



Multi-level structural equation modeling for city development based on the expectations of the local population in a special border economic zone in Western Thailand

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ABSTRACT

In response to the opening of ASEAN and the creation of special border economic zones throughout the ASEAN community, research into the expectations of the local population in such areas is necessary to establish the most efficient policy implementation for Thailand. Employing a mixed methodology, this research assembled a multi-level structural equation model based on a total sample size of 540 people living in 120 local communities. Multi-level structural equation modeling in the Mplus 7.3 software was used for data analysis. The results showed that policy awareness did not have a direct effect on city development expectations, but had indirect effects on public participation and special border economic zone management. Therefore, people in the local community must be approached for successful management and policy implementation in the regional and urban districts of special border economic zones, as was found in this study. Further, the public sector must conduct policy implementation by persuading people in the local area to contribute so that the goal of effective policy for the special border economic zones can be achieved.

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Introduction

The improvement of special border economic zones for urban communities in different nations adds to monetary advancement of the nation in general, as was found in Laredo, Texas. Laredo assumed an essential role as an international trade gateway, which extended and encouraged a proficient special economic zone. China also has an effective exceptional financial zone in Shenzhen. It is the biggest and most vital locale for financial improvement and worldwide exchange in China. Malaysia has a special

economic zone in Iskandar, a region close to Singapore, in order to bolster the universal exchange and venture that would happen from the opening of the ASEAN Economic Community (Tangyongtrakul, 2013; Texas Department of Transportation [TXDOT], 2003; Trevino, 1996). Even though some analysis has demonstrated that city development of a special economic zone has decidedly influenced financial improvement in East Asian nations, such achievement may not be consistently expected for nations in other regions (Kaewmanee, 2013; World Bank [WB], 2008).

The opening of the ASEAN community offers Thailand a strategic advantage primarily because of its central location in the ASEAN region and its capacity to act as a crucial link for the ASEAN region with the rest of the world. In 2013,

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regulations were created and implemented by the Office of the Prime Minister for special economic development zones in order to encourage international trade and investment. This act was motivated by Thailand's influential position for the connection of transportation and commerce between ASEAN partners in the region. Based on the ASEAN cooperation framework and additional economic agreements, it also aimed at becoming a free trade agreement and increasing international commerce across borders between Thailand and its neighbors ([Office of the Prime Minister \[OPM\], 2013](#)). As a result of its location on the western border with Myanmar, Kanchanaburi province was expected to become a significant international shipping route for future trade ([Ponsaram, Malison, & Sittilert, 2014](#)).

Issues concerning city development of a special border economic zone in Kanchanaburi province have been raised by previous researchers. Most were concerned with other institutions and attached to other institutional levels differently. For local development planning, the opinions of stakeholders in the area have not been collected. Accordingly, such opinions should be assessed and organized with related institutions for developmental groundwork and eventual execution to promote understanding by the people and stakeholders as well as offer exchanges for increased civic commitment. The economic and area politics between Thailand and Myanmar have enhanced industry in Thailand, from the central region to the border. However, it has also created deficiencies in the laws and directives aimed at controlling disparity in the border regions of both nations. Thus, citizen participation and civil rights must be included in the focus of regional border development policy. Likewise, related policy making should be enhanced, such as in the case of the border region along Tak province. At the same time, some suggest that citizens need to play a larger role in policy making and demand more from policy aimed at investment development. A special border economic zone regional institution should also be created. Government support, the function of state bodies, legal revisions, political turmoil, administration, area capacity, and public participation must be considered to achieve these goals ([Piyachot, 2011; Pongsawat, 2007](#)).

Because of a range of relevant factors, effective policy implementation has been very difficult for city development of special border economic zones by government agencies. As such, any devised policy must work in conjunction with the management of special border economic zone design under the most favorable public condition in the area. In addition, the development of model assumptions, also called multi-level structural equation modeling, was addressed by this research utilizing the expectations of citizens at the individual and community level for the city development of special border economic zones. This modeling approach was utilized as a means of detailing the underlying model and the results of its creation. Put simply, the study of public opinion in local areas can dictate the achievement of city development for a country on a macroeconomic level for economic development, stability, regulation, and impartiality.

