The Impact of COVID-19 on NEETs in Thailand between 2019-2021

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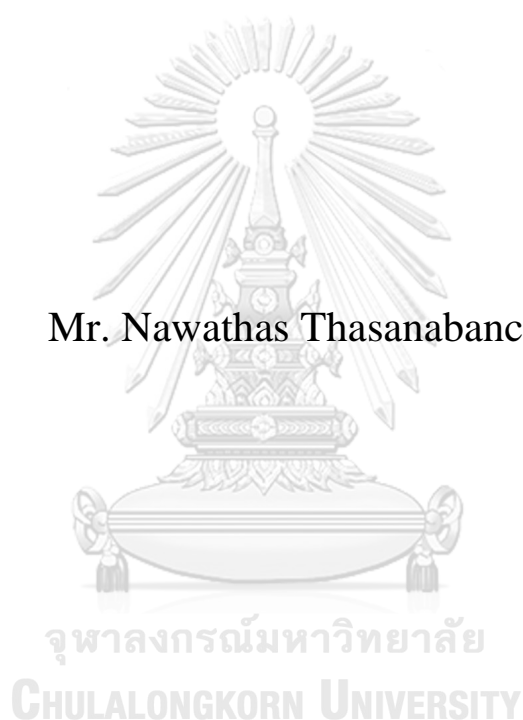
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ผลกระทบของโควิด-19 ต่อเยาวชนที่อยู่นอกระบบการศึกษา นอกระบบการจ้างงาน หรือการพัฒนาทักษะ (NEETs) ในประเทศไทย ระหว่างปี พ.ศ. 2562-2564

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สืบเนื่องจากภาวะสังคมสูงวัยแบบสมบูรณ์ ประเทศไทยจึงพึ่งพาเยาวชนมากกว่าก่อน เพื่อเติมเต็มตลาดแรงงาน
และเยาวชนในปัจจุบัน คือ อนาคตของชาติ อย่างไรก็ตาม เยาวชนไทยกำลังเผชิญกับความยากลำบากในการเปลี่ยนผ่านเข้าสู่
กำลังแรงงาน โดยเฉพาะอย่างยิ่งในช่วงการระบาดของโควิด-19 เยาวชนกว่า 1.3 ล้านคนหรือ ร้อยละ 14 ของประชากรอายุ
15-24 ปี ไม่ได้อยู่ในการศึกษา การจ้างงาน หรือการฝึกอบรม (Not in Education, Employment or
Training: NEET) ดังนั้น การศึกษานี้จึงมีวัตถุประสงค์เพื่อทำความเข้าใจลักษณะของ NEET และผลกระทบของการ
ระบาดของโควิด-19 ต่อ NEET ในประเทศไทย นอกจากนี้ คำว่า "NEET" เป็นมากกว่าการว่างงานและการไม่ทำงาน
สาเหตุที่แท้จริงของการเป็น NEET มาจากปัจจัยต่างๆ และบางส่วนสามารถวิเคราะห์ได้จากปัจจัยทางประชากรศาสตร์ทาง
สังคม การศึกษาดังกล่าว จึงใช้การวิเคราะห์การถดถอยโลจิสติก (Loigistic Regression Analysis) เพื่อวิเคราะห์
ความสัมพันธ์ระหว่างตัวแปรทางประชากรศาสตร์ทางสังคมและความน่าจะเป็นที่จะเป็น NEET ระหว่างปี 2562 ถึง
2564 โดยแบ่งออกเป็นสามช่วง: ก่อนโควิด-19 ระหว่างโควิด-19 และช่วงพักฟื้น ผ่านตัวแปรทางประชากรศาสตร์ทาง
สังคมประกอบด้วยเพศ กลุ่มอายุ ภูมิภาค ระดับการศึกษา สถานภาพในครัวเรือน และสถานภาพการสมรส จากการวิเคราะห์
พบว่า ตัวแปรส่วนใหญ่มีความสัมพันธ์เชิงบวกกับความน่าจะเป็นที่จะเป็น NEET ยกเว้นตัวแปรภูมิภาคและสถานภาพใน
ครัวเรือน ผลปรากฏว่าเยาวชนที่อาศัยอยู่ในกรุงเทพฯและเป็นหัวหน้าครอบครัวลดโอกาสการเป็น NEET แม้ว่าความน่าจะ
เป็นโดยรวมของการเป็น NEET จะแทบไม่เปลี่ยนแปลงระหว่างปี 2562 ถึง 2564 แต่ปฏิเสธไม่ได้ว่าการแพร่ระบาด
ของโควิด-19 ไม่ส่งผลกระทบต่อเยาวชน เนื่องจากสถิติพรรณนา ระบุว่า จำนวนเยาวชนที่ว่างงานเพิ่มขึ้นกว่าร้อยละ 40
ในช่วงเวลาดังกล่าว ในขณะที่จำนวนเยาวชนที่มีงานทำและเยาวชนในด้านการศึกษาแทบไม่เปลี่ยนแปลง จากผลลัพธ์ที่ได้
รัฐบาลควรใช้นโยบายตลาดแรงงานที่แข็งขันอย่างต่อเนื่องเพื่อส่งเสริมการจ้างงานของเยาวชน และจัดทำฐานข้อมูลประชากร
NEET เพื่อสไให้การสนับสนุนและมาตรการต่าง ๆ มีประสิทธิภาพมากขึ้น

สาขาวิชา	เศรษฐศาสตร์ธุรกิจและการจัดการ	ลายมือชื่อนิสิต ....
ปีการศึกษา	2564	ลายมือชื่อ อ.ที่ปรึกษาหลัก ....

Nawathas Thasanabanchong : The Impact of COVID-19 on NEETs in Thailand between 2019-2021. Advisor: Assoc. Prof. YONG YOON, Ph.D.

With the completely aged society, Thailand requires young people more than ever since the young people of today are the future of tomorrow. Nonetheless, young people in Thailand currently face a painful transition for young people into an active workforce, particularly during the COVID-19 pandemic. Over 1.3 million youths or 14 percent of the youth population aged 15-24 years are not in Education, Employment, or Training (NEET). Hence, the study aims to understand the characteristics of NEETs and the impact of COVID-19 on NEETs in Thailand. The "NEET" term is more than unemployment and inactiveness. The rooted causes of being NEETs came from various factors and some can be analysed from social demographic factors. Binary Logistic Regression is utilized to analyse the relationship between social demographic variables and the probability of being NEETs between 2019 and 2021, categorizing in three periods: pre-COVID-19, during COVID-19, and recovery period. The social demographic variables consist of gender, age group, region, education level, household status, and marital status. Most variables share a positive relationship with the probability of being NEETs except region and household variables. The result reveals that youth living in Bangkok and being the household head reduce the odds of being NEETs. Even though the overall probability of being NEETs barely changed between 2019 and 2021, it does not mean that COVID-19 does not impact young people. Since the descriptive statistics indicate the number of unemployed youths rose over 40 percent during the period while the number of employed youths and youth in education hardly changed. Based on the result, the government should implement active labour market policies continuously to foster youth employability and profile the NEET population to establish database for providing more effective support.

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Field of Study:	Business and Managerial Economics	Student's Signature ....
Academic Year:	2021	Advisor's Signature ....

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1.1 Background

Thailand has experienced social and technological transformations that may have an impact on the severity of issues, such as an ageing society that has increased the demand for young labour more than ever before, and technological advancements that have resulted in job losses. Thailand's socio-economic status will be shaped by both emerging technical and demographic trends. The country's job agenda, which includes future skills and skill development, will become increasingly important.

In Thailand, young people share approximately 14 percent of the total population with a declining trend. During the past five years, the number of births has declined from 702,000 persons in 2017 to 587,000 persons in 2021. According to the Population Reference Bureau (2017), the number of Thai young people (15-24 years) is projected to shrink from circa 9 million in 2020 to 6 million by 2030. Since the total fertility rate (TFR) is estimated to fall from 1.48 percent in 2022 to 1.42 percent in 2030, leading to a decreasing population.

Youth unemployment is rather gentle, as Thailand had a relatively lower youth unemployment rate at 5.2 percent in 2020 compared to other neighbouring countries, such as Indonesia (14.5 percent), Vietnam (7.3 percent), and Malaysia (14 percent) (ILOSTAT, 2020). Nevertheless, Thai young people have approximately five times the overall unemployment rate. The data reveals a rather painful transition for young people into an active workforce. In addition, the share of youth aged 15-24 years, who are not in Education, Employment, or Training or so-called NEET is huge at 14.03

percent, and higher for young women (18.45 percent) as compared to young men (9.73 percent). A mismatch between labour market requirements and limited access to jobs due to disadvantaged backgrounds are all potential concerns.

With the COVID-19 pandemic, young people in Thailand have faced unprecedented challenges, such as high unemployment and lockdown measures, which have affected their livelihood. Therefore, it is very important to study the impact of COVID-19 on NEETs in Thailand to identify changes in the profile of NEETs and the probability of being NEETs throughout the difficult period between 2019 and 2021.

