Shih, J. L. et al. (Eds.) (2019). Proceedings of the 27th International Conference on Computers in Education. Taiwan: Asia-Pacific Society for Computers in Education

Factors Affecting the Behavioral Intention of K-12 Students to Pursue an IT Degree in a Transitioning Educational System

Ryan EBARDO[a,c*], Laiza LIMPIN[b,c] & Ma. Rowena CAGUIAT[c]
[a]*Jose Rizal University, Philippines*
[b]*Mindanao State University – General Santos City, Philippines*
[c] *De La Salle University – Manila, Philippines*
[*]ryan.ebardo@jru.edu

Abstract: The rising technology sector in the Philippines has called for a holistic structural reform in its educational system through the implementation of the K-12 program. As such, higher educational institutions are in constant quest to look for strategies to increase enrollment in their Information Technology programs. To be effective, educational institutions must understand individual perceptions towards pursuing an IT degree in higher education. This paper presents the results of a study among senior high school student, who are one of the first recipients of the newly implemented system of education. Using additional constructs to the established Theory of Reasoned Action, a survey instrument was deployed in two higher educational institutions and gathered a total of 431 responses. Using Partial Least Squares – Structural Equation Model, results revealed that computer self-efficacy and job availability does not positively influence the attitude towards an IT degree at a significant level. The study also confirmed prior research that job salary and social image are primary factors that positively influence the attitude of students. Aligned with the findings of other research, attitude and social norms are strong predictors of the behavioral intention of students to pursue an IT degree. The paper concludes by suggesting theoretical, educational and social implications of the study and acknowledging its limitations.

Keywords: Theory of reasoned action, computing education, K-12 education, IT education, digital natives

1. Introduction

The Philippines is one among the Asian countries that has exhibited a healthy economic growth in the recent years. A Philippine Economic Outlook report reveals that the country's GDP increased by 6.7% in 2017, a figure that is slated to grow in the next years to come (FocusEconomics, 2018). The technology services industry is one sector that contributes to this development, which in 2014 raked in $2 billion in revenues, a 20 percent increase from the previous year, and the second-highest growth amount in the information technology-business process management (IT-BPM) subsectors. The positive economic outlook was credited to the diversification of services by global in-house centers (GICs) and the growth of information technology outsourcing (ITO).

An industry road map for 2011-2016, however, reveals a need for the industry to develop more talent and skills and to gain stronger government support, specifically in providing remedial training and structural reforms at all educational levels (Mitra, 2013). The industry, government and academia are further called to establish stronger linkages and to exert more effort to expand the scale and scope of educational and ICT-related training programs. Education is considered as the main foundation of national development and serves as the driver of social and economic development (UNESCO, 2008). Higher education is expected to provide new skills to meet the demands in emerging markets (Hendel & Lewis, 2005). However, the Philippine education system has not been matched by adequate resources to deliver relevant skills (World Bank, 2012). As a result, a Filipino graduate is considered to be underqualified compared to the graduates coming from other countries (Acosta & Acosta, 2017).

The supply of graduates is not adequate to meet the requirements of the industry. In a Korn Ferry Institute report (2018), there are 85.2 million job openings globally, almost half will be contributed by countries in the Asia Pacific region. Failure to address this deficit will have long-term

negative economic impact worldwide. In order to address the growing manpower demand particularly in the technology services sector, the Philippine government embarked on an ambitious education sector reform program. In 2013, the Republic Act No. 10533 known as the Basic Education Act was passed and extended the elementary and secondary education cycle from 10 to 12 years (DepEd, 2013). The Philippines was one of the three countries left to have implemented the K-12 program worldwide, only having the 10-year basic education system and as such, the educational reform was a necessary move towards the improvement of the nation's global competitiveness. The transition to the new educational system is to be completed by 2021.

Prior studies investigating factors that influence the decision-making process of students in pursuing technology-related degrees are based mainly on environments that have adopted and implemented the twelve-year basic educational system for years. The unique situation in the Philippines presents an opportunity for research to understand determining factors of K-12 students in their pursuit of an IT degree while the system is undergoing a shift in its educational structure. As one of the latest to adopt this educational system, investigating the insights of students born in the digital age and how they perceive an IT degree as an option in their future academic plans merits further scholarship inquiry. Lastly, by incorporating additional dimensions to the Theory of Reasoned Action (TRA) such as computer self-efficacy, job availability, job salary and social image, we contribute further to its theoretical precision.

