THE IMPACTS OF HIGH-SPEED RAIL LINKING 3 AIRPORTS IN THAILAND TOWARDS RESIDENTIAL BUYER'S DECISION

BY

MR. KAMON SIRIRATTANAPHONKUN

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION PROGRAM IN GLOBAL BUSINESS MANAGEMENT
(INTERNATIONAL PROGRAM)
FACULTY OF COMMERCE AND ACCOUNTANCY
THAMMASAT UNIVERSITY
ACADEMIC YEAR 2022
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INDEPENDENT STUDY

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ENTITLED

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was approved as partial fulfillment of the requirements for
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ABSTRACT

In the recent years, Thai government introduced and approved mega project named High-speed rail linking 3 airports ("HSR linking 3 airports") which is one of the crucial infrastructure projects under the National strategy (B.E.2560 - 2579). Also, this transport will connect between Bangkok and other provinces along the route making journey more conveniently. Several research studies described that infrastructure facility is one of the most common factors having influence on residents' purchase decisions. Therefore, this research aims to study the impacts of upcoming HSR linking 3 airports towards residential buyer's decision by doing survey of 120 respondents in total and performing analysis on the significant drivers which should be focused on the future residential development. Furthermore, Suvarnabhumi area is the focused area where this area is being rapidly developed to connect with the existing and future transportation networks. Finally, the statistical results show the improvement of accessibility and convenience in travelling to central business district and level of income are the significant factors explained the intention to acquire residence located close to Suvarnabhumi area.

Keywords: Central business district, Infrastructure, Suvarnabhumi area

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Housing is considered as one of the basic needs for all human beings that provide a secure and comfortable habitat. Besides basic features, there are other elements under both environmental factors and personal requirements to be considered when purchasing a dream home. Basically, the buyers are particular to understand and attach a great importance to the housing that meets their preferences especially for the first-time homebuyers. Several factors such as affordability, family members' satisfaction, housing amenities and features, infrastructure facilities, location, monetary policy regulated by local governments, popularity of property developers, security, and surroundings may have an influence on residents' purchase decisions (Zhang, & Nuangjamnong, 2022). Furthermore, financial stability and long-term engagement are connected with a process of house-buying considerations that makes it distinctly uneasy.

1.2 Significance of Study

1.2.1 Property Market in Thailand

In years past, a variety of buying decision behaviors are likely to change and adapt to a new circumstance. For example, working from home culture encouraged people looking for spacious homes amid the pandemic of Covid-19. (Sinha, 2021), and the impact of Covid-19 pandemic makes buyers tend to consume more time in decision making (DDProperty, 2022). From the statistics of the National Statistic Office of Thailand, the number of homes of the whole kingdom after the two-year pandemic was 27.71 million units with compound annual growth rate of 2.17% for the past 10 years. In terms of the capital and its five adjacent provinces; Samut Prakan, Nonthaburi, Pathum Thani, Nakhon Pathom, and Samut Sakhon provinces, the number is accounted for 5.99 million units or 21.62% of the total units and its growth rate

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increased above the country average to 2.72%. Pathum Thani, Samut Prakan, and Nonthaburi have an outstanding change over 10-year period of 3.37%, 3.27%, and 2.94%, respectively. However, the movement of growth rate of Bangkok Metropolitan Region has unexpectedly slowed down from 2018 onwards and the 2021 growth rate of 1.78% was the lowest over a decade. (NSO, n.d.). The impact of changes over time in either environmental factors or personal requirements could dominate demand and supply over the Thai property market thoroughly.

For the current trends in 2022, DDProperty (2022) described the housing price index that the overall price of property in Bangkok continue to decline, and it is below the pre-pandemic period in 2019; however, only single-detached house has a positive change which is 6% escalation from prior year and 13% before COVID-19 outbreak. 4 out of 5 areas that have the highest price growth are Bangkok's suburban areas; Thawi Watthana, Wang Thonglang, Taling Chan, and Bang Phlat in a price range between 40,000 - 100,000 Baht per square meter (sq.m.).

The improvement of the new condominium projects in Bangkok's midtown and suburban areas has been recovered or closed to pre-pandemic period whilst the midtown condominium project still stayed at the bottom. About 70% of future supply in the midtown and suburban condominium market are located close to the existing train lines and under-construction of orange, pink, and yellow mass transit lines. In the 1st quarter of 2022, 18 new projects were launched in midtown and suburbs of Bangkok which substantially increased quarter-on-quarter and year-on-year approximately 82% and 257%, respectively while there was only 1 project launched in Bangkok downtown (CBRE (Thailand), 2022).

Table 1.1 below shows the newly launched condominium projects in midtown and suburban areas in 1st Quarter 2022.

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Table 1.1

Newly launched condominium projects in midtown and suburb in Q1 2022, (CBRE (Thailand), 2022)

Project Name	**Grade**	**Total Units**	**Launch Price (Baht per sq.m.)**	**Proximity to Mass Transit**
HI Rise Sukhumvit 101	Entry-level	150	71,500	n/a
NUE District R9	Upscale	1,441	131,500	MRT Dark Blue Line
GLADDEN Square Ladprao 15	Upscale	77	113,000	BTS Yellow Line
NUE Evo Ari	Upscale	488	149,500	BTS Light Green Line
THE LINE Vibe	Upscale	940	111,500	BTS Yellow Line
Blue Phahonyothin 35	Mid-range	322	91,500	n/a
Origin Plug & Play Sirindhorn Station	Mid-range	1,034	96,000	MRT Dark Blue Line
Aspire Pinklao - Arun Amarin	Upscale	395	108,500	n/a
Sub Total - Midtown		**4,847**		
Supalai Loft Ratchada-Wongsawang	Entry-level	1,302	64,500	n/a

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Project Name	Grade	Total Units	Launch Price (Baht per sq.m.)	Proximity to Mass Transit
Premio Condo	Mid-range	101	71,500	BTS Pink Line
Landmark at Kasetsart TSH Station	Upscale	236	130,000	SRT Red Line
Sena Kith Rangsit-Tiwanon (A-B)	Entry-level	490	36,000	n/a
Atmoz Kanaal Rangsit	Entry-level	974	65,000	SRT Red Line
EMMA CONDO	Entry-level	76	49,500	n/a
Ploen Condo Ratchaphreuk-Pinklao	Entry-level	154	36,500	n/a
NUE-Z Square Suan Luang Station	Mid-range	289	78,000	BTS Yellow Line
NUE Mega Plus Bangna	Mid-range	1,005	90,000	LRT Silver Line
Regent Home Bangna	Entry-level	5,007	42,857	BTS Light Green Line
Sub Total - Suburb		**9,634**		
Grand Total		**14,481**		

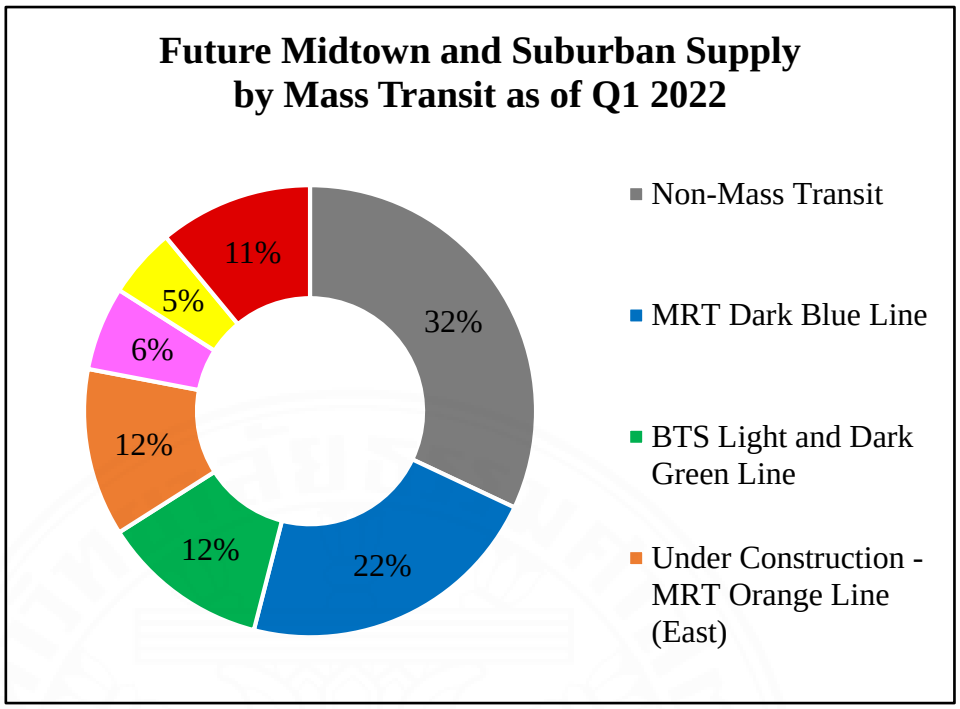

Figure 1.1 Future midtown and suburban supply by mass transit as of Q1 2022, (CBRE (Thailand), 2022)

On the demand side, property developers especially focused on real demand from local buyers and saw that less than half of millennials intends to find new residences after moving out of their parents' houses, whereas, nearly half of them also have financial concerns (DDProperty, 2022). Therefore, property developers have reformed products and related services to fulfill customers' requirements accordingly (DDProperty, 2022; CBRE (Thailand), 2022). For example, various property developers saw housing demand in northern suburbs of Bangkok from students and first jobbers, who seek tiny units located near mass transit with reasonable prices; therefore condominium projects were introduced and launched 4,319 units in 2022 and will be supplied during 2023-2025 about 8,466 units or 17% of entire units in midtown and suburban areas (CBRE (Thailand), 2022).

For the Bangkok housing market, demand in this sector has increased since the COVID-19 pandemic and it tend to be higher than the demand in condominium over 10 years. Changes in the requirement of buyers such as additional green space, more functional rooms, yard for their kids or pets, and other preferences reflected the

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higher demand in this market. In 1st Quarter of 2022, many low-rise housing projects were launched to the market which substantially increased year-on-year approximately 60% but decreased nearly 36% from 4th Quarter of 2021. Moreover, about 77% of total units launched in 1st Quarter of 2022 were residences in suburban area, as it may imply that condominium development tends to expand the location from inner to outer city which conform to the development in housing estate (CBRE (Thailand), 2022).

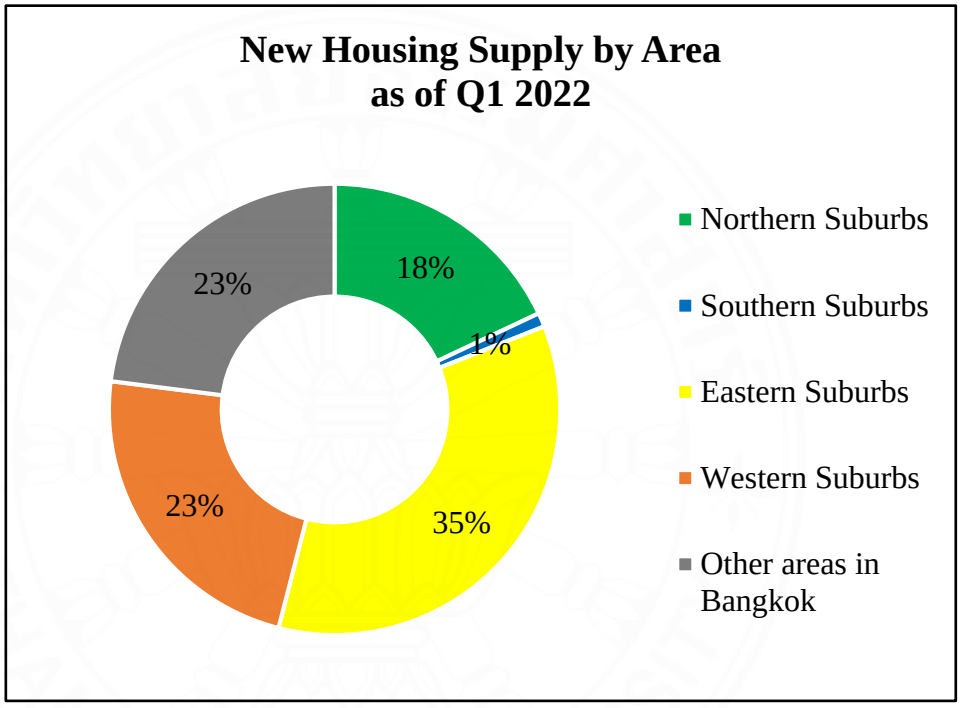

Figure 1.2 New housing supply by area as of Q1 2022, (CBRE (Thailand), 2022)

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1.2.2 High-Speed Rail

Many types of infrastructure projects whether communication, power and energy, public facilities, etc. have been developed over decades and transportation infrastructure is one of the major drivers of urbanization in many countries. Nowadays, the best transportation method for the busiest areas across densely populated cities is HSR. Over 25 countries globally have succeeded in many aspects such as economy, reputation of technological invention, and attractiveness of business and tourist destinations (ADB, 2019).

