Strategy to Build a Transshipment Port as a Catalyst to Achieving Critical Mass for Sabah's Economic Growth

Dr. Ngui Min Fui@Tom[1]

[1]IPE Management School Paris, France, Eramaju Synergy Sdn Bhd, Malaysia

Correspondence: Dr. Ngui Min Fui@Tom, IPE Management School Paris, France; Eramaju Synergy Sdn Bhd, Kota Kinabalu, Sabah, Malaysia.

Abstract

Digital transformation has led to a new era of port development at an unprecedented pace. China represents a large percentage of total global trades, navigating the maritime silk-road to various global and regional ports. In Malaysia, the lack of concrete justifications for the issue of transhipment port strategy leads to a debatable framework. Hence, the aim of the paper is to critically discuss the strategy to build a transhipment port as a catalyst to achieving critical mass for economic growth in Sabah. The study draws heavily on existing literature on the theoretical evidence and the possible factors that shape strategy to build transshipment port in Sabah. Based on reviewed literature, various resultant strategies adopted to stand for their interest are discussed. In this way, this paper provides not only theoretical insights, but also strategically guides managers of organisations in Sabah, government, and businesses values towards building a transshipment port in Sabah to effectively retire cabotage policy to reduce cost, enhance port throughput, develop hinterland for critical mass, enhance ports-economic clusters connectivity, eliminate capacity bottleneck, unlock natural resources export potential, align port service towards regional port users' needs and to give regional port powers a run for their money.

Keywords: transshipment port strategy, port cost, availability, operational efficiency, service quality, economic growth, Malaysia

1. Introduction

1.1 Background of Study

This paper conceptualizes a refined framework of variables by discovery approach. For research strategy, it employs qualitative approach for in-depth information and wider insight into the transshipment port strategy as a way of ensuring its prominence and efficacy. All the relevant information gained from the secondary data sources. It means that this study uses the most updated secondary sources available to see whether a new trend occurs to build a transshipment port and to ascertain whether there is any variation in the outcomes compared to prior studies.

Transshipment ports were established with the sole purpose of linking interior business hubs with international companies. For example, Palau was considered a petroleum super port in the 1970s (Gurpreet &Richa, 2018). The policy implementation of the Panamanian sea-level canal demonstrated the changes that have been implemented in transshipment ports towards enhancing accessibility from the international sectors (Bonney, 2016).

Cluster theory explains the strategy to build a transshipment port in Sabah is contingent on value-adding production chain, which helps achieve horizontal integration by linking the activities of the firm with customer needs. It reflects the interdependencies of the firms through shared input, alliance formation, and co-location, such as borrowing empty containers from parters to reduce cost and congestion by minimizing empty container movement (Chhetri, Butcher, & Corbitt, 2014; Kuzmicz & Pesch, 2018). Transshipment ready ports specifically in Sabah showed an increase in volume of cargo in Sabah; this has placed pressure on handling capacity of the port (Wai, 2008). With direct calls, consolidation of direct and transshipment cargo was made possible. Economic development and industrial development in Sabah mean that the logistic costs reported can be reduced drastically; but the increase in volume of cargo has meant that there is a plan to expand Sapangar Bay container port (Business Standard, 2018; SEDIA. (2016).

State and federal governments should look into building a transshipment port in Sabah because Sabah state has demonstrated its growing ability to be the hub of economic activities in Malaysia with the availability of agricultural products in the region (Sabah Development Corridor, 2016). Sabah is the center of tourist attraction in Malaysia, and the attractiveness of the port is dependent on the infrastructural development and reduction in logistic processes or procedures for the tourists (Vega, Cantillo, & Arellana, 2019). Sabah needed to have a transshipment port in Sabah because the state has demonstrated strong economic progress with the GDP of the region growing from 2.7% in 2011 to 8.2% in 2017. Sabah also contributed 5.8% of total GDP to Malaysia and 75% of total palm oil exports are from Sabah (Sabah Development Corridor, 2016). Moreover, a transshipment port can further eliminate bottleneck for the Sabah tourism sector, as it is evident that the expenditure per tourist in Sabah is RM 1,810; this is the highest among all states in Malaysia (The Malaysian Insight, 2018).

The benefits of forming a strategy to build a transshipment port in Sabah include growth in tourism within the region and will improve the reported revenue outlay in Malaysia (Lu, Lin, & Lee, 2010). Moreover, agricultural products, such as palm oil, can be exported to different economies across the globe (Kim, Kang, & Dinwoodie, 2016). However, the disadvantages of forming a strategy to build transshipment port in Sabah include an increase in the cost of financing for the development of the project. This can affect the stability of both Sabah and Malaysia (Kim, Kang, & Dinwoodie, 2016). Also, the success of the project can be influenced by the challenge of procuring the needed resources by project management (Wang & Yang, 2014).