1.2 Research Question

How does COVID-19 impact the probability of being youth not in Education, Employment, or Training (NEET) in Thailand between 2019 and 2021

1.3 Research Objectives

1.3.1 To identify the characteristics of young people who are not in Education, Employment, or Training (NEET) in Thailand.

1.3.2 To analyse the probability of being youth not in Education, Employment, or Training (NEET) between 2019 and 2021.

1.3.3 To provide policy recommendations for enhancing youth employability in Thailand.

1.4 Scope of Study

The study focuses on young people who are NEETs. The age range is based on the definitions of adolescents and youth coined by the United Nations[1]. The study includes a situational analysis to identify determinants and implications of COVID-19 on Thailand's NEET population, as well as a summary of young employment and labour market trends. The study will analyse the impact of COVID-19 on the probability of being NEETs by examining the probability of being NEETs in the three periods as follows: the pre-COVID-19 in 2019, during the COVID-19 in 2020, and the recovery period in 2021. Since the first COVID-19 case in Thailand was detected in January 2020 and slightly increased during March 2020, resulting in lockdown measures and economic slowdown (Tantrakarnapa and Bhopdhornangkul, 2020). While the COVID-19 vaccination and lockdown relaxation were implemented in the early to mid-2021.

1.5 Methodology

The study utilises quantitative methodology to analyse the impacts of COVID-19 on NEETs in Thailand. Statistical data from credible organisations and government agencies – such as the National Statistical Office and UN agencies – were analysed quantitatively.

1.6 Research Structure

The study is divided into five sections. The first chapter presents the background and overview of this study, including the research objective, scope of

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[1] Secretary-General's Report to the General Assembly, A/40/256, 1985

study and methodology. The second chapter is a literature review to address the situation of young people and Thailand and its institutional framework. The third chapter is the empirical approach, presenting the conceptual framework and the empirical equation to analyse the impacts of COVID-19 on the NEET population. The fourth chapter provides empirical results, illustrating findings in both the descriptive and inferential statistics and identifying key factors and impacts of COVID-19 affecting the NEET population in Thailand. The fifth chapter presents the conclusion and recommendations.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 The Concept of NEETs

The definition of NEETs has no international standard, unlike for unemployment or employment. According to the ILO (2016), persons meeting the conditions must not be employed and have received any education or training in the four weeks preceding the survey. Nevertheless, there are various interpretations given to the issue of NEETs. For instance, OECD (2013), refers to the NEET as "having few individuals who are neither in employment nor in education or training is a sign of a healthy transition from school to the world". While Eurostat (2014) states that "NEETs are of particular interest to policy-makers as most of them can presumably be considered as facing difficulties in finding a job".

According to TDRI (2020), the statistical data of NEETs can be retrieved from the Labour Force Survey classified by status to compile the data of youth not in education, employment, and training in Thailand as can be seen from the following definitions provided below (National Statistical Office, 2021):

- Unemployed persons: persons 15 years of age and over, who during the survey week did not work even for one hour, had no jobs, business enterprise or farms of their own. Persons in this category include:

  o Those who had been looking for work, applying for a job or waiting to be called during the last 30 days before the interview's date.

- Those who had not been looking for work during the last 30 days before the interview's date but were available for work during the last 7 days before the interview's date.

- Persons not in the labour force[2]: persons who, during the survey week were 15 years of age and over, but were neither employed nor available for employment because they were

  - Engaged in household work

  - Too young or too old

  - Incapable of work because of physical or mental disability or chronic illness

  - Resting

Therefore, young people in employment and education will not be included in the NEET population calculation.

2.2 Challenges

Several studies have widely associated the concept of NEET with negative outcomes. Since there are circumstances related to the NEETs, including unemployment, forgone earnings, and poor health (Godfrey et al., 2002).

According to Scarpetta et al. (2010), the less educated and skilled young people were, the greater the likelihood of unemployment. The OECD (2009) divided young people who have trouble finding a stable job after graduating from high school into two groups: "youth left behind" and "poorly integrated new entrants." Young people who do not meet requirements and are considered disadvantaged are indicated

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[2] Young people with retirement and engaged in studies status are excluded

as "youth left behind." On the Other hand, the "poorly integrated new entrants" group, who may or not have any qualifications or work experience bounces between inactivity, unemployment, and temporary jobs. Countries with a robust traineeship system and/or a less controlled labour market, such as the United Kingdom and Germany, have more youth population, who achieve well in the job market, due to having vocational qualifications or being able to transition between unemployment and employment more easily (Quintini and Manfredi, 2009).

Therefore, the problem of NEET is challenging in Thailand. Since there is a huge gap between formal and non-formal education in terms of quality and reputation (TDRI, 2020). Moreover, the traineeship or apprenticeship system in Thailand is still limited to a certain scope of jobs and is available merely in large cities, such as Bangkok. Hence, it is not yet inclusive for young people nationwide.

2.3 The Current Situation of NEET Population in Thailand

The concept of NEET in Thailand is not well-known. By and large, the general public tends to pay more attention to the number of youth unemployment, focusing on new graduates, which is merely the tip of the iceberg. The situation of the NEET population in Thailand is very complex, relating to social norms, education system, employment opportunities, and structural social problems. Therefore, the key aspects used to analyse the NEET profile focus on education level, gender inequality, and family background (TDRI, 2020).

According to the Labour Force Survey from various years, the number of unemployed youth population has increased significantly from 229 thousand to 316 thousand between 2019 and 2021. While Young females are more likely than young

men to be unemployed. Joblessness affects young females more than it does to young males, and it has been on the rise in latest years. With the current economic shock that COVID-19 is causing in Thailand, the lack of work opportunities for young people is an urgent matter that must be addressed. NEET status is also significantly more common among young women. The NEET rate for young women was 19 percent, whereas it was 10 percent for young males. NEET rates also tend to rise with age, and it disproportionately impacts young married women. Young married women (41 percent) have a substantially higher chance of being a NEET than young married men (6 percent).

Young people aged between 15 and 18 can be engaged merely in certain types of employment with restricted working conditions and special care, according to the Labour Protection Act of 1998. Furthermore, some firms insist on male applicants who have served in the military. In several circumstances, applicants must be at least 21 years old to be considered.

The COVID-19 pandemic has impacted negatively on the global economy and society. It affects people from many walks of life, especially young people aged 15-24. According to numerous studies, young individuals are most exposed to the crisis. The problem of young people who are not in work, education, or training, sometimes known as NEETs, is a critical issue in Thailand that must be addressed. Since more than a million people have been left behind and are unable to reach their full potential.

Due to the COVID-19 pandemic, the total NEET population increased by 8.64 percent to 1.4 million persons due to the higher number of unemployed young people between 2Q2019 and 2Q2020 (TDRI, 2020). Moreover, the study aims to analyse the

changes in the probability of being NEETs between 2019 and 2021, which are the pre-COVID and the recovery phases.

2.4 The Importance of Human Capital Development

Human capital is defined as a person's stock of knowledge, skills, and other personal attributes that enable them to be productive. Investing in human capital includes not just formal education (early childhood, formal school system, adult training programs), but also non-formal training, informal learning, and work experience (Botev et al., 2019). Health is included in broader conceptions of human capital (Flabbi and Gatti, 2018; Bloom and Canning, 2003). Higher education and skill levels have been cited as significant drivers of productivity development, allowing workers to perform more challenging activities and solve more complicated challenges (Rincon Aznar et al., 2015). Returns to schooling differences are effective in explaining productivity across OECD nations and over time (Botev et al., 2019). Other types of capital, such as technology, are complemented by human capital. Technology adoption, for example, will have no practical impact on economic growth processes unless it is spread through education, which develops the basic skills needed to use technology and learn on the job (McMahon, 2000).

Human capital development, on the other hand, has an impact that extends beyond its direct impact on productivity and economic growth. Human capital investment has a positive impact on health, such as increased longevity and lower infant mortality; increased democratisation, and human rights and other social-related issues (McMahon, 2000). All of this has an indirect impact on economic growth.

2.5 Past Related Literature

The profile of NEETs is diverse from each location and country. Since data collection and survey in each country are built differently in terms of questionnaires despite binding with the international standards. While there is no clear international standard of NEETs besides the interpretation of the International Labour Organization (ILO) describing the NEETs as "youth not in education, employment, or training". By and large, the key characteristics are normally related to being disconnected from education and work. Therefore, it is very essential to understand who the NEETs are and what are their key characteristics based on the available demographic variable in the Labour Force Survey (Table 1). The following section reviews the past literature and studies associated with the characteristics of NEETs.

2.5.1 Gender Disparity in Young People

According to the World Bank (2019), in Georgia and Armenia, young men and women have a different transition from school to work. Since young men mostly shift from school to the workforce, while most young women remain inactive and out of the labour force (World Bank 2019). Young women have higher NEET rates at least 30 percentage points above male counterparts in countries with large gender gaps, such as Pakistan, Honduras, and Guatemala (ILO, 2019).

