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Investigating the Intention to Work Overseas Among Filipino Engineering Students by Testing a Structural Equation Model Based on an Extended Theory of Planned Behavior

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ABSTRACT

This study examined the antecedents of Filipino engineering students' intention to work overseas, applying the theory of planned behavior (TPB) (involving attitude, subjective norm, and perceived behavioral control) extended with migration push and pull factors (PPF) (involving salary and compensation, career prospects, and quality of life). Structural equation modeling using 1,706 questionnaire responses proved that the PPF dimensions were indistinguishable, while another factor distinct from attitude, evoking the perceived enjoyment of working overseas (PEJ), emerged. The TPB and PPF were identified as important antecedents of intention ($R^2 = 0.667$). PEJ had no direct effect on it but was significant along with PPF in explaining attitude, which mediated PEJ and PPF's indirect effects on intention. Additionally, evidence was found for the moderation and effects of student characteristics (including gender, year level, school type, income group, and migration network). The findings provide opportunities for integrating human factors into labor migration-related strategies.

Keywords: *labor migration, youth migration, engineering students, structural equation modeling, extended theory of planned behavior*

Introduction

The number of overseas Filipino workers (OFWs) was estimated to be 2.2 million in 2019, in addition to millions of other Filipino migrants who are undocumented and those who have permanently resided abroad (Philippine Statistics Authority [PSA] 2020, Commission on Filipinos Overseas 2013). Around 17 of every 100 OFWs are engineers and other professionals, also known as highly-skilled workers who are generally characterized by higher education (PSA 2020, Institute of Labour Science and Social Affairs and International Labour Organization 2014). In the last few years, there has been an increasing number of professionals who are leaving the Philippines. A recent study by the Department of Science and Technology-

Science Education Institute (DOST-SEI 2011) confirmed that from 1998 to 2009, the

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emigration of Filipino science-and-technology (S&T) professionals, of which engineers comprised a bulk, tremendously grew by 148%. The study also noted that the volume of migrating engineers had been increasing throughout those years, as opposed notably to the stable outflow of healthcare workers. Albuero and Abella (2002) observed that more Filipino professionals were emigrating than being added to the national workforce, concluding that the engineering profession experienced the worst manpower depletion due to the labor migration, surpassing other fields such as nursing.

The continuous emigration of highly-skilled workers leads to brain drain, which has considerable repercussions: fiscal losses; slowing down of current and future economic growth and development; reduction in attracting foreign direct investment and research and development activities; decreased productivity and wages, and inequality in the remaining manpower, especially in the skilled workers' complement—the unskilled workers (Docquier and Rapoport 2007). According to Albuero and Abella (2002), the brain drain in the Philippines is more pronounced due to the larger number of permanent OFWs who are considered to be composed mostly of seasoned professionals or “the best and the brightest” in their fields (Lowell and Findlay 2001, pp. 12).

Notably, according to government data, the bulk of overseas-job applicants in all types of occupations are young college graduates (Battistella and Liao 2013). Most of the present youth, whose age range from 15 to 24 years old according to the United Nations definition as cited by Asis and Battistella (2013), belong to Generation Z, which began in 1997 (The Economist 2019). This young generation has been characterized as generally more educated than their predecessors, with a more career-focused mindset earlier on in their lives, already having ambitious plans and preparations for their future careers (The Economist 2019, Alpay *et al.* 2019). Asis and Battistella (2013) mention that the educational choices of younger Filipinos are set toward getting overseas jobs, familiar with migrating as a “fact of life”, being born and raised in a culture of migration that has permeated the Filipino society (International Organization for Migration [IOM] and Scalabrini Migration Center [SMC] 2013, Battistella and Liao 2013). The youth is now a cause for concern to the brain drain and for the Philippines in achieving long-term prosperity. The loss of (future) Filipino engineers prevents economic growth and development, which will also hinder the nation from soon joining the developed world, a goal which is envisaged in its *AmBisyon Natin 2040* long-term development plan (Salvosa 2017).

Despite the negative impacts of brain drain, the Philippines has no concrete plans in controlling it. This lack of a clear government policy against brain drain has met criticism (Battistella and Liao 2013). It also seems that the government focuses more on maximizing the benefits from the OFWs (IOM and SMC 2013). While remittances have already become a major economic driver, Lowell (2001), as cited by Battistella and Liao (2013), says that these still cannot compensate for the brain drain. DOST-SEI (2011) calls for the review and amendment of the existing labor-migration legislations and policies to retain the critical S&T human resources, including the engineers. World Bank (2015) supports a better policy approach, in which human factors such as people's decision-making process form the basis of the strategy. In situations that are driven by people's choices, solutions based on a deeper understanding of their decisions lead to more effective policies that better achieve the desired behavior changes, compared to traditional policy tools, which prove to be costly and unproductive (Knott, Muers, and Aldridge 2008, Madrian 2014).

Thus, it is considered that a comprehensive understanding of the motivations and the characteristics of individuals seeking to work abroad will offer information about future migration movements (Migali and Scipioni 2018). This, along with identifying the extent to which these factors affect intention, can help leaders in preparing behaviorally-informed policies and interventions, such as those for inducing shifts in a population's behavior and culture (Knott, Muers, and Aldridge 2008). Using behavioral intention as a proxy for the behavior of migration has been validated by previous studies (Van Dalen and Henkens 2008,

Tjaden, Auer, and Laczko 2018). They found that intentions are a good predictor of actual migration behavior. Furthermore, Van Dalen and Henkens (2008) observed that potential migrants who have left and those who are yet to migrate were rather alike. Thus, examining the intention from the perspective of non-migrants still in the home country, such as students, is valid. Fouarge and Ester (2007) say that their insights are as important and excellent as those of people who have already emigrated.

The literature describes that migration occurs due to “push” and “pull” factors, occurring at each end of migration: at the migrants’ home that compelled them to leave, which is the push factor; and at their destination that attracted them there, which is the pull factor (Kline 2003). Lowell and Findlay (2001) say that skilled migrants are encouraged by higher incomes and better employment opportunities. These may be accompanied by push factors such as low wages, which are said to drive many Filipino workers to emigrate (Asis 2017). Martin and Zürcher (2008) say that these are not straightforward, and their importance can vary over time or among populations.

Against this background, studying the mindset of the current engineering students who are members of Generation Z is of high importance. However, only two studies have tackled migration intentions and/or motivations of Generation Z students over the past few years. In particular, Wazir *et al.* (2017) elicited Malaysian engineering students’ specific push and pull factors and characteristics relative to their potential migration, while, Gherheş, Dragomir, and Cernicova-Buca (2020) also attempted to predict the intention of those from Romania using similar variables. The latter authors noted that their study results explained only 17.9% of the variance in the intention, and additional research was thus needed. According to Ajzen (1991), general dispositions and traits are poor predictors of intention and actual behavior. Without utilizing behavioral models, they are also inadequate from a policy perspective since behavioral intervention programs based on theory are more effective in changing people’s behavior than those following no theoretical framework (Ajzen 2020).

Other scholars (e.g., Weerasinghe and Kumar (2014) and Yurtkoru, Dauda, and Sekarawisut (2017)) have used the well-known theory of planned behavior (TPB) for predicting the intention. However, they failed to include the role of the push and pull factors of migration, which are also important to the decision-making process to work overseas. Empirical research is thus, notably fragmented. This study attempts to bridge the gap and provide a more holistic analysis by integrating the push and pull factors and the TPB.