The opportunity to form a strategy to build a transshipment port in Sabah includes the potential for capturing the highest economic value for its activities; this will enhance economic growth and development of Sabah (Sumner & Rudan, 2018; Jiang et al., 2014). Another opportunity is to handle higher port throughput in terms of volume to take advantage of the existing maritime Silk Road (Duchatel & Duplaix, 2018). The threats to form a strategy to build a transshipment port in Sabah include lack of technological advancement to build a modern and sophisticated port infrastructure; which, influences the port activities because MLO and other port users rely on a sophisticated and innovative mode of transportation (Sumner & Rudan, 2018; Darayi, Barker, & Santos; 2017). Moreover, laws and regulations by the federal government of Malaysia that do not recognize the need Sabah has to build a transshipment port, can impact the influx of economic activities in both Sabah and Malaysia (Duchatel & Duplaix, 2018).

Contradictions about forming strategy to build transshipment port in Sabah include many ports being developed in the global port industry, and Sabah's inability to recoup the cost incurred in the construction of the port (Chhetri, Butcher, & Corbitt, 2014). However, socio-cultural practices in Sabah can also influence the completion of this transshipment port project. Most of the businesses in Sabah, the federal government of Malaysia, MLO, and other port users are not interested in the port activities of Sabah (Kim, Kang, & Dinwoodie, 2016). Chhetri, Butcher, & Corbitt (2014) supported a strategy to build a transshipment port in Sabah through the economic perspective; whereby, focusing on sharing technologies and increasing customer-supplier relations can contribute to distribution networks. In contrast, Yang et al. (2017) supported a strategy to build a transshipment port in Sabah by assessing the socio-cultural practices, which is influential in integrating the different components of port management in Sabah.

The contributions from this research to establish a comprehensive background of this issue include a greater understanding of the logistical issues that can impact the development and implementation of a transshipment port towards realizing economic growth in both Sabah and Malaysia (SEDIA, 2016) understanding the role of technology and innovation in facilitating the development of the transshipment port (Chou, 2014; Antara News, 2018).

1.2 Developing Strategy to Build Transshipment Port in Sabah

Successful milestones and critical mass of the Sabah port industry include continued growth in cargo volume, which increased by 180% from 2005 to 2013 and is expected to increase in the future (SEDIA, 2016). A minimal amount of effort from the government by removing non-tariff barriers has resulted in an increase in participation by small players within the industry, which has increased international trading activities (Idris & Idris, 2017). Such minimal amount of effort from the government has initiated huge improvement in cooperation between local and international players, which enhances the efficiency of the Sabah port industry (Huo, Zhang, & Chen, 2018; Merkel, 2017).

The political environment that affects the strategy to build a transshipment port in Sabah includes improvement of security for operators as a result of the government's commitment to curbing piracy (Mak, 2017). Also, there is an increase in access to the market, as a result of the partial removal of the cabotage policy that promoted monopoly. Total removal of the cabotage policy is still under review stage by the state and federal governments

of Malaysia. Such a policy will affect seafarers' income tax and the ship owner's corporate tax (Suffian, Rosline, & Karim, 2015; Daily Express, 2018).

The economic environment that affects the strategy to build a transshipment port in Sabah includes the economic performance of Sabah in 2016 which has made a profit of RM 66.38 million. Sabah, being a surplus state, has managed to make more money than it has spent. This made Sabah the second highest profitable state of all states in Malaysia (Tan, 2018). Moreover, the fiscal health of Malaysia has increased to 82.4%, thanks to Sabah for having profitable economic activities and being able to meet its financial and service obligations (The Heritage Foundation, 2019). Therefore, it is essential to highlight this issue since a role of transshipment port in fulfilling its operational function and enhancing the service quality benchmarking business values performance as well as the growth of Malaysian economy (Khalid, 2005a; Sahu et al., 2014).

1.3 Focal Issue

A minimal financial resource of RM 1.02 billion from the Malaysian federal government has initiated fast expansion of Sapangar Bay Container Port (SBCP), which has fully utilized the port's maximum handling capacity at about 280,000 20-footer containers annually, and the port expansion is predicted to be more than 1.25 million TEUs by 2030 (Ascutia, 2016). However, the federal government has yet to allocate the required funds of RM 1.8 billion to initiate further expansion of SBCP into a transshipment hub of the East (Press Reader, 2017). Also, there is a lack of transparent administrative procedures to enhance quality workforce to improve the port information system, this has hindered business values expansion in positioning Sabah as the leading economic region in Asia, this is when the logistics sector in Sabah is lack of international connectivity, slow internet services, and poor service delivery (Felder, 2018). There is a lack of efficient connectivity to international markets in Sabah. Port is an important part of local economic growth. For a port to accommodate mega containership of 5th-generation Panamax vessels and above and expand local economy requires competitive advantages. No international port for direct shipment, no international air freight logistic hub and no highway or railway connectivity to major cities has led to a small niche market of Sabah (Sabah Development Corridor, 2018; Daily FT, 2018a). There is high logistics and operation cost in Sabah, inefficient inland transport and inland connectivity, lack of hinterland developments, and complex procedures have led to inefficient port handling in Sabah (Su, Hsieh, & Tai, 2016; Martin, Salvador, & Sauri, 2014). High handling cost charges and transportation cost per container and storage cost and inbound/outbound cost in Sabah are affected by lack of good road and railway connectivity to major cities town and industrial area (Jeevan, Salleh, & Othman, 2018). Sabah has shown a low response to port users' needs evidently in slow port clearance and lack of service differentiation has meant Sabah port did not meet port users' needs and expectations. Low service quality has adversely affected customer loyalty and referral intention, the national conference on "economic corridors challenges and prospects" pointed out that there has been a problem of low internet speed of 2 to 30 Mbps, this has affected shipment safety and security, application of information technology (IT) in operations, and congestion in SBCP (Antara News, 2018; Heilig & Voß, 2017).