2. Related Studies

Recognizing the economic impact of technology courses, prior research has investigated factors and motivation of students that influence their intention to enroll in such programs in higher education. The study by Joshi and Kuhn (2011) argues that attitudes and social beliefs collectively influence the decision of students to enroll in a tech-related program. The study further investigated the influence of other factors such as self-efficacy, image, work value and congruency in the behavioral intention to pursue an IT career. The students' interests, prospects, curriculum and social influence are also critical factors considered by students (Zhang, 2007). Moreover, in a cross-cultural work by Shin, et al., (2018), career motivation of university-bound students is affected by different socio-cultural factors such as gender, race and educational level. A longitudinal study by Mau (2016) also reveals that gender and racial differences are major factors. These studies further call for an investigation of socio-cultural contexts embedded in each country when examining the factors that contribute to the students' decision in pursuing a degree that will help them land a technology-related career in the future.

In the Philippines, there is a high regard for university graduates and education is embedded in the political, social and cultural ecologies. Since the K-12 program in the country is still in its infancy, its impact remains under-investigated. In the study of Montebon (2014), students are found to be perceptive to the new curriculum of the K-12 program which meets their cognitive requirements. A study by Mohammad (2016) captured insights from students, parents and the community and revealed heterogenous perspectives towards the new educational system. The additional years in senior high school are perceived to be a financial burden to some parents. On the other hand, students expressed the lack of their readiness to embrace K-12. While these studies focused on perceptions, the work by Bonifacio (2013) addresses the challenge of K-12 by calling for standards in the ICT curriculum. Furthermore, this study stressed the importance of different stakeholders to successfully implement K-12 such as administrators, teachers, and the government.

3. Theoretical Background and Hypotheses

The Theory of Reasoned Action or TRA (Ajzen & Fishbein, 1980; Ajzen, 1975) predicts an individual's behavior based on their pre-existing attitudes and behavioral intentions. It posits that a person's behavior is motivated by the intention to perform a certain action and the stronger the intention, the more likely the behavior will be executed (Zhang, 2007). The two components that lead to the development of behavioral intention includes a person's attitude and the subjective norms. Attitude refers to an individual's interpretation of the consequences of performing an action and subjective norms refers to an individual's perception towards a behavior based on the social and environmental pressures. Therefore, in this model (as shown in Figure 1), students' intention to choose an IT degree are influenced by their attitudes towards pursuing an IT degree and the social pressures exerted on them to choose the course.

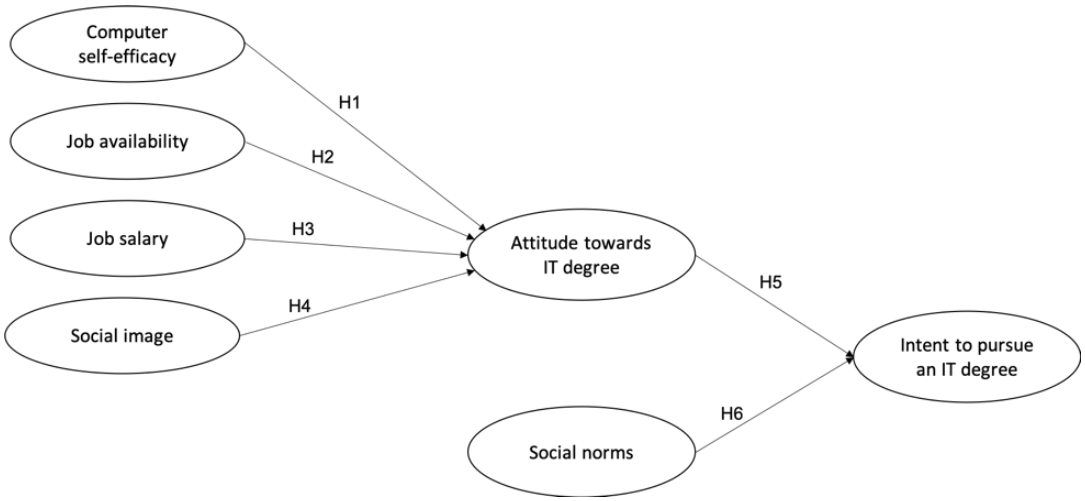

Figure 1 Theoretical Framework

Computer self-efficacy refers to a "judgement of one's capability to use a computer" (Compeau & Higgins, 1995) through multiple domains which influences an individual's decision to use a computer to become knowledgeable (Torkzadeh, Chang, & Demirhan, 2006). The relationship of computer self-efficacy and student's performance has been the object of various studies. For instance, a study reveals that students with a positive attitude towards computers improved their self-efficacy significantly compared to those with negative attitudes (Compeau & Higgins, 1995). In addition, students with a high-level of computer self-efficacy shows better attitudes and academic performance than those with a lower level of computer self-efficacy (Akbulut & Looney, 2007; Peinado & Ramírez, 2014; Smith, 2002). Behavioral and psychological factors also influence a person's computer self-efficacy and as a result, it positively influences a students' performance in computational environments (Moos & Azevedo, 2009).

