Agricultural Systems	0		2		1		3	
Agronomy	5		21		16		42	
Animal Science	16		15		26		57	
Crop Protection and Plant Pathology	5		10		9		24	
Entomology	4		9		7		20	
Horticulture	16		6		10		32	
Soil Science	12		6		9		27	
Others	0		1		4		5	
n	58		70		82		210	



Enrolment Status				
Full-Time	58	68	77	203
Part-Time	0	2	5	7
n	58	70	82	210
Academic Performance				
Grade Range				
1.00-1.49	1	1	2	4
1.50-2.00	21	8	18	47
2.01-2.49	28	52	47	127
2.50-3.00	8	9	15	32
n	58	70	82	210

Table 3 presents the determinants of student persistence in completing BS Agriculture degree in the University of the Philippines. These persistence factors are composed of fifteen-item (15) student-related, seventeen-item (17) institution-related, and eighteen-item (18) classroom-related factors, a total of 50 perception statements in all. The results were presented based on the order of overall frequencies from the highest to lowest value/s to facilitate analysis and interpretation.

Findings reveal that institution-related factor regarding institutional processes, as well as academic and co-curricular procedures got the highest frequency value among the student-respondents. In particular, the institution's commitment to academic excellence ( $I_{16}$ ) amounts most to the experiences of agriculture students. Their positive attitude towards academic success is supported by some of the classroom-related factors, which according to the agriculture students and even program graduates are really helpful in pursuing their degree. They affirmed how the contents of their course are valuable and sufficient for the requirements for entrance into the profession such as licensing or certificate ( $C_{42}$ ). Having knowledgeable

course advisers ( $C_{41}$ ) really help them to perform the fundamental skills and acquire knowledge ( $C_{49}$ ). Indeed, agriculture students experience intellectual growth inside the classroom ( $C_{50}$ ). This supports findings from various studies that put emphasis on the role of student satisfaction and program relevance as a facilitator of persistence. Persistent students voice satisfaction with the quality of the program, interactions with students and peers, the relevancy of the course to individual needs, and with the learning environment itself (Ivankova and Stick, 2007; Levy, 2007, Müller, 2008, Park and Choi, 2009). Indeed overall life experience was identified as the most agreed motivator of agriculture students (Bunch, et al, 2015).

Factors related to student personal, academic and career disposition are notable to agriculture students. They are quite optimistic that they would be successful ( $S_{14}$ ) in their chosen school ( $S_6$ ). Their supportive family ( $S_3$ ) motivates them to do their best to be able to complete their degree ( $S_{11}$ ). Though majority of them are experiencing financial constraints and are living in urban areas. Yet they never think of it as something that will hinder their desire to complete their chosen degree.

Table 3  
*Determinants of Student Persistence*

ITEM#	Statements	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Overall
	Persistence Factors	Frequencies			
I16	This campus has a commitment to academic excellence.	41	47	62	150
S11	I am trying my best to be able to complete this degree.	35	46	60	141
S3	I have a family who are supportive of my educational goals.	38	43	57	138
S6	I am studying in the school of my choice.	36	46	56	138
S14	I think I would be successful.	34	45	49	128
C42	The contents of the course within my major are valuable and sufficient for the requirements for entrance into the profession such as licensing or certificate.	20	41	40	101
C50	I am able to experience intellectual growth here.	28	40	32	100
C41	Faculty, particularly course advisers are knowledgeable about the program requirements for registration and graduation.	21	40	38	99
C49	The course helps me to perform the fundamental skills and acquire knowledge.	21	36	34	91
S12	I am aware that applicable jobs are present in my community.	29	21	33	83
S15	I want this job for it does pay enough.	29	20	32	81
C48	The course demonstrates the ability to anticipate and adapt to changes in society and technology.	23	39	19	81
S5	I am physically fit for the kind of job this education demands.	13	24	38	75
I25	This campus emphasizes the teaching of undergraduates and undergraduate learning.	19	25	26	70
C33	Faculty have mastery of the course content.	22	12	36	70
C44	The contents of the course are applicable to the work.	22	18	29	69
S13	I am knowledgeable about career opportunities.	22	14	27	63
I17	This campus makes every student feel welcome at all times.	18	13	28	59
C43	The contents of the course keep abreast with the latest information from related field.	18	11	29	58
I29	This campus provides opportunities for students to establish social networks (e.g. clubs, sporting activities, etc.).	16	9	32	57
C39	Faculty are approachable and available for academic discussions and advising.	17	12	28	57
C40	Faculty members treat students with respect.	20	15	19	54
S7	I am taking the right courses.	17	14	22	53

I32	This campus has honors programs available for academically advanced students.	23	10	20	53
C45	The objectives of the course comply with the purpose for which they are intended/develop self-reliance and variability in entrepreneurship.	17	13	19	49

When asked to talk about the qualities of successful BS Agriculture students, interviewees cited some of the basic skills that help agriculture students succeed in this course. These include planning, analytical and critical thinking skills that will help them deal with the toughest situations; gather new information and formulate a strategic plan. For they won't be able to solve every organic farm problem with just a textbook, for instance. As explained by the Goal Setting Theory (Locke, 1960s) performance is influenced by the individual's commitment to the goal (degree completion). Belief that they can accomplish the goal, and possessing the requisite skills to complete the task at hand (Demetriou and Schmitz-Sciborski, 2011).

