The Value Added Tourism Logistics Industry of Thailand

Sanyanunthana K¹ and Benabdelhafid A²

¹Laboratory of Applied Mathematics, University of Le Havre, Le Havre, France
²Program in Information Technology, Faculty of Science and Technology, Suan Dusit University, Bangkok 10300, Thailand

Abstract

The purpose of this article is to study the Value Added Logistics and Supply Chain Value in tourism industry of Thailand. The concept is to study tourism logistics strategies on the view of the foreign tourists, also other involved people. The satisfaction of the tourists with the components and tourism, logistics management has resulted in a visit over the country for development and value added logistics management in tourism. The researcher compiles a guide to the development of value added supply chain and logistics management in Thailand tourism, also evaluate the management of efficiency changes and compare potential investment between each province of Thailand region.

In order to increase value added for Thailand tourism industry, seeking opportunity and increasing competition ability for Thai tourism entrepreneur to ASEAN community including the development of tourism supply and increasing competition ability for Thailand foundation among market opportunity, tourist demand and supply configuration. This study could assist government sector and private sector to determine tourism business operation policy and investment of new tourism attraction policy. Furthermore, produce higher logistic network for transportation plan, decrease the expenses of operation on creating the value added through tourism and commercial aviation. Thailand is valued as the initial country which has the variety of operation. Moreover, the Thai government has the intention to push the country to be the center of tourism travel in the ASEAN regions because of several readiness especially the conditions of geographic location of Thailand which is like it is located in the center of region considered as the pathway among the ASEAN Economic Community, and create the competitive advantages for Thailand. This research is carried out by both qualitative and quantitative research types. The purposes of this study are to study the tourists’ requirements which reflect the impacts of tourism environments and potentials assessment of tourism for tourism development which can create values, improve the competitive ability of tourism business, enhance the potentials of tourism logistics in Thailand, and create the benefits for the further research.

Keywords: Thailand; ASEAN community; Environment; Tourism logistics

Introduction

Including the tourists service centers for giving correct tourism information. The World Tourism Organization (WTO) has predicted that the tendency of world tourism situations from B.E. 2547 (2004) to B.E. 2563 (2020) would likely have a number of international tourists up to 1,600 million persons. The far distance tourism will play a key role and be well-known increasingly. The regions which tend to become the famous tourism places include East Asia and Pacific regions. The MasterCard Global Destination Cities Index of the Year 2015 ranked a number of foreign tourists who travelled and spent money across the borders along 132 cities around the world in order to predict a number and growth of tourists in each country, the survey results revealed that Bangkok, the capital of Thailand, was ranked the second of the world, the first of Asia, according to a number of tourists who visited and stayed overnight for 18.24 million persons, this is increased 8% from the previous year. The first rank of the world was London, with 18.82 million tourists; this is regarded as the second year continually. Whereas the third rank was Paris, with 16.06 million tourists [1]. While Singapore, Kuala Lumpur, Soul, and Hong Kong ranked the top ten of the world as well, by the 7th, 8th, 9th and 10th ranks, respectively. The report of CNN indicates that Bangkok has lost the 1st rank since 2013 because of the political crisis. However, such report indicates that Thailand is improving and reducing the gap to be equal to London more. Likewise, The economic times identifies that London and Bangkok, both countries has alternated the 1st rank of such index for the last 5 years. And it is believed that the competition between the two cities will continue since a number of tourists who visited Bangkok have improved continually after the political crisis in 2014. While the total expenses of the foreign tourists who stayed overnight belong to London as the first rank, with the expenses for an amount of 20,230 million dollars, followed by New York, 17,370 million dollars and Paris, 16,610 million dollars, respectively, while Bangkok reached the 7th rank with the total expense of 12,360 million dollars. MasterCard indicates that the information identifies the rapid growth of tourism in the cities of Asia, such as Bangkok, Singapore, and Kuala Lumpur. However, most of the tourists who have visited these cities are from the Asia-Pacific region. This is not varied by the race of tourists in several cities of Asia [1].