We argue that students' attitude towards pursuing an IT degree will be partly influenced by their computer self-efficacy beliefs and that a high self-efficacy which corresponds to the IT skills that they possess will lead to a more positive attitude towards an IT course.

H1: Computer self-efficacy positively influences a student's attitude towards pursuing an IT degree.

Studies have found that job market influences relate to students' choice of college degrees (Fiorito & Dauffenbach, 1982; Zhang, 2007). Job availability was found to be a crucial factor for students to be confident in choosing a degree to pursue in college (Stanko, Zhirosh, & Krasnikhin, 2015). Moreover, students who pursue an IT degree were found to be aware that job opportunities in the IT field exist and were not worried about its availability (Kuechler, Mcleod, & Simkin, 2009). However, studies have either identified or confirmed job availability as a relevant predictor of a student's intention to pursue an information systems-related degree (Jackling & Calero, 2006; Kuechler et al., 2009; Kumar & Kumar, 2013; Snyder, 2013; Tantuco, 2017; Zhang, 2007). Moreover, high job availability were related to student accountants' decision to pursue a degree in the accounting field (Jackling & Calero, 2006) and not surprisingly, a lower job availability discouraged students to get into any IT-related degree (Lee & Lee, 2006). Therefore, we argue the following:

H2: Job availability positively influences a student's attitude towards pursuing an IT degree.

A satisfying job salary has also been observed as an important factor in pursuing an IS degree (Granger, Dick, Jacobson, & Slyke, 2007; Snyder, 2013) as it is in other fields such as accounting (Cohen & Hanno, 1993) and medical-related majors (Sheikh, Naqvi, Sheikh, Naqvi, & Bandukda, 2012). In May 2013, the US Bureau of Labor Statistics reported an average annual salary of $81,860 for computer occupation ("Occupational Employment and Wages," 2013). A Forbes report also revealed the IT professionals have stayed satisfied with their income and their jobs in recent years (Adams, 2015).

We argue that students' outcomes expectations specifically on job salary for IT jobs will influence a positive perception, therefore:

H3: Job salary positively influences a student's attitude towards pursuing an IT degree.

A positive social image of a profession is essential to a successful career (Kumar & Kumar, 2013; Zhang, 2007) and a student's perception of a certain profession provides guidance in their career choice development (Glerean, Hupli, Talman, & Haavisto, 2017). For instance, nursing students have a positive image of the field which influences their attitude and perception towards nursing as a profession (Emeghebo, 2012). Moreover, while IT professionals may be perceived as nerdy and geeky, the IT profession is still described as exciting, youthful and enjoyable (E. Myers & Beise, 2001). In this context, we argue that:

H4. Social image positively influences a student's attitude towards pursuing an IT degree.

In this study, we hypothesized that factors such as computer self-efficacy, job availability, job salary and social image contribute to a student's positive attitude towards pursuing a degree in IT. Attitude, in this context, refers to a student's perception about choosing an IT degree. Moreover, a more positive attitude to IT is associated with a greater intention to pursue a degree in IT, therefore, we hypothesize the following:

H5. A positive attitude towards IT is positively associated with the intent to pursue an IT degree in college.

In TRA, a student's intention to pursue a degree in IT is also influenced by the social norms or the social pressures exerted to them to choose the course. Individuals are influenced by the beliefs of people who are important to them and plays an important role in determining behavior in a wide variety of domains such as in adopting a technology (Venkatesh & Davis, 2000). Students may feel pressured to pursue a degree based on the influence of their family, guidance counselors, high school advisers, friends and fellow students (Kumar & Kumar, 2013; Snyder, 2013; Stanko et al., 2015; Zhang, 2007). Therefore, we argue that

H6. Social norms are positively associated with the intent to pursue an IT degree in college.

4. Methodology

To test the applicability of the TRA in the research context of this study, an empirical approach is adopted. Questions from prior research are incorporated in a survey instrument. To test the validity of the instrument, a pilot test was conducted with selected students. Two institutions, A and B, offering a senior high school program were approached and the validated instrument was distributed online. Institution A is a state university based in the Southern Philippines. Institution B is a private college located in Metro Manila. The responses are recorded and a Partial Least Squares – Structural Equation Model is applied to test the propositions by the study.

