CHAPTER IV
A STRUCTURAL EQUATION MODEL OF THE FACTORS AFFECTING THE BELT AND ROAD INITIATIVE (BRI) ON THE PERCEIVED BENEFITS AND INTENTION OF THAI PEOPLE TO USE THE CHINA-LAOS HIGH-SPEED RAIL SERVICE

4.1 Abstract

The Belt and Road Initiative (BRI) policy, with the China-Laos high-speed railway being a part of the BRI project. As it is well known, Thailand shares a border with Laos and has significant cross-border trade with China. In terms of tourism, Thailand is a globally popular destination, with Chinese tourists being the largest group of visitors. This study takes place in Thailand, a developing country, to examine the opportunities that may arise if Thailand prepares to handle the China-Laos high-speed railway. The objective of this research is to study the relationship between factors affecting BRI and Thai people's perceived benefits and their intention to use the China-Laos high-speed railway. Data was collected through a survey conducted in key trade gateway areas along the Thailand-Laos border, using Stratified Random Sampling of 1,540 Thai residents living in border provinces along the BRI route. The research findings indicate that Perceived Emotional is the most important factor in explaining Thai people's perception. Additionally, foreign direct investment, tourism, employment, living standards and society, economy, and logistics transportation positively influence the perceived benefits of BRI. Furthermore, the perceived benefits of BRI have a positive relationship with the attitudes of Thai people. The results also reveal that perceived benefits, attitudes, and subjective norms positively correlate with the intention to use the China-Laos high-speed railway. These findings can be utilized to provide in-depth insights to relevant agencies and assist in formulating policies and measures that align with the BRI policy. This alignment will enhance development to sustainable changes.

4.2 Introduction

The Belt and Road Initiative (BRI) stands as one of the most ambitious international development programs in modern history, representing China's vision for a new era of global economic cooperation. Initially announced in 2013 as "One Belt One Road" (OBOR), this comprehensive strategy aims to recreate the ancient Silk Road's spirit of interconnectedness through modern infrastructure and trade networks. The BRI's scope encompasses not only traditional infrastructure development across Asia, Europe, and beyond, but also promotes deep cultural exchanges and technological collaboration between participating nations (Ohashi, 2018). This grand vision has begun materializing in transformative projects like the China-Laos high-speed railway, a landmark achievement connecting Kunming, the capital of China's Yunnan Province, to Vientiane, the capital of Laos. Since its inauguration on December 3, 2021, this modern railway has revolutionized regional connectivity, enabling passenger travel at speeds of up to 160 kilometers per hour. More than just a transportation link, this railway embodies Laos' strategic transformation from a landlocked nation to a land-linked hub of Southeast Asian commerce and cultural exchange (Thai Public Broadcasting Service, 2022).

As this ambitious initiative reshapes global economic landscapes, its impact is particularly pronounced across Asia, where nations are fundamentally reconsidering their development trajectories. The far-reaching scope of the BRI has catalyzed a fundamental shift in how countries approach their development strategies, with many actively restructuring their domestic policies to align with BRI objectives. This strategic realignment is particularly evident in East Asia, where the Republic of Korea (ROK) has undertaken comprehensive analyses to identify and capitalize on economic opportunities emerging from BRI-related projects (Pugacheva & Piatachkova, 2021). The initiative's influence extends even more prominently across Southeast Asia, where ASEAN member states have embraced connectivity with China as a transformative force capable of delivering multifaceted benefits spanning economic growth, tourism development, societal advancement, and cultural enrichment (Schulhof, Van Vuuren, & Kirchherr, 2022).

Within this evolving regional landscape, Thailand's position exemplifies both the opportunities and challenges that BRI presents for developing nations. As a country strategically positioned at the heart of mainland Southeast Asia, Thailand recognizes

that modernizing its transportation infrastructure represents not merely an economic necessity but a strategic imperative for enhancing both regional and international trade relationships (Theerathitichaipa, Wisutwattanasak, et al., 2024a). This recognition has crystallized into an ambitious vision: positioning Thailand as the preeminent transportation hub that bridges ASEAN's dynamic economies with China's vast and rapidly expanding market (Thai Civil Rights and Investigative Journalism, 2024).

Thailand's unique geographical position and established economic relationships create a compelling foundation for BRI participation. The country shares an extensive 1,845-kilometer border with Laos, facilitating robust cross-border commerce that represents a significant portion of Thailand's trade with neighboring nations (Ministry of Commerce, 2020). This existing trade relationship takes on new significance in the context of Thailand's broader economic ties with China, which have already proven transformative in the tourism sector. China has emerged as Thailand's primary source of international visitors, with Chinese tourists contributing substantially to Thailand's GDP through both direct spending and indirect economic stimulation (Tourism Council of Thailand, 2023). The inauguration of the China-Laos high-speed railway presents an unprecedented opportunity to strengthen these existing economic bonds. By dramatically reducing travel times and enhancing connectivity between China and Southeast Asia, this infrastructure development opens new avenues for Thailand to expand its export capabilities, accelerate tourism growth, and create a more attractive environment for foreign direct investment (Bank of Thailand, 2021). However, the ultimate success of these opportunities hinges on a crucial human factor: the perceptions and behavioral intentions of Thai stakeholders toward BRI-related infrastructure. Their willingness to embrace and utilize new transportation options, particularly the high-speed rail service, will largely determine whether Thailand can fully capitalize on its strategic position within the BRI framework. Understanding these stakeholder perceptions becomes particularly crucial when examining the broader context of BRI implementation across different national settings.

The scholarly discourse surrounding the Belt and Road Initiative reveals how such stakeholder perceptions interact with infrastructure development to shape socioeconomic transformation across diverse national contexts. International research has demonstrated how public perceptions of Chinese investment can fundamentally shape a nation's economic trajectory. Studies from the United States (O'Trakoun, 2018)

and India (Sachdeva, 2018) have established a compelling correlation between positive attitudes toward Chinese investment and enhanced business confidence, ultimately influencing the direction of national infrastructure planning and connectivity initiatives. This relationship between public sentiment and economic outcomes becomes even more pronounced in countries directly participating in major BRI corridors. Research examining the China-Pakistan Economic Corridor (Mahmood, Ali, Menhas, & Sabir, 2022) has revealed how foreign direct investment catalyzes a cascade of developmental benefits, creating synergistic relationships between economic growth, tourism expansion, and educational advancement. Similarly, studies in Laos (Khamphengvong, Zhang, Wu, & Thavisay, 2022) have documented how BRI investments generate multifaceted social and economic benefits that extend far beyond immediate infrastructure improvements. However, the Thai context presents a notable gap in this growing body of literature. While existing research has thoroughly examined government policies and political dynamics surrounding Thailand's BRI engagement (Punyaratabandhu & Swaspitchayaskun, 2021), scholarly attention has largely overlooked a crucial dimension: the perspectives and intentions of the Thai public, particularly those residing in border provinces who stand to be most directly affected by BRI infrastructure developments. This significant oversight in the Thai context is particularly notable given the country's strategic position within the BRI framework and its potential role as a regional transportation hub.

To address this critical gap and support Thailand's strategic aspirations within the BRI framework, our investigation pursues two interconnected objectives: first, we seek to identify and analyze the key factors that shape Thai citizens' perceived benefits of the Belt and Road Initiative, considering both economic and sociocultural dimensions. Second, we examine how these perceptions translate into behavioral intentions, specifically focusing on citizens' willingness to utilize the China-Laos high-speed rail service as a tangible manifestation of BRI infrastructure. To develop a robust theoretical foundation for this analysis, we employ the Theory of Planned Behavior (TPB), a well-established framework in social psychology and behavioral economics. TPB provides a comprehensive lens through which to examine how individual attitudes, societal influences (subjective norms), and perceived ability to act (behavioral control) collectively influence public acceptance of major infrastructure developments. By integrating TPB with contextual factors specific to Thailand's economic and social

landscape, our research offers nuanced insights into the mechanisms driving public engagement with BRI initiatives. The findings from this investigation hold significant practical implications, providing evidence-based guidance for policymakers and private stakeholders working to enhance Thailand's integration with BRI-driven developments. This research ultimately aims to bridge the gap between infrastructure development and public adoption, ensuring that Thailand's strategic positioning within the BRI framework translates into tangible benefits for both the nation and its citizens.

4.3 Literature Review

In this section, a literature review is presented that comprehensively examines factors influencing Thai people's intention to use the China-Laos high-speed railway. The review focuses on three main issues: TPB, Perception, and factors impacting BRI. These factors have been thoroughly investigated to provide in-depth insights into Thai perceptions of the benefits associated with the BRI policy.

4.3.1 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) explains human behavior based on three core beliefs that influence intention to use a service (Conner & Armitage, 1998). These beliefs are: 1) Attitudes: This refers to personal beliefs about the outcomes of a behavior. If individuals believe that performing a particular behavior will result in positive outcomes, they tend to develop a favorable attitude towards that behavior. Conversely, if they believe it will result in negative outcomes, they develop an unfavorable attitude. Positive attitudes lead to the intention to engage in the behavior. 2) Subjective Norms: These are perceptions of social pressures or norms related to the behavior. It involves the individual's perception of whether significant others (such as family and peers) perform the behavior and whether they approve of or expect the individual to perform it. If individuals perceive that important others engage in or support the behavior, they are more likely to conform to those expectations and intend to perform the behavior. and 3) Perceived Behavioral Control: This refers to the individual's perception of the ease or difficulty of performing the behavior. If individuals believe they have the capability to perform the behavior under the given circumstances and can control the outcomes as intended, they are more likely to have the intention to perform the behavior. In summary, TPB posits that these beliefs (attitudes, subjective norms, and perceived behavioral control) collectively

influence human intentions regarding behaviors, including the intention to use services. This theoretical framework helps explain how attitudes, social norms, and perceived control interact to shape human behavior intentions (Ajzen, 2002). Although this concept has been widely used to study the intention to use railway transport services (Borhan, Ibrahim, & Miskeen, 2019; Brohi, Kalwar, Memon, & Ghaffar, 2021; Hou, Liang, Meng, & Choi, 2021), no studies have yet applied the Theory of Planned Behavior (TPB) to investigate the intention to use high-speed rail services among Thai people. Moreover, high-speed rail has not yet been introduced in Thailand, resulting in a lack of research in this area. Therefore, the application of TPB is incorporated into this study to examine the intention of Thai people to use the China-Laos high-speed rail service.