Gender community value also influences the lack of gender equality. Young pregnant women are often forced to drop out of school, which significantly affects their learning continuity (TDRI, 2020; Paweenawat & McNown, 2014 as cited in Khomsod (2021)). Ralston et al. (2022) indicate that women mostly have the long-term effect of being NEET and higher compared to men in the aspect of employability

and returning to the workforce. Even though the odds of later employment are higher for young male NEETs, the overall probability of economic inactivity is higher for women. In many countries, women tend to have higher rates of disconnection from school and work since they particularly provide care to young children (Palmer and Small, 2021) Therefore, gender inequalities remain one of the biggest challenges to resolve in fostering youth employability and potential fulfilment among young women.

2.5.2 Region and Unequal Opportunities

The NEET population is more ubiquitous in urban areas in Georgia, while urban is as a phenomenon as rural in Armenia. Moreover, the gender gaps in NEET rates between rural women and men are higher than in their urban counterparts (World Bank 2019). Furthermore, statistics reveal that NEET rates were higher in rural areas at 18.3 percent compared to urban areas (15.1 percent) in 17 European Union member states (Eurostat 2019). Accordingly, Palmer and Small (2021) reveal that young people living in rural villages have a higher probability of being NEETs, due to lacking access to reliable transportation in Austria.

Braziene (2021) also states that young people from disadvantaged backgrounds faced additional challenges. In addition, they were not entirely covered with policy measures and interventions. Hence, young people face a higher risk of social exclusion and tend to be more fragile compared to young people in urban areas. However, Strat et al. (2018) reveal that the largest percentage of the NEET population in Romania is recorded for the central and southeastern regions, where large cities are

located. The study argues that young NEETs are concentrated more in urban areas, unlike the aforementioned studies.

2.5.3 Marital Status and Economic Activities

World Bank (2019) reveals that from the regression analysis, household and marital status share crucial correlations to being NEET among women but not for men. Moreover, statistics reveal that NEET women marry at higher rates compared to average young women. A study conducted by TDRI (2020) shows that one of the prominent factors of being NEETs for females is marrying at a young age. Since nearly 30 percent of female NEETs who are household workers hold married status while less than 5 percent of young men NEETs are married.

It can be suggested that being married at a young age leads to being economically inactive while young men must enter the labour force to earn a living after marriage. Similarly, Khomsod (2021) also indicates that most Thai female NEETs were characterized as young mothers during their studies, resulting in school dropouts, which serves as a challenge in returning to either education or employment.

2.5.4 Age and Employment

Numerous studies state indicate age plays a critical role in being NEETs. Khomsod (2021) states that young people aged 19-23 are the majority of the samples. Most of them drop out of education. Young people in their mid- seem to have higher rates of being disconnected from education, training and work (Palmer and Small, 2021; Holmes et al., 2021; Ralston et al., 2022). In line with the World Bank (2019), the study reveals that age is positively associated with the likelihood of being NEET based on the linear probability model. Nonetheless, the positive effect declines as young people become older.

Similarly, research from TDRI (2020) also shows that the NEET population concentrates more among the population aged 20-24 years. Although the youth aged 15-19 years had a lower unemployment rate at 5.13 compared to those aged 20-24 years in 2018, the NEET population concentrated more among the 20-24 cohort, particularly in the non-labour force group e.g., household worker and resting idle groups. In 2018, over 160 thousand females aged 15-19 years are household workers while there are nearly 450 thousand household workers in the older cohort.

2.5.5 Being in charge of Household

Household status plays a critical role in determining the probability of being NEETs, such as being a head of household. Since the young head of the household may have responsibilities to take care of their family, which could drive either to employment to earn a living or to depart from the workforce for caregiving tasks at home. World Bank (2019) reveals that the inactivity of young female NEETs is large because of being the household head and caregiving responsibilities. Furthermore, Maila and Mabasa (2021) also state that young people heading households are often faced daily struggles for survival, namely lack of resources, embarrassment, lack of resources and support from the school, and financial constraints.

2.5.6 Education Level

Khomsod (2021) reveals that most of the samples have secondary education as their highest educational attainment since they mostly dropped out during the secondary school period. While it generally takes more than a year for young people to re-enter high school. Palmer and Small (2021) state that the NEETs who did not complete upper secondary education have the highest disconnection rate from

education and employment. Young women who had been NEET have a continuing drawback at specific education levels while there is no evident relationship for men (Ralston et al, 2022).

Nonetheless, World Bank (2019) reveals that more education does not ensure the fewer NEETs. Since NEET rates are highest among young people with vocational, upper secondary, and tertiary education. Therefore, the key issue to consider is the quality and relevance of the education programmes provided to the needs of the labour market (Strat et al., 2018; Holmes et al., 2021). In line with TDRI (2020), the study displays that young people with bachelor's degrees have the highest unemployment rate at 17.22 percent compared to the lower primary education at 2.43 percent. Therefore, it is critical to re-design the educational system that could suit slow-leaners or even subsidies to encourage young people to attend school. While it is also important to design curricula that suit the market needs to alleviate labour mismatch problems (Maila and Mabasa, 2021).

Table 1 Literature Review

Name	Khomsod (2021)	Strat et al. (2018)	Palmer & Small (2021)	Ralston et al. (2022)	Holmes et al. (2021)	World Bank (2019)	TDRI (2020)	Maila & Mabasa (2021)
Country	Thailand	Romania	Various countries	Scotland	United Kingdom	Georgia and Armenia	Thailand	South Africa
Variables								
Gender	✓	✓	✓	✓	✓	✓	✓	
Age	✓		✓	✓	✓	✓	✓	
Region		✓	✓		✓	✓		
Education Level	✓	✓	✓	✓	✓	✓	✓	✓
Marital Status	✓					✓	✓	
Household Status						✓		✓
Methodology	Descriptive and qualitative	Descriptive	Descriptive and Qualitative	Descriptive and logit	Probit and logit	Descriptive and probit	Descriptive	Qualitative

3. EMPIRICAL APPROACH

3.1 Conceptual Framework

According to figure 1, the calculation framework indicates the criteria and factors related to the NEET population, whose magnitude can be varied in each year. According to the scope of the study, this paper focuses on NEETs aged between 15-24 years. Utilising the data from Labour Force Survey, the NEET population can be categorised by status as follows: (1) unemployed persons, (2) household workers, (3) too young[3], (4) incapable to work[4], and (5) resting[5]. In 2021, the household worker group has the largest share of 44.95 percent, followed by the unemployed persons (24.70 percent), the resting group (17.96 percent), the incapable to work group (10.60 percent), and the too young group (1.79 percent).

Figure 1 Calculation Framework for NEET indicator

Source: Author

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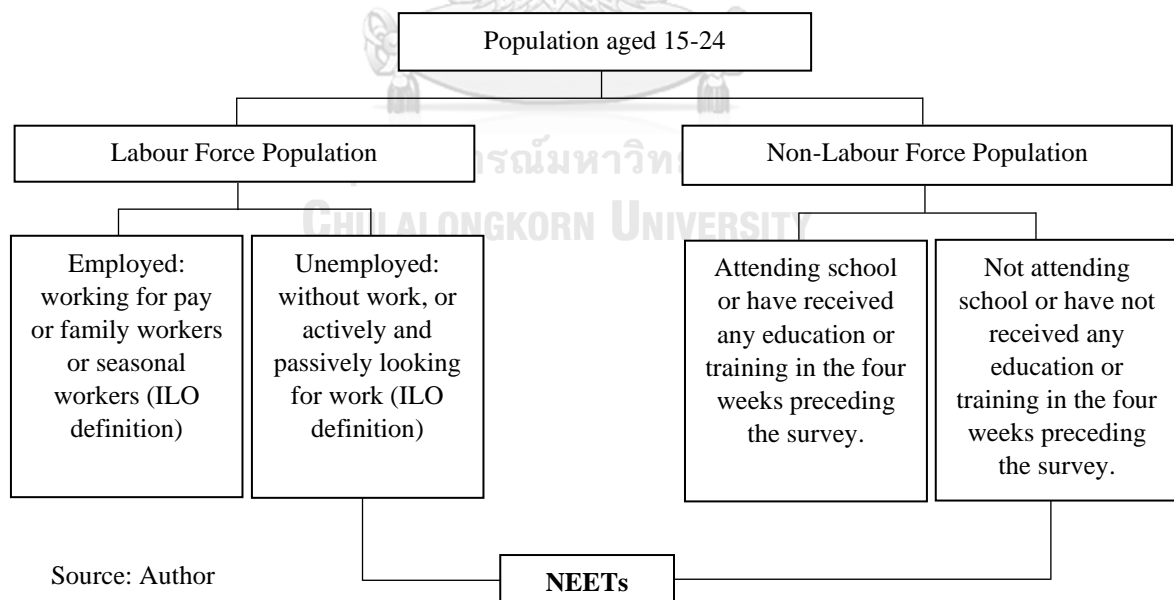
[3] "Too young" group refers to a person aged below 18 years old who is neither in education nor employment.
[4] "Incapable to work" group refers to a person who is incapable to work or study due to disabilities.
[5] . While there is no official description for the "resting" group in the LFS. "Resting" is inferred from the list of answers to state the reasons why one does not attain education or is not employed.