The remainder of the paper proceeds as follows. The following section expounds the literature review pertaining to the theories, the factors that shape strategy to build transhipment port in Sabah, conceptual framework, knowledge gaps and research outcomes as well as contribution of the study. The paper ends with the concluding remarks.

2. Literature Review

In order to analyse the strategy to build a transhipment port as a catalyst to achieve economic growth within the context of Sabah, this section introduces the theoretical foundation of the research and offers overview of each strand of the literature.
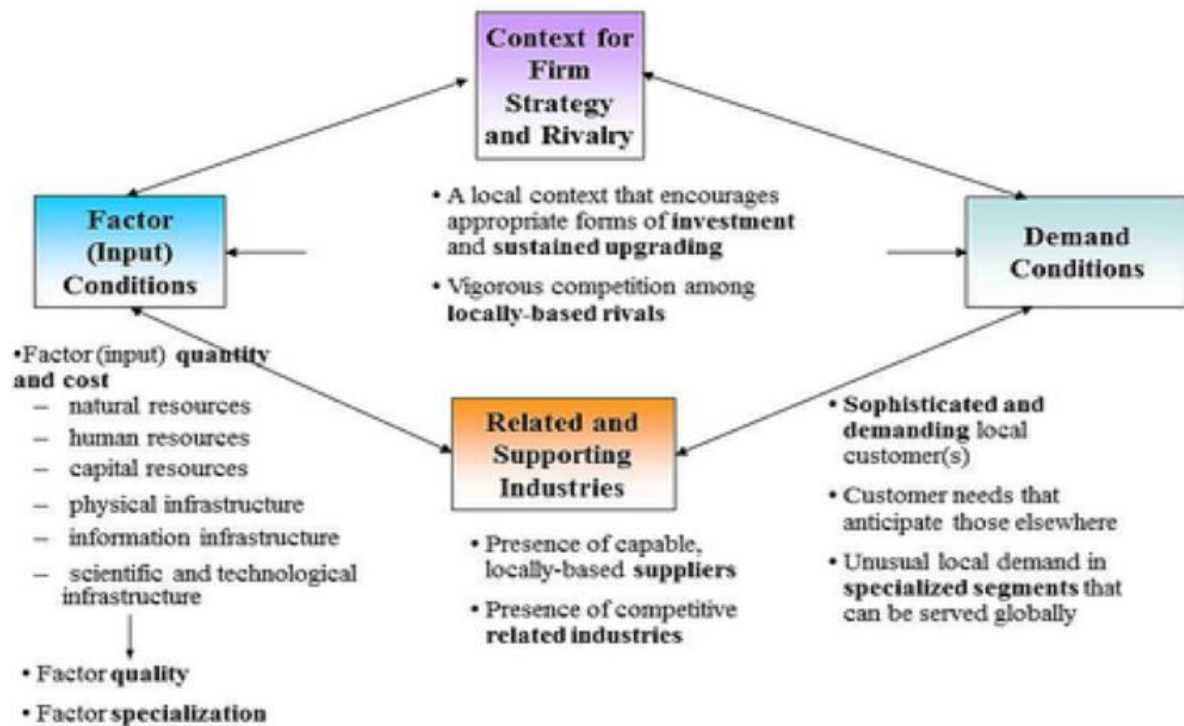
2.1 Theories

2.1.1 Cluster Theory

Figure 1. Cluster Theory

Source: Seguir (2011)

Cluster theory, as shown in Figure 1, analyses the strategy for building a transshipment port as a catalyst to achieving critical mass for Sabah's economic growth. Cluster theory focuses on externalities, linkages, heightened demand, productivity, and innovation. Strong clusters generally attract more firms and clusters with strong innovative records pose benefits in attaining more innovation and higher productivity (Chhetri, Butcher, & Corbitt, 2014). The value-adding production chain concept leads to more productivity through the integration of different firms, as well as consumers. In addition, this enhances efficiency through co-location, alliance formation, and shared inputs (South China Morning Post, 2019; Woo, 2019). Other variables in cluster theory are commonalities and complementariness. Commonalities and complementariness are aspects that make it possible for firms to create a sole cluster. They include products, services, inputs, technologies, and output activities (Lexicon, 2019). Cluster theory focuses on the concentration of specialized industries in particular localities to create the benefits of less competitive occurrence, higher profits gained by the firms, a stronger unchanging customer base, a steady presence of suppliers, and better personable relations that lead to better business values in all manners (The Economist, 2009).