Japan, a pioneer of HSR development, started the first operation with the Sinkansen, or "bullet train" in 1964. At present, 9 HSR lines across 3 of the 4 major islands covering 22 cities have served an excess of 420,000 passengers on weekdays and influence the Japanese HSR network becoming the busiest rail transportation system in the world. Recently, China has stepped into the front-row player in this infrastructure development. They have established and expanded their HSR networks expeditiously by using the Japanese's Shinkansen network as a prototype in development. It resulted in giving them the first operational route from the capital city to Tianjin in 2008. The Chinese HSR is expected to reach more than 45,000 kilometers (km.) which will be the longest railway line or longer than the total routes in other countries (Nunno, 2018).

Table 1.2 below shows the current status of HSR for the top 5 countries and Thailand based on the length of operating lines.

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Table 1.2

The current status of HSR for the top 5 countries and Thailand, (Nunno, 2018)

Country	**Length of Operating Lines (km.)**	**Length of Lines under Development (km.)**	**Max Speed (km. per hour)**
China	26,869	12,006	350
France	3,220	125	320
Spain	3,100	1,800	310
Japan	3,041	596	320
Germany	3,038	330	300
Thailand	n/a	615	300

Thailand, the 2nd country in Southeast Asia behind Laos is in the process of developing a HSR system. Regarding the National strategy (B.E.2560 - 2579), 4 modern railway infrastructure projects have been assigned to the specific regions and the HSR linking 3 airports is one of the top priority infrastructure projects to synchronize with the existing transportation and logistics networks and support flagship special economic zone named Eastern Economic Corridor, a new Southeast Asia's hub for the emerging industries and their future growth. The estimation of total passenger for both city line and high-speed express in the first year of operation is 150,000 per day and reach 310,000 per day in the next 51 years. In 2021, the extension of modern transportation infrastructure from the inner city to outer suburbs is one of the significant impacts to the changes in property price in Bangkok's suburban neighborhoods, the area with highest price growth in Thailand (DDProperty, 2022).

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The given current situation, the upcoming HSR in Thailand could generate multiple aspects to residents and non-residents in Thailand but there are a few research on the question of whether the impacts of HSR linking 3 airports influence towards residential buyer's decision.

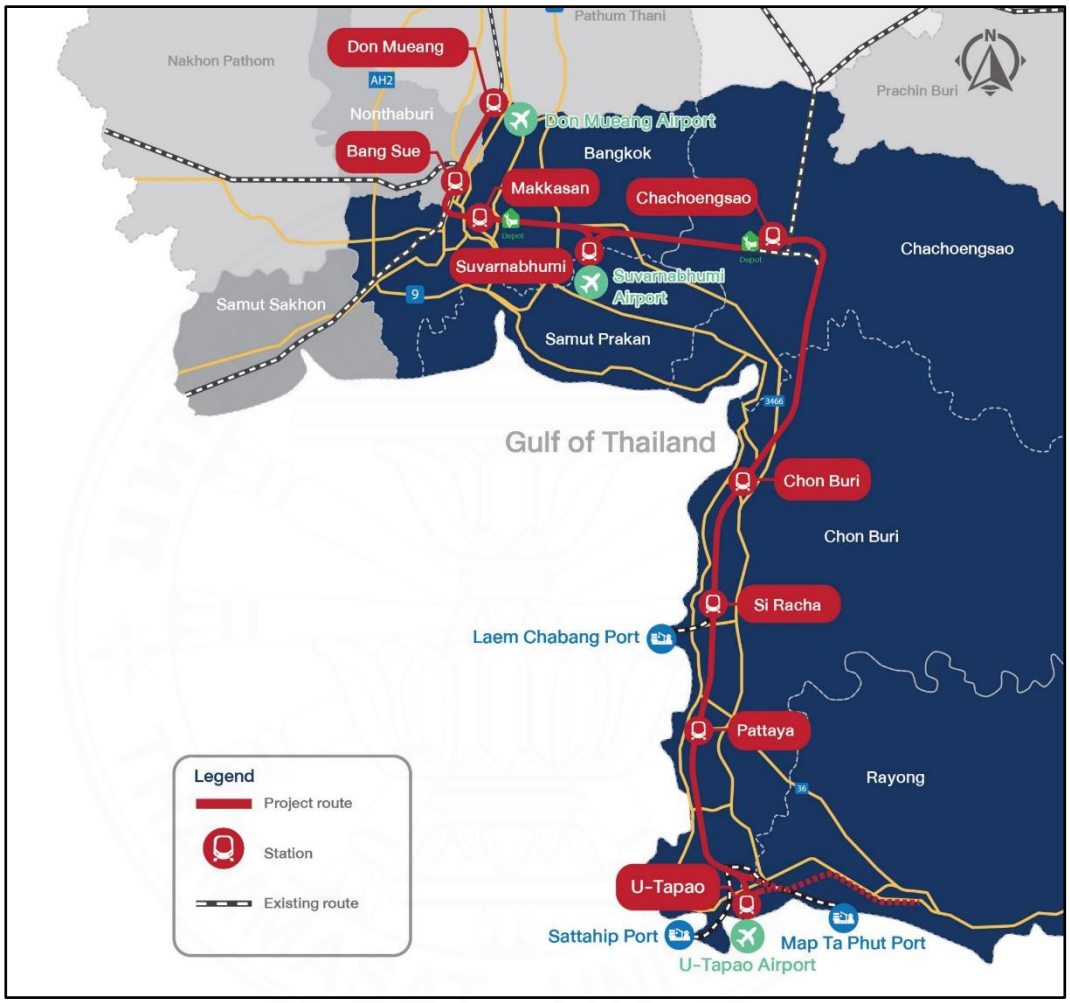

Figure 1.3 HSR linking 3 airports route (SRT, n.d.)

1.3 Research Objective

To find the answer, this research aims to study the impacts of upcoming HSR linking 3 airports towards residential buyer's decision by doing survey and performing analysis on the significant drivers which should be focused on the future residential development in terms of marketing and commercial objectives. Furthermore, Suvarnabhumi area is the focused on this research study due to the fact

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that this area is being rapidly developed to connect with the existing and future transportation networks.

1.4 Scope of Study

This research focuses only on the influences of the upcoming HSR linking 3 airports in Thailand towards the decision of residential buyers in Suvarnabhumi area. Furthermore, it limits its time frame to span only between August and the end of December 2022.

1.5 Definition of Terms

In this research, the following terms have exclusive definition and meaning as defined below;

Bangkok Area - Downtown

This area comprises 7 sections; Silom-Sathorn, Central Lumpini, Sukhumvit, Pathumwan, Rama 3, Riverside incorporating Rama 3, Charoenkrung, and Charoennakorn, and Outer Sukhumvit (CBRE (Thailand), 2022)

Bangkok Area - Midtown

This area comprises 6 sections; Late Sukhumvit, Pattanakarn-Rama 9, Ratchadapisek-Rama 9-Ladprao, Phaholyothin-Vibhavadi, Pinklao, and Thonburi (CBRE (Thailand), 2022)

Bangkok Area - Suburb

The Bangkok area excludes downtown and midtown areas (CBRE (Thailand), 2022)

BTS

The Bangkok Mass Transit System consists of 2 lines, dark green and light green lines with 52 stations in total. Currently,

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other 2 lines (yellow and pink lines) are under construction and due to start the operation in the late of 2022 (MRTA, n.d.; CBRE (Thailand), 2022)

EEC

Eastern Economic Corridor, the new special economic zone covering 3 principal provinces; Chachoengsao, Chonburi, and Rayong (EEC, n.d.)

Grade classification

Table 1.3

Grade classification of condominium and house, (CBRE (Thailand), 2022)

Grade	**Condominium Price Range (Baht per sq.m.)**	**House Price Range (Million Baht per unit)**
Super Luxury	Above 350,000	Above 70 million
Luxury	250,000-349,999	30.1 million - 70 million
High-end	150,000-249,999	15.1 million - 30 million
Upscale	100,000-149,999	5.1 million - 15 million
Mid-range	70,000-99,999	3.1 million - 5 million
Entry-level	Below 69,999	Below 3 million

HSR

High-speed rail defines train with minimum speed of 125 miles per hour or 200 kilometers per hour (High Speed Rail Alliance, n.d.)

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HSR linking 3 airports

The Airport Rail Link consists of single line with 8 stations in total. Currently, the extension phase is in progress of land expropriation and the existing structure will be redeveloped and converted to HSR linking 3 airports; Don Mueang, Suvarnabhumi, and U-Tapao International Airports (SRT, n.d.; CBRE (Thailand), 2022)

LRT

The Traffic and Transportation Department introduced silver line consisting of 14 stations from Bangna to Suvarnabhumi International Airport. Currently, the extension phase is under study plan and due to start the operation in 2024 (CBRE (Thailand), 2022)

MRT

The Metropolitan Rapid Transit consists of 2 lines, blue and purple lines with 54 stations in total. Currently, another 1 line (orange line, eastern section) is under construction and due to start the operation in 2024 (MRTA, n.d.; CBRE (Thailand), 2022)

SRT

The State Railway of Thailand operates 2 lines, dark red and light red lines with 13 stations in total. Currently, the extension phase is under study plan and due to start the operation in 2026 (SRT, n.d.; CBRE (Thailand), 2022)

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1.6 Presentation Structure

The report is divided into the following sections; Chapter 2 contains a review of the literature on real estate purchase decision and impacts from the HSR development. Chapter 3 gives a research methodology whose results are reported in Chapter 4. Eventually, conclusion and recommendation are summarized in the last.

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CHAPTER 2
REVIEW OF LITERATURE

2.1 Introduction

The first 2 parts describe real estate purchase decision and impacts from the HSR development. This review of literature generates hypotheses determination and develops a conceptual framework for this research study.

2.2 Real Estate Purchase Decision

Housing is one of the necessities that influence residents having stability and security in their lives. Responding to the basic and personal requirements, many criteria are identified and assessed when people consider buying new homes. This resulted in the perpetual adaptation of property developers in order to understand the market trends and conditions and develop the properties that could satisfy the customers' demands. For example, regarding the increase in Thai property supply index by 25% from pre-COVID-19 pandemic and issue of economy insecurity, most developers have delayed new project launches and continued to focus on selling their inventories or backlogs with promotions and discounts. Even though, many marketing strategies are applied, Thai consumers also take more time to consider carefully when buying properties (DDProperty, 2022).