The computation of the NEET population is based on the ILO's definition of NEET by grouping the young people who are not employed, including seasonal workers, and those who have not received any education or training in the four weeks preceding the survey. The Thai Labour Force Survey also used the International Classification of Status in Employment, 1993 (ICSE-93) of the International Labor Organization (ILO) to assure consistency with the international standard. Hence it can be assured that the respondent's status will not be clear since the survey specifically asks about the respondent's status within the 30 days or 4 weeks preceding the survey.

Therefore, the NEET population is visualised by status to portray the changes in dynamics before and during the COVID-19 period between 2019 and 2021. It is evident that the total population is declining, due to the ageing society. Nonetheless, there was a significant YoY increase in the unemployed group at 41.7 percent between 2019 and 2020. While the number of young people in education barely changed. The data reveals that young people have been impacted negatively by COVID-19, resulting in unemployment, and they could not either return to education or employment yet. Since the number of employed youths and youth in education barely changes between 2019 and 2021. Surprisingly, the number of young people with "too young" status rose constantly. According to the Labour Force Survey's definition, it can be inferred that the number of young people aged between 15-18 who are not in education and employment has increased, which can be resulted from both school dropout rather than being unemployed. Since only a small portion of the youth population aged below 18 years reside in the labour force (Table 2).

Table 2 Thai Youth Population by Status between 2019 and 2021

Youth, 15-24	2019	2020	2021	YoY Change 19/20	YoY Change 20/21
Labour Force	3,787,806	3,797,061	3,676,664	0.2	-3.2
Employed	3,552,960	3,467,952	3,351,219	-2.4	-3.4
Unemployed	219,731	311,318	315,787	41.7	1.4
Seasonal	15,115	17,791	9,658	17.7	-45.7
Not in Labour Force	5,559,138	5,438,187	5,435,570	-2.2	-0.0
Household worker	671,467	611,631	574,712	-8.9	-6.0
Studying	4,340,117	4,309,587	4,342,596	-0.7	0.8
Too young	17,147	20,002	22,878	16.6	14.4
Unable to work	173,925	145,785	135,477	-16.2	-7.1
Resting	242,574	222,454	229,621	-8.3	3.2
Others	113,906	128,728	130,286	13.0	1.2
Total NEET	**1,324,845**	**1,311,190**	**1,278,475**	**-1.0**	**-2.5**
Total Non-NEET	**8,022,099**	**7,924,058**	**7,833,759**	**-1.2**	**-1.1**
Total Youth Population	**9,346,944**	**9,235,248**	**9,112,234**	**-1.2**	**-1.3**

Note: NEET population by status is highlighted in grey based on the definition provided in

the section above.

Source: National Statistical Office, Labour Force Survey, 2019-2021.

Figure 2 Conceptual Framework
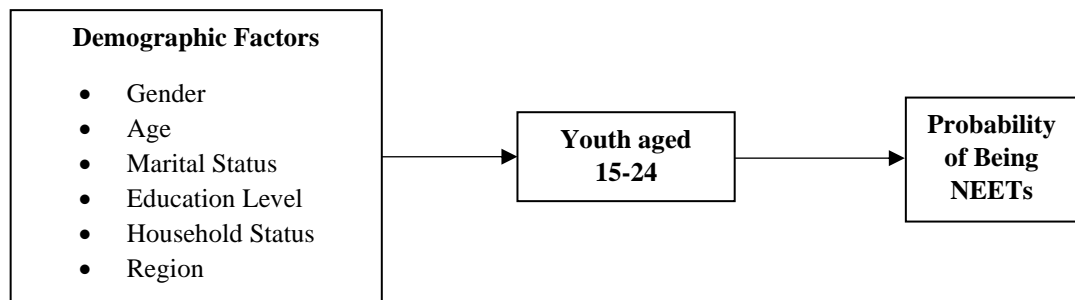
Source: Author

The concerns from empirical papers and statistics reveal that social demographic factors play a critical role in the probability of being NEETs. Figure 2, therefore, is structured to analyse the relationship and magnitude of the probability of being NEETs in Thailand. The NEET population is the outcome variable and demographic factors are explanatory variables. Demographic factors include gender, age, marital status, education level, household head status, region, and labour force group. The study aims to analyse the impact of COVID-19 on the NEET population in Thailand by examining the changes in factors influencing young people being NEET.

3.2 Data

The study is based on the cross-sectional data collected by the National Statistical Office (NSO) under the Ministry of Digital Economy and Society. Since 1993, Thailand's NSO has adopted ideas and terminology to ensure compatibility with the country's real social and economic realities. The concepts and principles of the International Labour Organization (ILO) and the United Nations are adhered to in the labour force statistics survey (UN).

The third quarter Labour Force Surveys (2019-2021) are used to analyse the impact of COVID-19 on the NEET population in the pre-COVID (2019), COVID

outbreak (2020), and the recovery phase (2021). The total sample size of youth aged 15-24 is 66,013, comprising 21,136 observations, 22,1196 observations, and 16,383 observations in the year 2019, 2020, and 2021 consecutively (Table 3).

Table 3 Summary Statistics

Variables	N	Std. Deviation	Mean	Minimum	Maximum
Year	66,013	0.814	2020	2019	2021
NEET	66,013	0.3414	0.1347	0	1
Gender	66,013	0.50	1.50	1	2
Age	66,013	2.929	19.18	15	24
Marital Status	66,013	0.3756	0.1700	0	1
Household Status	66,013	0.248	0.0659	0	1
Region	66,013	1.807	3.1151	1	7
Education	66,013	1.353	3.4314	1	11

Source: National Statistical Office, Labour Force Survey, 2019-2021.

3.3 Summary Statistics

The LFS data is cross-tabulated between NEET and explanatory variables to display the overview of changes in the NEET population during 2019-2021. In 2019, the total youth population was 9,346,944 persons while the number dropped to 9,112,234 in 2021. The statistics reveal the declining number of young people due to the declining fertility rate (Figure 3).

Figure 3 The Comparison of NEET and Non-NEET Population
between 2019 and 2021
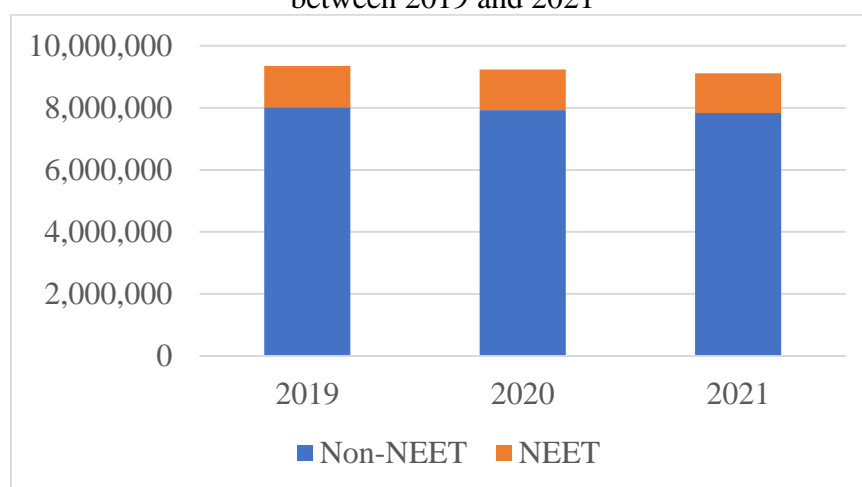
Source: National Statistical Office, Labour Force Survey, 2019-2021.

The non-NEET population has a slight difference in the share of gender. However, the NEET population mostly are women, revealing gender disparity issues. The young females had a larger share of the NEET population at 64.6 percent than their male counterparts (35.4 percent) in 2019 before the COVID-19. While the share changed slightly when COVID-19 hit Thailand, the share of male NEET surged to 37.2 percent due to unemployment and lockdown. With the COVID-19 recovery period and the relaxation of lockdown measures, statistics revealed that young males went back to employment and education more than their female counterparts, decreasing the share of the NEET population (Figure 4).