4.1 Instrument Development

To account for the constructs in the proposed framework, questions from previous studies were modified and included in an initial instrument. To represent the dimension of computer self-efficacy (CSE), 3 questions from a study by Joshi and Kuhn (Joshi & Kuhn, 2011) were included. Social image (SI) is operationalized in this study through the 3 questions adopted from the research of Zhang (Zhang, 2007). Job availability (JA) and job salary (JS) were investigated in prior studies to have an influence in student's attitude towards pursuing a college degree and are integrated in the instrument with 2 questions each adopted from the study of Kumar and Kumar (Kumar & Kumar, 2013). Attitude (ATT), social norm (SOC) and intention (INT) are the primary constructs of the TRA and are adopted in this study through the questions of Zhang (2007) with 2, 5 and 2 questions respectively. The preliminary survey instrument is shown in Table 1.

Table 1. *Instrument*

	Indicators	Questions
Computer Self-Efficacy	CSE1	I often find it easy to use a computer.
	CSE2	I do not need assistance in computer-related tasks or assignments.
	CSE3	I usually find computer-related assignments easy.
Social Image	SI1	Businessmen look up to IT professionals
	SI2	If I choose an IT degree in college or university, I will have a respectable career.
	SI3	The business world treats IT professionals with great respect.
Job Availability	JA1	There will be plenty of job opportunities available in IT.
	JA2	There will be job opportunities available in IT when I graduate.
Job Salary	JS1	I can get a high paying job in IT.
	JS2	My starting salary will be satisfying in IT.
Attitude	ATT1	Choosing IT degree seems a good idea to me.
	ATT2	It will be wise for me to choose an IT degree.
Social Norms	SOC1	My friends think I should choose an IT degree.
	SOC2	Other students recommend that I enroll in an IT degree.
	SOC3	My class adviser recommends that I should choose an IT degree.
	SOC4	My teachers believe that choosing an IT degree is best for me.
Intention	INT1	I intend to choose an IT degree in college or university.
	INT2	It is likely that I will choose IT degree.

4.2 Instrument Validation

To test the validity of the instrument, 16 students were invited to answer the online survey as part of the pilot test. A Partial Least Squares through SmartPLS is applied to the results of the pilot sample to identify questions are below the minimum threshold of Cronbach's Alpha (0.70) Average Variance Extracted (0.60) and Composite Reliability (0.70). One question from the social norm construct, SOC5, was dropped from the initial instrument due to the low values in Average Variance Extracted and Composite Reliability. Table 2 shows that the Cronbach's Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) values are above minimum threshold required to establish reliability and validity of the instrument for this study (Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, 2014).

Table 2. *Instrument Validation Result*

Constructs	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Computer Self-efficacy	0.773	0.846	0.651
Job availability	0.915	0.959	0.922
Job salary	0.939	0.970	0.942
Social image	0.862	0.913	0.779
Attitude	0.908	0.956	0.915
Social Norm	0.937	0.954	0.839
Intention	0.792	0.903	0.824

4.3 Demographics

A total of 431 respondents from Institution A and Institution B answered the validated research instrument. All students are enrolled in academic year 2018-2019 in the senior high school department of both institutions. Of the sample population, 184 or 42.69% are females while 247 or 57.31% are males. Majority of the respondents are between 16 to 18 years old and more than half or 50.59% of participants are 17 years old. Of the respondents, 209 or 48.49% are from Year 11 and 222 or 51.51% are on Year 12.

Table 3. *Demographics*

Number of Respondents		A	137
		B	294
Gender	Male	184	42.69%
	Female	247	57.31%
Age	15 and Below	2	0.46%
	16	70	16.24%
	17	218	50.58%
	18	131	30.39%
	19	7	1.62%
	20	2	0.46%
	21	1	0.23%
Year Level	11	209	48.49%
	12	222	51.51%

5. Results and Discussion

To test the applicability of our proposed model, a Partial Least Squares - Structural Equation Model or PLS-SEM was applied to the results of the survey. The number of the indicators, the sample size and the predictive nature of this investigation are the primary motivators for the adoption of this statistical technique. In addition, PLS-SEM have been applied in prior literature in the education domain with great success (Ifinedo, 2017; Ramírez-Correa, 2017). Using a bootstrapping technique in SmartPLS (Ringle, Wende, & Becker, 2015), results are examined as shown in Table 3 – Summary of Results to assess whether to accept or reject a hypothesis at 0.05 significance level.