According to the research study of Zhang & Nuangjamnong (2022), there are 9 factors with different levels of significance that may have an impact on purchase decision by ranking from high to low level of significant are as follows;

Finance: Finance demonstrates the affordability of residential purchasers including salary, employment, personal wealth and financial credit, availability in mortgage finance, and ability to repay. In terms of mortgage lending, lenders will evaluate the loan-to-value ("LTV") ratio and the debt-service coverage ratio to define

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the principal and interest rate that is suitable to specific borrowers. Currently, Thai monetary policy in mortgage lending has been enforced all commercial banks in Thailand by reconsidering the maximum LTV ratio in the range between 70% - 90% of property value (Bangkok Post, 2021). This is to prevent the rapid increase in household debt. The financial health is the most significant towards the decision which is exceeding 30% compared to other factors (Zhang & Nuangjamnong, 2022).

Living space: Living space is one of the basic housing features which includes room types, room size, garden, car park, etc. The house size is more essential when a family is growing. For example, a larger home may have a yard for kids or pets to enjoy their outdoor activities (Zhang & Nuangjamnong, 2022). On the other hand, a smaller house is suitable for a nuclear family and related housing costs such as utilities, repair and maintenance, and so on could be economized (White, 2018).

Family members' influence: Influence from family affiliates can be categorized into direct and indirect impacts, however it is based on risks and interest sharing within the household. Assuming family members are buying a property together, all risks, obligations, and asset ownership are transferred to all co-buyers pertaining to proportion of equity (Zhang & Nuangjamnong, 2022). Under this cooperation, the co-buyers may have more choices in buying properties such as bigger home, higher quality, better location, and so on (RayWhite, n.d.). In addition, due to their experiences, parents' voices supporting their children' decision making are always matter and meaningful (Zhang & Nuangjamnong, 2022).

Location: Location is one of the key factors that will pop into consumers' mind when buying a property. A house located on a piece of land can be demolished or renovated but the location is unchangeable, so this is a reasonable argument and makes this factor valid. Furthermore, location is just a partial subjective and there are other sub-factors in consideration of location such as community appearance, infrastructure and recreational amenity development, proximity to community, and vicinity (Zhang & Nuangjamnong, 2022). Location and other relevant factors are highly relative to property value and its increase in property value in the future (Struyk, 2022). Distance

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is also mentioned as a variable for homebuyer, for example distance from workplace or school for their child could distinctly affect homebuyer's decision making (Zhang & Nuangjamnong, 2022).

Security: Security is less significant compared to other 4 factors as mentioned earlier. Regarding the study of Mang, Zainal, & Radzuan (2020), security is one of the elements under neighborhood factor that create a positive atmosphere. Consumers desire for safety, security, better quality of street layout, and traffic conditions, etc. that make them have a low-risk lifestyle. In addition, they also request for a healthy environment or without air pollution, water pollution, noise pollution, and other kinds of pollution to save their lives or get a better quality of life.

The later part of the study shows that the remaining factors; Environment, Dwelling features, Infrastructure facilities, and Property developers, are identified as insignificant factors in housing purchase decision.

Environment: This factor may overlap between environment and other factors. People are seeking a property with a good condition of neighborhood and community, location attractiveness, better utilization of available space from city plan and zoning, low traffic condition, sustainability plan for PM2.5, flooding and other natural disasters, etc. that provide them a variety of benefits in a daily life. Furthermore, it could help people live longer and have good mental wellbeing (Zhang & Nuangjamnong, 2022). According to the study of Felman (2020), the World Health Organization recommends that the environment, one of the key factors, may have a powerful impact on physical and mental health.

Dwelling features: Dwelling features may have a different characteristic based on individual preference. Some amenities could provide a specific function and satisfy the people in different generations (Zhang & Nuangjamnong, 2022). For example, Lewis (2021) indicated that nowadays, with many recreational-activity rooms in retirement communities, they could support the inhabitants in de-stressing, enjoyment, and relaxation.

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Infrastructure facilities: Infrastructure such as public transport system, road and highway development, public utility, communication network, etc. is a foundation in many countries that make their population have a good life (Zhang & Nuangjamnong, 2022). Times Property (2021) revealed that, recently, a lot of infrastructure in transportation has been developed in Bangalore, one of the largest cities in India. An increase of migrants nearly 4% per annum from 2018 to present is the visible outcome of the fast-paced infrastructure development. Also, these projects have created a huge-step change in city urbanization including the property market. As a result, this potential city has attracted numerous investors, both local and international, who look for a new investment opportunity and be a crucial hub for investment in Indian commercial properties.

Property developers: Property developers with their brands will be the first thing that comes through homebuyers' minds. Regarding the reputation of a property developer, it could be relevant to the brand awareness, housing characteristics, house quality, reliability, etc. (Zhang & Nuangjamnong, 2022). Multiple brands are created in order to classify product tiers such as entry-level, mid-scale, upscale, high-end, luxury, and super luxury, aligning with price range and target customers (CBRE (Thailand), 2022). For example, there are 10 brands in single detached house portfolio under Land and Houses Public Company Limited, the company with the largest market capitalization in Thai real estate sector, which are the following;

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Table 2.1

The brands in the single detached house portfolio under Land and Houses Public Company Limited, (Land & Houses, n.d.) with the grade classification, (CBRE (Thailand), 2022)

Brand	Grade	Price
Laddawan / Nantawan	Luxury	Start 30 million Baht
Vive	High-end	Start 28 million Baht
Siwalee	High-end	Start 7 million Baht
Chaiyapruek / Mantana / Prueklada	High-end	Start 6 million Baht
Anya	High-end	Start 5 million Baht
Inizio	Mid-range	Start 4 million Baht
Villagio	Entry-level	Start 2 million Baht

According to the study of Cheng & Cheok (2008), the summary showed that the property brands have been perceived by the real estate purchasers by ranking developers based on level of fame, brand image, and residential quality.

2.3 Impacts from HSR Development

2.3.1 Accessibility and Connectivity

According to the study of Cheng & Chen (2021), in terms of accessibility, the ability to approach a variety of public transit options including bus, rail, ferry, and other services. HSR is one of the modern transports that could change the traditional accessibility everlastingly. Multiple studies showed that time and cost savings while commuting between the cities is the key improvement from the development of HSR. On the other hand, certain studies mentioned the negligible improvement in the accessibility which is due to the fact that HSR was developed and

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served the passengers who live in metropolises and some specific cities only. For example, in the United Kingdom, the cities without direct connection in HSR stations obtain minor benefits compared to other major cities. In addition, for the Shanghai - Nanjing HSR line, the accessibility tends to develop in the certain areas that have high economical activities rather than other less developing cities.

Accessibility is one of the key considerations in real estate prices that is measured by the distance from the central business district, and how far from the HSR station. Residences near the transportation system could be beneficial from time and cost savings in transportation. Therefore, the relationship between level of accessibility to the rail networks and real estate price could have high positive correlation (Cheng & Chen, 2021). Furthermore, the HSR stations with quality facilities or destinations are examined to have a substantial impact on the residential property prices (Makumbi, 2019).

In terms of connectivity, from the study of Jiao et al. (2020), HSR development in China is the latest missing part of conglomerated transportation systems that fully connect with airways, roadways, railways, and waterways. Furthermore, this also supports the improvement of connectivity between cities, especially in the central region. The magnitude of improvement in transportation by HSR is less than aviation and water transportation but greater than ground transports. The network quality of HSR connecting between cities is measured by the train frequency or service interval between trains.

The measurement of accessibility for individual infrastructure consists of many indicators, such as temporal variation of location, weighted average travel time, daily accessibility, potential accessibility, etc. (Cheng & Chen, 2021; Jing et al., 2019). The results from analysis of the correlation between accessibility and HSR system by using respective indicators could be different. For example, daily accessibility indicates a significant change in accessibility, whereas the change is minimal when measured by potential accessibility. Nevertheless, the outcome quantified by weighted average travel time cannot reach a conclusion. Other research

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studies showed that travel time, travel distance, or travel cost are associated with the shortest path in separate periods of time, another factor in evaluating changes in accessibility (Cheng & Chen 2021; Jiao et al., 2020).

2.3.2 Economy

Economic performance is evaluated by the degree of achievement according to the economic policy objectives which mainly comprise economic growth, unemployment rate, inflation rate and balance of payment accounts. Economic growth is relevant to the correlation between demand and supply of products and services from internal and external markets. Gross domestic product is one of the international measurements in economic growth. Unemployment rate relates to the level of the active economy by the unemployment rate has an inverse correlation with the economy. For inflation rate, when the prices continuously rise from time to time and the money earned cannot defeat the inflation rate, the affordability of consumers will be less. Many countries maintain moderate inflation on their monetary policy to drive economic growth and prevent deflation. Lastly, the balance of payment accounts shows the country's cashflow status or financial health (StudySmarter, n.d.).

HSR could benefit the national or provincial economy in many aspects such as reducing travel time and cost, increasing accessibility and connectivity, creating an attractive investment climate, etc. Moreover, improvement in mobility including city to city migration, high job demand, and other specific factors that could influence the economy for both short-term and long-term run and also support the location endowment. For example, HSR development in France has a significant impact toward the neighboring cities such as Lille and Komei. Also, Shinkansen in Japan expands the economic benefits from inner to outer areas (Jiao et al., 2020). The economic performance in suburbs including second and third level from the metropolis could be better in terms of housing prices due to the HSR extension in China (Cheng & Chen, 2021; Jiao et al., 2020).

The study also indicated the economic results from the connectivity between large cities and small cities by HSR routes that market activities and

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productivity could transfer from the neighboring cities to the megacities. In terms of economic performance, there is substantial influence on the megacities' GDP while the small cities might have a negative result from the introduction of HSR. However, enhancement of connectivity could have minimal impacts on the economic performance rather than improvement of accessibility driven by the developing extended HSR. Overall, the introduction of HSR could generate a net positive impact on economic growth and it is clearly seen that the governments in different countries concentrate on the extension of HSR routes to connect with the economic areas collectively and elevate the cluster-based economic development (Jiao et al., 2020).

Regarding the study of Cheng & Chen, 2021, there are 2 issues from assessment between HSR impact and the economic performance; how HSR development drives the economic growth and level of the economic impacts on different provinces. The result from several studies revealed the positive aspects of economic growth from the improvement of accessibility by HSR development. Besides, there are other factors that may have impacts on the economic performance such as transportation volume, direction of HSR routes, route distance, stages of development in the economy. For instance, the daily passenger should reach the target of 8-10 million per every 500 kilometers of HSR route to fulfill the positive economy or higher than break even point. In addition, the cost of development, reducing travel times, and the level of effectiveness in the current transportation system could be the other specific economic indicators of the successful HSR development.

2.3.3 Environment

Many governments announced several infrastructure development plans which are relevant closely to economic and social impacts, environmental changes, and human lives. The crucial objective is to enhance productivity and competitive advantages and secure a sustainable future for their descendants. From the Group of Twenty ("G20") summit at Hangzhou, People's Republic of China in 2016, the leaders from top 20 largest economic countries focused on the measurement of environmental and socioeconomic impacts together with a consideration of quality

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infrastructure investment and provided the assurance and cooperation between G20 countries and other nations worldwide (OECD, 2019).

The study of Cheng & Chen (2021) mentioned that HSR rollouts influence both positive and negative aspects. To begin with the issues, Chinese HSR could generate a significant level of CO2 emission caused by the high density of passengers and transport volume. Also, several studies showed that one of the significant variables of the greenhouse effect could derive from the electricity production consumed by HSR. Negative impacts from air and noise pollution could decrease the price of residences close to stations as well.

On the other hand, HSR could generate environmental benefits from the connection of multiple transportation networks when compared to the different single modes of transport (Gao, Zheng, & Wang, 2021). Actually, short scheduled flight and road transports could have a higher air pollution than HSR; however, the studies are limited due to the degree of transit accessibility in respective countries. For instance, in Turkiye, buses are more attractive in transportation rather than flights, private cars, and rails.

When HSR is developed together with urban and facility development, many heavy-polluting factories may move to other restricted areas or specific industrial zones or improve the pollution and waste management process to alleviate the impact of climate change and other environmental concerns. Nowadays, innovative ideas and useful inventions support the new technology in HSR development such as energy savings improvement, eco-friendly manufacturing in HSR components, utilization of renewable energy sources, etc. Also, policies and regulations such as net zero emissions, carbon neutrality, etc. are designed and implemented to directly control the environmental impacts and generate the continuous improvement into manufacturing innovations (Gao, Zheng, & Wang, 2021).