For being the cooperative frame of enhancing Thailand to become ASEAN as a Single Destination, this makes the opening of routes for goods transportation among China-Myanmar-Laos-Thailand have to develop all rules and regulations of tourism, trade, and border of entry-exit to be comfortable (Easy Come/Easy Go), especially the use of Border Pass for the country which has the attached areas, and the use of Entry-Exit Permit for the country which has no the attached areas, such as Thailand to China. Moreover, it includes the organizing of Visa free Zone, service rates for border pass or the rate of goods taxation which the international standard must be met, and the increase of measures...
through security rules and regulations. Currently, Thailand has cooperated with neighboring countries about tourism both bilateral and multilateral level under the frame of various cooperation, such as the cooperative frame of Greater Mekong Sub Regional Cooperation (GMS), Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT), and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic (BIMST-EC), etc. by having the negotiation between Thai government and the ASEAN member countries government, in order to determine the measures and rules and regulations which enhance the travelling currents of tourists both within the regions and outside the regions, as well as building the cooperation between government and private sectors for expanding the investment base of the businesses related to the tourism industry towards the neighboring countries. In addition, the strategy of Thailand is that it is the country which has tourism industry regarded as a big size and really significant at the country policy level because it is the tourism is considered as an industry which makes income, develops the economy and local communities, produces employment and business of organizations related to the tourism. In the past, a number of foreign tourists travelling in Thailand were numerously, i.e., the group of East-Asia including the Asian group considered as the core target group of Thailand. This can be seen from the tourists coming from the East-Asia region which increased in numbers, as well as the tourism within the country among Thai people [2]. Therefore, the tourism industry is considered as a core industry which makes numerous incomes and plays a key role towards the economic states of the country. Thailand and several countries in ASEAN group are enthusiastic with the tourism strategy plans to attract the tourists, especially the neighboring countries, such as Myanmar, and Cambodia, when they begin to open their countries more. This makes the tourists all over the world start to be interested in travelling to the new tourism places increasingly. Hence, it is regarded as the crucial opportunity of Thailand to catch the marketing group of neighboring countries tourists for connecting them to travel further to Thailand more. The organizations involved with the tourism industry, both government sectors; Ministry of Tourism and Sports, Tourism Authority of Thailand, Department of Provincial Administration, and Department of Local Administration, and private sectors; airlines, tourism companies, hotels, resorts, residences, restaurants, souvenir shops, etc., and local communities have to realize and prepare themselves for enhancing the competitive potentials, and tourism plan, to be readiness to ASEAN. Thus, the study of motivational factors and tourism behaviors of the tourists, considered as the Demand Side, and the study of tourism models, tourism places, tourism news and information resources, service, and tourism facilities, as well as participation of local communities, considered as the Supply Side, with integration study is really beneficial for the tourism plan to the government sectors, business sectors, estate enterprises, local communities, in order to prepare for the readiness of competitive potentials to be used as the model, and the ways to integrate the tourism management of every industrial sector related to the tourism industry of Thailand to prepare for the readiness of entering into the ASEAN Community sector. The purposes of this articles are to review the literatures of potentials assessment for creating the value added in the supply chain system of the tourism industry in Thailand, which includes 4 parts: 1) Introduction about the real situations and significance of occurred problems in the tourism industrial system, travel routes in Thailand, 2) Supply chain of the management of tourism industry, 3) Literature reviews and theories related to the potential assessment of tourism industrial management, and the ways to solve the problems of creating the theory of travelling model for Thailand tourism, and 4) The study conclusion, recommendation, and continuous researches.