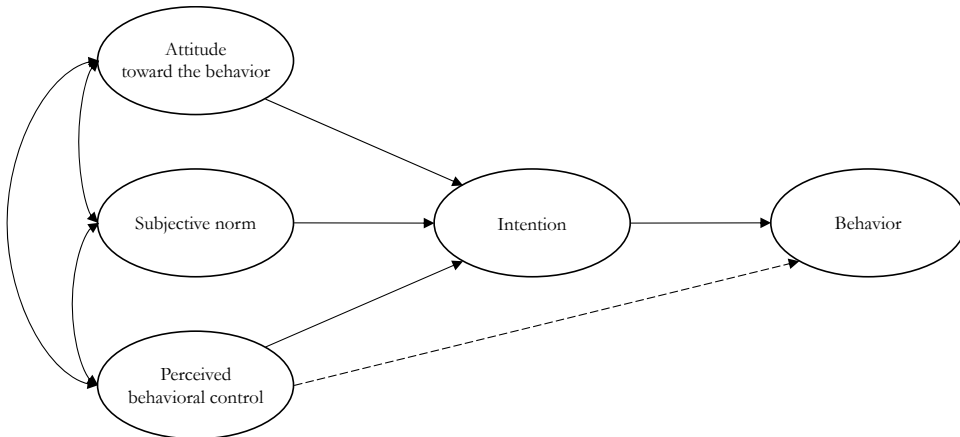
The study, therefore, aims to determine the various factors contributing to the formation of the current Filipino engineering students’ intention to work overseas after graduating from the university by applying an extended theory of planned behavior, i.e., one that accounts for push and pull migration factors. The remaining part of the paper first describes the framework of the extended TPB and its elements, then presents the methodology used to test it and achieve the research objective. Subsequently, the results are shown and discussed. Finally, the paper concludes by noting the potential policy implications and the limits of the study, which may guide policy makers and future researchers.

Framework

The study’s theoretical framework applies an extended theory of planned behavior (TPB) to map the migration intention of the Filipino engineering students in a more holistic manner. It involves the behavioral construct pertaining to the students’ intention to work overseas (IWO) as a dependent variable of six constructs: attitude toward working overseas (ATD), subjective norm (SjN), perceived behavioral control (PBC), salary, and compensation (SAC), career prospects (CRP), and quality of life (QOL). Additionally, ATD is dependent on SAC, CRP, and QOL, thus also acting as a mediator on their relationship with IWO. There are five moderating variables (i.e., gender, year level, school type, income group, and migration

network). The following briefly describes the TPB (see Figure 1) and the other factors hypothesized to affect IWO and the extended TPB model.

The TPB is a psychological theory widely used to predict a behavioral intention, which eventually leads to the actual behavior or action itself, as illustrated in Figure 1 (Ajzen 2020). Armitage and Conner's (2001) meta-analysis concluded that the TPB performs quite well in accounting for the execution of behavior from the intention to act on it. The TPB postulates that an intention to perform a behavior (like working overseas) can be explained by the individual's attitude toward the behavior, subjective norm, and perceived behavioral control (Ajzen 2020).



Source: Ajzen (1991)

Figure 1. Theory of planned behavior

The attitude toward the behavior is an individual's overall evaluation of a given behavior (Ajzen 1991). It is a specific attitude, which refers in the context of this study to the students' attitude toward working overseas (ATD). Empirical evidence by Chatzisarantis *et al.* (2005) has indicated the strong association between the attitude toward behavior and the intention to assume the behavior, which demonstrates the ability of an individual's attitude to predict their intention of performing a behavior. The more the students believe that working overseas is favorable for them, then the TPB predicts that the students will have a stronger intention to perform it.

The second predictor of intention according to the TPB is the subjective norm, which refers to one's beliefs of whether important people in that individual's life would like them to perform a behavior (Ajzen 1991). In the present study, this factor, denoted by SJN, refers to the students' impression of their important others' approval of them to work overseas, which may affect how they would carry it out.

Finally, perceived behavioral control refers to one's perception of their ability to accomplish an activity. As people do not always have complete volitional control over doing an activity like migration, control factors or the resources available to a person can command their intention and behavior. Indeed, successful migration requires certain qualifications and resources (IOM and SMC 2013). In this study, perceived behavioral control is assigned as PBC, which corresponds to the students' trust in their control or capability to work overseas.

In light of the arguments discussed above, this study hypothesized that the engineering students' attitude toward working overseas, subjective norm and perceived behavioral control positively influence their intention to work overseas after graduation.

There are other potentially influential variables that would be considered. In the circumstance of migration, the literature suggests that the push and pull factors (PPF) are also considered and pondered when deciding to relocate, so they must be playing some role in the intention. Lim *et al.* (2016) has determined that three dimensions of the push and pull factors—salary and compensation, career prospects, and quality of life—can explain college students' intention to work in another country after graduation. This study adopted those push and pull factors to the TPB model as the additional factors directly influencing IWO. Thus, it is hypothesized that the students' beliefs of salary and compensation (SAC), career prospects (CRP), and quality of life (QOL) in the context of working overseas positively influence their intention to work overseas.

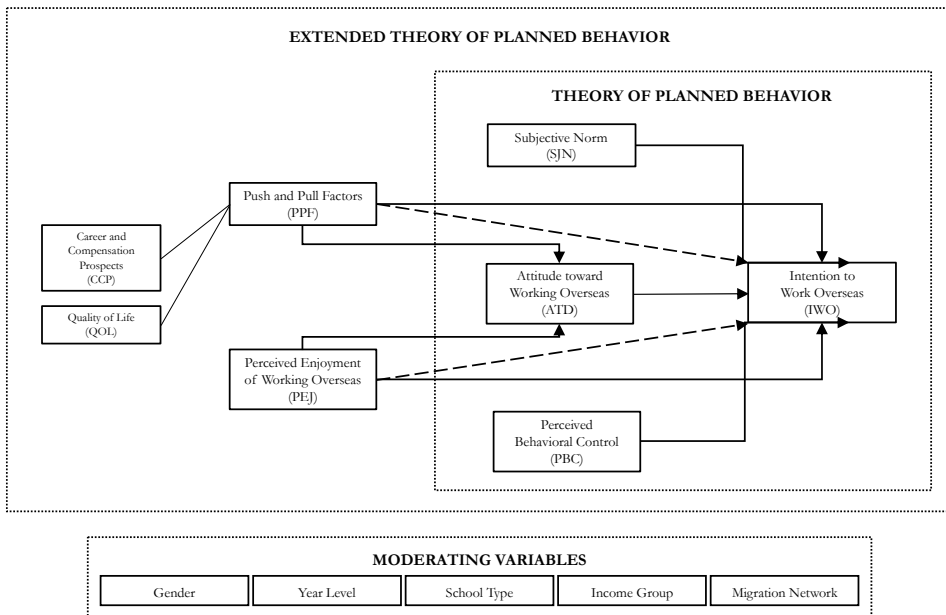
More than that, the push and pull factors were also assumed to be contributing factors to shaping the students' ATD. Attitudes are also considered to be a function of behavioral beliefs, which refer to one's beliefs of the particular outcomes of performing an activity (Ajzen 2020). Since the push and pull factors are certain attributes (e.g., better quality of life) that an individual may associate to the activity of interest (i.e., working overseas), they are behavioral beliefs, and an attitude toward working overseas may develop based on those beliefs, as in the expectancy-value model (Ajzen 1991). In this case, the existence of the relationship between the dimensions of the push and pull factors and IWO is also supposed to be explained by ATD as a mediating variable (Hair *et al.* 2019). In light of these considerations, it is also hypothesized that SAC, CRP, and QOL positively influence ATD and that these three dimensions of the push and pull factors also positively influence IWO indirectly through their influence on ATD.

The push and pull factors were the additional factors added to the TPB model. Despite its usefulness and popularity, the TPB has been criticized by different scholars who believe that the attitude, subjective norm, and perceived behavioral control were sometimes insufficient to explain the intention to perform a behavior (Atombo *et al.* 2017). Ajzen (1991, pp. 199), who invented the TPB, stated that it is “open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention.” Attempts to improve the TPB's explanatory power in certain contexts added more constructs to the model, such as perceived usefulness and perceived enjoyment (Lu, Zhao, and Wang 2009, Atombo *et al.* 2017).

Perceived enjoyment can be another factor appropriate for inclusion in the model. It is defined as the extent to which an activity (like working overseas) may be perceived as enjoyable apart from any of its expected consequences (Teo and Noyes 2011). Happiness is said to be a determinant of emigration (Ivlevs 2014). Moreover, as indicated by Goss and Lindquist's (1995, pp. 317), “the prospects of adventure are particularly important to younger migrants, both male and female.” However, as enjoyment is also known as an attitude according to Nabi and Kremer (2004), it is expected that the two factors would be undifferentiated.