Literature Review

A hypothesis model using multi-level structural equation modeling for city development expectations of a special border economic zone in Western Thailand was created by the researcher for individual and community level data synthesis. The units of examination for the individual level merged into bigger units at the community level and derived the basic data link contributing to the structure in sliding order. This was because no research study exists for state sector management, including cross-sectional studies of policy formation for economic and social development, also termed multi-level data structure. A type of model likeness can be gleaned by the relation between upper and lower variables. In a phenomenon called Mirror Effects, the upper variable makes the model status and replicates the lower variable ([Kanchanawasi, 2007](#)).

Components of city development expectations in special border economic zones: Physical, Environmental, Economic, Social, and management indicators have previously been found by a synthesis of intellectual concepts to be inclusive in city development expectation (CDE) ([Office of National Economic and Social Development Board \[NESDB\], 2011; Pradpreud, 2012; World Health Organization \[WHO\], 2007](#)). It has been found that the causal factor relating to multi-level factors affecting city development expectation (CDE) for special border economic zones is consistent at both the individual and community levels. Two levels for the group of variables in the research of [Tochot, Chanpeng, and Meemak \(2012\)](#) were similar to this case following multi-level causal factors. In this study, the multi-level causal factors were divided into three groups:

- 1) Special border economic zone management (SEZ), comprised of the indicators Location, Economic Activities, Management, and Rights Privilege, was included in the first group ([Knoth, 2000; Krainara, 2008; NESDB, 2011](#)).
- 2) Public participation (PP), comprised of the indicators Inform, Consult, Involve, Collaborate, and Empower, comprised the second group ([Burikul, 2008; International Association for Public Participation \[IAP\], 2014; Kokpon, 2013; Sopchokchai, 2007](#)).
- 3) Policy awareness (PA), as applied from the concept of [Kingdon \(2003\)](#) and consisting of the indicators Political Stream, Problem Stream, and Policy Stream, comprised the third group.

Understanding of the causal factors affecting city development expectation (CDE) at both the individual and community level for special border economic zones in Western Thailand, namely, policy awareness (PA), public participation (PP) and special border economic zone management (SEZ), is brought about through the development of a multi-level structural equation model. As such, development plans and regional management systems in the state sector may be influenced. Additionally, regional

development in the special border economic zone of Western Thailand consistent with the regional context likely results and Thailand's macro-economic development in the ASEAN context will gain advantages.

Methodology

The quantitative research method was applied for the current study, with the procedural research separated into two phases. The first phase developed the research framework from acknowledged research to study the multi-level causal factors of CDE for a special border economic zone constructed using the initial outline of the multi-level structural equation model. Subsequently, verification of the appropriateness of the constructed model and adjustment according to the expert's recommendations was accomplished for the draft model and all factor components applied using the input of five experts. In the second phase, data collection through a questionnaire was utilized for quantitative research to acquire empirical data as well as to check for correspondence between the empirical data and the multi-level structural equation model of the research framework.

Population and Samples

People in the region expected to be affected by policy development for special border economic zones comprised the sample population. A previous case study in Kanchanaburi province employed 6 districts with 338,619 people ([National Statistics Office \[NSO\], 2015](#)). In this research, the sample size was 540 people in the region living in 120 communities as obtained from clustered random sampling, being further split into community and individual levels. At the community level, the study split the 6 districts into 62 subdistricts and randomly selected 30 subdistricts. Each subdistrict was separated into communities. Four communities in the subdistricts were selected for an overall total of 120 communities, which was an appropriate sample size for multi-level examination ([Muthén & Muthén, 2012](#)). To arrive at the sample total of 540 for the individual level, the study randomly selected 4–6 people in each community.

Research Instrument

A questionnaire was employed as the research instrument. The four elements of variables and 17 experimental variables were addressed by the questions in the questionnaire. A rating scale using five levels was used for the opinion-based questions. The quality of content was also verified and validated by five experts. Cronbach's Alpha was employed to contemplate and corroborate the reliability of values, for which the range of reliability fluctuated between 0.834 and 0.957.

Data Collection

Set guidelines were utilized for the collection of data. Prior approval was obtained from the Research Ethics Committee of Mahidol University in May 2014.

Subsequently, the design of the official letter of request for research involvement from the Faculty of Social Sciences and Humanities, Mahidol University was started. Data were researched and collected from July to December 2015, based on self-administered questionnaires. A request for completeness was inserted within each questionnaire. From all the questionnaires distributed, 540 samples were returned that could be verified for 100% completeness.