Table 4
Summary of Results

Hypothesis	Statement	T-Statistics	Decision
H1	Computer self-efficacy positively influences a student's attitude towards pursuing an IT degree.	0.793	Rejected
H2	Job availability positively influences a student's attitude towards an IT degree.	0.930	Rejected
H3	Job salary positively influences a student's attitude towards an IT degree.	5.068	Accepted
H4	Social image positively influences a student's attitude towards an IT degree.	3.421	Accepted
H5	A positive attitude towards IT is positively associated with the intent to pursue an IT degree in college.	6.590	Accepted
H6	Social norms are positively associated with the intent to pursue an IT degree in college.	10.860	Accepted

While existing literature have supported computer self-efficacy to be highly influential in students' intention to enroll in further studies (Lim, 2001; Soykan & Kanbul, 2018), this cannot be

proven in the context of this study as proven by the T-statistics value of 0.793 for H1. Consistent with the findings of a prior research (Joshi & Kuhn, 2011), computer skills does not translate to a positive attitude towards pursuing a technology-oriented degree. Several explanations are offered by this study. First, a possible explanation is that the respondents are classified as digital natives, a generation described to possess ICT skills at an early age and are inherently technology capable. These are individuals who are exposed to digital technologies and generally have access to computers and the Internet (Margaryan, Littlejohn, & Vojt, 2011; Uwizeyimana, 2018). Since acquisition of technical skills to operate technology devices is considered a normalcy among digital natives, it can be inferred that possession of such will not necessarily convert to a positive attitude towards pursuing an IT degree. Second, prior studies have also explored the affordances of ICT among students. Students have used digital technologies mostly for leisure such as gaming, communication and social media (Šorgo, Bartol, Dolničar, & Boh Podgornik, 2017). Through this luxury and coupled with access to a wealth of information available online, students at this age may conduct preliminary research on their interests in their college degree plans that are not necessarily specializing in IT.

Prior research have identified job availability as an influential factor in the attitude towards pursuing a technology-oriented degree (Kuechler et al., 2009). While the T-statistics score of 0.930 for H2 implies a positive influence, this cannot be supported at a significant level. Several reasons are offered by this study. First, majority of the respondents are coming from Institution B and that majority of IT job opportunities are concentrated in Metro Manila where business processing outsourcing (BPO) companies have established their presence (Price, Francisco, & Caboverde, 2016). Although major multinational companies engaged in the technology sector have slowly ventured into regions outside the capital, the job opportunities brought forth by such movements are yet to be enjoyed by residents in the provinces(Price et al., 2016). Second, job prospects among Filipinos are still largely anchored on opportunities outside the Philippines (Welsh, 2016). The economy is primarily driven by remittances of Overseas Filipino Workers who are working in industries such as nursing and hospitality (Aquino, Tuazon, Yap, & David, 2017; Castro-Palaganas et al., 2017; Joia & dos Santos Vinhais, 2017). The culture of economic success through working overseas is intricately embedded among Filipinos and demonstrates a strong influence in how they perceive job opportunities and consequently their decision to choose their educational path.

Consistent with existing scholarship, job salary (H3) and social image (H4) both positively influence attitude within the proposed research framework with T-Statistics values of 5.068 and 3.421 respectively. The perceived competitive salary rates associated with the ICT industry including the Philippines encourages keen interest towards pursuing an IT degree (Kuechler et al., 2009; Tantuco, 2017). Despite the fact that the social image of IT professionals have been perceived to have a negative image in prior literature (Grim, Harmon, & Gromis, 2006), this may not be true in the Philippine context. IT professionals are regarded as catalysts of innovation who deliver products mostly enjoyed by digital natives.

Lastly, a positive attitude and social norms lead to behavioral intention to pursue an IT degree with values of 6.590 and 10.860 respectively for H5 and H6. Consistent with other studies, a positive attitude is a crucial determinant in the decision making process of students in their academic pathways (Joshi & Kuhn, 2011; Sathapornvajana & Watanapa, 2012). Social norms appear to be the most influential factor in the students' in choosing an IT degree for college. Normative pressures in student life have been research extensively in research. It assumes that peer beliefs and behaviors are influential in the decisions of an individual (Abdullah & Ward, 2016; Camara, Eng-Ziskin, Wimberley, Dabbour, & Lee, 2017). In the context of this study, social norms are represented by people who students primarily interact with such as classmates, friends, advisers and teachers who can significantly influence their decision to attend an IT degree program in higher education.

6. Conclusion and Future Directions

In conclusion, this research aimed to investigate the factors affecting the behavioral intention of K-12 students to pursue a degree in IT. This study has supported the applicability of Theory of Reasoned Action in investigating the factors influencing student's behavior towards pursuing an IT degree. Particularly, it confirms that a high initial salary and a good professional image of working in the IT industry leads to a positive attitude towards an IT degree which further translates to a behavioral intention to pursue a degree in IT. Additionally, the pressures from the student's social environment

such as classmates, friends, and teachers relates to their decision as to which academic direction they want to pursue in the future.

However, the result of the study revealed that a student's computer skills do not necessarily translate to a positive attitude towards pursuing a technology-oriented degree. Several explanations were offered by this study including the fact that the respondents are digital natives who possess ICT skills and are inherently technologically savvy. In addition, the respondents may have used their access to digital technologies, the Internet and its vast array of information to research professions that they are interested in, which may not be necessarily specializing in IT.