In terms of energy consumption, HSR could remarkably reduce energy consumption and energy consumption intensity in the few years after opening

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for the operation. The empirical result from the study of Chinese HSR, the explanation on the changes in energy consumption is possible due to the enhancement of connectivity of transportation networks, train frequency or service interval between trains, level of accessibility to public transport, and future technological advancements (Chen, 2021).

2.3.4 Mobility

Transport mobility is a physical ability to move from one place to other places for individual purposes such as working, shopping, sightseeing, etc. Mobility also allows the people to be a part of social and community (Brodrick & Stanley, 2013). Many people believe that HSR, one of the modern modes of transport, is safe, being on-time performance, comfortable, and cost saving. It strengthens the commuters travel from their hometown with uncertainty free (Xu & Sun, 2020).

Cheng & Chen (2021) mentioned in the research study that the HSR development could have a positive impact on the labor market in many aspects such as increase in employment rate, labor mobility, and company relocation. Furthermore, it could support the people to create happiness and life satisfaction (Brodrick & Stanley, 2013). Many studies described the main reason for the migration in the labor market is due to the enhancement of accessibility and connectivity derived from HSR extension (Jiao et al., 2020). In general, it can be measured by the number of commuters who are not living in the city permanently.

For instance, many fundamental infrastructures and facilities are required when city urbanization in Africa is increasing rapidly in order to embrace the population growth and market demand. Multiple sectors including transportation and real estate could have impacts on this shifting. The local government designed an investment plan on rail transport by assessing carefully between development cost and benefits from economic activities. Nevertheless, a large amount of capital is required to support the distribution of proceeds in the railway major renovation (Makumbi, 2019).

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Campa et al. (2018) disclosed that HSR development is able to decrease an average vehicle speed supporting the problem in traffic safety and the number of private cars due to traffic congestion in many important cities. HSR has been integrated with the existing transportation networks that make them more perfect and convenient in traveling. Their study also revealed the empirical results that there is a material change in the extension of the rail networks when the number of daily passengers reach the maximum limits.

In conclusion, the literature review on the residential buyer's decision and the impacts from HSR development can be discovered and many aspects lead to the changes in housing prices; nevertheless, there are limited results of the relationship between the impacts of HSR development and the consumer's decision in residential acquisition. The multiple results from research study may be different based on the research methodology such as research approach, population and sampling, research instrument, measurement, etc.

Thus, this research study aims to understand those relationships and assess the extent to which impacts of HSR linking 3 airports development may have an influence towards the purchasing residences in Suvarnabhumi area where is being rapidly developed to connect with the existing and future transportation networks. It can be useful information in the future residential development in terms of marketing and commercial objectives.

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CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

For this chapter, it begins with conceptual framework and hypotheses, population and sampling, methodological approach, data collection, research tool, questionnaire, and data analysis. The objective is to explain the research process including the data and tools which leads to understanding of the evaluation of the accuracy and consistency in research questions (Scribbr, 2022).

3.2 Identification of Research Method

The research is conducted by following process;

1. Develop conceptual framework and define hypotheses to illustrate the relationship between dependent and independent variables;
2. Specify methodological approach, data collection and research instrument to prescribe the research methodology;
3. Examine the collected data by using the IBM SPSS statistical program;
4. Conclude the result and discuss the findings including further development.

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3.3 Conceptual Framework and Hypothesis

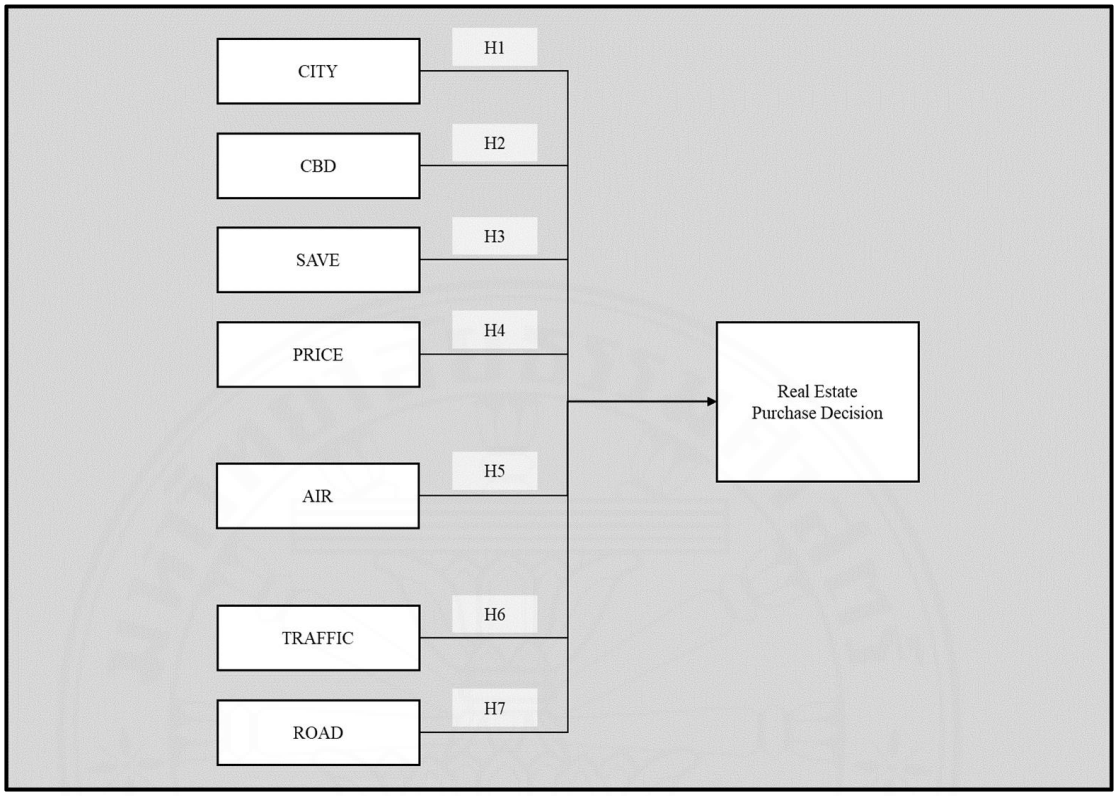

Figure 3.1 Proposed conceptual framework for the impacts of HSR linking 3 airports towards residential buyer's decision in Suvarnabhumi area

Table 3.1

Proposed hypotheses for the impacts of HSR linking 3 airports towards residential buyer's decision

Hypothesis	Description
H1	The improvement of connectivity with other cities and other modes of transportation along the routes of HSR linking 3 airports ("CITY") has significant impact to residential buyer's decision in Suvarnabhumi area
H2	Increasing accessibility to central business districts by HSR linking 3 airports ("CBD") has significant impact to residential buyer's decision in Suvarnabhumi area

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Hypothesis	Description
H3	Time and cost saving from traveling by HSR linking 3 airports, a fastest on-ground intercity travel ("SAVE") has significant impact to residential buyer's decision in Suvarnabhumi area
H4	The changes in residential price from transit-oriented development ("PRICE") have significant impact to residential buyer's decision in Suvarnabhumi area
H5	HSR linking 3 airports, an additional mode of transportation which reduces air pollution such as CO2, PM2.5, etc. ("AIR") has significant impact to residential buyer's decision in Suvarnabhumi area
H6	To reduce traffic congestion, HSR linking 3 airports development ("TRAFFIC") has significant impact to residential buyer's decision in Suvarnabhumi area
H7	To reduce traffic accident injuries and death, HSR linking 3 airports development ("ROAD") has significant impact to residential buyer's decision in Suvarnabhumi area

3.4 Population and Sampling

This research study on the impacts of HSR linking 3 airports towards residential buyer's decision among Thai population without restrictions regarding age, average monthly income, gender, and degree in education. The sample in data collection represents the population with the above description in total of 120 respondents.

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The illustration shows selected locations in the circles

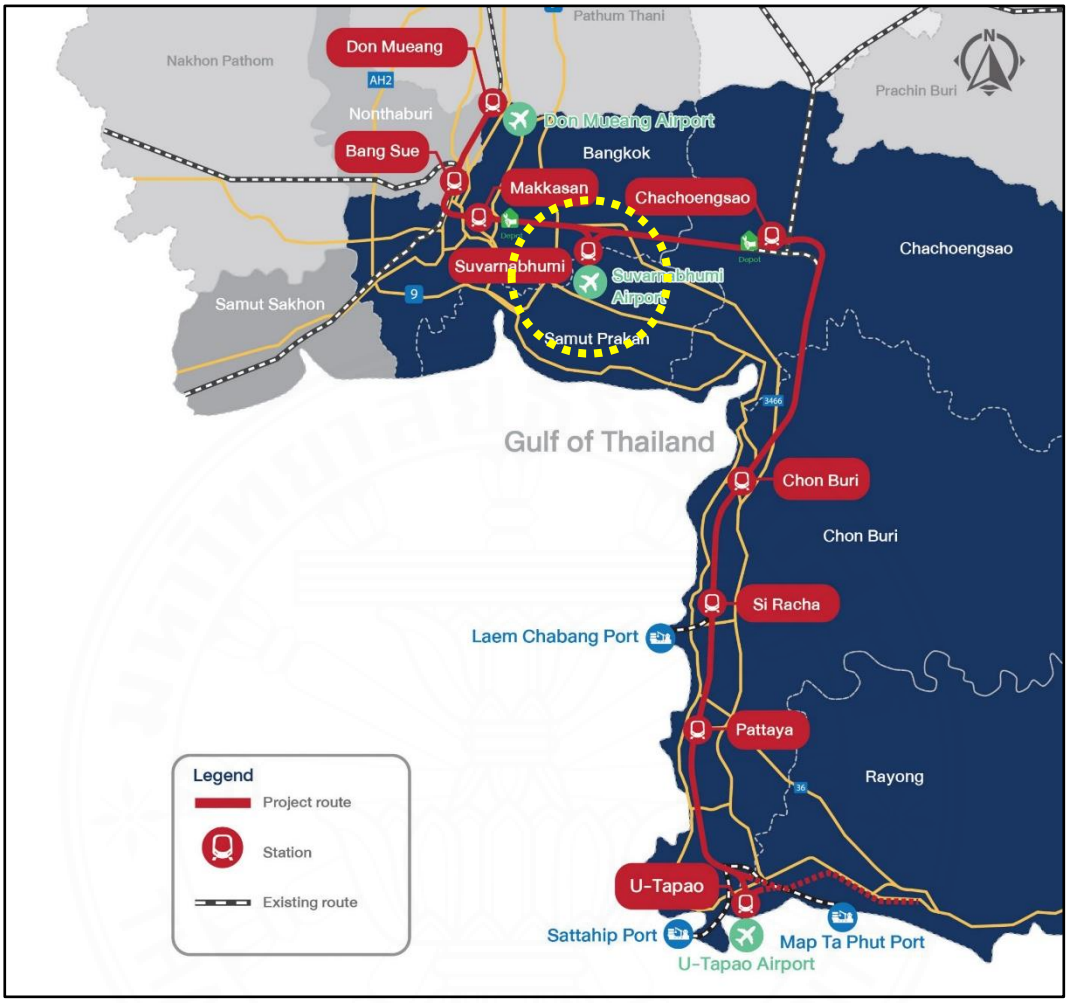

Figure 3.2 HSR linking 3 airports route (SRT, n.d.) with selected focus area, Suvarnabhumi area

3.5 Methodological Approach

This research study applies a quantitative approach, which is a process of collecting and assessing numerical data. This approach is data-oriented and could be able to serve a variety of functions in the analysis such as discovery of patterns and averages, predictions, statistical tests on variables, and others in many fields (Scribbr, 2022).