But along with these skills are the important traits of a successful student. Interviewers pointed out the intrinsic motivation that drives students to succeed in their academic endeavour. Students with determination, sense of purpose and have the passion for what they do, in particular, the love for manual labour and for the outdoors. Interviewees believe that if a student loses all these three crucial attributes, finishing his or her degree will become meaningless and will be "just a chore". A person with determination can weather any challenge that is set before him/her in reaching his/her goal. The sense of purpose comes in when a student finds meaning in his/her work. That is what s/he is doing has a deeper purpose beyond mere academics. Their passion for what they do will enable them to see a bigger goal in spite of the myriad distractions. This intrinsic

motivation of pursuing a dream according to Ivankova and Stick (2007) is often coupled with personal challenge, an appreciation of learning, and personal responsibility.

Truly, motivational orientations can influence college student ability and desire to stay in college. Using Deci and Ryan's theory of motivational orientations, Lin and McKeachie (1999 in Demetriou and Schmitz-Sciborski, 2011) found that students with a balance of both extrinsic and intrinsic motivation tend to perform best in college-level coursework. In their study of college students in multiple academic domains, students who combined high intrinsic motivation with a medium-level of extrinsic motivation were most likely to achieve academically. Allen (1999 in Demetriou and Schmitz-Sciborski, 2011) examined whether a strong desire for achievement influences student persistence in college. Allen found that background variables including precollege characteristics and desire to finish college influenced persistence.

Based on the interviews, graduates of the BSA program confirmed how their family served as source of inspiration in completing their degree despite that some did not prefer agriculture education in the first place. They acknowledge their parents with inculcating in them the worth of a college education in a premier university. This supports findings from Barbatis (2010) and Ortega-Dela Cruz (2015) who have discussed the influence of the study participants' cultural self-identification, particularly the emphasis their families placed on the importance of an education.

Parents who are morally supportive; despite not always able to financially support the students' academic pursuits were cited as a major factor in encouraging persistence (Arana *et al*, 2011).

While an institution-related factor got the highest frequency value among other persistence factors, but, it brought in the so-called demotivators or persistence barriers to most of the student-respondents. Students highlighted their experiences with the institutional procedures for regularly communicating student satisfaction and important data (I<sub>21</sub>), for internal and external evaluations of the student life programs and services (I<sub>22</sub>), for students' satisfaction survey (I<sub>24</sub>), as well as for ease of student registration processes (I<sub>20</sub>) as the least among persistence factors that they experience in the campus. These are some of the issues which were also pointed out by the program graduates during their stay in the university. Ten (10) out of 25 graduates who were interviewed even specified the need for gathering the students' feedback concerning institutional issues on registration processes and other services. This substantiates findings from Aragon and Johnson (2008) and Bunn (2004) who

stressed out incomplete or ineffective communication as one of the barriers to persistence. Another study confirmed how lack of information is perceived as the greatest barriers among freshman agriculture students (Danjean, Bunch, Blackburn, 2015). For instance, communication problems may stem from late, inadequate, or lack of notification of changes to the program, slow or contradictory feedback from faculty, and an inability to contact staff or support services.

Result of Analysis of Variance in Table 4 reveals a significant difference in the persistence of BS Agriculture students across year levels (F = 4.134, p< .05). This implies that factors that explain why students persist are quite distinct to their year level. Therefore, second year students may or may not experience the same factors that support their persistence as third year or fourth year students have. In particular student perception rating varies in relation to their personal, academic and career disposition, their experiences towards faculty traits, some institutional processes, as well as academic and co-curricular procedures.

Table 4  
*Analysis of Difference in Student Persistence Across Year Levels*

		Sum of Squares	df	Mean Square	F	Sig.
Persistence	Between Groups	.624	2	.312	4.134	.017
	Within Groups	15.614	207	.075		
	Total	16.238	209			

**Conclusions**

The results of this study point out that, as per responses of the students as well as the faculty and administrators

interviewed, the university similar to other State Universities in the Philippines, such as Cavite State University, Laguna State Polytechnic University and Southern Luzon

State University (Ortega-Dela Cruz, 2015) has not gone far enough to ensure that BS Agriculture students are supported in an efficient manner. Efficiency speaks about the need to address students' major concern on registration processes and other services. There has to be a way of gathering student's feedback or their satisfaction on institutions' educational and learning resources, especially on the effectiveness of implementing new online platform for communication related to all institutional procedures.

Although factors crucial to student persistence have been satisfied, nonetheless, these specific concerns that students raised clearly indicate the areas that require prompt action and aspects of the institution that need to be strengthened. Therefore, the junior and senior university officials need to become more responsive to them as Agriculture serves as the university's major thrust.

Students who persist beyond their sophomore years are often highly motivated individuals with the ability to adapt to the challenging system of the degree program. The determinants that were presented in this study are just few among myriad explicit and implicit factors that in one way or another have positive or negative effects on the student persistence in completing their degree. For agriculture students, all possible effort should be made to support those who have found the right choice in an agriculture field.

The University of the Philippines, being the National University has much opportunity to make positive changes in the persistence of these exceptional groups of agriculture students. Like any other agricultural colleges and universities around the world, its goal towards progressive and sustainable agricultural development for the country is something that needs to be taken seriously. For this goal will never be

realized without well-trained and equipped agriculture graduates. Thus, it needs to take concrete steps toward making more of a commitment to student success.

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