Additionally, the study does not support that the availability of IT jobs encourages students to pursue an IT course in college. A possible factor leading to this result is the fact that most BPO and tech companies in the country are concentrated in the urban areas and are yet to be distributed into the other regions. Also, many Filipinos still view job opportunities available abroad particularly in the hospitality and healthcare industry which possibly influence their decisions to choose their academic path.

Several implications can be drawn from this study. For theoretical implications, attitude and social norms are confirmed to be influential in behavioral intention to pursue IT. However, other determinants in addition to job salary and social image of the IT profession may be more appropriate to positively influence the attitude towards pursuing an IT degree. For educational implications, regulatory bodies that govern K-12 should emphasize on active industry-academic curricular integration and promote opportunities in the technology sector. For social implications, to narrow the digital divide, stakeholders of the technology industry should develop a blueprint that will distribute the IT opportunities across the country.

This study is not without limitation therefore the findings should be interpreted with caution. First, although this study examined perspectives from private and public higher educational institutions, the limited number of respondents may limit the generalizability of the results of this research. Second, there was no comparison between the results of institutions A and B, therefore this investigation cannot account for the significant differences of the results of the two sets of respondents. In this regard, we encourage future researchers to focus on the significant differences in attitudes and behavioral intention of students in pursuing an IT degree in different contexts such as public versus private schools, rural versus urban areas, and schools with different K-12 track offerings.

References

Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, *56*, 238–256. https://doi.org/10.1016/j.chb.2015.11.036

Acosta, I. C., & Acosta, A. S. (2017). A Mixed Methods Study on Teachers' Perceptions of Readiness of Higher Education Institutions to the Implementation of the K-12 Curriculum. *Universal Journal of Educational Research*, *5*(7), 1215–1232. https://doi.org/10.13189/ujer.2017.050714

Adams, S. (2015). Money Doesn't Buy Happiness At Work, New Study Says. Retrieved December 11, 2018, from https://www.forbes.com/sites/susanadams/2015/06/18/money-doesnt-buy-happiness-at-work-new-study-says/#7955953f19bc

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, Icek. (1975). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research., *6*(2), 244. https://doi.org/10.2307/2065853

Akbulut, A. Y., & Looney, C. (2007). Inspiring students to complete computing degrees. *Communications of the ACM*, pp. 67–71.

Aquino, R. S., Tuazon, G. P., Yap, T. W., & David, I. B. M. (2017). In search of greener pastures? Investigating Filipino tourism and hospitality management students' willingness to work overseas. *Asia-Pacific Journal of Innovation in Hospitality and Tourism*, *6*(2), 81–90.

Bonifacio, A. L. (2013). Developing Information Communication Technology (ICT) Curriculum Standards for K-12 Schools in the Philippines, 12. https://doi.org/10.3748/wjg.v19.i38.6458

Camara, S. K., Eng-Ziskin, S., Wimberley, L., Dabbour, K. S., & Lee, C. M. (2017). Predicting Students' Intention to Plagiarize: an Ethical Theoretical Framework. *Journal of Academic Ethics*, *15*(1), 43–58. https://doi.org/10.1007/s10805-016-9269-3

Castro-Palaganas, E., Spitzer, D. L., Kabamalan, M. M. M., Sanchez, M. C., Caricativo, R., Runnels, V., … Bourgeault, I. L. (2017). An examination of the causes, consequences, and policy responses to the migration

of highly trained health personnel from the Philippines: the high cost of living/leaving—a mixed method study. *Human Resources for Health*, *15*(1), 25. https://doi.org/10.1186/s12960-017-0198-z

Cohen, J., & Hanno, D. M. (1993). An analysis of underlying constructs affecting the choice of accounting as a major. *Issues in Accounting Education*, *8*(2), 219. Retrieved from https://search.proquest.com/docview/210925575?accountid=190474

Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, *19*(2), 189. https://doi.org/10.2307/249688

DepEd. (2013). Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013. *Official Gazette*. Retrieved from https://www.officialgazette.gov.ph/2013/09/04/irr-republic-act-no-10533/

E. Myers, M., & Beise, C. (2001). *Nerd Work: attractors and barriers perceived by students entering the IT field.* https://doi.org/10.1145/371209.371236

Emeghebo, L. (2012). The image of nursing as perceived by nurses. *Nurse Education Today*, *32*, e49–e53. Retrieved from http://10.0.3.248/j.nedt.2011.10.015

Fiorito, J., & Dauffenbach, R. (1982). Market and Nonmarket Influences on Curriculum Choice by College Students Author (s): Jack Fiorito and Robert C . Dauffenbach Published by : Sage Publications , Inc . Stable URL : https://www.jstor.org/stable/2522295 Market and Nonmarket Influences on CU. *Industrial and Labor Relations Review*, *36*(1), 88–101.