4.3.2 Perception

The concept of perception is an explanation of how humans understand and perceive their surroundings, encompassing thoughts, feelings, and decision-making influenced by various sensory perceptions (Efron, 1969). Currently, this concept is widely used to study people's perceptions of the BRI policy (Khamphengvong et al., 2022; Kuek, 2020; Lubis, Rini, & Sembiring, 2021). However, no studies have yet applied the concept of perception as an indicator of people's perceived benefits. To fill this gap, this study applies the perception to analyze the factors that influence Thai people's perception of the benefits of the BRI. The key perception consists of four main factors. Key aspects of perception include: 1) Perceived benefits Product: This refers to how humans perceive or understand products and express feelings towards specific products. Perception is influenced by various dimensions such as product characteristics and quality. 2) Perceived Service: This concept is crucial in marketing and service management contexts. It involves the intangible aspects of service perception that are palpable and affect human perception significantly. 3) Perceived Cultural: This type of perception relates to cultural norms, artistic culture, and cultural values. Understanding and adapting to different cultures can influence decision-making in service selection. and 4) Perceived Emotional: This involves emotional responses or reactions towards products, services, or overall consumer experiences. It often relates to feelings or understanding of services. Overall, these factors collectively influence human decision-making in choosing services (Merleau-Ponty, 2004).

4.3.3 BRI Impact Factors

Based on a review of previous literature, this paper has collected and analyzed data on 15 research studies across 9 countries that attempt to examine factors influencing the Belt and Road Initiative (BRI) policies, as presented in **Table 4.1**. It can be seen from the research table that most of the factors affecting the policy BRI tend to be considered from only a few perspectives. No study has been found to include all factors. Therefore, to fill the gap in the study, the researcher has included all factors, consisting of 8 factors: foreign direct investment, tourism, employment, education, living standards and society, international relations, economy, and logistics and transportation. This study is conducted in Thailand, a developing country, to examine and assess the impact of all these factors on the population, which will help gain a deeper understanding of the perspectives of the people in Thailand from various viewpoints.

Table 4.1 Summary of previous studies on factors affecting the BRI

Author	Country	Factor impact of BRI							Method
		FDI	Tourism	Employment	Education	Standard of living and social	International relations	Economic	Logistics and transportation	
(Menhas, Mahmood, Tanchangya, Safdar, & Hussain, 2019)	Pakistan					✓		✓		Univariate and binary logistic regression analyses
(Prates & Lages, 2019)	Brazil						✓			Qualitative Data Analysis
(Masabo, 2019)	China	✓					✓	✓		Qualitative data analysis
(Choi, Xia, & Lee, 2020)	Korea								✓	SEM
(Daye, Charman, Wang, & Suzhikova, 2020)	Kazakhstan		✓							Social Exchange Theory

Table 4.1 Summary of previous studies on factors affecting the BRI (Continued)

Author	Country	Factor impact of BRI							Method
		FDI	Tourism	Employment	Education	Standard of living and social	International relations	Economic	Logistics and transportation	
(Daye et al., 2020)	China		✓							Pearson Chi-square test
(Khan, Chenggang, Bano, & Hussain, 2020)	China					✓		✓		PCA, PVAR-GMM and Driscoll and Kraay regression
(Yue, Gong, & Ma, 2021)	China				✓					Sequential explanatory mixed method
(An, Razzaq, Nawaz, Noman, & Khan, 2021)	China	✓				✓		✓	✓	FGLS and Sys-GMM
(Abdulsalam, Xu, Ameer, Abdo, & Xia, 2021)	China	✓						✓		Johansen Fisher Panel Cointegration, PDOLS and the Toda and Yamamoto technique
(Carlucci, Corcione, Mazzocchi, & Trincone, 2021)	Italy								✓	Theoretical model and two partial non-parametric techniques
(Y. Liu & Suk, 2021)	Azerbaijan		✓							SWOT and AHP
(Khamphengvong, Zhang, Wu, & Thavisay, 2022)	Laos	✓	✓	✓	✓	✓				SEM and multi-group analysis
(Ashraf, Luo, & Anser, 2022)	China							✓		ARDL
(Jinrui, 2023)	Malaysia							✓		Multiple regression analysis

Table 4.1 Summary of previous studies on factors affecting the BRI (Continued)

Author	Country	Factor impact of BRI								Method
		FDI	Tourism	Employment	Education	Standard of living and social	International relations	Economic	Logistics and transportation	
Present study	**Thailand**	✓	✓	✓	✓	✓	✓	✓	✓	**EFA, CFA and SEM**

Note: PCA = Principal component analysis; PVAR-GMM = Panel vector autoregressive model based on a generalized method of moment approach; FGLS = Feasible generalized least squares; Sys-GMM = System generalized method of moments; PDOLS = Panel Dynamic Ordinary Least Squares; SWOT = Strengths, Weaknesses, Opportunities, and Threats; AHP = Analytic Hierarchy Process; ARDL = Autoregressive distribution lag; SEM = Structural equation modeling; EFA = Exploratory factor Analysis; CFA = Confirmatory factor analysis.

4.4 Research methodology

The study begins with a review of relevant literature on factors influencing the perception of benefits from the China-Laos high-speed rail project. This review aims to identify gaps in previous research and examine potential statistical methods and theories for application in the study. The researchers then developed a questionnaire based on relevant principles and theories, as well as designing a conceptual framework for the research. Data were collected from individuals in Thailand living in provinces along the Thai-Laos border, covering areas along the BRI route. A total of 1,540 participants were interviewed face-to-face. After collecting all responses from the survey, the data were analyzed using statistical models, including Exploratory Factor Analysis (EFA). Data from 462 participants (30% of the sample) were used for EFA to group the 77 survey questions into appropriate components. The remaining 1,078 participants (70% of the sample) were used for Confirmatory Factor Analysis (CFA). The data is divided such that 30% is used for EFA for training the data, and 70% is used for CFA for testing the dataset. Therefore, splitting the data for EFA and CFA is a critical approach to developing models that perform well in real-world situations and predict outcomes accurately when applied to varying datasets. This approach aligns with current research practices (Salazar, Garland, Ochoa, & Pyrcz, 2022). However, before

splitting the data, the researchers carefully considered the demographic and social characteristics, such as gender and age, to ensure an even distribution across all sample groups. Finally, Structural Equation Modeling (SEM) was used to validate the factors and explore the relationships between variables. The study concluded with statistical results, discussions, and policy recommendations for the future development of Thailand's rail system, as illustrated in **Figure 4.1**.

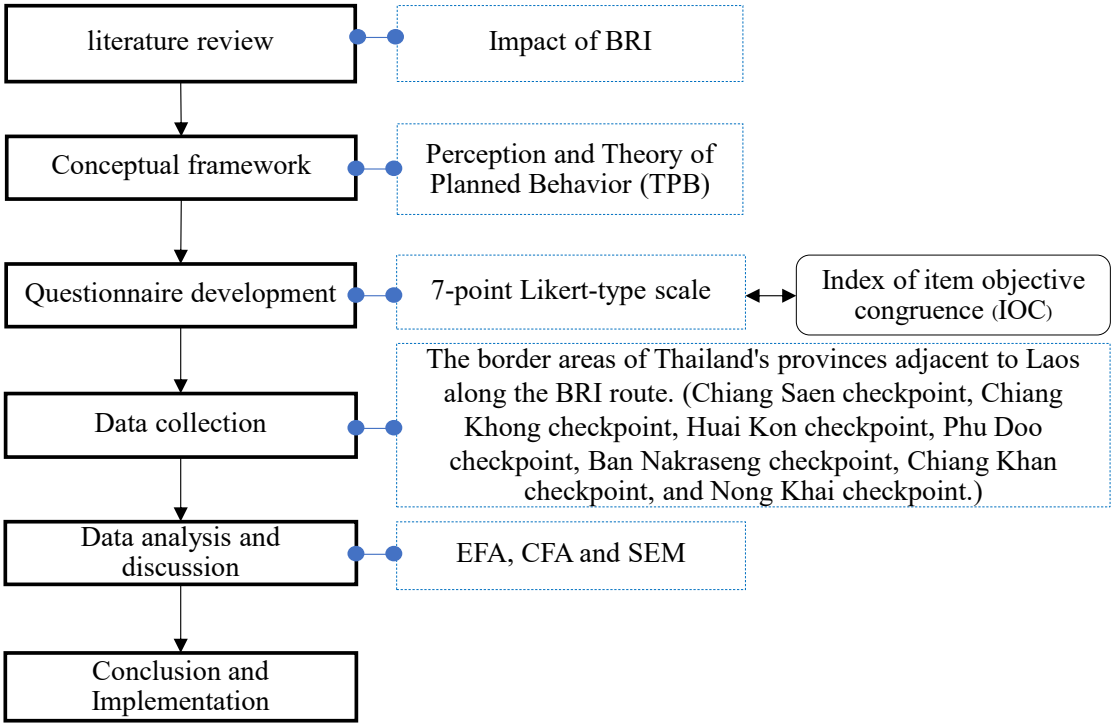


Figure 4.1 Research Process

4.4.1 Research Conceptual Framework

For the research framework in **Figure 4.2**, it illustrates the format to be used for presentation, aiming to examine the relationships between factors impacting the BRI on Thai perceptions of benefits and intention to use the China-Laos high-speed railway service. The framework includes factors related to the Theory of Planned Behavior (TPB), which serves as a central mediator.