Finally, there are five moderating variables: gender, year level, school type, income group, and migration network. Male OFWs dominate the number of Filipino migrant engineers, while youth who are male are known to have stronger migration intentions (DOST-SEI 2011, Migali and Scipioni 2018). At the same time, though, there is an ongoing feminization of migration evident in the current wave of Filipino workers (Ocampo 2019). On the other hand, there is interest in the students' educational background, such as year level and school type, where the former relates to proximity to graduation and the latter to the category of school being attended because this would reveal whether these conditions also affect the decision to work overseas. Considering also the students' household income may contextualize how their intention is linked to their income status since migration is supposed to be economically-driven. Finally, migration networks are known to encourage further migration (Martin and Zürcher 2008).

Figure 2 illustrates the initial framework of the study as have been described above.



Note: Solid arrows represent direct effects while dash-dot arrows indicate both direct effects and the indirect effects through the mediator (ATD).

Figure 2. Initial framework of the study

Methodology

Quantitative Approach

In order to meet the study's objectives which are reflected in the formulated hypotheses, quantitative methods were used. Quantitative studies have a major strength of producing objective and representative explanations of a population, unlike the findings of a qualitative study, which may be more difficult to generalize due to the chances of bias (Collis and Hussey 2014).

The quantitative approach was based on performing covariance-based structural equation modeling (SEM) on the study's theory. SEM seems appropriate because it allows more complex models with multiple independent and dependent variables (e.g., mediation models), unlike first-generation statistical tools such as linear regression that can only analyze levels of relationship between a dependent variable and a set of predictors serially (Gefen, Straub, and Boudreau 2000). It is also better adapted for modeling latent constructs, which are inferred by multiple indicators. Indicators can be validated whether they are reliable, and the SEM analysis also minimizes measurement error, which is not assumed in the traditional regression approach (Hair *et al.* 2019).

In this study, the two-step SEM approach was followed (Schnusenberg, De Jong, and Goel 2012). The first step covered the measurement model, verifying that the constructs were being adequately represented by their indicators, which was required so the structural equation model—the second step which focused on testing the hypothesized relationships among the constructs as well as assessing model fit—would be likewise valid (Hair *et al.* 2019).

With this, data that could be quantified into numbers to find patterns of association for testing of formulated hypotheses were used. A web-based questionnaire consisting of 36 statements reflecting the study's seven constructs was used to collect the data. All the indicators for inferring the constructs, listed in Table 1, were adapted from Weerasinghe and

Kumar (2014) and Lim *et al.* (2016), who had already tested them empirically among college students. The indicators were also chosen to be adapted in the present study because of their good internal consistency based on their Cronbach's alpha which is more than the 0.7 acceptable minimum threshold (Hair *et al.* 2019). The statements were presented as Likert-scale items, which respondents rated using a 1–5 rating, where 1 means strongly disagree, and 5 means strongly agree. Five-point Likert scales were applied for less time, and cognitive effort among the respondents (Chyung *et al.* 2017) and because this number resulted in the best SEM factor analysis (Leung 2011).

Table 1. Constructs and their indicators and sources

Construct	Indicator	Source
Attitude toward working overseas	ATD1. Doing an overseas job is a good idea	Weerasinghe and Kumar (2014)
	ATD2. Doing an overseas job is a wise idea	
	ATD3. I like the idea of doing an overseas job.	
	ATD4. Doing an overseas job is beneficial	
	ATD5. Doing an overseas job is valuable	
	ATD6. Doing an overseas job would be pleasant	
	ATD7. Doing an overseas job will make me feel happy	
	ATD8. Doing an overseas job will make me feel positive	
	ATD9. Doing an overseas job will make me feel good.	
Subjective norm	SJN1. People who influence my behavior/decisions would think that I should do an overseas job	Weerasinghe and Kumar (2014)
	SJN2. People who are important to me would think that I should do an overseas job	
	SJN3. People whom I respect would expect me to do an overseas job	
Perceived behavioral control	PBC1. I would be able to do an overseas job	Weerasinghe and Kumar (2014)
	PBC2. Doing an overseas job is entirely within my control	
	PBC3. I have the resources and the knowledge, and the ability to do an overseas job	
Salary and compensation	SAC1. I will receive a higher salary if I work abroad	Weerasinghe and Kumar (2014)
	SAC2. My job pay will match the work that I do abroad	
	SAC3. The salary level offered in the Philippines is low	
	SAC4. I predict that pay in the Philippines will not increase as fast as the rising cost of living	
	SAC5. I feel my work is being valued if I work abroad	
Career prospects	CRP1. My job requirement is clear if I work abroad	Lim <i>et al.</i> (2016)
	CRP2. My long-term career development can be achieved by working abroad	
	CRP3. I will have a greater chance to achieve my career goal if I work abroad	
	CRP4. I can enhance my expertise if I work abroad	
	CRP5. I can enhance my skills if I work abroad	
Quality of life	QOL1. I believe that standards of living are better abroad	Weerasinghe and Kumar (2014)
	QOL2. I will be more satisfied to work abroad than in the Philippines	
	QOL3. I believe job security is higher abroad than in the Philippines	
	QOL4. I will have opportunities to improve my standard of living by working abroad	
	QOL5. I will be able to lead an enjoyable life by working abroad	
Intention to work overseas	IWO1. I intend to do an overseas job in the near future (i.e., after graduation)	Weerasinghe and Kumar (2014)
	IWO2. I expect to do an overseas job in the near future (i.e., after graduation)	
	IWO3. It is likely that I will do an overseas job in the near future	
	IWO4. I predict that I will do an overseas job in the near future	
	IWO5. Although I will likely do an overseas job, I think that I may not do an overseas job but have a job in the Philippines in the future	
	IWO6. I expect that I will do an overseas job	

Sampling and Data Collection

The sample of the study comprised Filipino undergraduate engineering students enrolled in the Philippines. According to the Commission on Higher Education (CHED 2021), which combines engineering and technology students in data reporting, there were 412,397 of them enrolled as undergraduates in the Philippines as of the academic year 2019–2020. Non-probability sampling was applied since participation was intended to be voluntary (Galloway 2005).

A list of universities per region in the country that offer baccalaureate programs in engineering was generated, to which the questionnaire could be sent for distribution to their engineering students (Galloway 2005). Overall, 149 schools in 16 of the Philippines' 17 regions were sought. There were 32 schools that agreed to cooperate, which were provided with the link to the online questionnaire. Of the 32 schools, only 28 in 13 regions successfully recommended the study to their students. The 28 schools conveyed the link to their students through virtual means available to them and their students. The responses were collected from January to April 2021.

A total of 1,909 engineering students from the 28 schools completed the online questionnaire. There were 203 respondents (10.63%) that were discarded due to their incomplete or invalid inputs, leaving 1,706 (89.37%) valid observations for the statistical analyses (see Tables 2 and 3). The sample cannot be regarded as random due to the non-probability sampling approach. For example, there were noticeable discrepancies in the percentage of the student respondents in some regions compared to CHED's (2021) data. For instance, the bulk of the engineering (and technology) students (22.32%) were enrolled in the National Capital Region (NCR). Although most invitations were sent to NCR schools for that reason, the respondents from NCR only constituted 5.28% of the study's sample.

Table 2. Distribution of the engineering student respondents by region ($n = 1,706$)

Region	Frequency	Distribution (%)
CAR (Cordillera Administrative Region)	61	3.58
NCR (National Capital Region)	90	5.28
Region I (Ilocos Region)	194	11.37
Region II (Cagayan Valley)	89	5.22
Region III (Central Luzon)	248	14.54
Region IV-A (CALABARZON)	197	11.55
Region IV-B (MIMAROPA)	155	9.09
Region VII (Central Visayas)	107	6.27
Region VIII (Eastern Visayas)	265	15.53
Region IX (Zamboanga Peninsula)	71	4.16
Region X (Northern Mindanao)	141	8.26
Region XI (Davao Region)	53	3.11
Region XIII (CARAGA)	35	2.05

Table 3. Distribution of the engineering student respondents by characteristics ($n = 1,706$)

Characteristics	Frequency	Distribution (%)	
Gender	Female	717	42.03
	Male	989	57.97
Age	17	2	0.12
	18	132	7.74
	19	345	20.22
	20	457	26.79
	21	380	22.27
	22	228	13.36
	23	109	6.39
	24	53	3.11

Table 3. Continued...