Supply Chain of Tourism Industry Management

Logistics for tourism is originated from tourism transportation. The conceptual framework of acceptable two European specialists, Lumsdon and Page [3]. The framework can be used to analyze the Physical Flow and Information Flow as the main, while Suriya [4], tries to create the framework for analyzing the logistics which combine the Financial Flow, and other activities, as well as supply chain, which integrate support the tourist transportation. The most important factors for developing the logistic strategies of tourism business in Thailand include the first rank, this consists of infrastructure of Thailand, the second rank, this is about the clients or tourists’ needs, the third rank, this is about the types of goods and tourism service, and the last rank, this is about the government policies. Thailand emphasizes the tourism research according to the country strategies carried out by specialists to apply the results to adjust the strategies to be able to support business sectors of tourism service all over the country. According to the conceptual framework for analyzing the tourists transportation of Lumsdon and Page [3], and additional improvement of Suriya [5], Lumsdon and Page [3] suggests the conceptual framework of analysis on tourists transportation in the book named Tourism and Transport as follows:

1) Availability; this means the types of vehicles which are ready for giving service, routes opened to service, the level of service quality, as well as additional service, such as elevator for the invalid or the persons who have heavy baggages, locker, and emergency communication instruments, etc.,

2) Accessibility; this is the ability of people who can use the services, facilitation for people to use the service, such as time and places for ticket distribution, location of railway station or bus station, etc.,

3) Information; this is about giving the correct, accurate, and quick news and information to help the passengers not to be confused about their travel, and be able to make an advance plan, as well as the places which provide the news and information to facilitate the passengers to be able to follow the news and information easily through the news and information system, and communication system, while Mingsarn khoasa-ard [6].

For tourism logistics at the level of tourism town which are related to the tourists service (Tourism Supply Chain Operation), there are some interesting points and items which should be considered, which are, what does the logistics tourism core service?, and how does the core process on tourism logistics service? (Source, Make and Deliver), what factors do help the tourism service be smooth and effective? (Supply Enable Process), how is the news and information used for tourism service? (ICT Management System), what connection points do cause the link of tourism service? (Integrated Resource Management).

The factors which will promote the tourism service to be better in the future from learning of tourism services from other sources, or from experiences of last tourism services (Benchmarking and Tourism Performance Review). For the framework which should be considered about the tourism logistics, things should be known from the service framework for the tourists are involved with the flow or movements divided into 3 parts as follows:

1) Physical Flow; this refers to the travel, transportation, baggage transportation of tourists, and convenience of travel, etc.,
2) Information Flow; this refers to giving news and information, guidepost, places sign,
instructions on things should be done in some places, and warning of dangers for the tourists, etc., 3) Financial Flow; this refers to facilitation of goods payment or tourism service, and buying various kinds of travel ticket.

The analysis can be divided into 3 stages as follows: 1) Travel into the tourism city, 2) Stay in the tourism city, and 3) Leave the tourism city.

These mentioned principles are in accordance with the government policies, therefore the strategies on tourism are determined in terms of research visions, which is “add the values and worthies of Thai tourism industry through management of effective and efficient tourism research which leads the Thai tourism to creative economy with justice and sustainability” carried out by research team. The referred secondary information and strategy of major research include as the following:

The strategies to support the national period research on tourism consist of strategies under 4 issues as follows:

1) Research for determining the policies of tourism development at the macro level,
2) Research for promoting and developing the potentials of demand tourism in Thailand,
3) Research for promoting, developing, and managing the demand marketing for tourism of Thailand, and
4) Research for creating and developing the mechanism of tourism management of Thailand which can support and conduct the network tourism research through process of Participatory Action Research to promote the conduction of tourism research by interdisciplinarity integration, collect the data to support the research for doing tourism data base, and support the research of news and information and communication use for supporting the development of information system on tourism by map, systematically with Thai unique.

For the purposes of service industrial research which covers the tourism, the development of logistic value added, and information technology, in order to create and encourage the knowledge base as the basis to potential creativity, and ability for developing the equal and justice economy creatively, balance, and sustainably, by considering the philos of sufficiency economy, factors of success of strategies, and factors of success of strategies on research strategies, therefore the organizations related to the problem solving and tourism development have to mutually coordinate and cooperate to apply the research contributions for solving problems and developing seriously. According to the case mentioned above, moreover the key strategies which have to be treated and maintained carefully, which is, it must be supported for environment and natural resources reservation. The last time, tourism is considered as the domestic income which made income to the country at the earlier levels of the world.