The use of indicators in measuring the perception of benefits from the BRI policy is based on the framework of Perception (Sánchez-Fernández & Iniesta-Bonillo, 2007), which assesses various dimensions such as Perceived Product Benefits, Perceived Service Benefits, Perceived Cultural Benefits, and Perceived Emotional

Benefits. These factors can significantly predict perceptions of benefits regarding the BRI policy. Therefore, these indicators can be utilized as components in analyzing perceived benefits.

In the context of this study, to measure the impact dimensions of the BRI, all relevant factors have been compiled including foreign direct investment, tourism, employment, education, standards of living and social aspects, international relations, economics, and logistics and transportation. These factors are utilized to assess people's perceptions of the perceived benefits of the BRI. The underlying hypothesis of the model can be defined as follows.

1) ***Hypothesis 1 (H1):*** Foreign direct investment will positively influence perceived benefits.
2) ***Hypothesis 2 (H2):*** Tourism will positively influence perceived benefits.
3) ***Hypothesis 3 (H3):*** Employment will positively influence perceived benefits.
4) ***Hypothesis 4 (H4):*** Education will positively influence perceived benefits.
5) ***Hypothesis 5 (H5):*** Standards of living and social aspects will positively influence perceived benefits.
6) ***Hypothesis 6 (H6):*** International relations will positively influence perceived benefits.
7) ***Hypothesis 7 (H7):*** Economics will positively influence perceived benefits.
8) ***Hypothesis 8 (H8):*** Logistics and transportation will positively influence perceived benefits.

In addition, correlations were also examined between the perceived benefits of the BRI policy and the intention to use the China-Laos high-speed railway service. Based on these findings, hypotheses regarding the intention of Thai people to use the high-speed railway service were formulated as follows:

9) ***Hypothesis 9 (H9):*** Perceived benefits have a positive influence on attitudes.
10) ***Hypothesis 10 (H10):*** Perceived benefits have a positive influence on intention.

11) ***Hypothesis 11 (H11):*** Perceived behavior control has a positive influence on intention.

12) ***Hypothesis 12 (H12):*** Attitude has a positive influence on intention.

13) ***Hypothesis 13 (H13):*** Subjective norm has a positive influence on intention

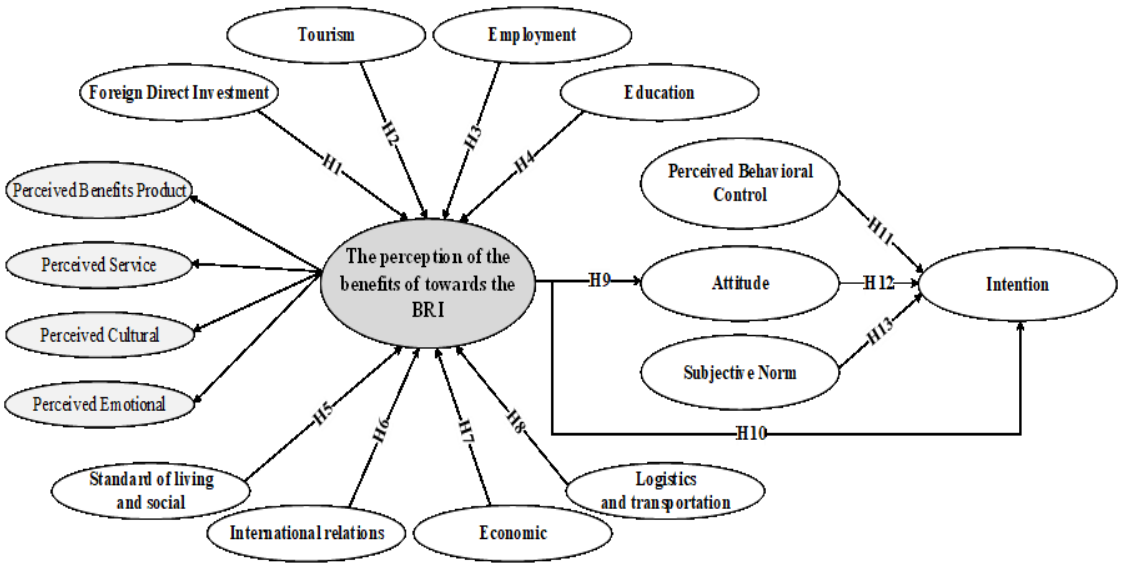


Figure 4.2 Conceptualization of the proposed model

4.4.2 Development of the Questionnaire

In order to design and establish guidelines for study, from the research framework to the creation of tools used for questionnaire analysis, it is divided into three parts: (1) General information and travel behavior of respondents, such as gender, age, marital status, residential area, education level, occupation, income, and preferred travel modes. (2) Behaviors influencing Thai people's perceptions of the benefits of the Belt and Road Initiative (BRI), consisting of 37 questions based on the Theory of Planned Behavior (TPB) principles like Intention to Use, Attitudes, Subjective Norm, and Perceived Behavioral Control, as well as Perception principles such as Perceived Benefits, Product Perception, Service Perception, Cultural Perception, and Emotional Perception. (3) Impact factors of BRI, including 40 questions across 8 factors: foreign direct investment, tourism, employment, education, living standards and society, international relations, economy, and logistics and transportation. The questionnaire responses are based on a 7-point Likert scale (Harpe, 2015), where 1 indicates strongly disagree and 7 indicates strongly agree.

Furthermore, the content accuracy of the questionnaire has been validated using the Index of Content Validity (IOC), assessed by 3 experts. This study identified questions with IOC values exceeding 0.50 (Fouzul Kareema & Bt Zubairi, 2021), and found that our questionnaire includes questions with IOC values ranging from 0.67 to 1.00.

4.4.3 Participants and Data Collection

This study was conducted with a sample group of individuals in Thailand residing in the border provinces adjacent to the Lao PDR, along the BRI route. The study employed Stratified Random Sampling to collect data from seven border checkpoint areas between Thailand and Laos: Chiang Saen checkpoint, Chiang Khong checkpoint, Huai Kon checkpoint, Phu Doo checkpoint, Ban Nakraseng checkpoint, Chiang Khan checkpoint, and Nong Khai checkpoint. Prior to selection, the researchers reviewed the total population data for the study area to proportionally allocate the sample collection across the seven locations. Additionally, the sample included all age groups, such as Gen Alpha (18-25 years), Gen Y (26-43 years), Gen X (44-58 years), and Baby Boomers (59-77 years), ensuring the data collected would be representative of the broader population. A total of 1,540 valid responses were obtained, which are presented in **Table 4.2**. This sample size was deemed sufficient for analysis, as prior literature suggests that for Structural Equation Modeling (SEM) analysis, the sample size should be at least 15 times the number of observed variables (Cangur & Ercan, 2015; Hair, 2009). In this study, there were 77 observed variables, so the minimum required sample size was 1,155 responses. The sampling process for this study adhered carefully to these statistical requirements for SEM analysis. It can be emphasized that this sample size was strategically determined to meet the necessary statistical conditions for the analysis.

Furthermore, the interview process was conducted only with individuals who willingly agreed to participate in the questionnaire. Additionally, prior to the interview, respondents were asked for their consent. Interviews were conducted face-to-face with respondents aged 18 and above, and each respondent spent no more than 15 minutes answering the questionnaire. Moreover, our data collection process was approved by the Ethics Committee of Suranaree University of Technology (30 January 2024; COE No. 7/2567).

Table 4.2 Characteristics of respondents

Characteristics	Category	1540 Respondents	
		Frequency	Percentage
Gender	Male	738	47.9
	Female	802	52.1
Age	18 – 25 years old (Gen Alpha)	174	11.3
	26 – 43 years old (Gen Y)	874	56.8
	44 – 58 years old (Gen X)	380	24.7
	59 – 77 years old (Baby Boomer)	112	7.3
Status	Single	616	40.0
	Married	822	53.4
	Widowed/divorced/separated	102	6.6
Residential area	Live in the city	571	37.1
	Live outside the city	867	56.3
	Live in the suburbs	102	6.6
Education	Primary education	126	8.2
	High school education	321	20.8
	Vocational education	238	15.5
	Associate Degree	277	18.0
	Bachelor's Degree	503	32.7
	Master's Degree	65	4.2
	Doctoral Degree	10	0.6
Occupation	Agriculturist/Agricultural Organization	269	17.5
	Entrepreneur	377	24.5
	Private Employee	445	28.9
	Government Employee	199	12.9
	Student	108	7.0
	Others	142	9.2
Income	Less than or equal to 10,000 Baht	490	31.8
	10,001-15,000 Baht	178	11.6
	15,001-20,000 Baht	575	37.3
	More than 20,000 Baht	297	19.3

* Exchange rate as of the date of the survey (March 6, 2024)
1 Thai Baht = 0.026 Euro/0.028 US Dollar *

Table 4.2 Characteristics of respondents (Continued)

Characteristics	Category	1540 Respondents	
		Frequency	Percentage
Modes of travel used	Private vehicle (Car/Motorbike)	1,288	83.6
	Bus	221	14.4
	Railway	16	1.0
	Other (Airplane and Boat)	15	1.0

4.4.4 Statistical Method

1) Exploratory factor analysis (EFA)

To establish a latent variable model emphasizing various factors based on a literature review, typically when a clear theoretical framework isn't available for measuring relationships, Exploratory Factor Analysis (EFA) is employed. EFA is an analytical approach used to explore and identify factors (Stevens, 2012) that explain relationships among observed variables. Furthermore, EFA results can reduce observed variables by creating new variables in the form of composite factors (Fabrigar & Wegener, 2011; Williams, Onsman, & Brown, 2010). In this study, we used EFA to examine the grouping of data, especially for factors that have not been supported by any existing theoretical frameworks before. These factors include foreign direct investment, tourism, employment, education, standards of living and social, international relations, economic, and logistics and transportation. Since these factors were not previously supported by any established theories, it was necessary to group the questionnaire items using EFA first, before proceeding with further statistical analysis. This approach ensures that the data is appropriately structured and can be analyzed in subsequent steps.