Figure 4 The Comparison of NEET and Non-NEET Population by Gender
between 2019 and 2021
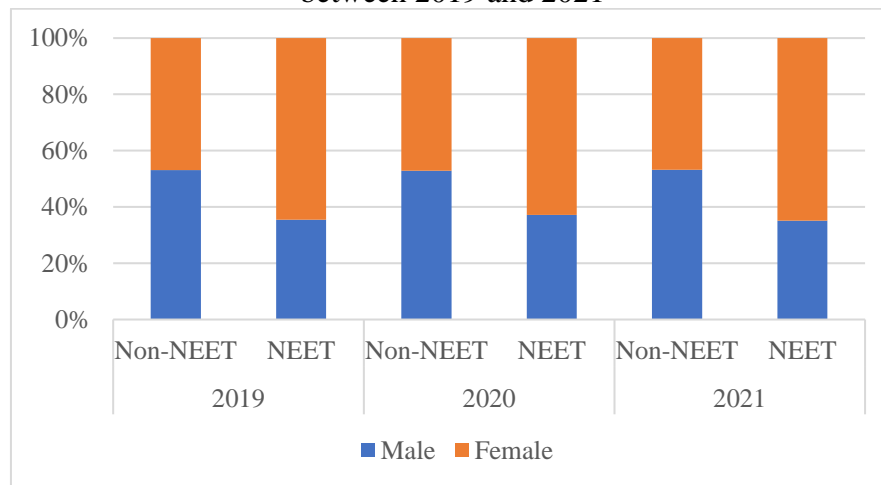
Source: National Statistical Office, Labour Force Survey, 2019-2021.

By and large, the older cohort (20-24 years) has a larger proportion at circa 52-53 percent compared to its younger counterparts (15-19 years). However, young people in the NEET group tend to concentrate more among the older cohort at approximately 70 percent, unlike the non-NEET population. The situation of COVID-19 has worsened the situation. The share of young people aged 20-24 has increased from 70.7 percent in 2019 to 73 percent and 72.6 percent in 2020 and 2021 consecutively. The data reveals that the older cohort is facing challenges to transfer from the non-labour force to the labour force, due to the competitive labour market and economic crisis (Figure 5).

Figure 5 The Comparison of NEET and Non-NEET Population by Age
between 2019 and 2021
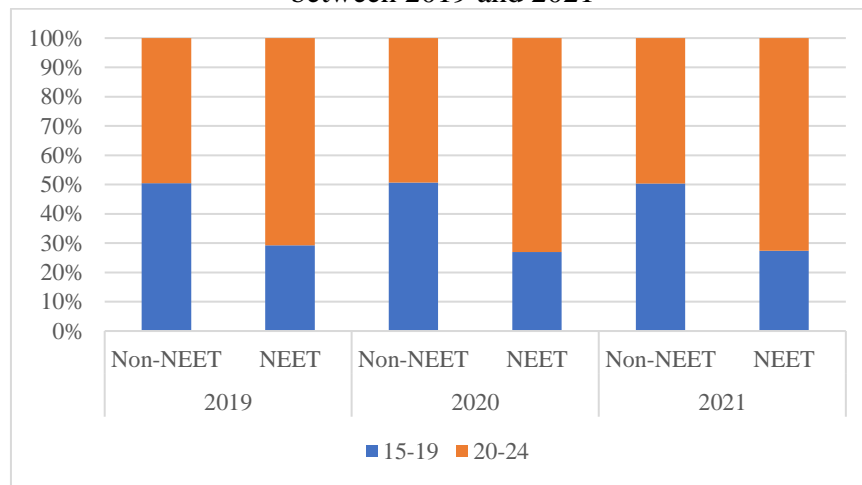
Source: National Statistical Office, Labour Force Survey, 2019-2021.

Another interesting aspect to analyse is the marital status of the NEET population. The Non-NEET population generally has a larger share of being single (approx. 84 percent) compared to married (approx. 16 percent). On the other hand, the NEET population has a larger share of being married at 40 percent. Nonetheless, the share of the NEET population who has married has declined constantly from 2019 to 2021. There is no concrete evidence to confirm whether the fall resulted from the Thai education system which encourages young people not to marry at a young age or the COVID-19 pandemic which affects the young people's will to marry amidst the economic crisis (Figure 6).

Figure 6 The Comparison of NEET and Non-NEET Population by Marital Status between 2019 and 2021
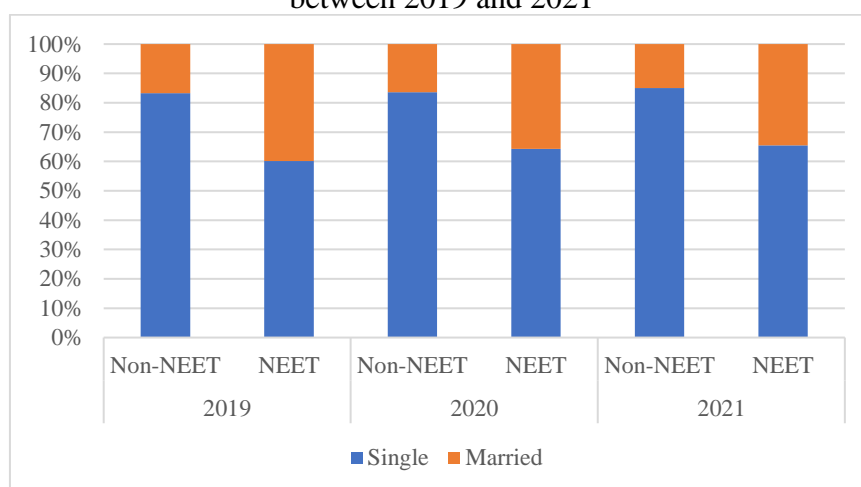
Source: National Statistical Office, Labour Force Survey, 2019-2021.

The LFS reveals that the non-NEET population has a larger share of being the household head (approx. 8 percent) compared to the NEET counterparts (approx. 4 percent). The evidence can be interpreted that young people who are under employment (non-NEET) are more likely to be the household head, compared to the NEETs, due to financial stability and skills. Moreover, both non-NEET and NEET populations aged 15-24 have a declining share of being the household head between 2019 and 2021. The fall may be caused by the financial instability triggered by COVID-19, making young people have to step down from the household head role (Figure7).

Figure 7 The Comparison of NEET and Non-NEET Population by Household Status between 2019 and 2021

Source: National Statistical Office, Labour Force Survey, 2019-2021.

Nearly 10 percent of young people reside in Bangkok while the rest lives in other regions. The data reveals circa 10 percent of the non-NEET population lives in Bangkok, which is higher than its NEET counterparts (approx. 6 percent). Remarkably, the share of the NEET population residing in Bangkok has surged tremendously from 5.6 percent to 7.9 percent between 2019 and 2021. The shift may cause an economic slowdown, resulting in a major unemployment incident and school dropouts in Bangkok due to COVID-19 (Figure 8).

Figure 8 The Comparison of NEET and Non-NEET Population by Region
between 2019 and 2021
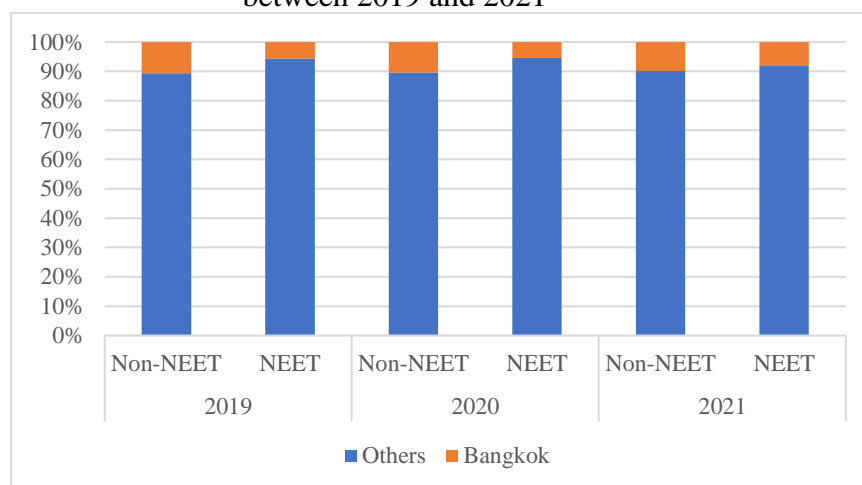
Source: National Statistical Office, Labour Force Survey, 2019-2021.