In Thailand, the organizations responsible to promote and develop the Thai tourism emphasizes the marketing in terms of letting the tourists visit the country more. At the meantime, it should encourage Thai people to travel in the country more as well. In addition, it is found that both Thai and foreigners have interested in visiting natural resources and cultures of Thailand since October (October, 2005). Hence, the organizations responsible for reserving natural resources and environments have adjusted and reformed the system in order to be able to support the change of tourism. Several key tourism resources under the control of government organizations, such as Department of national parks Wildlife and Plant Conservation, Ministry of Natural Resources and Environment, Department of Local Administration, etc., these are the responsible organizations of resources areas which have different control and prevention system, but the most important, when tourists want to visit those areas, each organization has to have the measures to support the increase quantity of those tourists by being able to maintain the qualities of environments in each area in better ways. The slowliness of control and prevention on the problem of natural resources and environmental destruction from tourism development can be seen numerously, and the consequence is, there is the movement of tourists to other new resources which still maintain the plentifulness of natures, when the tourists move to those new places, some private sectors or some organizations try to develop the facilitates to satisfy the tourists, however those developments become to destroy the natures and environments unintentionally. The consequence is that it causes destruction of natural and environmental resources which cannot be recovered like the previous time, the preparation for reservation of natural resources and environments are really important since it should not let the problems occur and then solve it. To make the natural resources and environments qualitative is rather difficult because it has to determine the measures full of serious practices, and it has to be cooperated by tourists. The plan of natural resources and environments reservation takes an important roles towards the maintaine of environments qualities of Thailand as a whole. Thus, every organization involved both country and local level as well as all people have to cooperate to one another seriously. Having good environments quality, especially in the tourism resources, this can attract the qualitative foreign tourists to visit Thailand increasingly therefore it will be able to create jobs and added values as well as large incomes for people in every part and sector.

Literature review, theories which relate to potential evaluation of Thailand tourism industry management. The purposes of the research of The Value Added Tourism Logistics Industry of Thailand are as follows: 1) To study the Thailand tourism logistics strategies in the present time in the view of foreign tourists and the involved, 2) To study the satisfaction of foreign tourists towards the components and management of tourism logistics which affects repeated visited of Thailand, 3) To study the effects towards the tourism environments, and 4) To study the ways and make a conclusion about development and values added of tourism logistics management. The research conclusions include as follows: 1) The study conclusion from information processing of each sample group which was studied include tourists group, communities group, entrepreneurs group, and community leaders group, 2) Research discussion, 3. Conclusion of recommendations for this research focuses on 4 target populations group as follows: (1) Foreign tourists group, (2) Group of people living around the studied tourism resources, (3) Entrepreneurs group which conducts the business around the tourism resources, (4) Community leaders group in the target tourism resources in Thailand, (5) The areas for the study are Bangkok areas, Chiangmai, Nakhonrachasima, Ayuttaya, and Kanchanaburi. The tourists group is determined by using the method of Non-probability Sampling, the sample group is selected by the method of Accidental sampling, toal 400 samples. For the group of people in the community, the method used is Probability Sampling carried out by Sample Random Sampling in 5 areas, 20 person per each area, total 100 samples. For the entrepreneurs group, the method used is Non- Probability Sampling by Purposive Random Sampling in 5 areas, 10 persons per each area, 50 samples per each, and for the community leaders group, the method used is Non-Probability Sampling by Purposive Random Sampling in 5 areas, 4 persons per each area, total 20 samples. The instruments for data collection from all 4 targets group in 5 mentioned areas include questionnaires and...
The recommendation needed to be added is only providing the tourism package by cooperating between tourism resources and tourism entrepreneurs more. However, there is an issue which should pay attention with, that is, the satisfaction level towards the components and management of tourism logistics, between tourists and tourism entrepreneurs compared with the same lists or any list which can be compared, it is found that there is the extreme difference; the tourists are satisfied only a little to moderate level, while the entrepreneurs are ready at the much and most level such as the aspect of Physical Flow: Tourists (4.20=much); Entrepreneurs (4.03=much), Physical flow: Tourists (2.80=moderate): Entrepreneurs (4.33=the most), etc. The conclusion at this point is really important towards the development of tourism logistics since the entrepreneurs who can be compared as the travel persuader or Supply side who can prepare the readiness to support the tourists to make sure that they are ready to provide the service in every aspect very well, while the tourists group who can be compared as the service users or Demand side by having the expectation of receiving good service according to their own thoughts. This point is likely an issue to make the tourism be able to maintain their standard of tourism service in order to create the repeated visit of the foreign tourists.