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3.6 Research Instrument

3.6.1 Data Collection

A survey questionnaire is used to collect data from the sample target participants. This method is adjustable in data collection that various types of research can apply (Scribbr, 2022).

3.6.2 Research Tool

The questionnaire is sent in google form during November - December 2022. The author is able to access the online data collected and upload them to the IBM SPSS statistical program for evaluation. A cover letter is also attached to the online questionnaire to explain the purpose of data gathering and data privacy. The google form is composed in Thai language.

3.7 Questionnaire

The survey comprises 18 questions and separated into 4 parts. Section 1 to 2 describe the impacts from the development of HSR linking 3 airports to find the opinion towards the residential purchase decision in the Thai property market. The question in section 3 mentions about decision to buy a residence on specific location. The final section comprises 4 questions of personal attributes; age, income, gender and education level.

In regard to hypotheses identified, the questions in Section 1 Decision to Buy a Residence relate to 4 independent variables; Accessibility and Connectivity, Economy, Environment, and Mobility as follows;

- Accessibility and Connectivity (“ACCN”) consists of 2 variables: CITY and CBD;
- Economy (“ECON”) consists of 2 variables: SAVE and PRICE;
- Environment (“ENVR”) consists of 1 variable: AIR;
- Mobility (“MOBL”) consists of 2 variables: TRAFFIC and ROAD.

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3.8 Data Analysis

3.8.1 Descriptive Analysis

For the responses relating to the impacts of HSR development, the answer will translate into numbers. While the decision in residential purchase is dependent variable (DV), the data from all answers represents independent variables (IVs) that may have an influence on outcome variable (University Libraries, 2022).

3.8.2 Quantitative Analysis

From the dependent and independent variables identified, they can be tested by using other functions in analyzing data as follows;

- Bivariate correlation: This is to examine the level and direction of linear relationship among two or more variables by the high correlation coefficient should be closed to -1 and 1 (University Libraries, 2022);
- Anova (F-Test): The One-Way ANOVA compares the means of two or more independent groups to consider whether there is statistical evidence that the associated population means are significantly different.
- Linear regression: This is to investigate the relationship between a dependent variable (DV) and independent variables (IVs) and also predict the DV which is accounted for by a single or multiple IVs;
- Other functions may apply to process and analyze survey data.

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CHAPTER 4
RESULTS AND DISCUSSION

4.1 Introduction

In order to respond to the objective, this chapter presents the result from the descriptive and quantitative analysis on the collected data by using multiple tools in IBM SPSS statistical program. The data is collected totally from 120 respondents and all replies are valid and have satisfied our samples for research study. The final part describes the summary of the analysis.

4.2 Descriptive Analysis

Table 4.1

Descriptive statistics for 4 independent variables for Q1 - Q9

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ACCN	120	1.50	5.00	4.2583	.72611
ECON	120	1.00	5.00	4.0875	.76878
ENVR	120	1.00	5.00	3.9667	.90687
MOBL	120	1.50	5.00	3.9375	.90647
Valid N (listwise)	120				

The descriptive statistical result from 9 questions (Q1 - Q9) for the impacts of upcoming HSR linking 3 airports towards residential buyer's decision, mean and Std. Deviation for individual independent variables; Accessibility and Connectivity ("ACCN"), Economy ("ECON"), Environment ("ENVR"), and Mobility ("MOBL") are in the range between 3.9375 - 4.2583 and 0.72611 - 0.90687. ACCN has the highest mean of 4.2538 while MOBL has the lowest mean of 3.9375.

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Table 4.2

Descriptive statistics for sub-independent variables for Q1 – Q9

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ACCN_CITY	120	1.00	5.00	4.2000	.82350
ACCN_CBD	120	1.00	5.00	4.3167	.79371
ECON_SAVE	120	1.00	5.00	3.9917	1.01663
ECON_PRICE	120	1.00	5.00	4.1833	.86950
ENVR_AIR	120	1.00	5.00	3.9667	.90687
MOBL_TRAFFIC	120	1.00	5.00	3.9333	1.00196
MOBL_ROAD	120	1.00	5.00	3.9417	1.04757
Valid N (listwise)	120				

Table 4.3

List of sub-independent variables

Sub-Independent Variable	**Description**
CITY	The improvement of connectivity with other cities and other modes of transportation along the routes of HSR linking 3 airports
CBD	Increasing accessibility to central business districts by HSR linking 3 airports
SAVE	Time and cost saving from traveling by HSR linking 3 airports, a fastest on-ground intercity travel
PRICE	The changes in residential price from transit-oriented development
AIR	HSR linking 3 airports, an additional mode of transportation which reduces air pollution such as CO2, PM2.5, etc.
TRAFFIC	Reduction of traffic congestion from HSR linking 3 airports development

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Sub-Independent Variable	Description
ROAD	Reduction of traffic accident injuries and death from HSR linking 3 airports development

Subsequently, the results of 7 sub-independent variables identified in the last chapter, are aligned with the variables as mentioned above. CBD is the outstanding variable with the best results (mean of 4.3167 and Std. Deviation of 0.79371) whereas TRAFFIC has the lowest position compared to other variances (mean of 3.9333 and Std. Deviation of 1.00196).

The descriptive statistical result can be interpreted that overall impact of the of upcoming HSR linking 3 airports has a high important effect towards the residential buyer's decisions. 4 out the 7 sub-independent variables from the hypothesis identified; SAVE, AIR, TRAFFIC, and ROAD have the same level of influence which is high important. The mean of remaining variables; CITY, CBD, and PRICE are higher than the average at 4.1167 meaning that these variables have the highest positive impact for homebuyer.

Table 4.4

Interpretation for sub-independent variables

Independent Variable	Sub-Independent Variable	Mean	Interpretation
Accessibility and Connectivity ("ACCN")	CITY	4.2000	High important
	CBD	4.3167	
Economy ("ECON")	SAVE	3.9917	
	PRICE	4.1833	
Environment ("ENVR")	AIR	3.9667	
Mobility ("MOBL")	TRAFFIC	3.9333	
	ROAD	3.9417	
TOTAL		**4.1167**	**High important**

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Table 4.5

Definition of individual levels for Linkert scale

Range	Definition for Question 1 - 9	Definition for Question 14
Below 3.00	Low important	Low interested
Above 3.00	High important	High interested
5.00	Highest important	Highest interested

Table 4.6

Frequency and descriptive statistics for Q10 - Q12

	Valid Percent		
Level of Affordability (Baht)	**Condominium ("AFF_CONDO")**	**Detached House ("AFF_DH")**	**Townhouse ("AFF_TH")**
Below 3 million	33.3	11.7	18.3
3.1 million - 5 million	42.5	33.3	42.5
5.1 million - 7 million	17.5	35.8	27.5
Above 7 million	6.7	19.2	11.7
Total	**100.0**	**100.0**	**100.0**

Above 3 million	66.7%	88.3%	81.7%
Below 7 million	93.3%	80.8%	88.3%

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
AFF_CONDO	120	1.00	4.00	1.9750	.88368
AFF_DH	120	1.00	4.00	2.6250	.92639
AFF_TH	120	1.00	4.00	2.3250	.90899
Valid N (listwise)	120				

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For Question 10 -13 (Q10 - Q13) under section 2 in survey questionnaire, the author applied single choice to measure the residential affordability. To begin with AFF_CONDO, the majority of 42.5% is the price range between 3.1 million - 5 million Baht, followed by below 3 million Baht and 5.1 million - 7 million Baht with 33.3% and 17.5%, respectively. The rest of 6.7% is the price above 7 million Baht. Furthermore, 93.3% of respondents expected the condominium with price less than 7 million Baht can be affordable.

AFF_DH: More than 3.1 million Baht is the price that 88.3% of respondents can be achieved. For the price ranges between 3.1 million - 5 million Baht and 5.1 million - 7 million Baht, the proportions for these two groups are slightly different and higher than 30%. The price above 7 million Baht is the third runner with 19.2%, followed by below 3 million Baht with 11.7%.

AFF_TH: The pattern is similar to condominium where the proportion of affordable townhouse with the price below 7 million Baht is the majority at 88.3%. The proportion of price range between 3.1 - 5 million Baht is 42.5%, followed by 5.1 million - 7 million Baht and below 3 million Baht with 27.5% and 18.3%, respectively. The rest of 11.7% is the price above 7 million Baht.

Subsequently, the descriptive statistical results of the affordability of residences in terms of mean, AFF_DH has the highest mean of 2.6250 while AFF_CONDO has the lowest mean of 1.9750. The average mean for all residential types is 2.3083 which can be interpreted that average affordability is 3.1 million - 5 million Baht.

Overall, it can be clearly seen that residences with the price range between 3.1 million - 5 million Baht is the most affordable. Furthermore, most respondents prefer condominium and townhouse with the price below 7 million Baht which account for 93.3% and 88.3%, respectively while 88.3% of them favor the price above 3 million Baht for detached house.

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Table 4.7

Frequency and descriptive statistics for Q13

The distance between residence and HSR linking 3 airports stations that facilitates the journey ("DIST")	**Valid Percent**
Below 3 kilometers	55.0
3.1 kilometers - 5 kilometers	34.2
Over 5 kilometers	10.8
Total	**100.0**

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DIST	120	1.00	3.00	1.5583	.68349
Valid N (listwise)	120				

For DIST under Question 13 (Q13), More than half of respondents prefer below 3 kilometers, followed by 3.1 kilometers - 5 kilometers and over 5 kilometers with 34.2% and 10.8%, respectively. The descriptive statistical results of DIST, mean and Std. Deviation is 1.5583 and 0.68349, respectively and it can be interpreted that below 3 kilometers is an average.

Table 4.8

Descriptive statistics for Q14

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
SVB	120	1.00	5.00	2.5750	1.24119
Valid N (listwise)	120				

For the last question under section 3 in survey questionnaire (Q14), the author applied Linkert scale to measure the decision to buy a residence located close to Suvarnabhumi area ("SVB"). The result is 2.5750 and 1.24119 for mean and Std.

Ref. code: 25656402043126HPR

Deviation, respectively. The descriptive statistical result means that it is low interesting in buying a residence in Suvarnabhumi area. The quantitative analysis of correlation between dependent and independent variables is described in section 4.4 Quantitative Analysis.

Table 4.9

Frequency and descriptive statistics for Q15

Age ("AGE")	**Valid Percent**
Below 25 years	10.0
25 - 35 Years	69.2
36 - 45 Years	15.0
Above 45 years	5.8
Total	**100.0**

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
AGE	120	1.00	4.00	2.1667	.67778
Valid N (listwise)	120				

Table 4.10

Frequency and descriptive statistics for Q17

Gender ("GENDER")	**Valid Percent**
Male	30.8
Female	69.2
Total	**100.0**

For demographic information, 69% of total respondents age in the range of 25 - 35 years, followed by 36 - 45 years and below 25 years with 15% and 10%, respectively. The rest of 6.8% is group over the age of 45 years. For gender, the proportion between male and female is 30.8% and 69.2%. Furthermore, the proportion between male and female is 30.8% and 69.2%.

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Table 4.11

Frequency and descriptive statistics for Q16

Average Monthly Income ("INCOME")	**Valid Percent**
Below 30,000 Baht	17.5
30,000 - 60,000 Baht	25.0
60,001 - 90,000 Baht	21.7
Above 90,000 Baht	35.8
Total	**100.0**

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
INCOME	120	1.00	4.00	2.7583	1.12269
Valid N (listwise)	120				

In terms of average monthly income, above 90,000 Baht is the biggest portion of 35.8%. The percentage of remaining components are slightly different or in the range between 17.5% - 25%. Below 30,000 Baht is the lowest of 17.5%. According to the descriptive statistical results of INCOME, mean and Std. Deviation is 2.7583 and 1.12269, respectively and it can be interpreted that 60,001 - 90,000 Baht is an average.