The intellectual antecedents of clusters date back to 1890 and are defined as a group of firms with a common premise to create business advantages (Neale, 2017). Evolution of the Cluster theory is from externalities and agglomeration, later to innovation milieu, and more recently as industrial districts (Iammarino & McCann, 2014). Basically, the cluster theory is a theory of strategy that focuses on the characteristics of clusters as a concentration of specialized industries in specific localities known as industrial districts (Sforzi, 2015). Further research on Cluster theory is beneficial because clusters are not static entities. They evolve over time and through various life cycles which paves the way to conduct a study on the evolutionary approaches to cluster mapping and modelling based on the timelines of cluster development from a methodological perspective (Charoen, 2016).
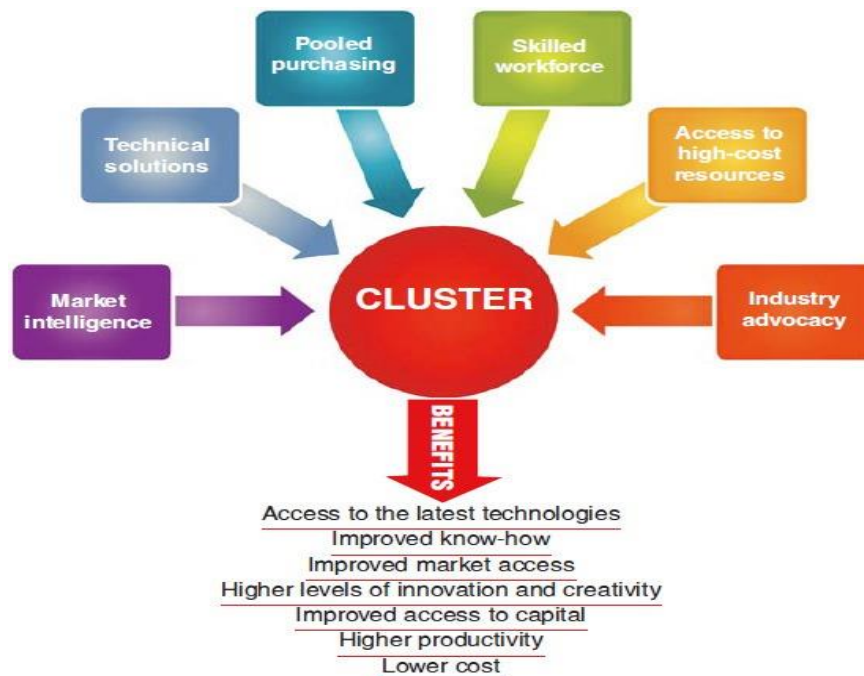
Figure 2. Extended Framework on Cluster Theory

Source: Alan M. Field (2019)

Figure 2 showed that extended theoretical framework on Cluster theory should explore the benefits of cluster formation. This includes improved know-how, availability, access to latest technologies, improved operational efficiency, lower cost, higher productivity, and service quality. Cluster theory relates to this research by exploring the various benefits of forming clusters which are less of a competitive occurrence. This allows for higher profits and business values, a strong customer base, steady presence of suppliers leading to low costs for the firms, and better personable relations. In return, that will lead to better business in all manners which will reflect on the proposed variables of availability, operational efficiency, port cost, service quality, and strategy to build a transshipment port in Sabah.

The main structure of Cluster theory entails four phases which are the context for firm strategy and rivalry, factor (input) conditions, related supporting industries, and demand conditions (Chhetri, Butcher, & Corbitt, 2014). Cluster theory is generally practised in industrial relationship management to explore the benefits of formation of industrial districts based on geographic concentration of firms. This stimulates the inter-regional and international competition (Lund, Lindgreen, & Vanhamme, 2016). Cluster theory is also practised by government authorities to enhance knowledge and innovation in the territorial perspective of software clusters through new industrial spaces, as well as milieu innovation (Hwang, 2018).

Evolutionary stages that created the Cluster theory include the industrial revolution and progresses to the adoption of policies concerning regional and international development that formed industrial districts (Konzelmann & Wilkinson, 2016). Alfred Marshal used the cluster theory to refer to the concentration of specialized industries in specific localities as "thickly peopled industrial district" due to the ongoing shifts in industry and trade. Subsequently, it is related to locally developing division of labour, competences and knowledge sharing (Gudrun & Jenny, 2017). Cluster theory is not applicable when firms forming a trading partnership are not concentrating on particular localities, but rather on distant outsourcing (Bhawsar & Chattopadhyay, 2018).

Cluster Theory

-Scope of Physical Clusters:

- Type 1: Industrial Complexes
- Type II: R&D Zones, Science Parks
- Type III: R&D Zones

- Type IV: Free Economic Zones

-Components of Innovative Clusters:

- Enterprise (MNEs and SMEs, but not only)
- Universities
- Research institutes
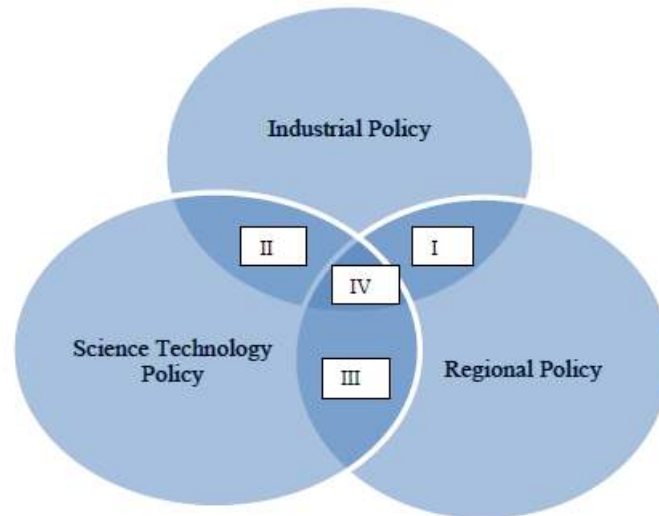- Efficient administration