2) Confirmatory factor analysis (CFA)

To confirm the relationships between components of variables, Confirmatory Factor Analysis (CFA) is used. This method is employed when researchers know that indicators are components based on theory or a literature review, and it verifies the consistency of measures with an academic understanding of relevant factors. The primary objective of CFA is to assess whether the collected data aligns with the research assumptions (Kline, 2023; Theerathitichaipa, Wisutwattanasak, Banyong, et al., 2024; Wisutwattanasak et al., 2023). For this study, we used CFA to assess the consistency of the data and to confirm whether the grouped items are

related and consistent with each other. This step ensures that the factors identified in the exploratory are statistically significant and reliable, providing confidence that the results are robust and meaningful.

3) Modeling Structural Equations

Structural Equation Modeling (SEM) is utilized because it is grounded in theory that emphasizes relationships between observable and latent variables. SEM encompasses both measurement models and structural models to establish causal links between variables (Byrne, 2013; Iamtrakul, Chayphong, & Yoshitsugu, 2024; Kaiser, Samuel, & Burger, 2024; Raykov & Marcoulides, 2012). To assess data appropriateness for SEM guidelines, various statistical techniques are employed, including factor analysis, path analysis, and regression modeling. These methods are typically analyzed using software such as Mplus 7 (Muthén & Muthén, 2017). These techniques collectively enable a comprehensive evaluation of data within the SEM framework.

We use criteria for assessing the adequacy of component data proposed by Fornell and Larcker (1981) and Hair (2009) to statistically test the results of each indicator model. This involves evaluating Composite Reliability (CR) values and Average Variance Extracted (AVE). CR values and AVE should ideally exceed 0.7 and 0.5, respectively. These statistical values can be computed using Equations (1) and (2) as follows:

$$\mathrm{AVE}= \frac{\sum_{i=1}^{n} \lambda_i^2}{n}, \qquad (1)$$

$$\mathrm{CR}= \frac{(\sum_{i=1}^{n} \lambda_i)^2}{(\sum_{i=1}^{n} \lambda_i)^2+(\sum_{c=1}^{n} \delta_i)} \qquad (2)$$

where i denotes the component loading of each indicator, and i represents the error terms.

4.5 Results

4.5.1 Descriptive statistics

The preliminary statistical analysis included measures of mean, standard deviation, skewness, and kurtosis. Before conducting Confirmatory Factor Analysis (CFA), we examined these descriptive statistics to confirm the suitability of the data for analysis. **Table 4.3** in the Appendix. It shows that across all 77 items, skewness ranges from –0.639 to 0.196, and kurtosis ranges from –0.767 to 0.938, respectively. These values align with the established criteria where skewness is ideally between –2 and 2,

and kurtosis between –7 and 7 (Kline, 2023). Therefore, it can be concluded that our sample statistics indicate a normally distributed data set and are acceptable for analysis.

Table 4.3 Statistical summary

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
1	IN1	I intend to use the China-Laos high-speed rail service for my travel.	5.40	1.036	–0.639	0.640
2	IN2	I will recommend my family members to use the China-Laos high-speed rail service for their travel.	5.27	1.033	–0.605	0.294
3	IN3	I will recommend the people around me to use the China-Laos high-speed rail service for their travel.	5.20	1.062	–0.356	0.028
4	IN4	I plan to use the China-Laos high-speed rail service if I have the opportunity to access it.	5.38	1.145	–0.373	–0.414
5	A1	I am well aware of the importance of the China-Laos railway.	5.05	1.025	–0.355	0.601
6	A2	I feel that the China-Laos high-speed rail will help develop Thailand's economy.	5.11	1.007	–0.362	0.161
7	A3	I feel that the China-Laos high-speed rail will help promote tourism in Thailand.	5.33	1.136	–0.392	–0.279
8	A4	I feel that the China-Laos high-speed rail will benefit the people in Thai society.	5.14	1.044	–0.253	–0.053
9	A5	I feel that the China-Laos high-speed rail will be able to create competitive advantages for Thailand in terms of trade.	5.05	1.072	–0.197	–0.104
10	A6	I am aware of Thailand's development plan for railway routes that will connect to the China-Laos high-speed railway.	5.12	1.115	–0.331	–0.153

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
11	SN1	I believe that family and people around me have influence in the decision to choose to use the China-Laos high-speed rail service.	4.94	1.035	–0.047	–0.145
12	SN2	If a friend recommends that I try using the China-Laos high-speed rail service, I think this recommendation would have a greater impact on my decision to use it.	5.01	1.050	–0.133	–0.286
13	SN3	If a well-known person (such as a celebrity, YouTuber, or influencer) uses the China-Laos high-speed rail service, it would make me want to try using it as well.	4.94	1.193	0.010	–0.519
14	SN4	Advertising and promotions through various media about the China-Laos high-speed rail make me interested in using the service.	5.04	1.135	–0.131	–0.392
15	BC1	Traveling from home to the China-Laos high-speed rail station is not beyond my ability.	5.00	1.032	–0.531	0.603
16	BC2	The steps to book/purchase tickets for the China-Laos high-speed rail are not beyond my capability.	4.96	1.050	–0.460	0.254
17	BC3	I think that the China-Laos high-speed rail is as easy to use as regular trains.	5.02	1.047	–0.510	0.276
18	BC4	I think that the China-Laos high-speed rail is not complicated and difficult to use.	4.93	1.033	–0.462	0.404
19	BC5	I think that even though I have never used the China-Laos high-speed rail before, it is easy to use and everyone can do it.	5.05	1.096	–0.368	–0.084
20	PP1	I think that the China-Laos high-speed rail is beneficial for Thailand in positive aspects such as trade and tourism.	5.08	0.992	–0.142	–0.207
21	PP2	I think that the China-Laos high-speed rail makes travel safer.	5.18	1.063	–0.218	–0.478

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
22	PP3	I think that the China-Laos high-speed rail helps save expenses.	5.15	1.150	–0.121	–0.663
23	PP4	I think that the China-Laos high-speed rail helps save time.	5.53	1.153	–0.316	–0.767
24	PS1	I think that the China-Laos high-speed rail is worthwhile.	5.27	1.090	–0.250	–0.478
25	PS2	I think that the China-Laos high-speed rail service is impressive.	5.21	1.085	–0.303	–0.405
26	PS3	I think that the China-Laos high-speed rail makes travel and goods transportation more convenient, efficient, and faster.	5.30	1.070	–0.204	–0.589
27	PC1	I think that the China-Laos high-speed rail is beneficial for cultural exchange and traditions between countries.	5.02	0.893	–0.230	0.316
28	PC2	I think that the China-Laos high-speed rail helps me learn about the culture of neighboring countries (e.g., Laos).	5.06	0.969	–0.256	0.096
29	PC3	I think that the China-Laos high-speed rail plays a part in transmitting culture (e.g., Thai products).	5.08	0.964	–0.300	0.120
30	PC4	I think that the China-Laos high-speed rail has a positive influence on cultural exchange between countries.	5.06	0.936	–0.214	0.250
31	PC5	I think that the China-Laos high-speed rail can create a positive reputation for travel.	5.14	1.001	–0.390	–0.101
32	PE1	I think that the China-Laos high-speed rail can create a sense of delight for passengers (for example, with picturesque natural scenery along the route).	5.18	1.009	–0.101	–0.360
33	PE2	I think that the China-Laos high-speed rail is interesting.	5.25	1.082	–0.275	–0.370
34	PE3	I think that the China-Laos high-speed rail can build confidence in travel.	5.21	1.093	–0.242	–0.632
35	PE4	I think that the China-Laos high-speed rail can meet people's travel needs.	5.31	1.109	–0.347	–0.433

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
36	PE5	I think that the China-Laos high-speed rail makes it easier for me to make travel decisions.	5.11	0.963	−0.419	0.622
37	PE6	I think that the China-Laos high-speed rail provides a good experience and can create a special travel experience.	5.18	1.045	−0.175	−0.374
38	B1	The China-Laos high-speed rail can attract more foreign investors to invest in Thailand.	4.88	0.821	−0.244	0.938
39	B2	The China-Laos high-speed rail can increase Thailand's import and export volumes of goods.	4.91	0.873	−0.233	0.592
40	B3	The China-Laos high-speed rail helps increase trade and investment between Thailand and foreign countries (such as Laos and China).	5.03	1.017	−0.399	−0.207
41	C1	The China-Laos high-speed rail can contribute to the development of tourism, both domestically in Thailand and internationally.	5.11	0.957	−0.338	0.081
42	C2	The China-Laos high-speed rail can increase the number of tourists.	5.22	1.007	−0.513	0.051
43	C3	The China-Laos high-speed rail can contribute to the development of services such as hotels, restaurants, and tourist attractions.	5.25	1.062	−0.446	−0.200
44	C4	The China-Laos high-speed rail can encourage more people to choose train travel.	5.28	1.085	−0.369	−0.347
45	C5	The China-Laos high-speed rail can generate more tourism income.	5.32	1.136	−0.355	−0.445
46	C6	The China-Laos high-speed rail can improve the connectivity of public transportation systems, such as shuttle services for tourists at border checkpoints.	5.21	1.055	−0.322	−0.376