Characteristics		Frequency	Distribution (%)
Student classification	Freshman	404	23.68
	Sophomore	456	26.73
	Junior	510	29.89
	Senior	336	19.70
Engineering course	Agricultural and Biosystems	183	10.73
	Biomedical	8	0.47
	Chemical	87	5.10
	Civil	734	43.02
	Computer	81	4.75
	Electrical	223	13.07
	Electronics	34	1.99
	Environmental and Sanitary	5	0.29
	Geodetic	87	5.10
	Industrial	90	5.28
	Mechanical	168	9.85
	Mechatronics	6	0.35
School type	Private	599	35.11
	Public	1107	64.89
Monthly family income	Below PHP 11,000	718	42.09
	PHP 11,000 – PHP 22,000	465	27.26
	PHP 22,000 – PHP 44,000	263	15.42
	PHP 44,000 – PHP 77,000	131	7.68
	PHP 77,000 – PHP 131,000	70	4.10
	PHP 131,000 – PHP 219,000	29	1.70
Has at least one family member/relative living and/or working abroad?	Yes	1069	62.66
	No	637	37.34

Data Preparation

The 1,706 valid observations, through their Cook's distances (D), were inspected for outliers that could distort the model estimation. A data point with D greater than 1 may be an influential outlier (Hair *et al.* 2019); none was found to be a cause for concern in the SEM analysis, so the sample remained at 1,706. Normality was also assessed by checking the Likert data's skewness and kurtosis; none exceeded the recommended limits of |3| for skewness and |10| for kurtosis (Teo and Noyes 2011). Thus, while it cannot be concluded that the Likert data were normal, their non-normality was regarded as inconsequential to the SEM analysis.

Next, the sample was randomly split approximately by half: the first random subsample was used as a calibration sample (m_0) in SEM, while the other was a validation sample (m_1) for checking the results of m_0 . Splitting is ideal, especially when the objective is prediction (Faraway 2014). According to Chae *et al.* (2002), this can also minimize self-selection or sampling bias. Although recommendations in the literature, such as ensuring anonymity and data privacy, had been followed to eliminate common method bias (CMB), it remains a possibility, so it was assessed by conducting Harman's single factor test through an exploratory factor analysis. The total variance extracted was 41.400% in m_0 and 41.997% in m_1 , which both did not reach more than 50%. Thus, CMB appears not to be a significant issue (Rodríguez-Ardura and Meseguer-Artola 2020).

Results and Discussion

Measurement Model

The internal reliability of the sets of indicators according to Cronbach's alpha was found to be acceptable in the present study. However, because this measure alone cannot guarantee that the constructs were actually being measured by their indicators, convergent and discriminant validities needed to be established (Hair *et al.* 2019). Convergent validity measures how correlated the indicators are to form a construct, which is usually determined by calculating each construct's composite reliability (CR) and average variance extracted (AVE) values. CR is another measure of internal reliability, the recommended minimum value for which is 0.7, but 0.6 is also acceptable (Hair *et al.* 2019, Srinivasan, Lilien, and Rangaswamy 2002). Meanwhile, AVE is the average percentage of variation in the indicators explained by their construct, which should be greater than 0.5 (Hair *et al.* 2019). Discriminant validity was evaluated to check if the constructs were distinct from one another, which was verified through the Fornell-Larcker criterion, wherein the correlations (shared variance) between two constructs must be less than the square root of their AVEs (Hair *et al.* 2019).

Since the indicators and their constructs were prespecified, confirmatory factor analysis (CFA) in IBM SPSS Amos version 24.0 was used to verify this assumption that the indicators represent their respective constructs. The initial measurement model of both samples had insufficient convergent and discriminant validity in some of the constructs, such as the students' attitude toward working overseas (ATD). Salary and compensation (SAC), career prospects (CRP), and quality of life (QOL), which were expected to be distinct dimensions of the push and pull factors, were also sharing high correlations. The initial model then had to be respecified to achieve validity. Exploratory factor analysis (EFA) using m_0 was performed in IBM SPSS Statistics version 26.0 to inspect the factor structure of the data, identifying misspecifications or insufficient loadings contributing to the fit and validity issues (Brown 2015, Farrell 2008). The EFA revealed these indicator variables, which were then removed from the analysis while taking into account content or face validity (Hair *et al.* 2019). Notably, the indicators of SAC, CRP, and QOL cumulated under one factor while ATD split into two factors, which explained the CFA issues.

SAC, CRP, and QOL were combined and respecified in the CFA to serve as subconstruct indicators of a higher-order construct, denoted by PPF (push and pull factors). According to Farrell (2008), high correlations among constructs suggest that they may be referring to just one construct. This consolidation would make the model more parsimonious and interpretable (Chen, Sousa, and West 2005). It is not illogical because the three are all push and pull factors, each representing part of the overall weight of which on an individual. This study then argues that these are just a single dimension, as opposed to the understanding that they are distinct elements in terms of migrating abroad for employment (e.g., Lim *et al.* 2016).

However, while CRP and QOL had no convergent validity issues, SAC was still being measured poorly by its indicators. More often, there is nothing else to SAC other than the belief of the expected incentives of overseas jobs. SAC as a construct was untenable, and it could just be another indicator, such as to CRP, because SAC is also a work-related attribute. Therefore, the SAC construct had been dropped, except for SAC5, which was reassigned to CRP, which in turn was renamed as CCP, for career and compensation prospects. However, salary (as reflected in SAC3 and SAC4, which pertain more to the students' perception of the domestic wages) still logically represented an important element of the intention to work overseas. For this reason, SAC3 and SAC4 were repurposed in the post hoc analysis of the structural model as a psychographic factor, another moderating variable in the model, to see whether the structural model of the hypothesized relationships between the constructs and the constructs themselves would change based on the students' opinions about the salary offered in the Philippines.

ATD had also been collapsed because indicators ATD7–9, which evoke the perceived enjoyment of working overseas (PEJ), proved to be a distinct factor, despite the indicator grouping and results obtained by Weerasinghe and Kumar (2014). This separation could enhance the understanding of the interplay of the factors affecting the formation of IWO. To the authors' knowledge, no previous research has studied perceived enjoyment as a specific determinant in the intention to work overseas. On the other hand, PEJ was also recognized to be subordinate with respect to ATD because if an individual perceives that working overseas is enjoyable, then they may develop and show a positive attitude toward it, which may also turn into a stronger intention to relocate abroad for employment, so it had been designated as contributing to ATD, like PPF.

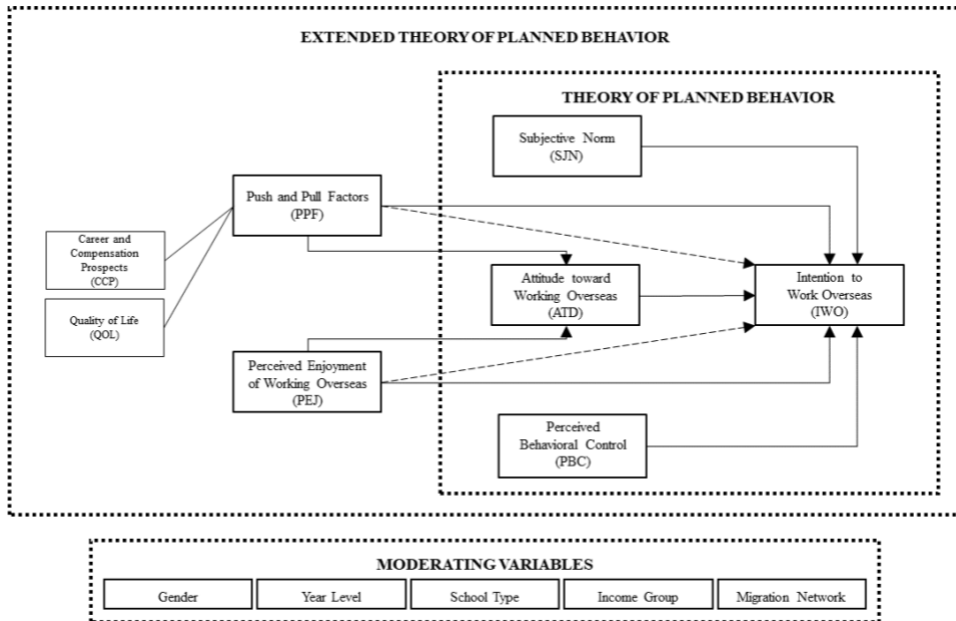
Residual terms of some indicators in the CFA measurement model, as suggested by modification indices, were also estimated to account for their high correlation, which was due to very similar wording (Brown 2015). As shown in Table 4, there were no longer indications of validity issues in the calibration sample's results, which was also the case with the validation sample. Convergent validity in the first- and second-order constructs had been achieved because the CR and AVE were greater than 0.6 and 0.5, respectively, which means that all the latent constructs were sufficiently being inferred by their indicators. Discriminant validity had also been established in both orders, which means that all the constructs were statistically independent.