Data Analysis

For variables with distinction at both the individual and community level with the ICC value of more than 0.05, intra-class correlation analysis (ICC) between variables for the two levels in this research was utilized. This resulted in multi-level positive factor analysis, the investigation of causal impact, and the confirmation of legitimacy for the multi-level structural equation model with empirical data using the Mplus program; Version 7.3. A license was obtained from Muthén and Muthén (No. STBC70023514) by the researcher on 21 July 2015.

Results

1) The after effects of the intra-class connection examination for each watched variable resulted in a variability of around 0.200 and 0.426 (ICC = 0.200 to 0.426), demonstrating that the 16 observable factors had a cross-level effect on variables at the community level from 20.0% to 42.6%. This was a satisfactory distinction endorsing the data for further investigation of the multi-level basic conditions. The captures or normal gathering implied, the standard of the watched variable at the gathering level produced an estimate around 3.017 and 4.184, demonstrating that the score for the combination of policy awareness (PA), public participation (PP), special border economic zone management (SEZ), and city development expectation (CDE) for each indicator was in the medium to high range with dissimilarity between groups. The research model fit to the exact information as an abnormal state. However, the synthesis of the special border economic zone management (SEZ) with the variable showing 'Location: Y6' was disposed. This was not consistent with the idea of amalgamation. This was likely influenced by an inconsistency in territory created at the time of information investigation between the administration's assurance and the premium gathering's prerequisites. This ought to be an itemized investigation of the pointer factors for extra data, which could prompt investigation of a causal association with different factors keeping in mind the end goal to affirm the presence of region and area in the model. The measurable qualities for the balanced multi-level auxiliary condition model of the elements influencing the city development expectation in the special border economic zone of Western Thailand.

2) The results of the legitimacy test for the balanced multi-level basic condition model fit the observational information to an abnormal state based on considering the measurements for legitimacy trial of a model, namely,

$\chi^2 = 202.624$, $df = 173$, $p = .061$, $\chi^2/df = 1.171$, $CFI = 0.996$, $TLI = 0.994$, $RMSEA = 0.018$, $SRMR_W = 0.031$, $SRMR_B = 0.077$. The size of the results in the adjusted multi-level structural equation model is provided in Table 1 and Figure 1, which lead to the following deductions.

Community Level (Between Group)

The city development expectation was affected by special border economic zone management (BSEZ), as observed by the measurement model for community level. However, it was not influenced directly by policy awareness (BPA) or public participation (BPP) at a level of statistical significance at .01. Additionally, it demonstrated that: 1) city development expectation (BCDE) was influenced by implication by BPP through BSEZ. The roundabout impact was -0.383 , demonstrating that group bunches with high support by implication influenced low BCDE. In any case, it did not straightforwardly affect group bunches having desires for city improvement; 2) BCDE was influenced by implication by policy awareness (BPA) through BSEZ. The backhanded impact was 0.462 , demonstrating that the group bunches with high policy awareness (BPA) makes by implication the high BCDE. Be that as it may, it did not straightforwardly influence the group bunches having desires for city improvement. Along these lines, all factors in the exploration model of the group level clarified 86.6 percent difference for city development expectation (BCDE) and 38.5 percent fluctuation for special border economic zone management (BSEZ).

Individual Level (Within Group)

The city development expectation (WCDE) was affected directly the most by special border economic zone management (WSEZ), as evidenced by the research model for the individual level. With a statistical significance of level .01 and .05, respectively, policy awareness (WPA) and

public participation (WPP) were subsequent. In addition, this focuses: 1) WCDE was additionally influenced in a roundabout way from WPP through WSEZ. The backhanded impact was -0.303 , more than the immediate impact -0.103 , demonstrating that individuals in the territory of high support were the circuitous cause to add to the low city improvement Expectation, was however not exactly the immediate cause to add to the general population in the range of low WCDE; 2) city development desire (WCDE) was additionally influenced by implication from WPA through WSEZ. The aberrant impact was 0.223 which did not have coordinate impact. This proposes individuals in the territory of high approach mindfulness (WPA) by implication adding to the high WCDE. Be that as it may, this did not bring about direct commitment to the general population in a similar zone. All factors in the exploration model of the individual level could clarify the change of city development expectation (WCDE) at 79.2% and portrayed the fluctuation of special border economic zone management (WSEZ) at 18.0%.