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
47	D1	The China-Laos high-speed rail provides me with a wider range of career opportunities (such as hotel services, restaurants, and tourist attractions).	4.74	0.981	–0.215	0.092
48	D2	The China-Laos high-speed rail has helped me get even more employment.	4.66	1.031	–0.153	–0.111
49	D3	The China-Laos high-speed rail has helped me earn more compensation from work.	4.64	1.092	–0.211	0.000
50	D4	The China-Laos high-speed rail has helped to make the company or business I work for more stable.	4.59	1.113	–0.348	0.220
51	D5	The China-Laos high-speed rail gives me more opportunities to work with foreign people (such as people from Lao PDR and Chinese people).	4.83	1.104	–0.280	0.208
52	F1	The China-Laos high-speed rail has increased educational opportunities for Thai people.	4.74	0.855	–0.242	0.690
53	F2	The China-Laos high-speed rail has helped facilitate international knowledge exchange.	4.87	0.971	–0.181	0.296
54	F3	The China-Laos high-speed rail contributes to the development of educational personnel in Thailand.	4.85	1.002	0.021	–0.167
55	F4	The China-Laos high-speed rail allows Thai people to use foreign languages to communicate better (such as English/Chinese).	5.05	1.030	–0.163	–0.411
56	F5	The China-Laos high-speed rail has helped bring more foreign people to study in the Thai education system (such as Lao PDR and Chinese people).	4.98	1.048	–0.095	–0.545
57	E1	The China-Laos high-speed rail helps improve the quality of life and society in Thailand.	4.81	0.910	–0.239	0.427

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
58	E2	The China-Laos high-speed rail helps improve Thailand's infrastructure (e.g., road networks).	4.82	1.006	–0.298	–0.057
59	E3	The China-Laos high-speed rail helps enhance Thailand's amenities (e.g., service-oriented businesses).	4.93	1.028	–0.184	–0.243
60	E4	The China-Laos high-speed rail helps improve Thailand's public infrastructure (e.g., electricity, water supply, and telecommunications systems).	4.72	0.999	0.196	–0.001
61	E5	The China-Laos high-speed rail helps promote greater social equality.	4.59	1.085	0.118	0.140
62	E6	The China-Laos high-speed rail helps reduce air pollution and contributes to environmental conservation.	4.97	0.959	–0.074	–0.201
63	E7	The potential of the surrounding Thai border communities along the China-Laos high-speed rail route has developed increased.	5.10	1.043	–0.205	–0.129
64	R1	The China-Laos high-speed rail helps bring Thai people closer to neighboring countries (e.g., Laos).	4.98	0.902	–0.235	–0.003
65	R2	The China-Laos high-speed rail helps make Thai culture more widely known to people from other countries (e.g., Thai cuisine).	5.00	0.931	–0.353	0.180
66	R3	The China-Laos high-speed rail helps boost Thailand's various soft power aspects (e.g., arts, drama, and Thai music).	4.97	0.944	–0.210	0.009
67	R4	The China-Laos high-speed rail helps enhances good relations between Thailand and foreign countries.	5.04	0.953	–0.209	–0.145
68	R5	The China-Laos high-speed rail contributes to the development of more effective international cooperation frameworks (e.g., the ASEAN Cooperation Framework).	5.07	0.968	–0.149	–0.527

Table 4.3 Statistical summary (Continued)

No.	Variable	Description	Mean	SD	Skewness	Kurtosis
69	M1	The China-Laos high-speed rail can provide Thais with more opportunities to start businesses or become SME entrepreneurs.	5.16	1.012	–0.191	–0.468
70	M2	The China-Laos high-speed rail could increase exports of Thailand's important industrial products (e.g., agricultural products).	5.09	0.951	–0.117	–0.188
71	M3	The China-Laos high-speed rail can increase trade between Thailand's border and Lao PDR.	5.19	1.050	–0.375	–0.378
72	M4	The China-Laos high-speed rail contributes to the growth of Thailand's tourism industry (e.g., hotels, restaurants, and service businesses).	5.20	1.073	–0.391	–0.205
73	L1	The China-Laos high-speed rail reduces transportation costs for goods.	4.95	0.962	–0.014	0.055
74	L2	The China-Laos high-speed rail can develop additional travel routes to enhance connections with Thailand.	5.04	1.013	–0.152	–0.202
75	L3	The China-Laos high-speed rail further enhances Thailand's transportation and logistics systems.	5.07	1.067	–0.155	–0.440
76	L4	The China-Laos high-speed rail enhances the development of economic corridors linking Thailand and Laos, such as the Luang Prabang, Indochina, Mawlamya Economic Corridor (LIMEC), the Greater Mekong Subregional Economic Corridors (GMS Economic Corridors), and the China-Indochina Peninsula Economic Corridor (CICPEC).	5.02	1.024	0.069	–0.264
77	L5	The China-Laos high-speed rail contributes to the growth of Thailand's logistics industry, including e-commerce and transportation businesses.	5.27	1.056	–0.343	–0.238

Note: SD = standard deviation; SK = skewness; KU = kurtosis.

4.5.2 The Exploratory Factor Analysis

We used EFA to establish observable indicators representing components of each latent factor and calculate main factors. In Table 4, we present factor analysis results categorized into 3 groups.

Group 1: The results of EFA for TPB factors indicate high reliability and acceptability, with a Kaiser-Meyer-Olkin (KMO) measure of 0.936, indicating excellent sampling adequacy. The model explains 79.597% of the variance, and the EFA yields 19 items grouped into 4 factors. The combined factors include Intention, Attitude, Subjective Norm, and Perceived Behavioral Control.

Group 2: The results of EFA for Perception factors indicate high reliability and acceptability, with a Kaiser-Meyer-Olkin (KMO) measure of 0.959, indicating excellent sampling adequacy. The model explains 78.870% of the variance, and the EFA yields 18 items grouped into 4 factors. The combined factors include Perceived Benefits, Product Perception, Perceived Service, Perceived Cultural, and Perceived Emotional.

Group 3: The results of EFA for BRI impact factors indicate high reliability and acceptability, with a Kaiser-Meyer-Olkin (KMO) measure of 0.961, indicating excellent sampling adequacy. The model explains 75.877% of the variance, and the EFA yields 40 items grouped into 8 factors. The combined factors include Foreign Direct Investment, Tourism, Employment, Education, Standard of Living and Society, International Relations, Economy, and Logistics and Transportation.

When examining the accuracy and reliability in terms of Cronbach's alpha for all variables, it was found that values ranged from 0.800 to 0.923. These values exceed the minimum standard recommended in previous research, which is 0.70 (Bujang, Omar, & Baharum, 2018; Tavakol & Dennick, 2011)

4.5.3 Confirmatory Factor Analysis Results

Considering the results from the EFA, we proceeded to evaluate and elucidate the importance of each item. The CFA results were analyzed using Mplus 7 software to confirm that the indicators could indeed be components of each factor.

Table 4.4 also presents the CFA results, which show that all indicators are significant at the 0.01 level as components of each factor. The statistical values for Composite Reliability (CR) should be no less than 0.7, and Average Variance Extracted (AVE) should be at least 0.5 (Ab Hamid, Sami, & Sidek, 2017; Alarcón, Sánchez, & De

Olavide, 2015) All factors analyzed have CR and AVE values greater than 0.7 and 0.5, respectively. Therefore, these results confirm that all factors are suitable for CFA analysis.

Table 4.4 Factor analysis results

Variable	EFA			CFA				
	Loading	Item	Cronbach's Alpha	Loading	S.E.	t-Stat	CR	AVE
			TPB					
Intention		4	0.911				0.868	0.622
IN1	0.824			0.751	0.016	47.357		
IN2	0.838			0.737	0.017	44.165		
IN3	0.769			0.783	0.015	53.472		
IN4	0.725			0.876	0.011	78.728		
Attitude		6	0.911				0.896	0.590
A1	0.602			0.757	0.015	52.110		
A2	0.770			0.758	0.014	52.394		
A3	0.793			0.800	0.013	63.801		
A4	0.819			0.736	0.015	47.771		
A5	0.780			0.774	0.014	56.502		
A6	0.705			0.782	0.013	58.851		
Subjective Norm		4	0.891				0.877	0.643
SN1	0.702			0.825	0.012	67.078		
SN2	0.793			0.882	0.010	86.562		
SN3	0.864			0.714	0.017	41.347		
SN4	0.853			0.777	0.015	53.433		
Perceived Behavioral Control		5	0.918				0.897	0.636
BC1	0.830			0.680	0.018	38.242		
BC2	0.840			0.774	0.014	55.900		
BC3	0.801			0.831	0.011	74.617		
BC4	0.847			0.834	0.011	75.754		
BC5	0.786			0.857	0.010	86.189		

***Goodness of fit**: Kaiser-Meyer-Olkin (KMO) = 0.936, Bartlett's test approx.* χ^2 *= 8273.228, Degrees of freedom (df) = 171, p < 0.001*

Table 4.4 Factor analysis results (Continued)

Variable	EFA			CFA				
	Loading	Item	Cronbach's Alpha	Loading	S.E.	t-Stat	CR	AVE
Perception								
Perceived Benefits Product		4	0.897				0.898	0.689
PP1	0.686			0.786	0.012	65.616		
PP2	0.792			0.867	0.009	92.836		
PP3	0.744			0.817	0.012	69.379		
PP4	0.756			0.847	0.011	80.514		
Perceived Service		3	0.902				0.891	0.731
PS1	0.573			0.843	0.011	78.701		
PS2	0.617			0.866	0.010	90.326		
PS3	0.622			0.856	0.010	85.885		
Perceived Cultural		5	0.898				0.883	0.602
PC1	0.755			0.727	0.016	44.481		
PC2	0.834			0.774	0.014	54.051		
PC3	0.826			0.757	0.015	50.181		
PC4	0.807			0.828	0.012	69.294		
PC5	0.701			0.789	0.014	58.144		
Perceived Emotional		6	0.919				0.914	0.640
PE1	0.759			0.796	0.012	64.965		
PE2	0.749			0.861	0.010	90.313		
PE3	0.775			0.831	0.011	77.946		
PE4	0.753			0.832	0.011	78.493		
PE5	0.665			0.684	0.017	39.941		
PE6	0.529			0.784	0.013	58.949		
***Goodness of fit**: Kaiser-Meyer-Olkin (KMO) = 0.959, Bartlett's test approx.* χ^2 *= 7859.706, Degrees of freedom (df) = 153, p < 0.001*								
Factor impact of BRI								
Factor 1: Foreign Direct Investment (FDI)		3	0.800				0.772	0.531
B1	0.787			0.693	0.019	35.731		
B2	0.683			0.734	0.018	41.877		
B3	0.498			0.758	0.016	46.623		