Community leaders group

This group views that in this present time, there is the readiness of tourism support at a good level since there are several famous tourism resources rearranged in order all over regions of Thailand. The tourism resources have already had activities which prepare its readiness on tourism logistics, however there are still some aspects which should be recommended for improvement, that are, travel, safety, and information provision in terms of emergency case, and readiness preparation in terms of tourists information, by observing the tourism resources which are famous among tourists the most. These can be concluded the most according to the Table 1.

Table 1 shown the data collection reveals that the foreigner tourists group who gives the research data feels satisfied towards the tourism logistics management of Thailand. The mean rearranged from much to little are as follows, the first range is the return trip over/Share; the highest mean is equal to 4.60, the second is Place; the mean is equal to 4.36, the third is Marketing promotion; the mean is equal to 4.34, the fourth is Terms of service; the mean is equal to 4.22, the fifth is Physical; the mean is equal to 4.03, the sixth is Personnel; the mean is equal to 4.02, the seventh is The service processes; the mean is equal to 3.88, the eighth is Information Technology; the mean is 3.28, and the ninth is Environment; the mean is 3.19. Especially, the last rank should be considered by the government to improve its infrastructure to be more suitable according to the Thailand strategies. Moreover the last rank is regarded as competitive advantages on the cost issue which is the strength of Thai tourism because the costs and expenses are at the moderate level which is considered as the low expenses when comparing with other tourism places in AEC and famous tourism places all over the world. The data are collected from the tourists of community leaders in 5 Province: Chiang Mai, Nakhon Ratchasima, Phra Nakhon Si AyutthayaandKanchanaburi. The study found that the tourists overall satisfaction of the logistic factor for tourism. The results are shown by graph of average rearranged according to the logistics elements of Thailand’s tourism as shown in the Figure 1.

According to the analysis and comparison from the questionnaires and interviews, the researcher team has the conclusions as follows: between the individual factors and satisfaction of tourists towards the components of Thai logistics tourism with statistical significance at
0.05 level can be concluded as overall image as follows: the variables which give the different results include gender, age, career, and income. While the variables which give the result not differently includes the educational state. According to the analysis of relationship between components of logistics tourism and the repeated visit of foreigner tourists from the test by using the \( X^2 \) value at the statistical significance at 0.05, it is found that the components and sub-lists have the relationships with the repeated visit as follows: The logistics management in terms of Physical Flow: the access sub-lists of food resources and drinks are easy, clean, and hygiene. The readiness of package tour, safety of residence, safety of airport, transport station, safety of tourism places, check-in registration, places visit, city safety, travel in the rural areas by public transportation, logistics management of News and Information Flow: every sub-list includes the information of tourism, food and beverages, residences, official websites, information at the tourism places, information at the Thai Tourism Office, and information at travel, Service: every sub-list includes the tourism places are clean, and convenient, the relaxation places are sufficient and suitable, clear, and beautiful, and safe, food and beverage shops are sufficient, bathrooms and toilets are sufficient, clean, and comfortable for operation, Place: only the sub-lists which have the tourism places not farther from the community resources, Personnel: in the sub-lists the people in the tourism community give services politely and friendly. Repeated visit: to share experiences: every sub-list includes the repeated visit next time, want to visit Thailand, and want to visit other places all over the country, will take friends to visit next time, and will recommend others to travel as well. Expenses: the sub-lists of expenses in tourism are appropriate and satisfied much, and the fees of visit are appropriate.