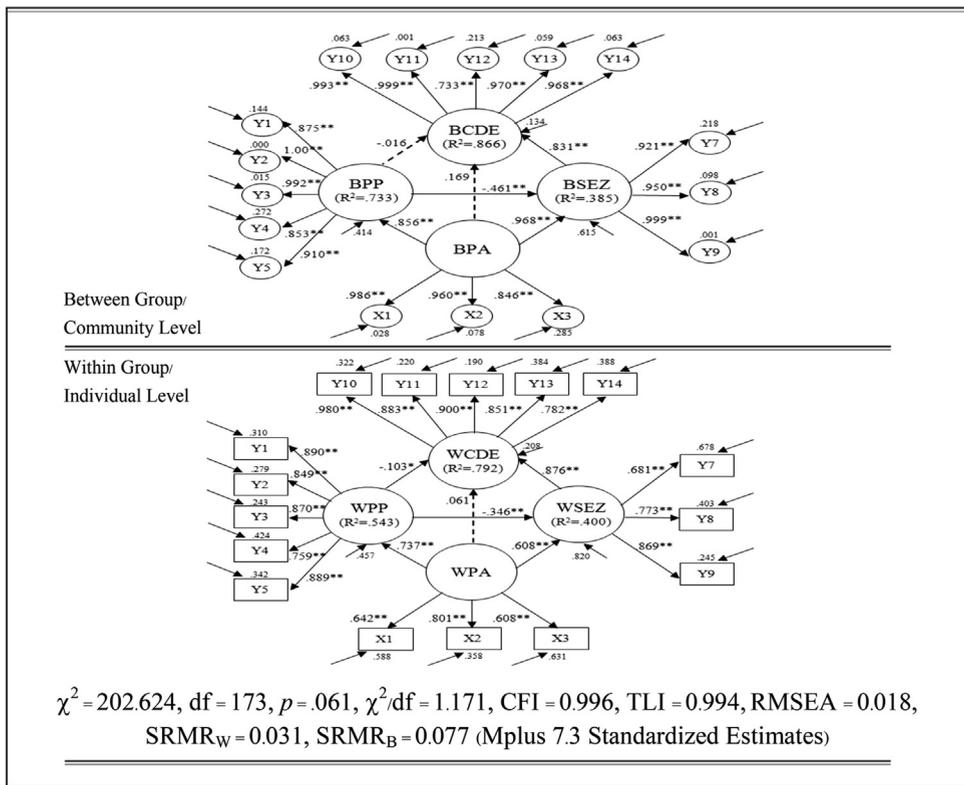
Discussion

City development expectation in the model includes the values for causal factor analysis, as shown by the high values of factor loading for the five indicators. This case has turned into an outcome based on the three fundamentals driver: 1) policy awareness, 2) public participation, and 3) special border economic zone management. The developed multi-level auxiliary condition model fit to the exact information in abnormal state after the model alteration. All qualities were consistent with the criteria of Diamantopoulos and Siguaw (2000). Additionally, these qualities were likewise as per the exploration of Songmuaykun (2005), who utilized the Mplus software for preparing data with all qualities as per the predetermined criteria. Be that as it may, they were not in accord with Tochet et al. (2012), whose χ^2 indicated factual essentialness that was not as per the predetermined criteria.

Table 1
Size of the effect in the adjusted multi-level structural equation model

| Independent variable | Dependent variable | | | | | | | | |
|----------------------|--------------------|----|--------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| | BPP | | | BSEZ | | | BCDE | | |
| | DE | IE | TE | DE | IE | TE | DE | IE | TE |
| Between | BPP | | | BSEZ | | | BCDE | | |
| BPA | 0.856** (0.043) | – | 0.856** (0.043) | 0.968** (0.121) | –0.395** (0.154) | 0.573** (0.099) | 0.169 (0.239) | 0.462* (0.225) | 0.631** (0.089) |
| BPP | | | | –0.461** (0.178) | – | –0.461** (0.178) | –0.016 (0.213) | –0.383* (0.154) | –0.400 (0.218) |
| BSEZ | | | | | | | 0.831** (0.091) | – | 0.831** (0.091) |
| Within | WPP | | | WSEZ | | | WCDE | | |
| WPA | 0.737** (0.043) | – | 0.737** (0.043) | 0.608** (.077) | –0.255** (0.070) | 0.353** (0.053) | 0.061 (0.044) | 0.223** (0.061) | 0.294** (0.049) |
| WPP | | | | –0.346** (0.085) | – | –0.346** (0.085) | –0.103* (0.044) | –0.303** (0.074) | –0.406** (0.078) |
| WSEZ | | | | | | | 0.876** (0.022) | – | 0.876** (0.022) |