Table 4.4 Factor analysis results (Continued)

Variable	EFA			CFA				
	Loading	Item	Cronbach's Alpha	Loading	S.E.	t-Stat	CR	AVE
Factor 2: Tourism		6	0.923				0.908	0.622
C1	0.760			0.727	0.016	46.228		
C2	0.765			0.781	0.013	59.252		
C3	0.825			0.792	0.013	62.009		
C4	0.821			0.835	0.011	77.550		
C5	0.793			0.826	0.011	73.952		
C6	0.721			0.765	0.014	54.798		
Factor 3: Employment		5	0.899				0.894	0.630
D1	0.771			0.680	0.019	36.611		
D2	0.842			0.796	0.015	53.775		
D3	0.854			0.863	0.012	70.347		
D4	0.860			0.762	0.014	52.920		
D5	0.724			0.855	0.015	57.796		
Factor 4: Education		5	0.870				0.858	0.549
F1	0.519			0.585	0.022	26.973		
F2	0.600			0.758	0.015	50.501		
F3	0.679			0.798	0.013	59.512		
F4	0.773			0.772	0.015	52.203		
F5	0.774			0.773	0.015	52.756		
Factor 5: Standard of living and social		7	0.900				0.882	0.517
E1	0.443			0.708	0.017	42.276		
E2	0.513			0.718	0.016	44.532		
E3	0.525			0.760	0.014	52.751		
E4	0.748			0.664	0.019	35.543		
E5	0.819			0.645	0.019	33.211		
E6	0.666			0.706	0.017	41.992		
E7	0.455			0.820	0.012	70.453		
Factor 6: International relations		5	0.902				0.899	0.640
R1	0.663			0.799	0.012	64.333		
R2	0.726			0.811	0.012	67.848		
R3	0.728			0.765	0.014	54.450		
R4	0.610			0.833	0.011	76.945		
R5	0.595			0.790	0.013	61.060		

Table 4.4 Factor analysis results (Continued)

Variable	EFA			CFA				
	Loading	Item	Cronbach's Alpha	Loading	S.E.	t-Stat	CR	AVE
Factor 7: Economic		4	0.886				0.868	0.622
M1	0.522			0.808	0.012	66.345		
M2	0.459			0.732	0.016	46.815		
M3	0.525			0.789	0.013	59.822		
M4	0.588			0.823	0.012	70.969		
Factor 8: Logistics and transportation		5	0.906				0.895	0.631
L1	0.769			0.725	0.016	45.307		
L2	0.711			0.799	0.013	62.694		
L3	0.727			0.807	0.012	65.455		
L4	0.687			0.798	0.013	62.660		
L5	0.663			0.839	0.011	78.031		
Goodness of fit: *Kaiser-Meyer-Olkin (KMO) = 0.961, Bartlett's test approx.* χ^2 *= 16485.083, Degrees of freedom (df) = 780, p < 0.001*								

Note: EFA = exploratory factor analysis, CFA = confirmatory factor analysis, CR = composite reliability, AVE = average variance extracted.

The results from Table 4 show that the TPB factors , which consists of four factors, reveals the following: 1) Intention to Use the China-Laos High-Speed Rail, where the indicator with the highest CFA loading is In4 (**γ** = 0.876, t = 78.728), stating, "I plan to use the China-Laos high-speed rail service if I have the opportunity to access it"; 2) Attitude, where the indicator with the highest CFA loading is A3 (**γ** = 0.800, t = 63.801), stating, "I feel that the China-Laos high-speed rail will help promote tourism in Thailand"; 3) Subjective Norm, where the indicator with the highest CFA loading is SN2 (**γ** = 0.882, t = 86.562), stating, "If a friend recommends that I try using the China-Laos high-speed rail service, I think this recommendation would have a greater impact on my decision to use it"; and 4) Perceived Behavioral Control, where the indicator with the highest CFA loading is BC5 (**γ** = 0.857, t = 86.189), stating, "I think that even though I have never used the China-Laos high-speed rail before, it is easy to use and everyone can do it."

Next, the Perception factors, which consists of four factors, reveals the following: 1) Perceived Benefits Product, where the indicator with the highest CFA loading is PP2 (**γ** = 0.867, t = 92.836), stating, "I think that the China-Laos high-speed rail makes travel safer"; 2) Perceived Service, where the indicator with the highest CFA loading is PS2 (**γ** = 0.866, t = 90.326), stating, "I think that the China-Laos high-speed rail service is impressive"; 3) Perceived Cultural, where the indicator with the highest CFA loading is PC4 (**γ** = 0.828, t = 69.294), stating, "I think that the China-Laos high-speed rail has a positive influence on cultural exchange between countries"; and 4) Perceived Emotional, where the indicator with the highest CFA loading is PE2 (**γ** = 0.861, t = 90.313), stating, "I think that the China-Laos high-speed rail is interesting."

Furthermore, for the BRI impact factors, which consists of eight factors, reveals the following: 1) Foreign Direct Investment, where the indicator with the highest CFA loading is B3 (**γ** = 0.758, t = 46.623), stating, "The China-Laos high-speed rail helps increase trade and investment between Thailand and foreign countries, such as Laos and China"; 2) Tourism, where the indicator with the highest CFA loading is C4 (**γ** = 0.835, t = 77.550), stating, "The China-Laos high-speed rail can encourage more people to choose train travel"; 3) Employment, where the indicator with the highest CFA loading is D3 (**γ** = 0.863, t = 70.347), stating, "The China-Laos high-speed rail has helped me earn more compensation from work"; 4) Education, where the indicator with the highest CFA loading is F3 (**γ** = 0.798, t = 59.512), stating, "The China-Laos high-speed rail contributes to the development of educational personnel in Thailand"; 5) Standard of living and social, where the indicator with the highest CFA loading is E7 (**γ** = 0.820, t = 70.453), stating, "The potential of the surrounding Thai border communities along the China-Laos high-speed rail route has developed increased"; 6) International Relations, where the indicator with the highest CFA loading is R4 (**γ** = 0.833, t = 76.945), stating, "The China-Laos high-speed rail helps enhances good relations between Thailand and foreign countries"; 7) Economic, where the indicator with the highest CFA loading is M4 (**γ** = 0.823, t = 70.969), stating, "The China-Laos high-speed rail contributes to the growth of Thailand's tourism industry, such as hotels, restaurants, and service businesses"; and 8) Logistics and Transport, where the indicator with the highest CFA loading is L5 (**γ** = 0.839, t = 78.031), stating, "The China-Laos high-speed rail contributes to the growth of Thailand's logistics industry, including e-commerce and transportation businesses."

4.5.4 Structural Equation Modeling Results

The analysis of hypotheses in **Table 4.5** and **Figure 4.3** illustrates the influence of BRI factors on perceptions of benefits and intentions to use the China-Laos high-speed railway service. These factors were initially hypothesized in the conceptual model, which incorporated indicators derived from CFA for testing the proposed hypotheses. SEM was utilized to explain behavioral intentions, and detailed findings will be presented in the following section.

For the overall goodness-of-fit assessment of the model, this study used absolute and incremental fit indices (D Hooper, Coughlan, & Mullen, 2008) The results of the CFA estimation are as follows: (1) Chi-square test of model fit χ^2= 7623.019, df = 2752, χ^2/df = 2.770, which aligns with the research by Bagozzi and Yi (1988) and Deb and Ahmed (2018) recommending that the Chi-square value or the ratio between the chi-square and the number of degrees of freedom (χ^2/df) should be less than 3; (2) Comparative fit index (CFI) = 0.929, which aligns with the research by Hu and Bentler (1999) and (Cangur & Ercan, 2015) recommending that CFI should be greater than 0.9; (3) Tucker–Lewis index (TLI) = 0.924, which aligns with the research by Daire Hooper and Coughlan (2008) recommending that TLI should be greater than 0.8; (4) Root mean square error of approximation (RMSEA) = 0.041, which aligns with the research by Deb and Ahmed (2018) and Xia and Yang (2019) recommending that RMSEA should be less than 0.06 and (5) Standardized root mean square Residual (SRMR) = 0.039, $p < 0.001$, which aligns with the research by Schreiber, Nora, Stage, Barlow, and King (2006) recommending that SRMR should be less than 0.08. Therefore, based on the examination of all indices meeting their respective criteria, it can be concluded that this model fits the empirical data well.

In **Table 4.5**, it is evident that Perceived Benefits Product, Perceived Service, Perceived Cultural, and Perceived Emotional are statistically significant indicators of the perceived benefits of the BRI policy. Additionally, the results show that foreign direct investment, tourism, employment, education, living standards and social economy, and logistics and transportation significantly influence the perceived benefits of the BRI policy in a statistically significant manner. Therefore, hypotheses H1–H5 and H7–H8 are supported. Conversely, H6 is not supported due to the lack of statistically significant international relationships. Furthermore, the perceived benefits of the BRI policy significantly influence attitudes, supported by hypothesis H9.

Additionally, perceived benefits, attitudes, and conformity to reference groups significantly influence the intention to use the China-Laos high-speed railway service, supporting hypotheses H10 and H12–H13. On the other hand, H11 is not supported as behavioral control does not have statistically significant influence on the intention to use the China-Laos high-speed railway service.