**Opinions about tourism logistics to support the tourism business**

It should be connected with the tourism research at the strategies level of Thailand by emphasizing the tourism activities all the time both in and out of tourism festivals. For during the time of out of festival, it should attract the tourists all over the world to travel by organizing various interesting activities, together with special promotions for being the motivation, and for distributing the congestion states of tourists in the tourism festival until it causes the hitch of tourism logistics management, especially the physical flow of the tourism resources. At that time, it should emphasize the public relations of new tourism places to be known through various media, together with giving the tourism information, and making the map to connect the tourism routes for improving the public transportation system for tourism to reach the standard in order to solve the problem of physical flow recommended by the tourists in 4 lists, which include, there is no public transportation system to support the tourism, safety at the transport station, tourism travel in the rural by public transportation and travel in emergency case by considering to make a plan seriously and carefully, improving the infrastructures and public transportation.

**Table 1: Review results.**

<table>
<thead>
<tr>
<th>Logistics elements of Thailand's tourism</th>
<th>Mean</th>
<th>S.D.</th>
<th>The interpretation</th>
<th>t</th>
<th>Df</th>
<th>Sig.</th>
<th>( X^2 )</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Physical</td>
<td>4.03</td>
<td>0.84</td>
<td>Less</td>
<td>2.59</td>
<td>397</td>
<td>0.01*</td>
<td>14.348</td>
<td>0.014*</td>
</tr>
<tr>
<td>2. Information Technology</td>
<td>3.28</td>
<td>1.26</td>
<td>Medium</td>
<td>0.80</td>
<td>398</td>
<td>0.42</td>
<td>47.586</td>
<td>0.000*</td>
</tr>
<tr>
<td>3. Terms of service</td>
<td>4.22</td>
<td>0.91</td>
<td>More</td>
<td>0.56</td>
<td>397</td>
<td>0.58</td>
<td>54.521</td>
<td>0.000*</td>
</tr>
<tr>
<td>4. Place</td>
<td>4.36</td>
<td>0.72</td>
<td>More</td>
<td>3.38</td>
<td>397</td>
<td>0.00*</td>
<td>6.689</td>
<td>0.462</td>
</tr>
<tr>
<td>5. Marketing promotion</td>
<td>4.34</td>
<td>1.02</td>
<td>More</td>
<td>0.16</td>
<td>398</td>
<td>0.87</td>
<td>8.106</td>
<td>0.124</td>
</tr>
<tr>
<td>6. Personnel</td>
<td>4.02</td>
<td>1.30</td>
<td>Less</td>
<td>1.10</td>
<td>398</td>
<td>0.27</td>
<td>9.187</td>
<td>0.201</td>
</tr>
<tr>
<td>7. The service processes</td>
<td>3.88</td>
<td>0.04</td>
<td>Medium</td>
<td>1.60</td>
<td>397</td>
<td>0.11</td>
<td>4.382</td>
<td>0.502</td>
</tr>
<tr>
<td>8. The return trip over/Share</td>
<td>4.60</td>
<td>0.61</td>
<td>More</td>
<td>1.76</td>
<td>397</td>
<td>0.08</td>
<td>21.330</td>
<td>0.001*</td>
</tr>
<tr>
<td>9. Cost</td>
<td>3.08</td>
<td>1.19</td>
<td>Medium</td>
<td>3.46</td>
<td>398</td>
<td>0.00*</td>
<td>9.428</td>
<td>0.076</td>
</tr>
<tr>
<td>10. Environment</td>
<td>3.19</td>
<td>1.06</td>
<td>Medium</td>
<td>2.58</td>
<td>398</td>
<td>0.00*</td>
<td>102.88</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Note: *Significant at the 0.05 level. (Source: Calculated)

**Figure 1: The average of satisfaction level of foreign tourists towards the tourism logistics management in terms of value is got by logistics management in 5 provinces in Thailand.**

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which are mostly in the component of tourism logistics, and being the index to assess the potentials of tourism places in terms of supply which usually weight to 50%. The government sectors have to rush to coinduct and develop suitably and sufficiently in this present, and to support the AEC: Asean Economics Community. The things which will incense the values of sustainable tourism are that the environments reservation and cultural environments reservation to have good quality, especially in the natural tourism resources which will be able to attract the qualitative foreign tourists to visit Thailand increasingly and sustainably all over the year.