$\chi^2 = 202.624$, $df = 173$, $p = .061$, $\chi^2/df = 1.171$, $CFI = 0.996$, $TLI = 0.994$, $RMSEA = 0.018$, $SRMR_W = 0.031$, $SRMR_B = 0.077$ (Mplus 7.3 standardized estimates)
Remarks: 1. * $p < .05$, ** $p < .01$ and $|t| > 1.96$ means $p < .05$, $|t| > 2.58$ means $p < .01$
2. DE = Direct Effect, IE = Indirect Effect, TE = Total Effect



Remark: 1. * $p < .05$, ** $p < .01$ and $|t| > 1.96$ means $p < .05$, $|t| > 2.58$ means $p < .01$

2. Variable detail: 2.1) Within group latent variables; WPA=Policy Awareness, WPP=Public Participation, WSEZ =Special Border Economic Zone Management, and WCDE =City Development Expectation. 2.2) Between group latent variables; BPA=Policy Awareness, BPP=Public Participation, BSEZ=Special Border Economic Zone Management, and BCDE=City Development Expectation. 2.3) Observed variables; X1=Problem Stream, X2=Political Stream, X3=Policy Stream, Y1=Inform, Y2= Consult, Y=Involve, Y4=Collaborate, Y5=Empower, Y7= Economic Activities, Y8=Management, Y9= Rights Privilege, Y10= Physical, Y11=Environment, Y12=Economic, Y13 =Social, and Y14=Management

Figure 1 Multi-level structural equation model for city development expectation in the special border economic zone in Western Thailand

All factors in the exploration model at both group and community levels could clarify the change of city development expectation and portray the fluctuations of special border economic zone management. The multi-level structural equation model could be used to describe the relationship of the cause and effect of city development expectations for both individual and communities. This model could be utilized as a means of detailing the underlying model and the results of its creation. Put simply, the study of public opinion in local areas can dictate the achievement of city development for a country on a macroeconomic level for economic development, stability, regulation, and impartiality.

The multi-level structural equation model fit construct validity when considering the causal effect value affecting the city development expectation, as mentioned above.

Alternatively, the empirical data fit with the theoretical model. This study showed that policy awareness did not have a direct effect on city development expectations, but it had indirect effects on public participation and special border economic zone management which could be defined as follows:

1) As indicated by the capacity of the community level to anticipate the reliant variable, the markers of each factor in the estimation model were critical in the region. The most essential pointer was Physical. The accompanying ones were Consult, Inform, Environment, and Involve, which separately demonstrated that the more group gatherings give a high priority to special border economic zone management, the better city development expectation will increment. However, the results

show that: i) city development expectation was influenced specifically by special border economic zone management at a significant level, while policy awareness and public participatory did not significantly affect city development expectation. This could explain why the community groups gave precedence to the special border economic zone management having a high level of city development expectation; ii) policy awareness and public participation had a direct effect on special border economic zone management at a significant level. Policy awareness had the maximum direct effect with a value of 0.968, and public participation was second with an effect value of -0.461 . This could explain why the community groups having high policy awareness gave high precedence to special economic zone management, while the community groups having high public participation gave low precedence to special border economic zone management; iii) policy awareness had a direct effect on public participation at a significant level. This could explain why the community groups having high policy awareness gave high precedence to special economic zone management; and iv) city development expectation was affected directly by public participation by passing the special border economic zone management with an indirect effect -0.383 . This means high public participation had an indirect effect on the low city development expectation, but it was not a direct effect on the community group having the city development expectation. Furthermore, city development expectation was still affected indirectly by policy awareness by passing the special border economic zone management with an indirect effect 0.462. This means the community group having high policy awareness was an indirect effect on city development expectation being high, but it was not a direct effect on the community group having high city development expectation. As a result, city development expectation was not influenced straightforwardly by policy awareness, which was not consistent with Pradpreud (2012), who attempted to show that city development expectation was pertinent and specifically identified with the arrangement of nation improvement. This difference may be because it was not accessible for open support or that the populace did not see the significance or comprehend that the special border economic zone management would probably influence the improvement of conditions in the city. In addition, city development expectation was not influenced specifically by open investment, which was inconsistent with a review by Chusuk (2012), who endeavored to show that physical issues and taxpayer-driven organization affected individuals straightforwardly, prompting individuals to improve conditions. This involved not just a better economy and living in the best possible environment, but also individuals taking an interest in characterizing the city's assumed course. That should not include individuals not living in the city, and where the improvement would not be valuable to the city. This might account for the financial lack of insight about the law or learning of the arrangement of special border economic zone management. Consequently, a positive effect on the city development expectation is not

possible without public participation and understanding to observe that the special border economic zone management is important.