Table 4.5 Hypothesis results (SEM)

Hypothesis	Variable	Standardized Coefficient	S.E.	p-Value	Results
	Measurement model:				
	Perception Measurement by;				
	Perceived Benefits Product	0.875	0.009	0.000	Supported
	Perceived Service	0.882	0.010	0.000	Supported
	Perceived Cultural	0.884	0.010	0.000	Supported
	Perceived Emotional	0.911	0.007	0.000	Supported
	Structural model:				
	Perception Affected on;				
H1	Foreign Direct Investment	0.314	0.014	0.000	Supported
H2	Tourism	0.290	0.011	0.000	Supported
H3	Employment	0.282	0.015	0.000	Supported
H4	Education	–0.279	0.042	0.000	Supported
H5	Standard of living and social	0.279	0.012	0.000	Supported
H6	International relations	–0.053	0.042	0.205	Not supported
H7	Economic	0.117	0.004	0.000	Supported
H8	Logistics and transportation	0.199	0.008	0.000	Supported
	Attitude Affected on;				
H9	Perception	0.935	0.007	0.000	Supported
	Intention Affected on;				
H10	Perception	0.177	0.008	0.000	Supported
H11	Perceived Behavioral Control	–0.016	0.048	0.740	Not supported
H12	Attitude	0.622	0.050	0.000	Supported
H13	Subjective Norm	0.146	0.036	0.000	Supported

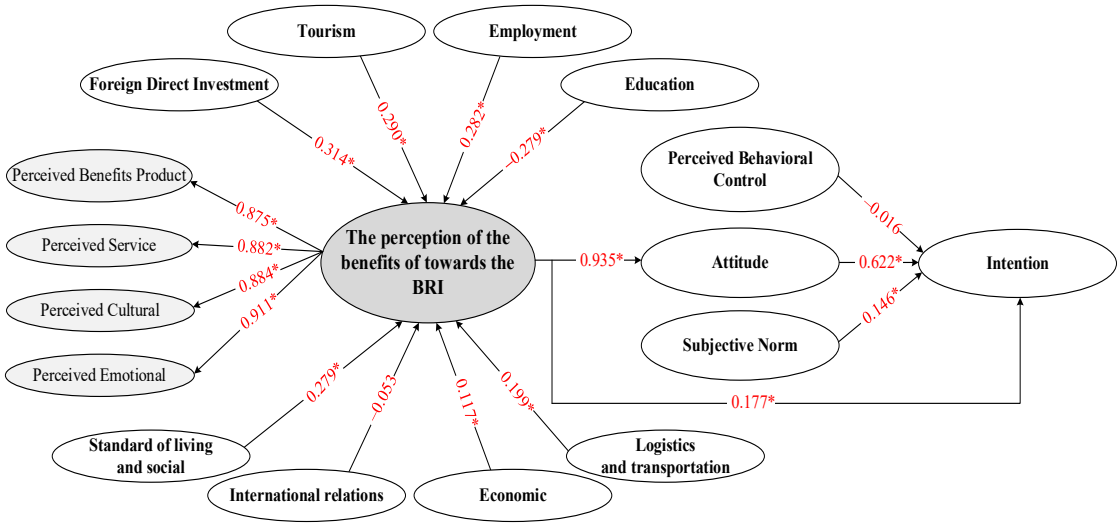


Figure 4.3 SEM Model Results.

4.6 Discussion

From our research findings, this study has revealed several significant discoveries and can provide further in-depth explanations. Details are outlined below.

4.6.1 Factors perceptions of the benefits of BRI

When evaluating overall perceptions of the benefits of the Belt and Road Initiative (BRI), Thai people generally have a high perception of its benefits. The component with the highest weight influencing perceptions of BRI benefits is "Perceived Emotional," with a value of 0.911. This indicates that emotional perception has the strongest impact on Thai perceptions of the China-Laos high-speed rail project. This finding is consistent with studies suggesting that emotional perception plays a significant role in BRI projects, highlighting that emotional perspectives form the basis of how BRI benefits are perceived (Mostafanezhad, Farnan, & Loong, 2023) Following this are "Perceived Cultural," "Perceived Service," and "Perceived Benefits Product," respectively.

4.6.2 The Relationship Between the Impacts of BRI and Perception of Benefits

Based on the findings of this study, factors such as foreign direct investment (FDI), tourism, employment, education, living standards and social conditions, economics, and logistics and transportation have significant correlations with the perception of the benefits of BRI. Among these, foreign direct investment (FDI) emerged as the most influential factor affecting Thai people's perceptions of BRI

benefits. This indicates that FDI positively influences the perception of BRI benefits, as it is seen to bring increased investment opportunities to Thailand. Additionally, it facilitates enhanced trade and investment between Thailand and other countries. These findings align with studies that reveal the BRI projects are beneficial in creating opportunities for foreign direct investment, which positively impacts various economic sectors within the country (Khamphengvong et al., 2022; O'Trakoun, 2018; Yu, Qian, & Liu, 2019).

In tourism, this factor influences perceived benefits second to FDI. This indicates that tourism factors have a positive influence on perceived BRI benefits, which are seen as beneficial in promoting tourism to Thailand. It can also attract more tourists to Thailand and helps promote the growth of tourism businesses such as hotels, restaurants, and tourist attractions. This finding is consistent with studies revealing that BRI projects have a significant positive relationship between tourism motivation and satisfaction, as well as between tourism motivation and tourism satisfaction (Yingzhi, Ningning, Huimin, & Jiaying, 2020). Regarding employment, this indicates that employment factors have a positive influence on the perception of BRI benefits. It is viewed as beneficial as it can promote more employment opportunities for people in Thailand, such as opportunities to find a variety of jobs, receive potentially higher compensation, and work with more foreign people. This finding is consistent with studies revealing that BRI projects create new business opportunities and jobs, and have a positive impact on policy-making. This creates opportunities for both local and Chinese workers to coexist positively (Fienena, Sorn, Ge, & Wang, 2023). In terms of living standards and society, this indicates that living standards and social factors have a positive influence on the perception of BRI benefits. These are seen as beneficial to living standards and Thai society by fostering increased development. It affects the development of the potential of communities around the Thai border along the BRI railway line, helping further develop Thailand's infrastructure and facilities, such as road networks. This finding is consistent with studies revealing that BRI projects bring positive changes in infrastructure and social development projects (Mahmood et al., 2022). In the field of logistics and transportation, this indicates that logistics and transportation factors have a positive influence on the perception of BRI benefits, which are seen as beneficial to Thailand's logistics and transportation system. It can promote the growth of Thailand's logistics industry, such as e-commerce and

transportation businesses. It also helps improve and develop travel routes connecting to Thailand. This finding is consistent with studies revealing that BRI projects affect the growth of logistics and transportation systems (Chhetri, Nkhoma, Peszynski, Chhetri, & Lee, 2018) Finally, regarding the economy, this indicates that economic factors have a positive influence on the perception of BRI benefits, which are seen as beneficial to economic development in Thailand. It helps stimulate Thailand's tourism industry, create opportunities for Thai people to establish businesses or become entrepreneurs, and boost Thailand's economy. It also contributes to the development of Thailand's cross-border trade economy. This finding is consistent with studies revealing that BRI projects play an important role in socio-economic development and influence the economic and social success of participating countries (Mahmood et al., 2022; Ur Rehman, Ahmed, Ali, Khattak, & Sameer, 2020)

On the other hand, this result also reveals that in the field of education, it is of statistical significance. However, it shows a negative relationship with the perception of BRI benefits. This means that the educational factor has a negative influence on the perception of BRI benefits, suggesting that education may not directly benefit Thailand. This finding is consistent with studies that revealed that in the perception aspect of education, it may be influenced by cross-cultural contexts. This factor may require understanding the learning perceptions of international students, as attitudes are extremely complex (Li, 2021).

Regarding the differences in the findings of this study, found that the education factor shows a negative relationship with the perception of the BRI benefits among people in Thailand. This contrasts with previous studies conducted in Laos by Khamphengvong et al. (2022), which found that the education factor showed a positive relationship with the perception of BRI benefits. At the same time, our findings also indicate that employment and living standards and social factors have a positive influence on the perception of BRI benefits in Thailand. This contradicts previous studies that did not find a positive relationship between employment and living standards and social factors (Khamphengvong et al., 2022). Therefore, it can be concluded that people in Thailand may not see education as directly benefiting the country, in contrast to factors such as foreign direct investment, tourism, employment, living standards and social factors, logistics and transportation, and economy, which

are perceived as having a positive impact on Thailand. These findings will contribute to the policy discussion in the Implementation section.

4.6.3 The Relationship Between Perception of Benefits and Attitudes

According to the study's findings, perceived benefits of the BRI are positively related to Thai people's attitudes. This indicates that when Thai people are aware of the benefits of the BRI, it promotes even more positive attitudes towards the China-Laos high-speed rail. This positive attitude helps them realize the importance of the BRI railway line in developing Thailand's economy. Additionally, they have a favorable perspective on the awareness of Thailand's railway development plan, which will connect with the China-Laos high-speed rail line, benefiting Thai society. This finding is consistent with studies indicating that perceived direct benefits have a positive and significant effect on attitudes (Chanthanasinh, Khamphengvong, Soukavong, Vongsavanthong, & Laungphonexay, 2022; Rosyidin, Sugandhini, & Harjanti, 2023). It can be explained that the current context of Thai people shows an increased awareness of the benefits of the BRI, as the China-Laos high-speed rail service is now officially operational. Furthermore, this rail route runs through Laos, a neighboring country to Thailand. This proximity has contributed to a more positive attitude among Thai people toward the BRI. A favorable attitude enables them to recognize the importance of the BRI rail route in contributing to the development of Thailand in multiple dimensions. Moreover, they have a favorable perception of the development plans for Thailand's railway network, which will eventually connect with the China-Laos high-speed rail. This connection will bring significant benefits to Thai society.