Table 4.12

Frequency and descriptive statistics for Q18

Degree in Education ("EDU")	**Valid Percent**
Less than Bachelor's degree	3.3
Bachelor's degree	51.7
Master's degree	45.0
Total	**100.0**

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Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EDU	120	1.00	3.00	2.4167	.55886
Valid N (listwise)	120				

The last independent variables for demographics, more than 95% are the respondents who hold at least bachelor's degree. Bachelor's degree has the highest portion of 51.7 while less than Bachelor's degree has the lowest of 3.3%. Master's degree is an average level of education among the respondents.

4.3 Reliability Analysis

4.3.1 Cronbach's Alpha Test

Cronbach's alpha is a measuring instrument for an appraisal of a set of scale or test items on the level of reliability or internal consistency. Particularly, the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and one of the tools that evaluate the substantial reliability is Cronbach's alpha. The result is in the range between 0 - 1. The high alpha coefficient shows the high correlation between underlying factors under the same concept. Referring to advice from methodologists, the alpha less than 0.5 is not acceptable (SPSS Tutorials, n.d.).

Regarding the conceptual framework, it is assumed that real estate purchase decision is attracted by the impacts of upcoming HSR linking 3 airports through 4 independent variables; ACCN, ECON, ENVR, and MOBL. Cronbach's alpha test is performed on ACCN variable only due to that fact that there are multiple underlying factors relating to CITY and CBD.

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Table 4.13

Reliability statistics for CITY and CBD

	ACCN_CITY	**ACCN_CBD**
Cronbach's alpha	0.871	0.922
N of items	2	2

Accessibility and Connectivity ("ACCN"): There are 2 sub-independent variables including CITY and CBD with Cronbach's alpha of 0.871 and 0.922 which is acceptable. In summary, the reliability of underlying factors under CITY and CBD are internal consistent.

Table 4.14

List of underlying factors under CITY and CBD

Underlying Factor	**Description**
Q1_CITY	It will improve the connectivity between Bangkok and other cities along the routes of HSR linking 3 airports.
Q2_CITY	It will improve the connectivity with other modes of transportation along the routes of HSR linking 3 airports.
Q3_CBD	It will improve accessibility to central business districts.
Q4_CBD	It will improve convenience in travelling to central business districts.

Subsequently, all independent variables are tested to measure the correlation between those factors under the same conceptual framework. The result shows that the internal consistency of a set of survey items is acceptable with Cronbach's alpha of 0.764.

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Table 4.15

Reliability statistics for all independent variable

	All Independent Variables
Cronbach's alpha	0.764
N of items	11

4.3.2 Exploratory Factor Analysis

The Exploratory factor analysis is a tool to examine which underlying factors are measured by several observed variables (SPSS Tutorials, n.d.).

For factor analysis, few requirements are needed to consider when generating new component for example Kaiser-Meyer-Olklin measure of sampling adequacy should be greater than 0.5 and significant level under Bartlett's test of sphericity should be lower than 0.05. Factor Loading is employed to describe the correlation underlying factors to new component, and it should be greater than 0.5 in Rotated Component Matrix but when the result under factor loading is less than 0.5, such underlying factor should be reconsidered in the construction of new component. Eventually, the scale is agreeable if the total cumulative percentage of Extraction Sums of Squared Loadings is greater than 50% and total Eigenvalues is not less than 1.

4 underlying factors as described in table 4.10 are included in the Exploratory factor analysis. As a result, the reliability of underlying factors under CITY and CBD are internal consistent and satisfy all criteria identified as follows;

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Table 4.16

Result from Exploratory factor analysis

	Criteria	**Result**
Kaiser-Meyer-Olklin measure of sampling adequacy	>0.5	0.673
Significant level under Bartlett's test of sphericity	<0.05	<0.001
Factor loading in rotated component matrix (individual component)	>0.5	>0.5
Total cumulative percentage of extraction sums of squared loadings	>50%	90.828%
Total Eigenvalues	>=1	3.999

In summary, the results from Cronbach's alpha test and Exploratory factor analysis present the measure of independent variables including underlying factors which are internal consistent and reliable.

4.4 Quantitative Analysis

4.4.1 Bivariate Correlations

The Bivariate collections computes Person's correlation coefficient, Spearman's rho, and Kendall's tau-b with respective level of significance. This tool is to measure the relationship between variables. The result will be in the range between -1 and +1. In addition, values close to -1 or +1 nominate the stronger relationships than values closer to 0. Except for Spearman's rho, and Kendall's tau-b, this tool is suitable for ordinal variable only (SPSS Tutorials, n.d.).

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The rules of thumb for levels of correlation are as follows;

Table 4.17

Rule of thumb for Coefficient interval (Napitupulu et al., 2018)

Coefficient Interval	Correlation
0.00 – 0.199	Very Weak
0.20 – 0.399	Weak
0.40 – 0.599	Medium
0.60 – 0.799	Strong
0.80 – 1.000	Very Strong

Person's correlation coefficient

Each theoretical model is to examine correlation between level of affordability in different residential types, distance between residence and HSR linking 3 airports that facilitates the journey, and level of intention for residential acquisition in Suvarnabhumi area. Furthermore, the correlation between variables is significant at 0.10 level for 2-tailed test.

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Table 4.18

Summary of results using the Person's correlation coefficient (Impacts of HSR linking 3 airports and DIST)

	Coefficient Interval	**P-value**	**Correlation**
	The distance between residence and HSR linking 3 airports that facilitates the journey ("DIST")		
CITY	0.039	0.674	Very weak
CBD	0.128	0.163	Very weak
SAVE	0.164	0.074	Very weak
PRICE	0.024	0.792	Very weak
AIR	0.085	0.359	Very weak
TRAFFIC	0.116	0.206	Very weak
ROAD	0.140	0.128	Very weak

Table 4.19

Summary of results using the Person's correlation coefficient (Level of residential affordability and DIST)

	Coefficient Interval	**P-value**	**Correlation**
	The distance between residence and HSR linking 3 airports that facilitates the journey ("DIST")		
Level of affordability in condominium ("AFF_CONDO")	0.065	0.480	Very weak
Level of affordability in detached house ("AFF_DH")	0.028	0.760	Very weak
Level of affordability in townhouse ("AFF_TH")	0.125	0.175	Very weak

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Table 4.20

Summary of results using the Person's correlation coefficient (Level of residential affordability, DIST, and SVB)

	Coefficient Interval	**P-value**	**Correlation**
	Level of intention to acquire residence located close to Suvarnabhumi area ("SVB")		
Level of affordability in condominium ("AFF_CONDO")	0.075	0.419	Very weak
Level of affordability in detached house ("AFF_DH")	0.072	0.433	Very weak
Level of affordability in townhouse ("AFF_TH")	0.086	0.349	Very weak

	Coefficient Interval	**P-value**	**Correlation**
	Level of intention to acquire residence located close to Suvarnabhumi area ("SVB")		
The distance between residence and HSR linking 3 airports that facilitates the journey ("DIST")	0.034	0.709	Very weak

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From table 4.18 to 4.20 above, a correlation between these variables is very weak and not statistically significant except the relationship between SAVE and DIST (higher than significance level at 0.10) at confidence level of 95%. It can interpret that time and cost saving from traveling by HSR linking 3 airports ("SAVE") is important to distance between residence and stations near HSR linking 3 airports ("DIST"). Furthermore, most association between those variables are all positive.

To summarize the result from correlation test by using the Person's correlation coefficient under the Bivariate correlation, the result shows the weak association between those variables which are not statistically significant at confidence level of 95%. Furthermore, all correlations between those variables are positive meaning that one variable increases and the other changes in tandem. Notwithstanding, the result of correlation coefficient matrix cannot conclude the influence between dependent and independent variables, but it is to examine the level of relationship between those variables.

4.4.2 ANOVA (F-Test)

The One-Way ANOVA compares the means of two or more independent groups to consider whether there is statistical evidence that the associated population means are significantly different. The author examined the different between the group of demographic variables and dependent variable.

Table 4.21

Summary of results using the ANOVA (AGE and SVB)

ANOVA

SVB

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.221	3	1.074	.691	.559
Within Groups	180.104	116	1.553		
Total	183.325	119			

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Table 4.22

Summary of results using the ANOVA (INCOME and SVB)

ANOVA

SVB

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.154	3	2.051	1.343	.264
Within Groups	177.171	116	1.527		
Total	183.325	119			

Table 4.23

Summary of results using the ANOVA (GENDER and SVB)

ANOVA

SVB

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.872	1	.872	.564	.454
Within Groups	182.453	118	1.546		
Total	183.325	119			

Table 4.24

Summary of results using the ANOVA (EDU and SVB)

ANOVA

SVB

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.766	2	.383	.246	.783
Within Groups	182.559	117	1.560		
Total	183.325	119			

The results show the p-values which are greater than significance level at 0.05 meaning that the result is statistically insignificant. As result, there is no difference in groups' means towards SVB at confidence level of 95%.

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4.4.3 Linear Regression

The linear regression performs the estimation of linear equation coefficients which is the best value anticipation of dependent variable (SPSS Tutorials, n.d.). Based on the proposed conceptual model, multiple linear regression will be used to test whether the hypotheses (H1 - H9) are supported. The multiple linear regression equation is as follows;

Table 4.25

Summary of equation using linear regression

SVB = β0 + β1*CITY + β2*CBD + β3*SAVE + β4*PRICE + β5*AIR + β6*TRAFFIC + β7*ROAD + β8*AFF_CONDO + β9*AFF_DH + β10*AFF_TH + β11*DIST + β12*AGE + β13*INCOME + β14*GENDER + β15*EDU	
Independent variable	CITY, CBD, SAVE, PRICE, AIR, TRAFFIC, ROAD, AFF_CONDO, AFF_DH, AFF_TH, DIST, AGE, INCOME, GENDER, and EDU
Dependent variable	SVB

Table 4.26

Summary of results using linear regression (Model summary)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445[a]	.198	.064	1.20061

a. Predictors: (Constant), Q9_ROAD, AFF_TH, GENDER, AGE, DIST, EDU, Q2_CITY, Q7_AIR, Q6_PRICE, INCOME, Q5_SAVE, Q4_CBD, Q8_TRAFFIC, AFF_CONDO, Q1_CITY, AFF_DH, Q3_CBD

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R-value explains the relationship between dependent and independent variables by r-value>0.4 can be taken a further analysis (Jain & Chetty, 2019). Regarding the result from table above, the r-value of 0.445 is acceptable and 19.8% of SVB as dependent variable can be described by independent variables (R Square of 0.198) with 95% confidence level.

Table 4.27

Summary of results using linear regression (ANOVA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.296	17	2.135	1.481	.117[b]
	Residual	147.029	102	1.441		
	Total	183.325	119			

a. Dependent Variable: SVB

b. Predictors: (Constant), Q9_ROAD, AFF_TH, GENDER, AGE, DIST, EDU, Q2_CITY, Q7_AIR, Q6_PRICE, INCOME, Q5_SAVE, Q4_CBD, Q8_TRAFFIC, AFF_CONDO, Q1_CITY, AFF_DH, Q3_CBD

The results show the p-value which is greater than significance level at 0.05 meaning that the result is statistically insignificant. As result, there is no difference in groups' means towards SVB at confidence level of 95%.