FocusEconomics. (2018). Philippines Economy - GDP, Inflation, CPI and Interest Rate. Retrieved November 15, 2018, from https://www.focus-economics.com/countries/philippines

Glerean, N., Hupli, M., Talman, K., & Haavisto, E. (2017). Young peoples' perceptions of the nursing profession: An integrative review. *Nurse Education Today*, *57*, 95–102. https://doi.org/https://doi.org/10.1016/j.nedt.2017.07.008

Granger, M. J., Dick, G., Jacobson, C. M., & Slyke, C. Van. (2007). Information Systems Enrollmetns: Challenges and Strategies. *Journal of Information Systems Education*, *18*(3), 303–312.

Grim, B. J., Harmon, A. H., & Gromis, J. C. (2006). Focused Group Interviews as an Innovative Quanti-Qualitative Methodology (QQM): Integrating Quantitative Elements into a Qualitative Methodology. *The Qualitative Report*, *11*(3), 516–537. https://doi.org/10.1007/978-3-531-92053-5

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). Partial least squares structural equation modeling (PLS-SEM). *Sage Publisher*. https://doi.org/10.1108/EBR-10-2013-0128

Hendel, D. D., & Lewis, D. R. (2005). Quality assurance of higher education in transition countries: Accreditation - accountability and assessment. *Tertiary Education and Management*, *11*(3), 239–258. https://doi.org/10.1080/13583883.2005.9967149

Ifinedo, P. (2017). Examining students' intention to continue using blogs for learning: Perspectives from technology acceptance, motivational, and social-cognitive frameworks. *Computers in Human Behavior*, *72*, 189–199. https://doi.org/10.1016/j.chb.2016.12.049

Jackling, B., & Calero, C. (2006). Influences on Undergraduate Students' Intentions to become Qualified Accountants: Evidence from Australia. *Accounting Education*, *15*(4), 419–438. https://doi.org/10.1080/09639280601011115

Joia, L. A., & dos Santos Vinhais, J. C. (2017). From closed source to open source software: Analysis of the migration process to Open Office. *Journal of High Technology Management Research*, *28*(2), 261–272. https://doi.org/10.1016/j.hitech.2017.10.008

Joshi, K. D., & Kuhn, K. (2011). What Determines Interest in an IS Career ? An Application of the Theory of Reasoned Action. *Communications of the Association for Information Systems*, *29*(September 2011), 133–159.

Korn Ferry Institute. (2018). *Future of work The Global Talent Cruch Economy Perspective: Hong Kong:* Retrieved from https://focus.kornferry.com/wp-content/uploads/2018/06/KF-Talent-Crunch-Country-Report-HK-Digital.pdf

Kuechler, W. L., Mcleod, A., & Simkin, M. G. (2009). Why Don't More Students Major in IS? *Decision Sciences Journal of Innovative Education*, *7*(2), 463–488.

Kumar, A., & Kumar, P. (2013). *An Examination of Factors Influencing Students Selection of Business Majors Using TRA Framework*. *Decision Sciences The Journal of Innovative Education* (Vol. 11). https://doi.org/10.1111/j.1540-4609.2012.00370.x

Lee, Y., & Lee, S. J. (2006). *The competitiveness of the information systems major: An analytic hierarchy process*. *Journal of Information Systems Education* (Vol. 17).

Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance learners. *American Journal of Distance Education*, *15*(2), 41–51. https://doi.org/10.1080/08923640109527083

Margaryan, A., Littlejohn, A., & Vojt, G. (2011). Are digital natives a myth or reality? University students' use of digital technologies. *Computers and Education*, *56*(2), 429–440. https://doi.org/10.1016/j.compedu.2010.09.004

Mau, W.-C. (2016). Characteristics of US Students That Pursued a STEM Major and Factors That Predicted Their Persistence in Degree Completion. *Universal Journal of Educational Research*, *4*(6), 1495–1500. https://doi.org/10.13189/ujer.2016.040630

Mitra, R. M. (2013). Leveraging service sector growth in the Philippines. *ADB Economics Working Paper Series*, *366*(366), 1–31. https://doi.org/10.2139/ssrn.2321536

Mohammad, N. K. (2016). the Perception of the Parents and Students on the Implementation of K – 12 Basic Education Program in the Philippines, *1*(July), 978–602.

Montebon, D. R. T. (2014). K12 Science Program in the Philippines: Student Perception on its Implementation. *International Journal of Education and Research*, *2*(12), 153–164.