Higher education level does not guarantee employment. Since the NEET population has a larger share of young people graduating with bachelor's degrees (approx. 13 percent) while only the non-NEET group has circa 4.5 percent. The scenario may have numerous driving factors, such as educational mismatch, high demand for agricultural works which require lower educational backgrounds, and new graduates. It is very crucial to examine this topic since generally only 6 percent of Thai young people hold bachelor's degrees while 13 percent of NEETs hold bachelor's degrees. Most importantly, the share of the NEET group holding bachelor's degrees has increased steadily from 11.1 percent to 14.3 percent between 2019 and 2021 (Figure 9).
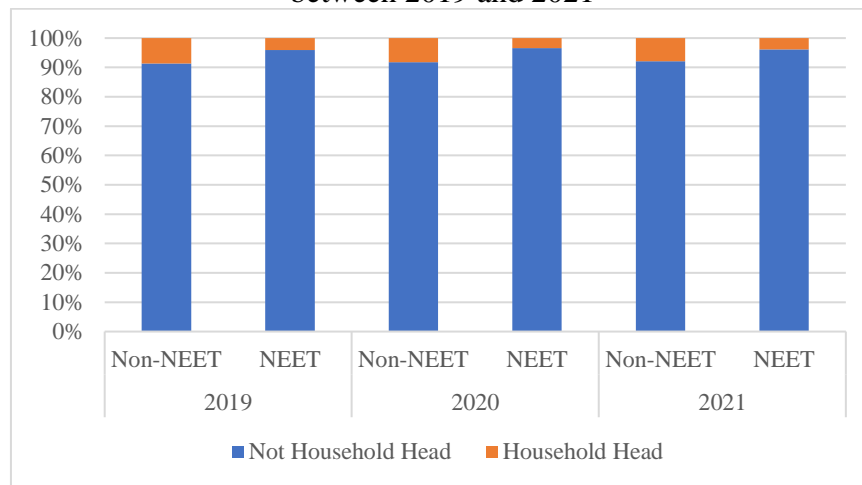
Figure 9 The Comparison of NEET and Non-NEET Population by Education Level between 2019 and 2021
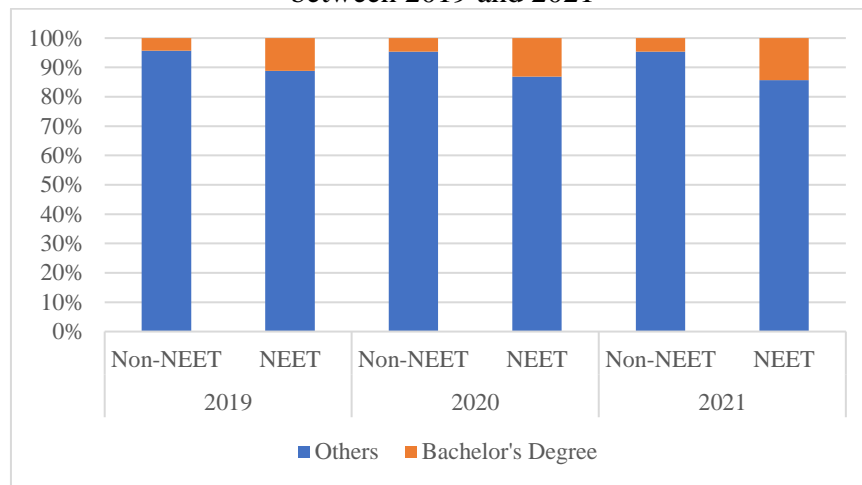
Source: National Statistical Office, Labour Force Survey, 2019-2021.

3.4 Methodology

The study also uses the logit model to analyse the inferential relationships to determine factors affecting the probability of being NEET population in Thailand. In this case, the logistic regression model is the preferred technique of estimation since the data contains qualitative responses with a binary dichotomous dependent variable. Utilising the ordinary least squares (OLS) would lead to various problems, such as heteroskedasticity, and non-normality (Guajarati, 2003).

Logistic Regression

The logistic regression is used to investigate the relationship between p, the probability of an interesting event, P (Y = 1), and a linear combination of independent variables (Xs) using a logistic regression model.

$$P(y = 1 \mid X_1, X_2, \ldots, X_p) = \frac{e\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p}{1 + + e\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p}$$

ss

For ease of exposition, the equation can be rewritten as follows:

$$P = \frac{e^z}{1 + e^z}$$

P is the probability, ranging from 0 to 1, while Z ranges from -∞ to +∞. As Z → -∞, P → 0, and as Z → +∞, P → 1. Odds are calculated using the probability of the event of interest, which will occur, then it is divided by the probability the event of interest will not occur, given the same set of independent values. Hence, the odds in a favour of Y = 1 can be described as follows:

$$Odds = \frac{P(y = 1 \mid X_1, X_2, \ldots, X_p)}{P(y = 0 \mid X_1, X_2, \ldots, X_p)} = \frac{P(y = 1 \mid X_1, X_2, \ldots, X_p)}{1 - P(y = 1 \mid X_1, X_2, \ldots, X_p)}$$

$$= e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p}$$

The logit link function is the natural log of the odds ratio, which is the ratio between the probability of an event occurring (if it occurs p) and the probability of not occurring (if it does not occur 1- p), as stated below.

$$Y = \ln\left(\frac{P}{1 - P}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_p X_p + \varepsilon$$

Guided by the empirical literature and statistics, this study introduces a model to investigate the factors impacting the probability of being NEETs between 2019 and 2021. Based on the objective, the study seeks to test the following hypotheses:

H_0: There is no linear relationship between explanatory variables and the NEET population.

H_1: There is a linear relationship between explanatory variables and the NEET population.

Most explanatory variables are not dichotomous from the raw data except gender and household head status. Other variables are either categorized into two main groups (age and marital status) or generated as dummy variables (education level and region). The author uses the binary logistic regression method to analyse the outcome of the dichotomous variables with "yes" or "no" controlled for socio-demographic characteristics as follows: age group, gender, marital status, education level, head of household, and region (Table X). The binary logistic regression equation for examining the relationship of being NEET is shown below.

Model 1

$$logit(Y_j) = \ln\left(\frac{p(Y)}{1-p(Y)}\right) = \beta_0 + \beta_1 X_{gender} + \beta_2 X_{age} + \beta_3 X_{married} + \beta_4 X_{edu} + \beta_5 X_{household} + \beta_6 X_{region} + \varepsilon$$

Where:

Y refers to the probability of being NEET

j refers to yes or no when Y is the probability of being NEET

β_0 is constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are regression coefficients

gender refers to the respondent's gender

age refers to the respondent's age

married refers to the respondent's marital status

edu refers to the respondent's education level

household refers to the respondent's household status

region refers to the respondent's region of residence

ε is the error term

Table 4 Definitions of variables

Variable Name	Code	Definition
Outcome Variable		
NEET	0 = No 1 = Yes	Probability of becoming NEET
Explanatory Variables:		
Gender	0 = Male 1 = Female	Respondent's gender
Age	0 = 15-19 1 = 20-24	Respondent's age group classification
Marital Status	0 = Single 1 = Married	Respondent's marital status Single refers to a person who has never married, divorced, or widowed. Married refers to a person who is married
Education Level	0 = Other Levels 1 = Bachelor's Degree	Respondent's education attainment
Household Status	0 = Not Household Head 1 = Household Head	Whether the respondent is the household head or not.
Region	0 = Other regions 1 = Bangkok	Respondent's region

Source: Author

4. RESULTS AND DISCUSSION

The binary logistic regression is utilised to examine the impact of COVID-19 and factors affecting the likelihood of being NEETs in Thailand between 2019 and 2021.

According to table 5, the binary logistic regression results are significant in all explanatory variables with a 99 percent confidence interval. The marginal effects after logistic regression reveal the effect on the probability of being NEETs in 2019 or the pre-COVID-19 period. Most variables except region and household status have a positive relationship with the probability of being NEETs. The result shows a marginal effect when all independent variables are at their mean values. The result indicates that the expected probability of being NEETs increases by .099 with a marginal change in education or studying for bachelor's degrees. Similarly, marginal effects of other explanatory variables indicate that being female, being married, and being aged 20-24 years increases the probability of being NEETs by .052, .130, and .061 respectively. While marginal effects of region and household status reveal that living in Bangkok and being a household head reduces the probability of being NEETs by .052 and .070 correspondingly.

Table 5 Logistic Regression Results

Variables	2019	2020	2021
	Odds Ratio	Odds Ratio	Odds Ratio
Constant	.037***	.033***	.028***
Edu	2.12*** (0.099)	2.553*** (0.130)	1.471*** (0.041)
Region	.531*** (-0.052)	.521*** (-0.053)	.876 (-0.012)
Gender	1.672*** (0.052)	1.53*** (0.044)	1.636*** (0.048)
Married	2.723*** (0.130)	2.425*** (0.113)	2.336*** (0.103)
Age	1.83*** (0.061)	2.087*** (0.075)	2.165*** (0.075)
Household	.392*** (-0.070)	.362*** (-0.074)	.345*** (-0.072)
Pseudo r-squared	0.085	0.085	0.077
Prob > chi2	0.000	0.000	0.000

*** p<.01, ** p<.05, * p<.1
Note: marginal effects in parentheses

In 2020, the COVID-19 pandemic affected Thailand tremendously, leading to lockdowns and a surge in the unemployment rate. Nevertheless, the binary logistic regression result and marginal effects remain slightly the same as the previous year (Table X). The marginal effects of education, gender, marital status, and age have a positive relationship with the probability of being NEETs. The result reveals that indicate that attaining a bachelor's degree, being female, being married, and being aged 20-24 years increases the probability of being NEETs by .130, .044, .113, and .075 respectively. While marginal effects of region and household status reveal that living in Bangkok and being a household head reduces the probability of being NEETs by .053 and .074 correspondingly.

In 2021, Thailand is recovering from COVID-19, due to a high vaccination rate and lockdown relaxation. Most explanatory variables remain significant at a 99 percent confidence interval except the region variable. This may be caused by the active movement of labour after the termination of lockdown measures and the removal of travel restrictions, making the region factor becomes insignificant. Hence, living in Bangkok may no longer be the option for finding jobs, studying, or training when the country is recovering from COVID-19.