Figure 3. First Model that Studied on Cluster Theory

Source: Goldstein (2014)

Figure 3 showed (Goldstein, 2014) has proposed own model to study on factors affecting Cluster theory, which are industrial policy, science, and technology policy and regional policy and other components of innovation clusters which are enterprises, universities, research initiatives and efficient administration.
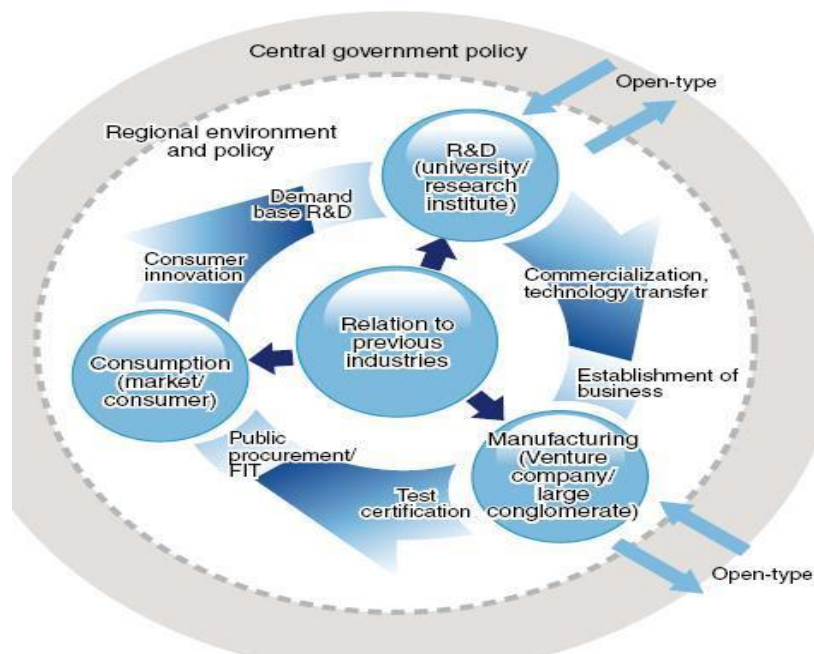

Figure 4. Second Model that Studied on Cluster Theory

Source: Yoon-Jun (2010)

Yoon-Jun (2010) has also proposed own model to study on factors affecting Cluster theory, which are regional environment and policy, central government policy, commercialization technology transfer, relation to previous industries, consumer market, demand base, research institutions, and consumer innovation. The similarity in proposed models between Goldstein (2014) & Yoon-Jun (2010) is science and technology policies, which have a key role in the establishment of businesses that integrate to form a cluster. Due to the advancement of business values in technology and science innovation, technical aspects are vital variables in formation of corporate clusters in any particular region of the globe. However, the proposed model by Goldstein (2014) is dependent on industrial policy in physical clusters which shape the formation of clusters within a particular geographical locality; in contrast, proposed model by Yoon-Jun (2010) is dependant on central government policy which has a vital role in the formation of business clusters within a particular geographical locality.

2.1.2 Game Theory

		Firm A High Price	Low Price
Firm B	High Price	*(Collusion)* (A) £8m, (B) £8m	(A) £1m, (B) £10m
	Low price	(A) £10m, (B) £1m	*(Non-Collusion)* (A) £3m, (B) £3m

Figure 5. Game Theory

Source: Tejvan (2019)

Game theory as shown in Figure 5 analyses on the strategies for port managerial decisions Hidalgo, Nunez, & Coto (2017). Game theory focuses on investments, price policies, ownership on profits, social welfare, competitive position and performance, each of these factors has a vital role in ensuring the benefits of cluster formation are explored in a strategic point of view, these factors enhance the possibility to theoretically analyze the effects of port management decisions. This can be better explained in the amount of capital to be invested to maximize realization of capital profits and enhance business values performance through investment decision planning and implementation (Byung & Hokey, 2011).

Game theory focuses on mathematical equilibriums, utility maximizing and rational choice (Caputo & Ling, 2017). Rationality is a significant assumption of Game theory, however, there were no explanations for various forms of rational or irrational decision. This means that the rational choice theory, as well as the player's general knowledge, was ideal in predicting utility maximizing decisions (Liu et al., 2018). Game theory focuses on determining the most beneficial choice of all players in a game as it sought to pinpoint the decisions players should make without emphasizing why such decisions were made (Aumann, 2017). Therefore, rationality decisions of the player and common knowledge were used in predicting utility maximizing decisions.