4.6.4 The Relationship Between Perception of Benefits and Intention to Use Services Using the Theory of Planned Behavior (TPB)

In the context of factors influencing the intention to use the China-Laos high-speed rail service, as clearly demonstrated by the findings of this study, the results strongly show that perceived benefits, attitudes, and subjective norm (i.e., family and friend) are positively related to the intention to use the China-Laos high-speed rail. Specifically, positive attitudes were found to have the most significant and beneficial impact on the intention to use the service. This finding aligns with studies indicating that attitudes influence the intention to use rail transportation services (Kwan, Sutan, & Hashim, 2020). It can be explained that Thai people have a positive attitude towards the BRI, and thus it is clear that they are likely to intend to use the China-Laos high-

speed rail service. Additionally, the perceived benefits were positively associated with the intention to use the service. This finding is consistent with research that suggests that positive perceptions of benefits influence the intention to use a service (Choi et al., 2020). It indicates that Thai people, recognizing the benefits of the BRI, show a strong intention to use the rail service. Moreover, subjective norm also showed a positive relationship with the intention to use the service. This result is in line with studies indicating that conformity to reference groups directly influences the intention to use a service (Borhan et al., 2019). It indicates that Thai people often follow the opinions and behaviors of their reference groups, such as family, friends, and peers. If these reference groups have a positive view of the BRI, it is likely to influence Thai individuals to use the China-Laos high-speed rail service as well. Therefore, it demonstrates that Thai people are motivated by reference group influence in their intention to use the service.

4.6.5 Recommendation for implementation

Based on the statistical analysis and key findings mentioned above, it was found that Foreign Direct Investment (FDI) is the most influential factor in the development of the BRI policy, followed by tourism, employment, standard of living and social, logistics and transportation, and economic, in that order. Therefore, this leads to policy recommendations aimed at preparing Thailand for adaptation and coping with the changes that must be faced in line with the implementation of the BRI route. As per our recommendations, this study have proposed ways to develop Thailand to align with the BRI policy, with the following details:

1) Policy on direct foreign investment development

The key findings of this study indicate that the country should prioritize the development of policies related to Foreign Direct Investment (FDI). Previous studies have indicated that policies should focus on increasing opportunities for FDI in various sectors, such as infrastructure, energy, and technology, to enhance the domestic economy (Abdulsalam et al., 2021). In light of this, we propose the following strategy: implement policies that promote international trade and investment to attract foreign investors and entrepreneurs to Thailand. This would not only increase revenue channels for the country but also facilitate expanded trade collaborations with China and other economically significant nations. For instance, positioning Thailand as an international business hub is crucial. This could be achieved through initiatives like

strengthening SMEs and startups in Thailand and integrating them with global markets. Such efforts would not only enhance the competitiveness of local businesses but also serve as a magnet for foreign investors, thereby driving Thailand's economic growth further.

2) Policy on tourism development

The key finding of this study indicates that Thailand should develop policies related to tourism. Previous studies have indicated that fostering collaboration in tourism is crucial for shaping strategies aimed at achieving sustainable tourism development on an international scale (Liu & Suk, 2021). In light of this, we propose the following strategy: policies should be implemented to promote tourism activities by enhancing the quality and diversity of Thailand's tourist attractions. These attractions should stand out with unique characteristics and gain global recognition, grounded in Thai culture. For instance, efforts should be made to upgrade the quality and standards of tourism-related service businesses, such as spas, hotels, and restaurants. This would position Thailand as an attractive destination for tourists traveling via the China-Laos high-speed rail, ultimately boosting the country's tourism sector growth.

3) Policy on employment development

The key finding of this study indicates that Thailand should develop policies related to employment. This aligns with the Ministry of Labour's initiatives in Thailand, which aim to drive labor policies that stimulate stable economic growth (Ministry of Labour, 2022). In light of this, we propose the following strategy: policies should be designed to stimulate employment in line with the demands of the new economic system, both domestically and internationally. Additionally, workforce skill development should be emphasized to create a high-quality labor force ready to meet the employment demands arising from the BRI. For instance, organizing training programs to enhance the capabilities of the Thai workforce would be essential. These programs should focus on equipping workers with the knowledge and skills required to compete in the global market, thereby strengthening Thailand's position in the international labor landscape.

4) Policy on standard of living and social development

The key finding of this study indicates that Thailand should develop policies related to standard of living and social. Previous studies have indicated that

social well-being and environmental degradation should be considered in economic activities to achieve sustainable development goals (Khan et al., 2020). In light of this, we propose the following strategy: policies should focus on enhancing the living standards of people in society to reduce inequality and promote regional development. This would involve improving infrastructure and facilities across Thailand to ensure balanced growth. For instance, efforts should include the development of road networks connecting border areas between Thailand and Laos, as well as upgrading public utilities such as electricity, water supply, telecommunications, and internet services. These enhancements would not only meet the needs of local residents but also support the influx of tourists traveling to Thailand, fostering economic and social progress.

5) Policy on logistics and transportation development

The key finding of this study indicates that Thailand should develop policies related to logistics and transportation. This aligns with the national strategy to enhance transportation connectivity with China, which has been incorporated into the 14th National Economic and Social Development Plan (2021-2025) (Department of International Trade Promotion, 2024). In light of this, we propose the following strategy: the development of a multi-modal transport system that links transportation routes and logistics systems between China's high-speed rail and Laos, ensuring seamless integration with Thailand's transportation network. This would involve improving transportation and logistics infrastructure to facilitate faster and more efficient cargo movement, while also enabling better connectivity for shipping goods to other countries. For instance, legal adjustments could be made to improve customs procedures, enhancing the ease of import and export between Thailand and other countries.

6) Policy on economic development

The key finding of this study indicates that Thailand should develop policies related to economic development. This aligns with the 14th National Economic and Social Development Plan (2023-2027), which aims to accelerate Thailand's progress toward a more advanced society with a sustainably value-driven economy (Office of the National Economic and Social Development Council, 2022). In light of this, we propose the following strategy: the formulation of policies to drive the economy and enhance economic competitiveness by creating opportunities for Thai

entrepreneurs. For instance, elevating the agricultural sector to produce high-value agricultural and processed agricultural products would help drive the growth of Thailand's industrial sector. This would enable the country to efficiently export goods and services to meet global market demands.

All of the policies mentioned have been directly informed by current public sentiment in Thailand. These policies will involve relevant stakeholders in shaping national-level policies. For instance, the Ministry of Foreign Affairs can apply policies for direct foreign investment development. The Ministry of Tourism can implement policies for tourism development. Additionally, the Ministry of Labour can apply policies for employment development. Furthermore, the Ministry of Transport (including the Department of Highways, Department of Rail Transport, and State Railway of Thailand) can apply policies for standard of living and societal development, as well as logistics and transportation development. The Office of the National Economic and Social Development Council can apply policies for economic development, aiming to align Thailand's national development plans with global cooperation policies such as the BRI, efficiently and effectively benefiting Thai citizens in all aspects going forward.

4.7 Conclusions

The Belt and Road Initiative (BRI) is recognized globally as a highly impactful trade route capable of bringing about significant changes in the economic and social systems of all participant countries. This initiative is expected to substantially reduce transportation time and trade costs (De Soyres, Mulabdic, Murray, Rocha, & Ruta, 2019). Thailand, classified as a developing country, benefits significantly due to its proximity to the high-speed railway line connecting China and Laos. This geographical advantage directly impacts Thailand and affects a majority of Thai people, who may experience both positive and negative effects from the changes occurring as a result. Therefore, this study aims to investigate indicators of benefit perception factors, including analyzing the factors influencing the BRI and examining the relationship between these factors and the intention of Thai people to use the China-Laos high-speed rail service using the Theory of Planned Behavior. (TPB). We have presented findings from a combination of exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) by surveying 1,540 Thai individuals in border

provinces adjacent to Laos along the BRI route. This study reveals several significant findings that can inform the development of policies tailored to Thailand's context and aligned with global changes arising from the BRI policy.

The findings of this study revealed that Perceived Emotion was identified as the indicator exerting the greatest influence on perceived benefits of the BRI, followed by Perceived Culture, Perceived Service, and Perceived Product Benefits, respectively. These results showed relatively high component weights, indicating high reliability within the domain. Additionally, regarding the perception benefits of BRI, the results also indicate a positive correlation with the attitudes of Thai individuals. This means that when Thai people perceive the benefits of the BRI, it enhances their positive attitude towards the China-Laos high-speed rail. This positive attitude helps them recognize the significance of the BRI railway.

We can further explore the significant role of BRI policies, as our results indicate. Direct foreign investment, tourism, employment, living standards, economic impact, and logistics and transportation are perceived positively in terms of their contribution to the benefits of the BRI among Thai people. Conversely, education shows a negative relationship with perceived benefits, suggesting that education may not be seen as directly benefiting Thailand. Additionally, the study provides insights into Thai people's intentions to use the China-Laos high-speed rail service, revealing that perceived benefits, attitudes, and subjective norms influence this intention. Thus, the structural equation model used in this study effectively examines the relationships between these factors and accurately reflects Thai people's perspectives on BRI policies.

However, amidst the limitations of the research, it primarily examines the perceptions of the benefits of the BRI from the perspective of Thai people living in border provinces along the BRI routes. Therefore, future studies should expand to other regions to cover all areas of Thailand. This could help uncover different perspectives and opinions based on the local context across the country. Moreover, this study applied only the Theory of Planned Behavior (TPB) and the concept of Perception for analysis. Future research could build upon this by incorporating other theories, such as the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT), to create new conceptual frameworks for further studies. Additionally, this research could be expanded to other countries

along the BRI routes to gather in-depth insights and new findings from researchers in various contexts, providing a more comprehensive understanding of the subject.

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