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Table 4.28

Summary of results using linear regression (Coefficients)

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.852	1.116		1.660	.100
	AFF_CONDO	.029	.221	.021	.133	.895
	AFF_DH	.109	.225	.081	.483	.630
	AFF_TH	.159	.231	.117	.690	.492
	DIST	-.016	.170	-.009	-.094	.925
	AGE	.107	.191	.058	.558	.578
	INCOME	-.267	.144	-.241	-1.854	.067
	GENDER	-.368	.264	-.137	-1.394	.166
	EDU	.055	.220	.025	.248	.804
	Q1_CITY	.247	.220	.174	1.122	.264
	Q2_CITY	-.334	.230	-.235	-1.451	.150
	Q3_CBD	.595	.305	.404	1.953	.054
	Q4_CBD	-.764	.286	-.496	-2.672	.009
	Q5_SAVE	.085	.160	.070	.533	.595
	Q6_PRICE	.150	.168	.105	.894	.373
	Q7_AIR	-.035	.150	-.026	-.236	.814
	Q8_TRAFFIC	.263	.165	.213	1.594	.114
	Q9_ROAD	.073	.147	.061	.495	.622

a. Dependent Variable: SVB

From table 4.28 above, the result from coefficient model 1 shows different p-values of independent variables which are greater than significance level at 0.10 except CBD and INCOME. Furthermore, in terms of standardized coefficients beta, Q3_CBD has high positive values of 0.404 meaning that these independent variables have potential impact to SVB. Surprisingly, CBD_Q4 and INCOME have beta of -0.496 and -0.241 which negatively affect SVB.

To conclude the result from testing, it can explain that 19.8% of SVB can be explained by only CBD and INCOME which have statistically significant influence and high correlation with SVB confidence level of 95%.

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4.5 Conclusion

To achieve the research objective, the statistical results show the improvement of connectivity with other cities and other modes of transportation along the routes of HSR linking 3 airports (“CITY”), increasing accessibility to central business districts by HSR linking 3 airports (“CBD”), and the changes in residential price from transit-oriented development (“PRICE”) are the powerful factors considered when buying a habitation. On the other hand, significant factors influence towards acquisition of residence located close to Suvarnabhumi area are different, which can be described by 3 highest impact factors; (1) HSR linking 3 airports will improve accessibility to central business districts (“Q3_CBD”); (2) HSR linking 3 airports will improve convenience in travelling to central business districts. (“Q4_CBD”); and (3) income level (“INCOME”). These independent variables are accounted for 19.8% of the total change in dependent variable. For the variables mentioned earlier, Q3_CBD is only one factor which has positive beta of 0.404 meaning improvement of accessibility to central business districts has positive impact towards decision making for homebuyer. In any case, the result from regression analysis on the level of intention to buy a residence in Suvarnabhumi area is similar for all groups of respondents.

However, the correlation among variables under decision to buy a residence; impacts of linking 3 airports, level of affordability and residential types, travel distance, and location are weak. In other words, one variable changes, other variable tends to change in unsteady manner. Amid this situation, only time and cost saving from traveling by HSR linking 3 airports is important to distance between residence and stations near HSR linking 3 airports.

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CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is to draw a finding and conclusion derived from literature review and statistical result from previous chapters. Research limitation and future research recommendation are presented respectively.

5.2 Finding and Conclusion

The research aims to study the impacts of upcoming HSR linking 3 airports towards residential buyer's decision by doing survey and performing analysis on the significant drivers which should be focused on the future residential development in terms of marketing and commercial objectives. Furthermore, Suvarnabhumi area is the focused on this research study due to the fact that this area is being rapidly developed to connect with the existing and future transportation networks. The data is collected totally from 120 respondents and all replies are valid and have satisfied our samples for research study.

From research objective above, the findings from SPSS statistical program can be elaborated as follows;

1. The overall impact from HSR linking 3 airports is high important for homebuyer. The following impacts are most powerful factors when buying a habitation;

- The improvement of connectivity with other cities and other modes of transportation along the routes of HSR linking 3 airports ("CITY");
- The increasing accessibility and convenience in travelling to central business districts by HSR linking 3 airports ("CBD");
- The increase of the residential price from transit-oriented development ("PRICE").

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In addition, an average affordable residential price is 3.1 million - 5 million Baht with the travel distance below 3 kilometers from the residence to the HSR linking 3 airports stations have the highest mean among the options. The statistical results are consistent with the external research for the current supply that nearly 70% of the midtown and suburban condominiums closed to the existing train lines and under construction of mass transit within 800 meters are being introduced to property market. In addition, the average asking price is about 96,000 Baht per square meter or mid-range grade. Obviously, several developers focused on the future residential development with the most important factors which are affordable price ranging from entry level to upper level and suitable location between residence and mass transit (CBRE (Thailand), 2022).

2. From linear regression test, the significant factors influence towards acquisition of residence located close to Suvarnabhumi area are different from descriptive analysis above, which can be described by 3 highest impact factors;

- The improvement of accessibility to central business districts ("Q3_CBD")
- The improvement of convenience in travelling to central business districts by HSR linking 3 airports ("Q4_CBD");
- Average monthly income ("INCOME")

These independent variables are accounted for 20% of the total change in dependent variable. Only Q3_CBD has a positive beta meaning that the dependent and independent variables variate directionally. HSR linking 3 airports will be another mass transport option to serve people who live in outer city and other provinces along the route commuting to central business districts in Bangkok such as Sathorn-Silom, Siam, Asoke-Ploetchit, Ratchda-Rama IX, etc. According to the development plan, Phaya Thai and Makkasan stations will be the most important intersection between HSR linking 3 stations and existing transportation networks. On the other hand, the negative impact from Q4_CBD and INCOME towards the dependent variable could be described as follows;

- At present, the travel distance from residences in Suvarnabhumi area to central business districts is distantly or at least half an hour

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with city line which departures every 10 - 15 minutes. The service interval between train is greater than other existing mass transit lines for example the frequency between trains is about 2 - 8 minutes and less than 10 minutes for BTS and MRT, respectively (Transit Bangkok, n.d.). Additionally, the number of intersections to other existing transport are low meaning that time spent in travelling may be redundant. According to the development roadmap of mass transit line, the major development is concentrated on the inner-city of Bangkok and the extension from the existing railways.

- People with high residential affordability might not interested in Suvarnabhumi area due to few urban development projects such as infrastructure facilities, public amenities, etc. compared to other areas. To support this statement, price index is one of the key indicators that reflect the level of urbanization. Location with the highest price escalation is suburbs in the western Bangkok while Suvarnabhumi area is in eastern suburb (DDProperty, 2022).

3. The correlation among variables on decision to buy a residence; impacts of linking 3 airports, level of residential affordability, travel distance, and location are weak. The result shows the uncertainty in buying residence in Suvarnabhumi area and future outcome of HSR linking 3 airport development. Furthermore, it is agreeable by all groups of respondents.

According to literature review in previous chapter, the residential buyer's decision, and the impacts from HSR development can be discovered in many aspects. The impacts of HSR linking 3 airports developments, accessibility and connectivity ("ACCN"), economy ("ECON"), environment ("ENVR"), and mobility ("MOBL") are consistent with other research studies. On the other hands, infrastructure facilities, one of insignificant factors in housing purchase decision may be contradictory. Correspondence to the research objective, CBD is one of total impacts from HSR linking 3 airports affect the decision making in homebuyer for the residential property

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in Suvarnabhumi area. The weight of influence from independent variables identified is about 20% of total variation in dependent variable.

In conclusion, the author sees the significant movement of upcoming condominium supply in suburban areas approximately 50% - 60% of total supply during 2023 - 2024. Aside to housing supply, the total number of land allocation permits in the suburbs of Bangkok is 75% of total plots. However, the residential demand will follow the supply-leading when the numerous direct and indirect factors are able to satisfy customers' needs such as affordable price, development roadmap of pedestrians and public transits as reduced the traffic congestion, road traffic injury and pollution and, thriving of public amenities from inner city to outer city, etc.

5.3 Research Limitation

The results of this study, there are some limitations that need to be considered as follows;

- The survey questionnaire is sent in google form during November - December 2022. The collected data might influence the research tool and timing.
- The sample size of 120 respondents may not represent the whole potential buyer for residence in Suvarnabhumi area.
- The independent and dependent variables are specifically identified to HSR linking 3 airports and Suvarnabhumi area; therefore, the findings could not respond to other research studies entirely.
- The study aims to examine the correlation between the HSR linking 3 airports impacts towards residential buyer's decision; therefore, the finding may be limited when applying to different objective.

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5.4 Recommendation

Based on the limitations identified above, some recommendations shall be suggested as follows;

- Extension of sample sizes: Sample size represent small group or subset of entire population. The extension of samples helps the researcher obtain the more accurate result from data analysis or to decrease standard deviation of mean.
- Adding demographic question: Demographic questions include occupation, marital status, number of family members, etc. to examine the relationship and level of correlation among variables and enhance an opportunity to discover the demographic variables explaining the movement in dependent variable more concisely.
- Enhancement of result evaluation from HSR linking 3 airports development in different stages; pre-development, during development, and post development: To understand the changes in environment that affect the residential demand.
- Specification of the impacts from HSR linking 3 airports: As mentioned in previous chapter, currently, the HSR linking 3 airports in Thailand is under development and the author applied the standard benefits of HSR from other research study to this study. Any updated advantages may help researcher understand the correlation among variables.
- Expansion of other factors for the impacts on residential purchase decision: This is to understand overall picture of the magnitude in different factors. Regarding the literature review, infrastructure facilities is 1 of 9 factors with different levels of significance that may have an impact on purchase decision.
- Expansion of location: This is to examine the level of important on the benefits of HSR linking 3 airports towards residential buyer's decision in different areas and which independent variables would have high impact to homebuyer in different areas.

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APPENDICES

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APPENDIX A
QUESTIONNAIRE
SURVEY ON THE IMPACTS OF HSR LINKING 3 AIRPORTS TOWARDS RESIDENTIAL BUYER'S DECISION

Introduction

The survey comprises 18 questions and separated into 4 parts. Section 1 to 2 describe the impacts from the development of HSR linking 3 airports to find the opinion towards the residential purchase decision in the Thai property market. The question in section 3 mentions about decision to buy a residence on specific location. The final section comprises 4 questions of personal attributes; age, income, gender and education level.

Section 1 - Decision to Buy a Residence		
Brief background of HSR linking 3 airports The Airport Rail Link ("ARL") operates a single line with 8 stations in total; Phaya Thai, Ratchaprarop, Makkasan, Ramkhamhaeng, Hua Mak, Ban Thap Chang, Lat Krabang and Suvarnabhumi Stations. Currently, the ARL extension phase is in progress of land expropriation and the existing structure will be redeveloped and converted to HSR linking 3 airports; Don Mueang, Suvarnabhumi, and U-Tapao International Airports. For more information, please visit https://www.hsr3airports.or.th/		
No.	**Question**	**Measurement**
Q1	It will improve the connectivity between Bangkok and other cities along the routes of HSR linking 3 airports.	Likert scale
Q2	It will improve the connectivity with other modes of transportation along the routes of HSR linking 3 airports.	Likert scale
Q3	It will improve accessibility to central business districts.	Likert scale

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Section 1 - Decision to Buy a Residence		
No.	**Question**	**Measurement**
Q4	It will improve convenience in travelling to central business districts.	Likert scale
Q5	It will reduce time and costs of traveling by HSR linking 3 airports which will be one of the fastest on-ground intercity travel in Thailand.	Likert scale
Q6	It will increase the residential price from transit-oriented development.	Likert scale
Q7	It will produce less air pollution such as CO2, PM2.5, etc. comparing to other modes of transportation.	Likert scale
Q8	It will reduce traffic congestion around the stations of HSR linking 3 airports and its surrounding areas.	Likert scale
Q9	It will reduce traffic accident injuries and death.	Likert scale

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Section 2 - Buying Decision on Residential Preference and Affordability		
No.	**Question**	**Measurement**
Q10	What is the price range for Condominium that could be affordable?	Single choice A. Below 3 million B. 3.1 million - 5 million C. 5.1 million - 7 million D. Above 7 million
Q11	What is the price range for Detached house that could be affordable?	Single choice A. Below 3 million B. 3.1 million - 5 million C. 5.1 million - 7 million D. Above 7 million

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Section 2 - Buying Decision on Residential Preference and Affordability		
No.	**Question**	**Measurement**
Q12	What is the price range for Townhouse that could be affordable?	Single choice A. Below 3 million B. 3.1 million - 5 million C. 5.1 million - 7 million D. Above 7 million
Q13	The distance between residence and HSR linking 3 airports that facilitates your journey	Single choice A. Below 3 kilometers B. 3.1 kilometers - 5 kilometers C. Over 5 kilometers