Table 4. Convergent and discriminant validity results of the final measurement model

	Convergent Validity				Discriminant Validity			
	CR	AVE	IWO	ATD	SJN	PBC	PEJ	PPF
	$n_0 = 821$							
IWO	0.921	0.702	0.838					
ATD	0.874	0.698	0.734	0.836				
SJN	0.861	0.674	0.587	0.534	0.821			
PBC	0.685	0.521	0.674	0.583	0.526	0.722		
PEJ	0.918	0.788	0.693	0.788	0.583	0.594	0.888	
PPF	0.942	0.891	0.720	0.819	0.571	0.580	0.737	0.944
CCP	0.858	0.504						
QOL	0.864	0.560						
	$n_1 = 885$							
IWO	0.929	0.724	0.851					
ATD	0.877	0.705	0.701	0.839				
SJN	0.876	0.702	0.604	0.583	0.838			
PBC	0.687	0.525	0.689	0.553	0.518	0.724		
PEJ	0.916	0.784	0.692	0.781	0.567	0.666	0.885	
PEJ	0.940	0.886	0.698	0.818	0.568	0.594	0.776	0.941
CCP	0.869	0.527						
QOL	0.838	0.508						

The process of model re-construction has been found in other similar studies. They also updated the initially identified framework after a few misspecifications were detected. One notable research is that of Ropovik (2014), who encountered and resolved a similar scenario wherein he had an initial model but had to update it after detecting misspecification in the data. Consequently, he had to split his latent construct into two, which also have a recognizable hierarchical relationship, like what the present study faced. The emergence of an unplanned construct such as PEJ must be confirmed by an independent sample as well (Hair *et al.* 2019). The validation sample corroborated the results of the calibration sample, substantiating the model respecification. If the average of the students' ratings across the five valid indicators of IWO were to be calculated, this would yield 3.74, signaling that an average engineering student's intention to work overseas is indeed positive (Chanwaiwit 2019). It is likely that they

will migrate after graduation. Using the measurement model that had just been tested and developed, the structural equation model, following the respecified framework shown in Figure 3, could now be properly estimated, identifying the influential factors to the students' intention.



Note: Solid arrows represent direct effects while dashed arrows indicate indirect effects

Figure 3. Respecified framework of the study

Structural Model

Path Analysis

In estimating the structural model based on the respecified framework, the two random subsamples, $n_0 = 821$ and $n_1 = 885$, were again utilized for cross-validation. Figure 3 shows the structural models from the calibration samples generated in Amos using maximum likelihood. The path estimates demonstrate the intensity of the causal relationships of the constructs, which are summarized in Table 5, along with their significance, standardized error, and t-value. Except for the direct effect of PEJ on IWO, all the hypotheses formulated were empirically verified and supported because of the statistically significant effects.

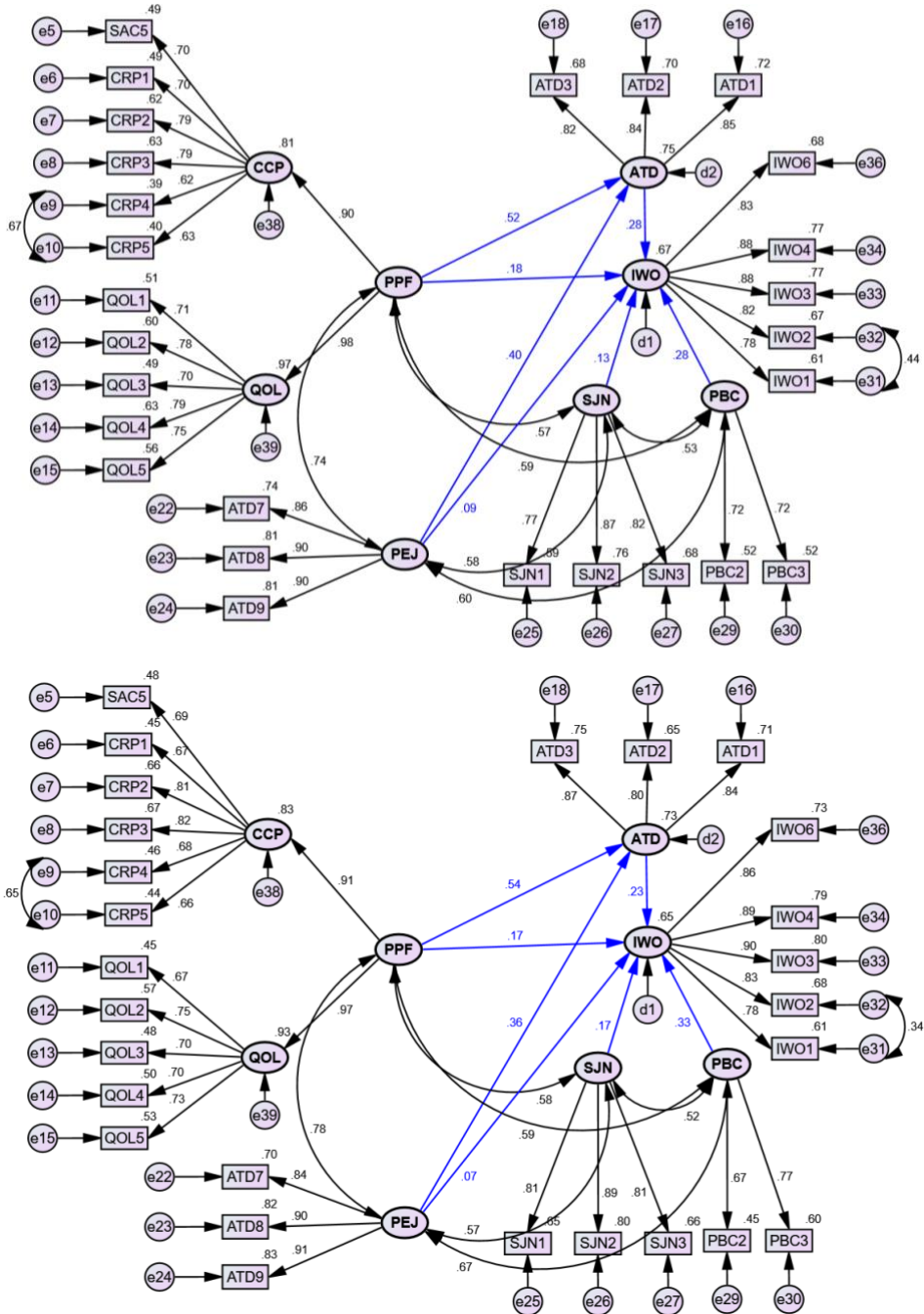


Figure 3. Structural models of $n_0 = 821$ (top) and $n_1 = 885$ (bottom)

Table 5. Path estimates of the structural models ($n_0 = 821$ and $n_1 = 885$)

Path	$n_0 = 821$			$n_1 = 885$		
	Standardized Estimate	Standard Error	T-value	Standardized Estimate	Standard Error	T-value
ATD→IWO	0.282***	0.066	4.397	0.228***	0.059	3.888
SJN→IWO	0.131***	0.038	3.576	0.169***	0.035	4.848
PBC→IWO	0.283***	0.051	6.014	0.330***	0.057	6.713
PPF→IWO	0.182**	0.083	3.054	0.167**	0.090	2.699
PPF→ATD	0.524***	0.065	10.941	0.543***	0.076	10.338
PEJ→IWO	0.091	0.048	1.751	0.069	0.052	1.246
PEJ→ATD	0.403***	0.038	9.445	0.361***	0.043	7.818

Note: A double asterisk (**) and a triple asterisk (***) denote significance at 1% and 0.1%, respectively.