Evolution of Game theory from zero-sum games branches out to study of mathematical models of strategic interaction between rational decision makers and other fields of social science, logic, and computer science (Podimata & Yannopoulos, 2015). In contemporary times, game theory focuses on behavioural relations of the logical making of decisions in humans, computers, and animals (Yang et al., 2017). Further research needed on Game theory because most research focuses on how groups of people interact but do not focus on the reasons behind formation of these groups (Webster, 2018). Therefore, there is an explicit need to carry out further research on the relationship between decisions for formation of such groups and the process of people interaction and how rivals decide involving strategic interaction.

PROCESS

INPUT

OUTCOME

Instructional Content

User Judgements

System | User
Feedback | Behavior

Game Characteristics
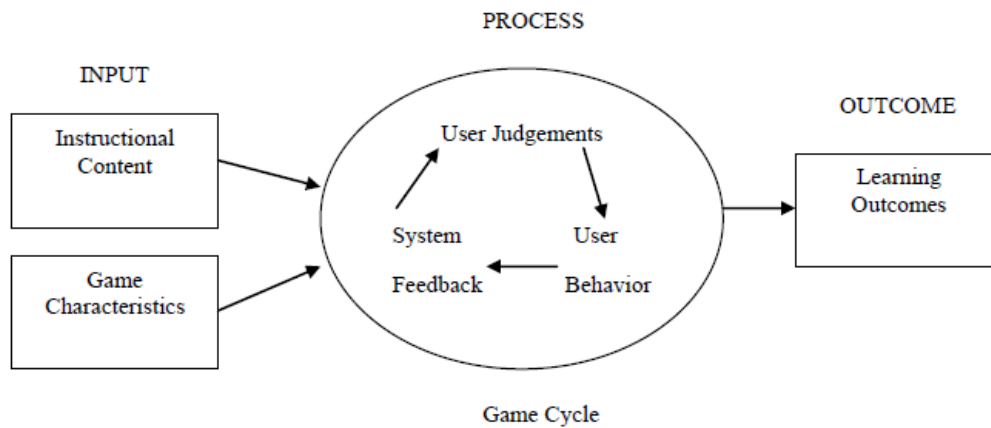
Learning Outcomes

Game Cycle

Figure 6. Extended Framework on Game Theory

Source: Bulander (2010)

Figure 6 showed that extended theoretical framework on Game theory should explore the inputs, the process, and outcomes of making a strategic decision which fits into modern informative theories. Such strategies include containerization, privatization, market liberalization, capacity investment and hinterland infrastructure investments, which affects port managerial decision-making and promote healthy competition (Su, Hsieh, & Tai, 2016; Morley, 2018; Tu et al., 2018; Cheon, Dowall, & Song, 2010).

Assumptions from the theoretical framework of the Game theory are rationality and maximization. Game theory is generally practised in social sciences, logic, and computer science to study the mathematical models of strategic interaction between two players as strategic decision makers as well as optimal decision-making of independent or competing players in a strategic environment (Thibaut, 2017). Game theory is also practised in political science in overlapping areas of fair division, political economy, public choice and war bargaining, as the application of game theory is to find effective solutions to ongoing political issues (Munck, 2018).

Evolutionary stages that created Game theory are the ideas about the existence of mixed-strategy equilibria in two-person zero-sum games, followed by the rise of modern mathematical concepts (Geiger, Knebel, & Frey, 2018). In addition, the discovery of the law of development of organic nature by Darwin led to the biological application of the game theory. Lastly, the technology revolution in the past half a century has led to adaptation of game theory in computer science (Xing & Huang, 2018). Game theory is not applicable when there is independent decision-making that lies at the heart of the interaction between businesses values in a competitive market. If the players have incomplete information about the others' intentions, a bargaining game should be considered instead (Song & Wen, 2015; Zheng et al., 2017).

Proposer

Stake: x

Offer: y

Responder

Accept   Reject

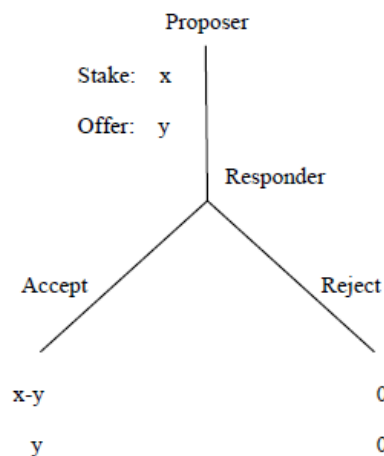$x-y$ 0
y 0

Figure 7. First Model that Studied on Game Theory

Source: Wang et al. (2015)