The marginal effects of education, gender, marital status, and age have a positive relationship with the probability of being NEETs. The result reveals that indicate that attaining a bachelor's degree, being female, being married, and being aged 20-24 years increases the probability of being NEETs by .041, .048, .103, and .075 respectively. While marginal effects of region and household status reveal that being a household head reduces the probability of being NEETs by .072.

By and large, education, gender, marital status, and age have a positive relationship with the probability of being NEETs. Gender, marital status, and age remain mostly unchanged in their marginal effects. While the education variable has a declining marginal effect on the probability of being NEETs.

The results reveal that attaining bachelor's degrees increases the probability of being NEETs by .099 in 2019. With the pandemic, the labour market was shocked with unprecedented challenges, leading to decreasing productivity and a high unemployment rate. Therefore, young people with bachelor's degrees have the highest unemployment rate. Hence, the marginal effect of attaining bachelor's degrees surged the probability of being NEETs by 0.130 in 2020. Nonetheless, the effect declines to 0.041 during the recovery period in 2021. Since it is expected that the labour market has recovered from the economic slowdown period and the market has become more active in 2021, leading to higher employment opportunities.

Generally, the results are aligned with most literature. Similar to World Bank (2019) and Palmer and Small (2021), the results show that young people living in the urban area, in this case, Bangkok, have a lower probability of being NEETs. In line with World Bank (2019) and TDRI (2020), the study reveals that youth married at a young age have a higher probability of being NEETs.

The study shows that young people in the 20-24 age cohort will increase the probability of being NEETs by 7 percent, in line with selected literature indicating a large population of NEETs are in the 19-23 and 20-24 cohorts (Khomsod 2019; TDRI 2020; Holmes et al. 2021; World Bank 2019).

Results show that female youths have a higher chance of being NEETs compared to male counterparts by approx. 5 percent. In line with Ralston et al. (2022), the study reveals that the probability of economic inactivity is higher for women. Young women tend to have a higher NEET rate (TDRI 2020; Khomsod 2021; World Bank 2019) but not Holmes (2021), which shows that young males have higher odds.

While attaining higher education does not reduce the probability of being NEETs, in line with TDRI (2020) and World Bank (2019) but not to Ralston et al. (2022) and Holmes (2021), which state that a higher level of educational attainment is generally associated with a reduced odd of economic inactivity. However, the results reveal that being a household head reduces the probability of being NEETs, unlike the studies by World Bank (2019) and Maila & Mabasa (2021).
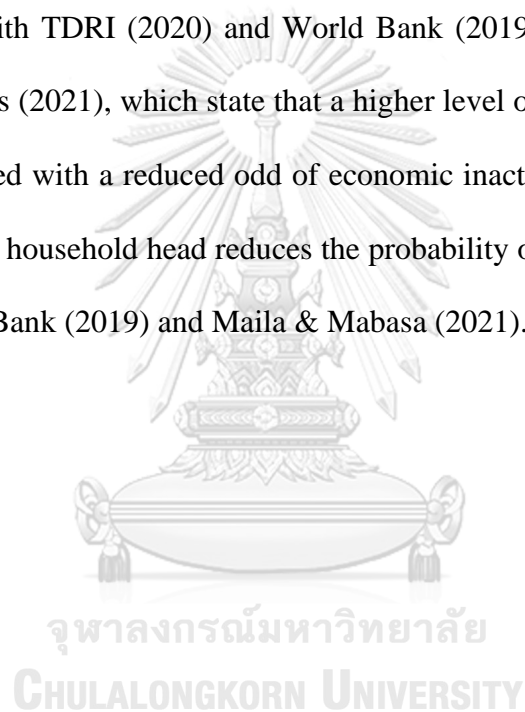
5. CONCLUSION AND RECOMMENDATIONS

The study reveals that even though most demographic variables are statistically significant with the probability of being NEETs in the logistic regressions (except region in 2021), the marginal effects of the explanatory variables on the outcome variable or NEET barely change between 2019 and 2021. In other words, it can be inferred that the impact of the COVID-19 pandemic barely changes the probability of being NEETs in Thailand.

While living in the Bangkok area may no longer be the crucial factor in reducing the likelihood of being NEETs. Even though the region variable is significant to the probability of being NEETs between 2019 and 2020. Since the marginal effect of living in the Bangkok area reduces the probability of being NEETs by .052 and .053 in 2019 and 2020 consecutively. Nevertheless, it is the only variable that is not statistically significant in 2021. Currently, there is no concrete evidence to support the statement, but it can be inferred that living in Bangkok does not reduce the probability of being NEETs. Since its marginal effect is merely .012.

Even though the binary logistic regression results reveal that the COVID-19 does not change the probability of being NEETs between the pre-COVID and during COVID-19 periods, it does not change the fact that COVID-19 has impacted young people negatively. Since the number of unemployed youths surged over 40 percent between 2019 and 2020. While the number also slightly increased in 2021 with no signs of returning back to employment yet. Therefore, NEET population is one of the

crucial challenges for the government to tackle. Since nearly 1.4 million youths are being left behind and could not fulfill their potential.

Recommendations

The government must engage more continuously with the active labour market policies (ALMPs), such as career counselling, job search assistance, and apprenticeship to enhance youth employability. Since the figure and data reveal that the NEET population barely changed between 2019 and 2021 while there was a significant increase in unemployed youths. Therefore, rigorous improvement in the apprenticeship system and job search assistance is extremely critical. It is noted that the government implemented job fair and hiring programs during the COVID-19 outbreak in 2020. Nonetheless, the effort must be done continuously to fulfil youth potential.

It is very important that the government must profile NEETs for adequate support. Currently, there is no standardised database of NEETs in Thailand. Most studies utilise the data from the labour force survey, which could present only estimations. It is noted that the Equitable Education Fund (EEF) has actively engaged disadvantaged children in education. Nonetheless, many young people are still left behind. Once the database is established, the government and related agencies can provide more direct and effective measures to support NEETs in Thailand and fulfil their potential.

Limitations

The data utilised in this study is based on the Thai Labour Force Survey (third quarter). The survey was based on the sample estimates and is subjected to both sampling and non-sampling errors. Moreover, all absolute figures are independently rounded to the nearest thousand. Therefore, the total number may not always be equal to the sum of the individual figure. Hence, the data can be used only for estimations to portray the overall image of the NEET population in Thailand, not to precisely determine the NEET profiles.

Appendix

Table A1 The Comparison of NEET and Non-NEET Population by Gender

between 2019 and 2021

Year				Category		
				Non-NEET	NEET	Total
2019	Gender	Male	Count	4263046	469216	4732262
			%	53.1%	35.4%	50.6%
		Female	Count	3759053	855629	4614682
			%	46.9%	64.6%	49.4%
	Total		Count	8022099	1324845	9346944
			%	100.0%	100.0%	100.0%
2020	Gender	Male	Count	4191485	487968	4679453
			%	52.9%	37.2%	50.7%
		Female	Count	3732573	823222	4555795
			%	47.1%	62.8%	49.3%
	Total		Count	7924058	1311190	9235248
			%	100.0%	100.0%	100.0%
2021	Gender	Male	Count	4170917	449695	4620612
			%	53.2%	35.2%	50.7%
		Female	Count	3662843	828779	4491622

Year				Category Non-NEET	NEET	Total
			%	46.8%	64.8%	49.3%
	Total		Count	7833760	1278474	9112234
			%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A2 The Comparison of NEET and Non-NEET Population by Age Group between 2019 and 2021

Year				Category Non-NEET	NEET	Total
2019	Age	15 - 19	Count	4051375	387992	4439367
			%	50.5%	29.3%	47.5%
		20 – 24	Count	3970723	936854	4907577
			%	49.5%	70.7%	52.5%
	Total		Count	8022098	1324846	9346944
			%	100.0%	100.0%	100.0%
2020	Age	15 – 19	Count	4013016	353637	4366653
			%	50.6%	27.0%	47.3%
		20 - 24	Count	3911043	957552	4868595
			%	49.4%	73.0%	52.7%

Year				Category		
				Non-NEET	NEET	Total
	Total		Count	7924059	1311189	9235248
			%	100.0%	100.0%	100.0%
2021	Age	15 – 19	Count	3942420	349849	4292269
			%	50.3%	27.4%	47.1%
		20 - 24	Count	3891340	928625	4819965
			%	49.7%	72.6%	52.9%
	Total		Count	7833760	1278474	9112234
			%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A3 The Comparison of NEET and Non-NEET Population by Marital Status

between 2019 and 2021

Year				Category		
				Non-NEET	NEET	Total
2019	Marital Status	Single	Count	6678976	796442	7475418
			%	83.3%	60.1%	80.0%
		Married	Count	1343123	528403	1871526
			%	16.7%	39.9%	20.0%
	Total		Count	8022099	1324845	9346944