Conclusion

The Travel System in a country such as Thailand, must also be considered in an environmental sustainability goal. One of the important parameters of this system is transportation, especially in large cities. We must therefore consider this aspect for optimum tourist system.

The increasing use of cars and their impact on the environment attracts the attention of researchers of health, environment and transportation. Sustainability is to meet the needs of the present without compromising the ability of future generations to meet their own needs (U.N., 1987). In this framework resource use and waste management, is very important. All energy sources have some impacts on our environment. Fossil fuels (coal, oil, and natural gas) do substantially more harm than renewable energy sources by most measures, including air and water pollution, damage to public health, wildlife and habitat loss, water use, land use, and global warming emissions [9].

Air pollution from traffic-related pollutants has become a very serious problem. Causes include traffic congestion, two-stroke engines, missing catalytic converters, quality of fuel, etc. The environmental burden of transportation is affected by the choice of transportation modes and consumer behavior. In developing countries, the choices are mostly limited, so people prefer to use private transportation compared with public ones. Environmental pressures cause the increase of air pollution levels in the cities. Air pollution occurs when it contains gases, dust, smoke or odors in harmful amounts. It means the amount is at a level that can be harmful for health or comfort of humans and animals, or can cause damage to plants and materials [10]. The main cause of urban air pollution is the use of fossil fuels (coal, oil, and natural gas) for transportation, power generation, industrial, and domestic sectors. In addition, biomass combustion such as firewood, agricultural and animal waste, also contributes to air pollution levels. Emissions of pollutants have direct and indirect effects on air quality with an impact on human health, ecosystems, agriculture, and materials [11].

Levels of air pollution in Asian cities exceeded the World Health Organization (WHO) recommendation, where smoke and dust particles are twice the world average [12,13]. The severity rate of air pollution problems in Asian cities reflects the level and rate of economic development, effectiveness of air quality management, and other efforts. WHO [14] divides air pollution by reaction formation in the atmosphere into two types, namely:

1. Primary air pollution: Primary pollutants are substances which are directly emitted from pollutants. The primary contaminants commonly contain greater concentrations of pollutant compound. Primary contaminants include 90% of the amount of pollutants in the air.
2. Secondary air pollution: Secondary pollutants are pollutant substances formed from the reaction of primary pollutants and the elements contained in the natural atmosphere. These pollutants can cause smog phenomena, haze, and cause eye irritation. Exhaust emissions from motor vehicles, such as cars, motorcycles, as well as public transportation are major source of air pollution when the level exceeds a specified threshold. This can damage the environment and endanger the health of infants, children and sensitive groups (especially the elderly and young/adults).

The transportation factors are:

1. Economy: Population level, demographics, income, vehicle ownership, operational costs, gasoline prices, technology, and types of occupation.
2. Socio-cultural: The weather, modernization of the city, freedom, security, and advertising.
3. Infrastructure: Transportation infrastructure, land use planning, parking, traffic, and travel speed.
4. Politics: Regulation, international policy, trades.

Transportation, it also raises new issues such as:
1. Economy: Time, income, infrastructure expenses, and tourism impact.
3. Environment: Water quality, air pollution, and climate change.
4. Health: Health effects from air pollution, health rates, noise level, and the level of stress.

The city’s economic growth that has driven urbanization is an important factor that affects the air quality. Transportation and energy needs increase along with the increasing population level, urban development, and changing lifestyles due to increased revenues. Increased energy consumption ultimately contributes to air pollution that causes economic loss [15].

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