Section 3 - Decision to Buy a Residence on Specific Location		
No.	**Question**	**Measurement**
Q14	Level of intention to acquire residence located close to Suvarnabhumi area which is one of areas that has HSR linking 3 airports development	Likert scale

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Section 4 - Personal Attributes		
No.	**Question**	**Measurement**
Q15	Age	Single choice A. Below 25 years B. 25 - 35 years C. 36 - 45 years D. Above 45 years
Q16	Average monthly income	Single choice A. Below 30,000 Baht B. 30,000 - 60,000 Baht C. 60,001 - 90,000 Baht D. Above 90,000 Baht

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Section 4 - Personal Attributes		
No.	**Question**	**Measurement**
Q15	Gender	Single choice A. Male B. Female C. Not specified
Q16	Degree in education	Single choice A. Less than Bachelor's degree B. Bachelor's degree C. Master's degree D. Doctoral degree

Typical answers for 9 questions (Q1 - Q9) are applying Likert scale in the range between 1 - 5 where the definition of individual levels is as follows;

1	2	3	4	5
Not at all important	Low important	Neutral	Important	Very Important

Typical answer for last question (Q14) is applying Likert scale in the range between 1 - 5 where the definition of individual levels is as follows;

1	2	3	4	5
Not at all interested	Low interested	Neutral	Interested	Very Interested

Ref. code: 25656402043126HPR

ส่วนที่ 1 จาก 6

แบบสอบถาม เรื่อง ผลกระทบของรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย

แบบสอบถามดังกล่าวเป็นการประเมินความเห็นของท่านต่อผลกระทบของรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย

คำตอบทั้งหมดของท่านจะนำมาใช้ในการประมวลผลเชิงสถิติสำหรับงานค้นคว้าอิสระในหัวข้อดังกล่าวเท่านั้น โดยคำตอบทั้งหมดจะถูกเก็บเป็นความลับ

คำถามทั้งหมดแบ่งออกเป็น 3 ส่วน
ส่วนที่ 1 ประกอบด้วย คำถามในการประเมินผลกระทบของรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย
ส่วนที่ 2 ประกอบด้วย คำถามในการประเมินลักษณะที่อยู่อาศัยและกำลังซื้อต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย
ส่วนที่ 3 ประกอบด้วย คำถามในการประเมินทำเลที่ตั้งต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย

ในการทำแบบสอบถามจะใช้ระยะเวลาประมาณ 5 นาที

Questionnaire : The Impact of High-Speed Rail Linking 3 Airports towards Residential Buyer's Decision in Suvarnabhumi area

This questionnaire will be used to assess your opinion on the impact of high-speed rail linking 3 airports towards residential buyer's decision.

All answers will be used to perform statistical test for this independent study only and they will be kept strictly confidential.

There are 3 sections
Section 1 comprises of the assessement questions of the impact of high-speed rail linking 3 airports towards residential buyer's decision
Section 2 comprises of the assessement questions of buying decision on residential preference and affordability
Section 3 comprises of the assessement question of decision to buy on specific location

This questionnaire will take about 5 minutes

ส่วนที่ 2 จาก 6

ส่วนที่ 1 คำถามในการประเมินผลกระทบของรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย (Section 1 : The impact of high-speed rail linking 3 airports towards residential buyer's decision)

ข้อมูลเบื้องต้นสำหรับรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน
แอร์พอร์ต เรล ลิงก์ เปิดให้บริการเพียง 1 เส้นทางผ่าน 8 สถานี ประกอบด้วย สถานีพญาไท สถานีราชปรารภ สถานีมักกะสัน สถานีรามคำแหง สถานีหัวหมาก สถานีบ้านทับช้าง สถานีลาดกระบัง และสถานีสุวรรณภูมิ ในปัจจุบัน แอร์พอร์ต เรล ลิงก์อยู่ระหว่างการเวนคืนที่ดินเพื่อพัฒนาส่วนต่อขยาย โดยจะถูกพัฒนาและผนวกเข้ากับโครงการรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน ระหว่างสนามบินนานาชาติดอนเมือง สนามบินนานาชาติสุวรรณภูมิ และสนามบินนานาชาติอู่ตะเภา สำหรับข้อมูลเพิ่มเติม สามารถเข้าชมเว็บไซต์ https://www.hsr3airports.or.th/

Brief background of HSR linking 3 airports
The Airport Rail Link ("ARL") operates a single line with 8 stations in total; Phaya Thai, Ratchaprarop, Makkasan, Ramkhamhaeng, Hua Mak, Ban Thap Chang, Lat Krabang and Suvarnabhumi Stations. Currently, the ARL extension phase is in progress of land expropriation and the existing structure will be redeveloped and converted to high-speed rail ("HSR") linking 3 airports; Don Mueang, Suvarnabhumi, and U-Tapao International Airports. Fore more information, please visit https://www.hsr3airports.or.th/

1. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะเพิ่มการเชื่อมต่อระหว่างกรุงเทพฯ และจังหวัดอื่นๆ ตลอดเส้นทางรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน
(It will improve the connectivity between Bangkok and other cities along the routes of HSR linking 3 airports.) *

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

2. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะเพิ่มการเชื่อมต่อกับการเดินทางประเภทอื่นๆ ตลอดเส้นทางรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน
(It will improve the connectivity with other modes of transportation along the routes of HSR linking 3 airports.) *

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

3. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะเพิ่มความสามารถในการเข้าถึงย่านศูนย์กลางธุรกิจ *
(It will improve accessibility to central business districts.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

4. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะเพิ่มความสะดวกสบายในการเดินทางไปยังย่านศูนย์กลางธุรกิจ *
(It will improve convenience in traveling to central business districts.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

5. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน หนึ่งในการเดินระหว่างเมืองทางบกที่เร็วที่สุดในประเทศไทย จะลดระยะเวลาและค่าใช้จ่ายในการเดินทาง *
(It will reduce time and costs of traveling by HSR linking 3 airports which will be one of the fastest on-ground intercity travel in Thailand.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

6. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะเพิ่มมูลค่าของที่อยู่อาศัยจากการพัฒนาพื้นที่โดยรอบสถานีขนส่งมวลชน *
(It will increase the residential price from transit-oriented development.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

7. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินสร้างมลพิษทางอากาศ เช่น ก๊าซคาร์บอนไดออกไซด์ PM2.5 และอื่นๆ น้อยกว่าการโดยสารประเภทอื่นๆ *
(It will produce less air pollution such as CO2, PM2.5, etc. comparing to other modes of transportation.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

8. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะลดการจราจรหนาแน่นบริเวณสถานีรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินและพื้นที่โดยรอบ *
(It will reduce traffic congestion around the stations of HSR linking 3 airports and its surrounding areas.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

9. รถไฟฟ้าความเร็วสูงเชื่อมสามสนามบินจะลดอุบัติเหตุจากการเดินทาง *
(It will reduce traffic accident injuries and death.)

	1	2	3	4	5	
ไม่มีความสำคัญ (Not at all important)	○	○	○	○	○	สำคัญมากที่สุด (Very important)

ส่วนที่ 3 จาก 6

ส่วนที่ 2 คำถามในการประเมินลักษณะที่อยู่อาศัยและกำลังซื้อต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย (Section 2 : Buying decision on residential preference and affordability)

คำอธิบาย (ระบุหรือไม่ก็ได้)

10. ระดับราคาและความสามารถในการเลือกซื้อคอนโดมิเนียม *
(What is the price range for Condominium that could be affordable?)

- ต่ำกว่า 3 ล้านบาท (Below 3 million)
- 3.1 ล้านบาท - 5 ล้านบาท (3.1 million - 5 million)
- 5.1 ล้านบาท - 7 ล้านบาท (5.1 million - 7 million)
- สูงกว่า 7 ล้านบาท (Above 7 million)

11. ระดับราคาและความสามารถในการเลือกซื้อบ้านเดี่ยว *
(What is the price range for Detached house that could be affordable?)

- ต่ำกว่า 3 ล้านบาท (Below 3 million)
- 3.1 ล้านบาท - 5 ล้านบาท (3.1 million - 5 million)
- 5.1 ล้านบาท - 7 ล้านบาท (5.1 million - 7 million)
- สูงกว่า 7 ล้านบาท (Above 7 million)

12. ระดับราคาและความสามารถในการเลือกซื้อทาวน์เฮ้าส์ หรืออาคารพาณิชย์ *
(What is the price range for Townhouse that could be affordable?)

- ต่ำกว่า 3 ล้านบาท (Below 3 million)
- 3.1 ล้านบาท - 5 ล้านบาท (3.1 million - 5 million)
- 5.1 ล้านบาท - 7 ล้านบาท (5.1 million - 7 million)
- สูงกว่า 7 ล้านบาท (Above 7 million)

13. ระยะทางระหว่างที่อยู่อาศัยและรถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน ที่ง่ายต่อการเดินทางของท่าน *
(The distance between residence and HSR linking 3 airports that facilitates your journey)

- ต่ำกว่า 3 กิโลเมตร (Below 3 kilometers)
- 3.1 กิโลเมตร - 5 กิโลเมตร (3.1 kilometers - 5 kilometers)
- มากกว่า 5 กิโลเมตร (Over 5 kilometers)

ส่วนที่ 4 จาก 6

ส่วนที่ 3 คำถามในการประเมินทำเลที่ตั้งต่อการตัดสินใจเลือกซื้อที่อยู่อาศัย (Section 3 : Decision to buy a residence on specific location)

คำอธิบาย (ระบุหรือไม่ก็ได้)

14. ระดับความสนใจในการเลือกซื้อที่อยู่อาศัยบริเวณสุวรรณภูมิ หนึ่งในพื้นที่ที่มีพัฒนารถไฟฟ้าความเร็วสูงเชื่อมสามสนามบิน *
(Level of intention to acquire residence located close to Suvarnabhumi area which is one of areas that has HSR linking 3 airports development.)

	1	2	3	4	5	
ไม่มีความสนใจ (Not at all interested)	○	○	○	○	○	น่าสนใจมากที่สุด (Very interested)

ส่วนที่ 5 จาก 6

ส่วนที่ 4 คำถามเกี่ยวข้องกับผู้ทำแบบสอบถาม (Section 4 : Personal attributes)

คำอธิบาย (ระบุหรือไม่ก็ได้)

15. อายุ (Age) *

- ต่ำกว่า 25 ปี (Below 25 years)
- 25 - 35 ปี (25 - 35 Years)
- 36 - 45 ปี (36 - 45 Years)
- มากกว่า 45 ปี (Above 45 years)

16. รายได้เฉลี่ยต่อเดือน (Average monthly income) *

- ต่ำกว่า 30,000 บาท (Below 30,000 Baht)
- 30,000 - 60,000 บาท (30,000 - 60,000 Baht)
- 60,001 - 90,000 บาท (60,001 - 90,000 Baht)
- มากกว่า 90,000 บาท (Above 90,000 Baht)

17. เพศ (Gender) *

- ชาย (Male)
- หญิง (Female)
- ไม่ระบุ (Not Specified)

18. ระดับการศึกษา (Degree in education) *

- ต่ำกว่าปริญญาตรี (Less than Bachelor's degree)
- ปริญญาตรี (Bachelor's degree)
- ปริญญาโท (Master's degree)
- ปริญญาเอก (Doctoral degree)

Ref. code: 25656402043126HPR

BIOGRAPHY

Name	Mr. Kamon Sirirattanaphonkun
Date of Birth	27 February 1989
Educational Attainment	Bachelor of Accounting
	Kasetsart University
	2011
Work Position	Project Finance Manager
	CP Future City Development Corporation Limited
Work Experiences	Business Development Manager
	MBK Public Company Limited
	Audit Manager
	Deloitte Touche Tohmatsu Jaiyos Audit
	Company Limited

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