Year				Non-NEET	NEET	Total
				Category		
			%	100.0%	100.0%	100.0%
2020	Marital Status	Single	Count	6626558	842727	7469285
			%	83.6%	64.3%	80.9%
		Married	Count	1297500	468463	1765963
			%	16.4%	35.7%	19.1%
	Total		Count	7924058	1311190	9235248
			%	100.0%	100.0%	100.0%
2021	Marital Status	Single	Count	6662116	836718	7498834
			%	85.0%	65.4%	82.3%
		Married	Count	1171643	441757	1613400
			%	15.0%	34.6%	17.7%
	Total		Count	7833759	1278475	9112234
			%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A4 The Comparison of NEET and Non-NEET Population by Household Status

between 2019 and 2021

Year				Non-NEET	NEET	Total
				Category		
2019	Household Status	Not Household Head	Count	7331675	1270963	8602638
			%	91.4%	95.9%	92.0%
		Household Head	Count	690424	53882	744306
			%	8.6%	4.1%	8.0%
	Total		Count	8022099	1324845	9346944
			%	100.0%	100.0%	100.0%
2020	Household Status	Not Household Head	Count	7275695	1266063	8541758
			%	91.8%	96.6%	92.5%
		Not Household Head	Count	648363	45127	693490
			%	8.2%	3.4%	7.5%
	Total		Count	7924058	1311190	9235248
			%	100.0%	100.0%	100.0%
2021	Household Status	Not Household Head	Count	7215293	1228753	8444046
			%	92.1%	96.1%	92.7%
		Household Head	Count	618467	49721	668188
			%	7.9%	3.9%	7.3%

Year			Category Non-NEET	NEET	Total
Total		Count	7833760	1278474	9112234
		%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A5 The Comparison of NEET and Non-NEET Population by Region

between 2019 and 2021

YEAR				Category Non-NEET	NEET	Total
2019	Region	Others	Count	7172983	1250566	8423549
			%	89.4%	94.4%	90.1%
		Bangkok	Count	849116	74279	923395
			%	10.6%	5.6%	9.9%
	Total		Count	8022099	1324845	9346944
			%	100.0%	100.0%	100.0%
2020	Region	Others	Count	7098601	1240184	8338785
			%	89.6%	94.6%	90.3%
		Bangkok	Count	825457	71006	896463
			%	10.4%	5.4%	9.7%
	Total		Count	7924058	1311190	9235248

YEAR				Category		
				Non-NEET	NEET	Total
			%	100.0%	100.0%	100.0%
2021	Region	Others	Count	7064472	1177462	8241934
			%	90.2%	92.1%	90.4%
		Bangkok	Count	769288	101012	870300
			%	9.8%	7.9%	9.6%
	Total		Count	7833760	1278474	9112234
			%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A6 The Comparison of NEET and Non-NEET Population by Education Level

between 2019 and 2021

Year				Category		
				Non-NEET	NEET	Total
2019	Education Level	Others	Count	7680709	1177308	8858017
			%	95.7%	88.9%	94.8%
		Bachelor's Degree	Count	341390	147537	488927
			%	4.3%	11.1%	5.2%
	Total		Count	8022099	1324845	9346944
			%	100.0%	100.0%	100.0%

Year				Non-NEET	NEET	Total
					Category	
2020	Education Level	Others	Count	7557531	1139046	8696577
			%	95.4%	86.9%	94.2%
		Bachelor's Degree	Count	366527	172144	538671
			%	4.6%	13.1%	5.8%
	Total		Count	7924058	1311190	9235248
			%	100.0%	100.0%	100.0%
2021	Education Level	Others	Count	7472951	1095721	8568672
			%	95.4%	85.7%	94.0%
		Bachelor's Degree	Count	360809	182754	543563
			%	4.6%	14.3%	6.0%
	Total		Count	7833760	1278475	9112235
			%	100.0%	100.0%	100.0%

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

Table A7 Binary Logistic Regression Results in 2019

Logistic regression

NEET	Odds Ratio.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Edu	2.12	.168	9.53	0	1.82	2.482	***
Region	.531	.06	-5.63	0	.426	.662	***
Gender	1.672	.073	11.70	0	1.534	1.823	***
Married	2.723	.137	19.96	0	2.468	3.004	***
Age	1.83	.09	12.28	0	1.662	2.015	***
Headhh	.392	.04	-9.24	0	.321	.478	***
Constant	.037	.003	-41.23	0	.032	.044	***
Mean dependent var		0.135	SD dependent var			0.342	
Pseudo r-squared		0.085	Number of obs			21136	
Chi-square		1425.880	Prob > chi2			0.000	
Akaike crit. (AIC)		15350.690	Bayesian crit. (BIC)			15406.401	

*** p<.01, ** p<.05, * p<.1*

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Table A8 Marginal Effect Results for the Probability of Being NEET Population

in 2019

Marginal effects after logistic

  y = Pr(NEET) (predict)

   = .11457414

variable	dy/dx	Std.Err.	z	P>z	[	95%	C.I.]
Edu*	0.099	0.013	7.700	0.000	0.073	0.124	0.050
Region*	-0.052	0.007	-7.180	0.000	-0.066	-0.038	0.057
Gender*	0.052	0.004	11.750	0.000	0.044	0.061	0.496
Married*	0.130	0.008	16.390	0.000	0.114	0.145	0.181
Age	0.061	0.005	12.490	0.000	0.052	0.071	1.442
Headhh*	-0.070	0.005	-13.120	0.000	-0.081	-0.060	0.071

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Source: National Statistical Office, Labour Force Survey, 2019-2021, calculated by author.

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Table A9 Binary Logistic Regression Results in 2020

Logistic regression

NEET	Odds Ratio.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Edu	2.553	.184	12.98	0	2.216	2.941	***
Region	.521	.057	-5.95	0	.421	.646	***
Gender	1.53	.065	10.04	0	1.408	1.662	***
Married	2.425	.12	17.91	0	2.201	2.672	***
Age	2.087	.1	15.41	0	1.9	2.291	***
Headhh	.362	.038	-9.71	0	.295	.445	***
Constant	.033	.003	-43.40	0	.028	.039	***
Mean dependent var		0.137	SD dependent var			0.343	
Pseudo r-squared		0.085	Number of obs			22196	
Chi-square		1498.599	Prob > chi2			0.000	
Akaike crit. (AIC)		16220.192	Bayesian crit. (BIC)			16276.246	

*** *p<.01, ** p<.05, * p<.1*

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Table A10 Marginal Effect Results for the Probability of Being NEET Population

in 2020

Marginal effects after logistic

y = Pr(NEET) (predict)

= .11575775

variable	dy/dx	Std.Err.	z	P>z	[	95%	C.I.]
Edu*	0.130	0.013	10.150	0.000	0.105	0.156	0.054
Region*	-0.053	0.007	-7.640	0.000	-0.067	-0.040	0.055
Gender*	0.044	0.004	10.050	0.000	0.035	0.052	0.496
Married*	0.113	0.008	14.870	0.000	0.098	0.128	0.172
Age	0.075	0.005	15.830	0.000	0.066	0.085	1.444
Headhh*	-0.074	0.005	-14.330	0.000	-0.085	-0.064	0.064

(*) dy/dx is for discrete change of dummy variable from 0 to 1

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Table A11 Binary Logistic Regression Results in 2021

Logistic regression

neet	Odds Ratio.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Edu	1.471	.092	6.16	0	1.301	1.663	***
Region	.876	.09	-1.29	.197	.717	1.071	
Gender	1.636	.082	9.83	0	1.483	1.805	***
Married	2.336	.136	14.52	0	2.083	2.619	***
Age	2.165	.125	13.38	0	1.933	2.424	***
Headhh	.345	.042	-8.65	0	.271	.439	***
Constant	.028	.003	-38.35	0	.023	.033	***

Mean dependent var		0.127	SD dependent var			0.333
Pseudo r-squared		0.077	Number of obs			16383
Chi-square		957.641	Prob > chi2			0.000
Akaike crit. (AIC)		11537.625	Bayesian crit. (BIC)			11591.553

*** p<.01, ** p<.05, * p<.1*

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Table A12 Marginal Effect Results for the Probability of Being NEET Population

in 2021

Marginal effects after logistic

y = Pr(neet) (predict)

  = .10821033

variable	dy/dx	Std.Err.	z	P>z	[	95%	C.I.]
Edu*	0.041	0.007	5.580	0.000	0.027	0.056	0.150
Region*	-0.012	0.009	-1.350	0.177	-0.030	0.005	0.065
Gender*	0.048	0.005	9.870	0.000	0.038	0.057	0.499
Married*	0.103	0.009	11.980	0.000	0.086	0.119	0.159
Age	0.075	0.005	13.780	0.000	0.064	0.085	1.442
Headhh*	-0.072	0.006	-13.020	0.000	-0.083	-0.061	0.067

(*) dy/dx is for discrete change of dummy variable from 0 to 1

REFERENCES

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