At the individual level, it was demonstrated that the marker of each factor in the estimation model was imperative in the region, which was similar to the community level. Notwithstanding, the distinction was in city development expectation. This might be because the group structure is shy of support by the populace. At the point when individuals know about arrangements, they understand the outcomes that will convey success from the perspective of individual benefit. Nonetheless, they may not consider the interests that the community will gain.

2) The variance of city development expectation at the individual and community levels of 79.2% and 86.6%, respectively, could be explained by all the variables in the multi-level structural equation model of city development expectation in the special border economic zone in Western Thailand. It could likewise portray the change of special border economic zone management at 18.0% and 38.5%, respectively. The prescient variable of group level could better clarify the individual level. This was consistent with the investigation by Tochot et al. (2012), which found that the prescient variable for the gathering level could preferred depict the fluctuation over the individual level. This may be because each community has different environments. Otherwise, there might be different driving associations of the nearby government association that the general population has a place within every group, each with an alternate feeling. At the end of the day, every group has distinctive policy awareness, public participation, special border economic zone management, and city development expectation, which mirror the marvel superior to the thought of individual conclusions. Along these lines, the model depicting the causal relationship of city development expectation at the individual land group level commonly can anticipate the desires of individuals in the territory for the approach of range and city financial improvement at the large scale level of the nation. This is significant on the grounds that the concentration of the review was the general population in the territory and group gathering. This was congruent with the study of Frederickson and Kevin (2003), who considered that an incident description of public management is likely connected to the clarification and forecast of the phenomenon at the micro as well as the macro level, being the community and individual levels in the current study. Consequently, research is needed to combine multiple methods and employ them using statistical methods and applied mathematics to examine the state's decision-making practices. It was also consistent with the notion by Wamsley (1990), that public management is not merely the practical study of behavioral science, but additionally requires the idea of innovative institutionalism, which places value on equality in society, public participation, and sound ethics. In order for public management to be within the

appropriate context of politics and government, which must include the public interest over the administration of public affairs, there may be intelligence from the units of examination at the individual, group, and organizational institution level, concurrently.

Conclusion and Recommendation

The multi-level structural equation model of the factors affecting city development expectation for special border economic zones in Western Thailand formed in this study fit the empirical data. Policy awareness, public participation, and special border economic zone management were used for forecasting and affected city development, which resulted in the main findings that the study of public opinion in the area should be at both the individual level and the community level. This is necessary in order to identify the structural characteristics of a community that affect the population. It also identified that the degree of public participation was a necessary tool to influence the policy through effective and successful management of the special border economic zone. As a result, the provincial public administration will not only be required to make the population conscious of the policy, but also to involve the population in the management of the special border economic zones. This is the only way that the population can fully understand and accept the significance and validity of the policy for implementation of special border economic zones, meaning they would realize the advantages to the common interests of the population and the resulting success that would spread throughout the region into the future.

Policy Proposals

- 1) Calculated planning for border exchange, commerce across borders, and collaboration with adjacent nations as well as ASEAN at the policy level should be established by provincial public administration. Additionally, the application of interior and exterior environmental characteristics should be employed for special border economic zones to adhere to in the development of an industrial city. This is inclusive of the industrial, agricultural, and commerce/support sectors.
- 2) The vital formation of a special border economic zone for public administration in each area is required by the relevant provinces. This may be an acquisition scheme for a thriving process anchored in specialists and authorities on commerce and ventures, which would perform in concert with governmental policy handling.
- 3) Provincial government organizations should delineate the plan and implore the public in the community to gain absolute awareness of the policy in order for strategy resolution to compel the policy for special border economic zones under primary agencies and to offer clarity for the policy with apt structures and instruments. It is necessary to have an arrangement to assertively select and agree with the corresponding media for people and the community in the area inclusively. As well, the opportunity for public participation should be offered. This might involve further development.
- 4) A plan to encourage awareness and comprehension amongst the public expands to the results through collaboration by governmental agencies, the private sector, and the distinct networks in the region, which might be characterized as a goal in the yearly plan of action with dimensions. This is essential in order for groups to abide by the apparent procedures and for the people to realize the significance of administration for special border economic zones through participation in the operation and a concentration on impartiality and righteousness for all people in society.

Conflict of interest

There is no conflict of interest.

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