Figure 7 showed that Wang et al. (2015) have proposed own model to study factors affecting Game theory to study strategic bargaining bahvaior and the trust game in economic transactions, which are investor, stake, trustee, non-trust, prosper, offer and responder. In spite of the theoretical predictions, this model is regarded as two social-interaction behaviours that have consequential social and economic scenarios.
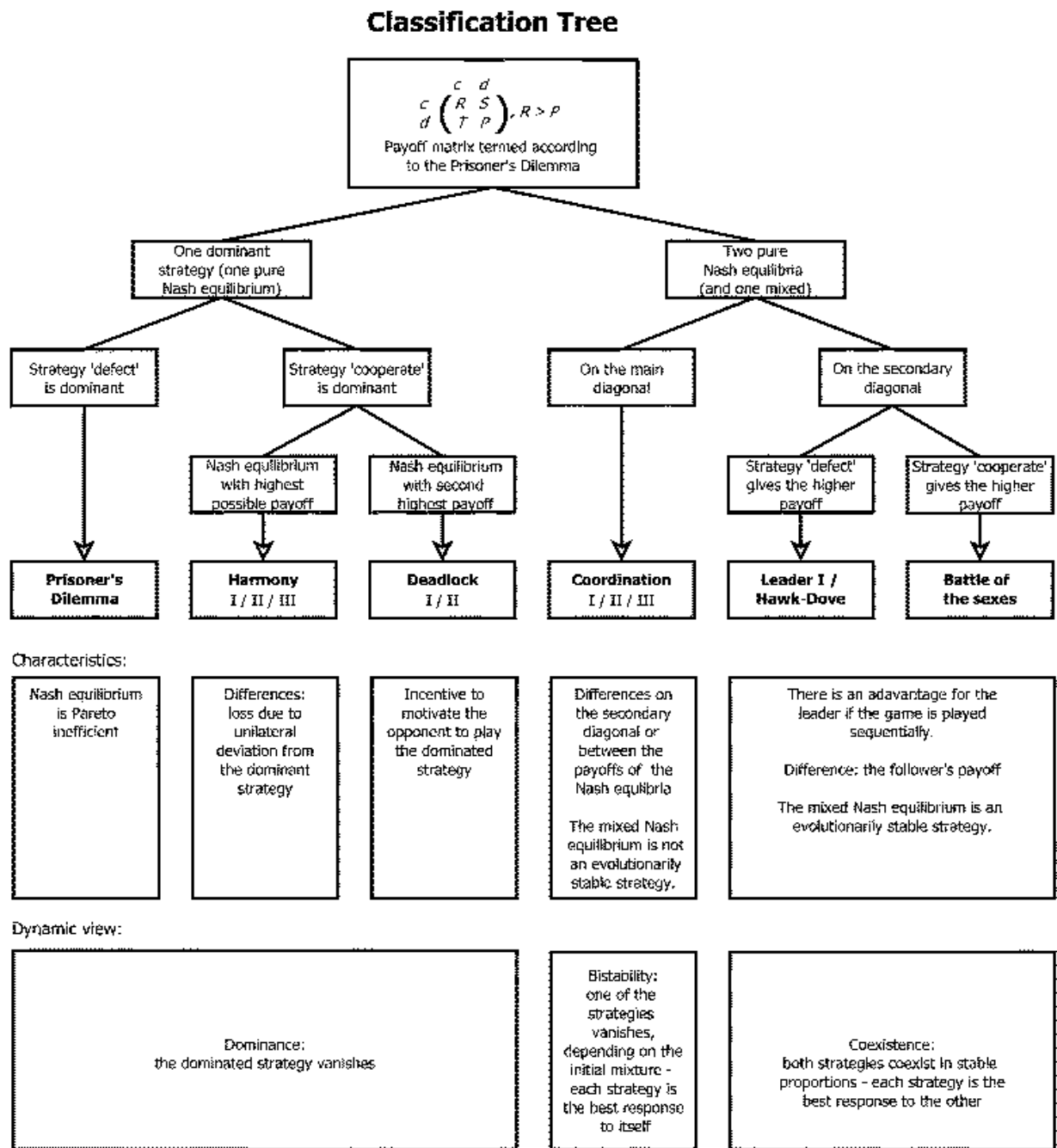

Figure 8. Second Model that Studied on Game Theory

Source: Hummert et al. (2014)

Game-theoretical model properties are summarised with the classification tree as shown in Figure 8. Figure 8 showed that Hummert et al. (2014) has also proposed their model to study on factors affecting Game theory, which are coordination, harmony, deadlock, and leader (Hawk-Dove, Battle of the sexes). The similarity in their proposed models between Wang et al. (2015) and Hummert et al. (2014) is that both researchers focused on corporate strategy and strategy defect. This shows how the interaction between the two players decides their payoffs and how mutually cooperating brings a modest payoff to both players. While mutual defection yields lesser amounts of payoffs.
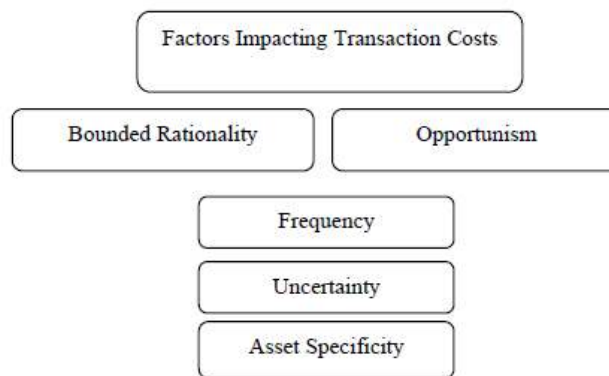
2.1.3 Transaction Cost Economics Theory

Figure 9. Transaction Cost Economics Theory

Source: Accounting College (2016)

Transaction cost economics (TCE) theory as shown in Figure 9 examines effective and efficient boundaries between markets and organizations. It postulates that firms and markets are different governance structures which differ only in transactional cost (Cho, 2014). TCE theory focuses on asset specificity, uncertainty and frequency. These variables decide whether an organization will produce internally or outsource services from external markets. TCE theory entails conducting a cost-benefit analysis to understand the viability of projects. Organization investment requires intensive capital to kickstart and implement, most of these products and is irreversible in nature. TCE practices are tailored to ensure meagre substitutes when structuring efficient transactions in case a market fails (Bandara & Nguyen, 2016).