Firstly, it was clear from the results of the estimated models that the three determinants of a behavioral intention in the TPB acted as important determinants of IWO. The strong significant effect of ATD on IWO entails that the students' favorable appraisal of working outside the Philippines is an important factor that leads to higher migration intention. SJN also significantly affected IWO, which means that, in planning to work overseas, the students also rely on the views of their family, relatives, friends, or other important people to which they refer. However, compared to ATD, SJN's intensity on IWO was lower, suggesting the students' strong ability to decide on their own accord, aside from just conforming to others' expectations or wishes. Finally, PBC's effect on IWO emerged to be more powerful than those of the first two constructs. While this is consistent with Armitage and Conner (2001), this seems to contradict the results of Ramoo, Lee, and Yu (2018), who investigated the migration intention of working-age, practicing engineers using the TPB as well. In fact, they did not find a significant relationship between the two constructs, as did Weerasinghe and Kumar (2014)—from whom the PBC items used in the present study were adapted—who noticed this among graduate students.

The current study's finding is not unreasonable because PBC largely depends on the individual's experiences and circumstances. Because of their status as students, it was possible that the engineering student respondents in the study had perceived the requirements of overseas employment to be mandatory. Unlike practicing engineers or most graduates, students still do not satisfy most of the requirements in overseas employment, such as a professional license (IOM and SMC 2013). Money, which adults probably have more of, is also needed (Carling and Schewel 2017). The qualifications and resources needed to successfully work in another country were more of a concern for the students than it was for the adults, which translated into PBC playing a much more decisive role in their migration plans. The result shows that it was the most important factor in the students' intention to work overseas. This also suggests that the students were aware of the conditions for going abroad, for which they might already be planning also in order to carry out their migration in the future.

With that, the study demonstrated that the TPB can predict the intention of Filipino engineering students to work overseas. However, this was not enough to explain it, which was a deficiency that had been observed from the literature. Other variables needed to be considered.

The students' beliefs of the push and pull factors made a strong contribution in their migration decision-making process. PPF was able to predict the students' intention to work overseas. However, more of the influence of PPF was on the students' attitude, demonstrating their beliefs of overseas employment were less relevant to their migration intention.

For the relationship between PEJ and IWO, PEJ's effect on IWO was statistically insignificant in both samples, implying that although many students found the idea of working

overseas as enjoyable other than the likely personal rewards that migration would entail, it did not mean that this could predict the students’ migration intention for employment. Despite that, PEJ had a significant effect on ATD. Praveena and Thomas (2014), who investigated social media use, had also found that perceived enjoyment does positively affect the individuals’ attitude toward it, but not their behavioral intention to continue using it.

Mediation Analysis

Since the study’s interest was also placed on ATD’s mediation of the indirect effects of PPF (as well as PEJ) on IWO, mediation analysis was conducted. PPF and PEJ, which had been found to be crucial in shaping the students’ ATD, could also be affecting the intention through these effects on ATD. Indirect effects between two variables through another variable acting as a mediator can be calculated by taking the product of the direct effect between the first variable and the mediator, and that of the mediator and the second variable. These are enumerated in Table 6.

PPF’s indirect effect on IWO was significant, meaning that, by virtue of the students’ attitude, the expected results, or benefits of working in another country also lead to their intention to migrate. ATD is a mediator on the relationship between PPF and IWO, albeit partially because PPF already affects IWO directly. On the other hand, PEJ’s indirect effect was relatively mild but still significant. This entails a relationship between PEJ and IWO exists, which is fully mediated by ATD. Thus, PPF and PEJ also increase IWO by increasing ATD. The youth’s attitude can be a good target on which efforts for controlling potential migration may be focused as the attitude has a tremendous role in the migration intention and presumably to the migration behavior.

Table 6. Results of mediation analysis ($n_0 = 821$ and $n_1 = 885$)

Relationship	Standardized Direct Effect		Standardized Indirect Effect		Mediation
	n_0	n_1	n_0	n_1	
PPF→ATD→IWO	0.182**	0.167**	0.148**	0.133**	Partial
PEJ→ATD→IWO	0.091	0.069	0.114**	0.082**	Full

Note: A double asterisk (**) denotes significance at 1%.

Model Fit

After testing the theory, the fit of the model to the observed data was assessed. There are several goodness-of-fit indices that can be used (Gefen, Straub, and Boudreau 2000). Aside from the chi-square (χ^2) and degrees of freedom (df), these include absolute fit indices like the relative χ^2 , the root mean square error of approximation (RMSEA), and the standardized root mean residual (SRMR) that should be less than 5, 0.08, and 0.1, respectively, to be acceptable, and incremental fit indices like the comparative fit index (CFI) and the Tucker-Lewis index (TLI), which both have a conventional cut-off point of at least 0.90 (Hair *et al.* 2019, Brown 2015). The study’s model of the decision-making process to work overseas can be regarded as relatively good in terms of adhering to reality (see Table 7). According to Hu and Bentler (1999), who examined the adequacy of the various rules of thumb for acceptable model fit in SEM, models with values near or less than 0.06 for RMSEA and 0.08 for SRMR have relatively good fit, and a stronger evidence of fit may be claimed if the CFI and TLI values were more than 0.95.

Table 7. Fit of the structural models ($n_0 = 821$ and $n_1 = 885$)

	χ^2	df	Relative χ^2	RMSEA	SRMR	CFI	TLI
$n_0 = 821$	839.179	307	2.733	0.046	0.034	0.966	0.961
$n_1 = 885$	983.935	307	3.205	0.050	0.034	0.960	0.954
Standard Cut-off			< 5	< 0.08	< 0.10	> 0.90	> 0.90

As what also emerged in the results, IWO's coefficient of determination (R^2) was 0.667 in n_0 and 0.652 in n_1 . A meta-analysis by Armitage and Conner (2001) of various studies applying the TPB showed that the attitude, subjective norm, and perceived behavioral control accounted for 39% of the intention on average. Thus, it appears that the model explained the intention to work overseas fairly well. On the other hand, the R^2 value of ATD was 0.748 in n_0 and 0.730 in n_1 . Combined with the excellent model fit, the R^2 values indicate the structural equation model's good predictive performance (Gefen, Straub, and Boudreau 2000). More effective policies, such as behavioral intervention programs intended to change the behavior and culture of migration, can be developed, provided the important direct and indirect predictors of IWO that the study revealed.

Multigroup Analyses and Latent Mean Comparisons

In this post hoc analysis of the structural model, the relationships among the constructs were assessed if these were moderated or altered by the students' characteristics, including gender, year level, school type, income group, and migration network. The links or paths were compared between the two subgroups in each factor: female and male; underclassmen (freshmen and sophomores) and upperclassmen (juniors and seniors); student respondents from lower and higher income groups¹; and respondents with at least one family abroad and those without.

The model would also be compared based on the students' perception of the salary in the Philippines, based on SAC3 and SAC4, which had an acceptable Cronbach's alpha of 0.710 ($N = 1,706$), indicating sufficient internal consistency. Following Mitchell (1994) and Hair *et al.* (2019), psychographic segmentation was performed using k -means clustering in SPSS to generate two clusters of the whole sample based on SAC3 and SAC4: the first group ($n = 1,037$) was composed of respondents who viewed the local salary as less favorable; the other group ($n = 669$) had a more favorable perception of the salary in the Philippines.

Measurement invariance had been established in the measurement model; thus, the indicators were measuring the constructs equivalently across groups of the students based on their characteristics (Byrne 2016). In accordance with Floh and Treiblmaier (2006), the multigroup analyses were performed in Amos in a hierarchical approach, where the paths were constrained to be equal for both groups in each factor and compared to the unconstrained model, the paths of which were freely estimated. If the χ^2 of the constrained and unconstrained models were significantly different, then moderation of the direct effects due to the underlying trait exists. Additionally, the existence of moderation in the path level was determined by freely estimating the model, except one of the seven paths, which was the only path that had an equality constraint.

Finally, the means of the main latent constructs were compared between the two groups of students related to each characteristic or trait. In SEM, since the constructs are

¹ The student respondents' monthly household income could be one of the seven income brackets—poor, low income, lower middle income, middle middle income, upper middle income, upper income, and rich—corresponding to the thresholds according to Albert *et al.* (2020), which had been rounded to the nearest thousandth in the questionnaire for ease and practicality; the first two income brackets were considered as the lower income group and the remaining five were the higher income group for comparison purposes.

latent, it is not possible to compute a group's means without referring to another group. Latent means can only be interpreted in a relative sense. The difference between the latent means was obtained by choosing one of the two groups in each factor as a reference group, the latent means for which were set to zero. The latent means for the other group were freely estimated, corresponding to the difference from the reference group. If a factor's latent mean differences were significant, then it would mean that it also affects the decision-making of going abroad for employment.