Moos, D. C., & Azevedo, R. (2009). Learning With Computer-Based Learning Environments: A Literature Review of Computer Self-Efficacy. *Review of Educational Research*, *79*(2), 576–600. https://doi.org/10.3102/0034654308326083

Occupational Employment and Wages. (2013). https://doi.org/10.1021/ja011916o

Peinado, S., & Ramírez, J. (2014). Effect of Learning Styles and Computational Self-Efficacy in Internet Forum Performance. *Investigación y Postgrado*, *25*, 145–168.

Price, N. A., Francisco, J. P., & Caboverde, C. E. (2016). *IT-BPO in the Philippines: A Driver of Shared Prosperity? SSRN*. https://doi.org/10.2139/ssrn.2880408

Ramírez-Correa, P. E. (2017). Relationship Between Cyber Plagiarism and the Big Five Personality Traits: an Empirical Study in a Chilean University. *Holos*, *5*, 125. https://doi.org/10.15628/holos.2017.5191

Ringle, C., Wende, S., & Becker, J. (2015). SmartPLS 3. https://doi.org/http://www.smartpls.com

Sathapornvajana, S., & Watanapa, B. (2012). Factors affecting student's intention to choose IT program. *Procedia Computer Science*, *13*, 60–67. https://doi.org/10.1016/j.procs.2012.09.114

Sheikh, A., Naqvi, S. H. A., Sheikh, K., Naqvi, S. H. S., & Bandukda, M. Y. (2012). Physician migration at its roots: A study on the factors contributing towards a career choice abroad among students at a medical school in Pakistan. *Globalization and Health*, *8*. https://doi.org/10.1186/1744-8603-8-43

Shin, S., Rachmatullah, A., Roshayanti, F., Ha, M., & Lee, J.-K. (2018). Career motivation of secondary students in STEM: a cross-cultural study between Korea and Indonesia. *International Journal for Educational and Vocational Guidance*, *18*(2), 203–231. https://doi.org/10.1007/s10775-017-9355-0

Smith, S. M. (2002). The Role of Social Cognitive Career Theory in Information Technology based Academic Performance. *Information Technology, Learning, and Performance Journal*, *20*(2), 1–10.

Snyder, J. (2013). Exploitation and demeaning choices. *Politics, Philosophy and Economics*, *12*(4), 345–360. https://doi.org/10.1177/1470594X13496067

Šorgo, A., Bartol, T., Dolničar, D., & Boh Podgornik, B. (2017). Attributes of digital natives as predictors of information literacy in higher education. *British Journal of Educational Technology*, *48*(3), 749–767. https://doi.org/10.1111/bjet.12451

Soykan, F., & Kanbul, S. (2018). Analysing k12 students' self-efficacy regarding coding education. *TEM Journal*, *7*(1), 182–187. https://doi.org/10.18421/TEM71-22

Stanko, T., Zhirosh, O., & Krasnikhin, D. (2015). Why girls with an interest in IT in high-school do not choose an IT career. *Proceedings of 2014 International Conference on Interactive Collaborative Learning, ICL 2014*, 131–137. https://doi.org/10.1109/ICL.2014.7017760

Tantuco, V. (2017). Jobstreet 2017 report: Highest paying jobs for fresh grads. Retrieved January 2, 2019, from https://www.rappler.com/life-and-style/career/164232-jobstreet-2017-fresh-graduates-report-highest-paying-jobs

Torkzadeh, G., Chang, J. C.-J., & Demirhan, D. (2006). A contingency model of computer and Internet self-efficacy. *Information & Management*, *43*(4), 541–550. https://doi.org/10.1016/J.IM.2006.02.001

UNESCO. (2008). Philippine Education For All 2015: Implementation and Challenges. Retrieved December 11, 2018, from http://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/philippines_efa_mda.pdf

Uwizeyimana, V. (2018). Digital Native (ness), Mobile Technologies and Language Proficiency in Rwanda, *11*(2), 121–138.

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model : Four Longitudinal Field Studies. *Management Science*, (January 2015). https://doi.org/10.1287/mnsc.46.2.186.11926

Welsh, M. (2016). *The Philippine Labor Brokerage State and the Overseas Filipino Workers*. Retrieved from https://digitalcommons.csumb.edu/cgi/viewcontent.cgi?article=1016&context=caps_thes_all

World Bank. (2012). *Putting Higher Education to Work Skills and Research for Growth in East Asia*. Retrieved from http://siteresources.worldbank.org/EASTASIAPACIFICEXT/Resources/226300-1279680449418/7267211-1318449387306/EAP_higher_education_fullreport.pdf

Zhang, W. (2007). Why IS: Understanding Undergraduate Students' Intentions to Choose an Information Systems Major. *Journal of Information Systems Education*, *18*(4).