Table 8 presents the results of the multigroup analyses of the structural model. Meanwhile, Table 9 shows the differences in the means of the main latent constructs. Both tables indicate the significance of the estimates or the differences and the t-values in the parentheses.

Table 8. Results of the multigroup analyses

Path	Gender		χ^2 Difference ($\Delta df=1$)
	Female ($n=717$)	Male ($n=989$)	
ATD→IWO	0.235*** (3.393)	0.268*** (4.810)	0.016
SJN→IWO	0.129*** (3.752)	0.178*** (4.924)	0.881
PBC→IWO	0.317*** (6.216)	0.290*** (6.408)	0.620
PPF→IWO	0.157* (2.181)	0.181*** (3.360)	0.102
PEJ→IWO	0.138* (2.252)	0.038 (0.791)	1.726
PPF→ATD	0.562*** (9.577)	0.517*** (11.378)	0.055
PEJ→ATD	0.354*** (6.609)	0.395*** (10.070)	0.654
All 7 Paths ($\Delta df=7$)			6.795
	Year Level		
	Underclassmen ($n=860$)	Upperclassmen ($n=846$)	
ATD→IWO	0.303*** (5.143)	0.235*** (3.576)	0.622
SJN→IWO	0.111** (2.907)	0.188*** (5.537)	2.374
PBC→IWO	0.298*** (6.091)	0.336*** (6.828)	0.355
PPF→IWO	0.254*** (4.640)	0.057 (0.816)	3.954*
PEJ→IWO	-0.002 (-0.026)	0.160** (3.248)	4.574*
PPF→ATD	0.426*** (9.082)	0.633*** (11.702)	13.806***
PEJ→ATD	0.480*** (10.814)	0.289*** (6.484)	8.149**
All 7 Paths ($\Delta df=7$)			26.876***
	School Type		
	Private ($n=599$)	Public ($n=1,107$)	
ATD→IWO	0.238** (2.920)	0.253*** (4.938)	0.011
SJN→IWO	0.206*** (5.018)	0.103** (3.162)	4.101*
PBC→IWO	0.261*** (4.989)	0.351*** (7.719)	1.778
PPF→IWO	0.148* (2.047)	0.206*** (3.786)	0.379
PEJ→IWO	0.116 (1.713)	0.053 (1.150)	0.602
PPF→ATD	0.521*** (9.072)	0.549*** (11.943)	0.182
PEJ→ATD	0.420*** (8.103)	0.348*** (8.701)	0.891
All 7 Paths ($\Delta df=7$)			6.366

Note: Asterisk (*), a double asterisk (**), and a triple asterisk (***) denote significance at 5%, 1%, and 0.1%, respectively.

Table 8. Continued...

	Income Group		χ^2 Difference ($\Delta df=1$)
	Lower ($n=1,183$)	Higher ($n=523$)	
ATD→IWO	0.224*** (4.518)	0.352*** (3.915)	2.206
SJN→IWO	0.129*** (3.967)	0.173*** (4.278)	1.313
PBC→IWO	0.348*** (7.515)	0.260*** (5.154)	1.058
PPF→IWO	0.215*** (4.181)	0.076 (0.929)	1.110
PEJ→IWO	0.032 (0.662)	0.139* (2.226)	2.019
PPF→ATD	0.501*** (11.890)	0.603*** (8.873)	4.274*
PEJ→ATD	0.400*** (10.420)	0.337*** (6.131)	1.345
All 7 Paths ($\Delta df=7$)			17.252*
Migration Network			
	With ($n=1,069$)	Without ($n=637$)	
ATD→IWO	0.213*** (3.544)	0.317*** (5.111)	1.006
SJN→IWO	0.165*** (5.322)	0.123** (2.819)	1.043
PBC→IWO	0.306*** (7.409)	0.321*** (5.326)	0.001
PPF→IWO	0.176** (3.196)	0.160* (2.314)	0.023
PEJ→IWO	0.100* (2.022)	0.061 (1.006)	0.250
PPF→ATD	0.511*** (11.901)	0.564*** (8.887)	1.381
PEJ→ATD	0.423*** (10.939)	0.311*** (5.705)	1.686
All 7 Paths ($\Delta df=7$)			4.260

Note: Asterisk (*), a double asterisk (**), and a triple asterisk (***) denote significance at 5%, 1%, and 0.1%, respectively.

Table 9. Comparison of the latent means

Moderating Variable	Group	IWO	ATD	SJN	PBC	PPF	PEJ
Gender	Female ^R	0	0	0	0	0	0
	Male	-0.078 (-1.938)	-0.109** (-2.706)	-0.072 (-1.745)	0.002 (0.043)	-0.055* (-2.030)	-0.071 (-1.666)
Year Level	Underclassmen ^R	0	0	0	0	0	0
	Upperclassmen	0.075 (1.888)	0.012 (0.303)	-0.008 (-0.210)	0.065 (1.605)	0.024 (0.904)	-0.045 (-1.055)
School Type	Private ^R	0	0	0	0	0	0
	Public	-0.037 (-0.855)	-0.070 (-1.619)	-0.016 (-0.365)	-0.180*** (-4.159)	-0.139*** (-4.777)	-0.085 (-1.840)
Income Group	Low ^R	0	0	0	0	0	0
	High	0.092* (2.055)	0.104* (2.363)	0.056 (1.229)	0.126** (2.778)	0.139*** (4.659)	0.080 (1.695)
Migration Network	With ^R	0	0	0	0	0	0
	Without	-0.143*** (-3.530)	-0.136*** (-3.321)	-0.111** (-2.699)	-0.094* (-2.268)	-0.118*** (-4.211)	-0.094* (-2.193)
Local Salary Perception	Less Favorable ^R	0	0	0	0	0	0
	More Favorable	-0.409*** (-10.295)	-0.494*** (-12.423)	-0.293*** (-7.328)	-0.336*** (-8.236)	-0.453*** (-15.482)	-0.382*** (-9.291)

Note: R means the reference group while asterisk (*), a double asterisk (**), and a triple asterisk (***) denote significance at 5%, 1%, and 0.1%, respectively.

No moderation on the constructs' relationships due to gender, migration network, and local salary perception was detected, meaning that the model parameters were statistically invariant across the groups related to these factors. The effects of PPF and PEJ on ATD and those of SJN, PBC, ATD, and PPF on IWO were being perceived on the same level by the students regardless of their gender, presence of relatives abroad, and of how they saw or rated the domestic wages. For PEJ's impact on IWO, which had been identified as non-significant

earlier using the n_0 and n_1 samples, it appeared to be significant for one of the two groups (such as for females but not for males) in all factors (except school type). The results show for which groups of the students the perceived enjoyment of working overseas could predict the intention. In most cases, however, no significant χ^2 difference was yielded, demonstrating that, while the path from PEJ to IWO was meaningful to one group and not the other, the difference was not large enough to dismiss that they were equivalent, and hence the test of the moderation on the path was rejected.

Although gender was not a moderator, it was giving rise to differences in the constructs. Female students generally reported higher latent means, especially in the ATD and PPF constructs, where the difference from male students was significant. Meanwhile, as may be expected, students who had a less favorable perception of the local salary in the Philippines reported significantly higher latent means in all the constructs, as did those who indicated that they had at least one family member or relative abroad. According to Asis and Battistella (2013), migration networks formed in transnational families whose members (usually older kin such as parents) live in other countries harbor the culture of migration, which is felt by the left-behind children. They may then be more inclined to migrate as well, which is verified by the present study's finding.

The remaining variables were able to act as moderators on the paths in the model. While the latent means were statistically identical between the under and upperclassmen, there was moderation of PPF and PEJ's effects on both the IWO and ATD due to the students' year level. Based on the results, the path from the push and pull factors to the intention was not meaningful for upperclassmen. The push and pull factors all went on to shape their attitude. In fact, PPF's effect on ATD, which was also significant among the underclassmen, was significantly higher for upperclassmen than for their younger counterparts. Meanwhile, the upperclassmen's perceived enjoyment of working overseas was able to predict their intention. Normally, since the upperclassmen are nearer to graduation, they are concerned about their more imminent transition to a working life. Although they are interested in the likely positive advantages of labor migration as shown by the stronger influence of the push and pull factors on their attitude, in contemplating about their intention to work overseas, they seemed to pay more attention to the other constructs, such as if working in a foreign country would be enjoyable or make them happy.

When analyzing underclassmen, the situation appeared to be the opposite. Unlike in the upperclassmen, the younger students' beliefs of the push and pull factors explained their intention, while perceived enjoyment did not as in the general sample. PEJ exerted all of its influence on the underclassmen's attitude, which was significantly stronger than the effect that was observed in the upperclassmen. The idea that working abroad would entail an enjoyable experience increases the younger students' attitude toward working overseas, but not their intention, which they ponder by relying on their beliefs of the push and pull factors and not by looking at whether working outside their home country would be enjoyable. The students' decision-making then seems to depend on their proximity to graduation. The beliefs of the push and pull factors are a basis for the intention years before graduation, while perceived enjoyment is not, which becomes relevant in their intention when they are closer to joining the workforce and engaging in overseas employment.

The type of the students' school did not moderate the model, except the path from the subjective norm to the intention to work overseas; SJN's effect on IWO was stronger for students in private schools than those in public schools. Generally, the latent means were lower for students attending public school, particularly in the PBC and PPF constructs.

Income group was also able to act as a moderating variable on one path, which was from PPF to ATD. The result shows that the influence of the push and pull factors on the attitude was stronger for individuals in the higher income group, whose household income is greater than PHP 22,000.00 per month, than those in the lower-income group. The latent

mean analyses found that the higher income group had higher latent means. It was only in the SJN and PEJ constructs where the differences were not significant. Migali and Scipioni (2018) have observed that most individuals in the middle- and low-income countries who intend to migrate have a higher income, which might be explained by the present study's finding confirming the significantly higher latent means (e.g., attitude or perceived behavioral control) of those in the higher income group.

It is worth noting that, because of the attitude as a mediating variable, the push and pull factors were determined to not mainly translate to the intention, which is especially apparent among those in the higher income group and the upperclassmen, whose intention was not significantly affected by the push and pull factors, which instead influenced their attitude toward working overseas. Although the engineering students believe in the positive advantages of labor migration, these beliefs may not automatically lead to the intention to work overseas.

Summary and Conclusion

While mobility is human nature that should not be impeded, significant outflows of professionals will only sustain brain drain, which provokes scientific and political inquiry (Lowell and Findlay 2001, Gherheş, Dragomir, and Cernicova-Buca 2020). Given the brain drain in the Philippines, along with the sophisticated Filipino youth who appear to be inclined to become expatriates, a comprehensive understanding of the engineering students' intentions and how these are affected by various behavioral factors may be beneficial.

The results demonstrate that the extended TPB can explain the intention ($\bar{x} = 3.74$, which suggests that an average Filipino engineering student has a positive intention to work in another country after graduation). The students' attitude toward working overseas, subjective norm, and perceived behavioral control all can influence the intention to work overseas. The stronger effect of the attitude on the intention than the subjective norm signals that the students have a strong ability to decide on their own, aside from just relying on others' thoughts, to become migrant workers. Meanwhile, perceived behavioral control was the most decisive factor predicting the intention, indicating that many students were mostly concerned about their ability to overcome the obstacles that could prevent them from successfully fulfilling their intention to work overseas. When they graduate, it is possible that they will have greater control over their capability to migrate, which would mean a higher probability that they will work in another country.

Two more factors that could influence the intention were inspected, and it was clear that the push and pull factors of migration (involving career and compensation prospects and quality of life) also affect them to want to work overseas, but more so their attitude. The students' perceived enjoyment of working overseas, which proved to be distinct from their attitude, was not able to predict intention but was nonetheless very influential to shaping the attitude. These factors were able to increase the intention by increasing the students' attitude toward working overseas, which serves as a mediator between them. Additionally, the study provides valuable insights about how the characteristics of the engineering students interacted with their decision-making.

The structural equation model showing the students' decision-making process to work overseas had a good fit to reality because of the excellent model fit. It was also able to predict the intention quite well ($R^2 = 0.667$). This was founded on the responses of over 800 engineering students, cross-validated by a second independent sample of roughly the same size, so the results have some generalizability. Owing to the SEM methodology, another key contribution of this study to theory, which may also have practical implications, is remodeling the push and pull factors of migration as a single second-order construct, in contrast with the

traditional view that these are distinct in the way they are contemplated when planning to migrate.

Policy-wise, the empirical findings offer knowledge on how the students may migrate in the future, which presents opportunities for authorities in developing and implementing proactive strategies that will control the Philippine brain drain. With the results, authorities can target not just the youth who indeed have a positive migration intention, but more importantly, their different considerations, which can be integrated into their strategies.

Behavioral intervention programs can modify the youth's intentions by targeting their stimuli. The respondents generally reported a positive attitude toward working overseas, believing it was a favorable endeavor that they would like to undertake. This view of theirs was strongly connected to their beliefs about overseas employment. For example, the students perceived that working abroad would improve their career prospects. However, highly skilled and highly educated workers still face difficulties in finding employment abroad, while many of those who have jobs are still underemployed and unable to realize their potential (Organisation for Economic Co-operation and Development and European Union 2015). Many Filipino professionals also experience this, as suggested by Battistella and Liao (2013). On the other hand, the programs may also focus on more specific groups such as women, as the female respondents in the study had a significantly higher attitude and beliefs of the push and pull factors. This is despite the Philippines being the top in Asia in terms of gender equality for years, particularly when it comes to the economic participation and opportunity of women in professional and technical positions. The Philippines also ranks fifth in gender wage equality based on World Economic Forum (WEF 2020) and the second-best country in the East Asia and the Pacific region, after New Zealand, based on the Council on Foreign Relations (2021) women's workplace equality index. Information such as these may be highlighted to change the youth's attitude and build confidence in them that the Philippines is relatively conducive to work in compared to other nations.

The youth may also be urged to stay by emphasizing that migration causes social and esteem problems. According to Morosanu (2013), as cited by Hendriks *et al.* (2018), migrants experience social exclusion and trouble in engaging with others in their host countries. Also, being separated from the home country elevates migrants' negative affect, and the left-behind family and friends sustain emotional pain as well due to increased sadness from being disconnected from their migrated loved one. Hendriks *et al.* (2018) observed that not all migrants enjoy and gain happiness when abroad; as one acclimatizes to their destination country, their happiness does not also improve over time. The youth's perceived enjoyment of working overseas can be transformed, which in turn will overturn their attitude about migrating to work elsewhere.

Authorities may benefit from carrying out extensive information campaigns applying social marketing techniques to cause the desired behavior and culture changes. They can use different media and platforms for the behavioral interventions to raise awareness and promote staying and working in the Philippines. As the importance of subjective norm has also been established, role models or individuals like credible and trusted public figures popular among the youth may be employed to target them and reinforce the change, like in the successful "Stay in School" campaign in the United States (Knott, Muers, and Aldridge 2008). Securing the cooperation of environments and influences that are immediate or close to the youth (e.g., schools, communities, organizations, and companies) may be key in turning the behavior shifts to sustained social and cultural norms. Of course, to effectively retain the critical human resources and their contributions in the country, sustained policy efforts over many years are needed.

Limitations and Recommendations for Future Research

The study was not without any limitations. First, the role of salary and compensation in the intention to work overseas is unsettled because it turned out to be unviable as a construct in the study. Future researchers need to come up with more stable questionnaire items that genuinely reflect the beliefs about the work-related rewards and incentives of overseas employment to concretely determine the extent and significance of its influence on the intention. Meanwhile, although relying on structured questionnaires made it possible to evaluate a larger sample size and to have a more generalizable evaluation and results, it inhibited the study from further exploring other reasons that the youth may have related to going abroad for employment. Future studies that will build upon or verify the findings of the current study may benefit from employing a qualitative approach of investigating and analyzing Filipino students and professionals and their responses to various factors in their lives that could be compelling them to migrate.

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