Evolution of TCE theory can be traced from the 1970s with Oliver Williamson. With Herbert Simon, they tried to reconcile the neoclassical approach to enhance cognitive turn in economics. Up to late 1980s, the development of TCE theory was marked by treating firms as sole avoider of negative frictions (Lubell et al., 2017). During 1900, further evolution occurred such as the literature on modularity which stressed firms as the creator of positive business value. As a result, firms are now viewed as the creator of value through investment of resources in risky projects. Further research on transaction economic theory is beneficial because of the changing nature of business and markets that result in more risks and uncertainties. The lack of which threatens firms with the loss of opportunities in the market. As a result, entities are paying uncertain cost, which makes them incur loss instead of creating business values (Hanley, 2016). In addition, technological advancements which are causing turbulence shifts in market transactions necessitate managers to conduct further research on TCE theory.
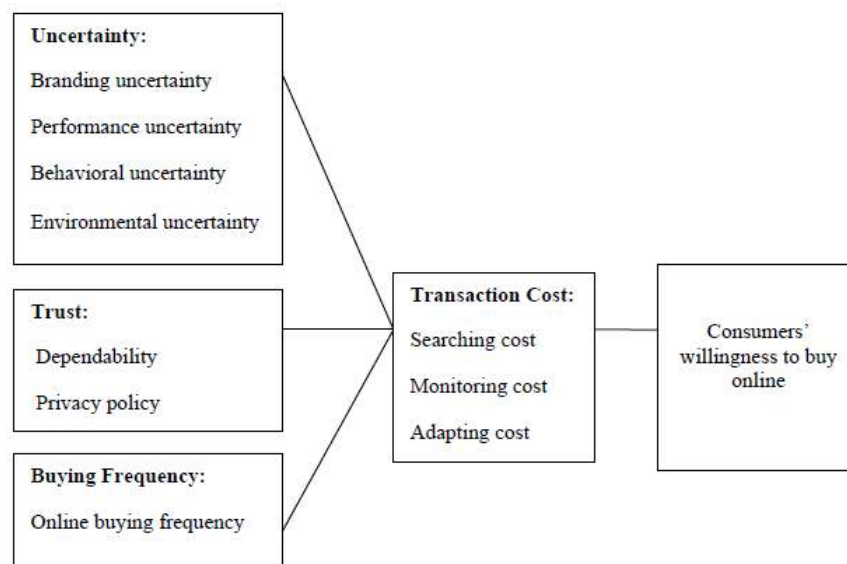

Figure 10. Extended Framework on Transaction Cost Economics Theory

Source: Teo & Yu (2005)

Figure 10 showed that risk and uncertainties are common in markets due to the changing nature of the business. Thus, TCE theory is relevant since it establishes a framework to minimize maritime uncertainties, leading to the advancement of business values. As a result, firms embracing this theory can optimize their profit margins in the long run. TCE theory relates to research problems on strategy to build a transshipment port in Sabah by emphasizing the cost-benefit analysis in port projects. As a result, firms will be able to hedge against such risks thus enabling them to generate sustainable value in the long run.

Assumptions from the theoretical framework of TCE theory are that the economic transactions are handicapped by incomplete contracts. The theory assumes that opportunism by the people as they try to take advantage of the opportunities that are available for exploitation; hence they opt to use methods that reduce the transactional cost (Hansen Henten & Maria Windekilde, 2016). The main structure of TCE theory is determined by transactions that are affected by the two human factors of rationality and opportunism; and three environmental factors, which include frequency, uncertainty and asset specificity/trust (Kaplan Financial Limited, 2012; Clark, Gertler, & Whiteman, 2017). TCE theory is generally seen in the decisions made by the organization on whether to produce commodities internally or by acquiring them over the market. The organization is able to pick the option that is cheaper and more convenient (Zimmermann & Rentrop, 2014). On the emergence of shadow IT-a transaction cost-based approach.

TCE theory is also practised in the manufacturing of Boeing 787 Dreamliner where different parts are outsourced to different companies across the world with the aim of reducing uncertainty, the time taken to complete the work, and the cost of production (Tsay, 2014). Evolutionary stages that created TCE theory are as follows; informal stage, pre-formal stage, semi-formal stage and finally fully formal stage. The earliest stage of the theory started from 1920 to the late 1970s. Transaction cost economics selectively combines economics, organization theory and law and is the product of the contributions of some of the finest minds in those three fields (Valentinov & Chatalova, 2014). TCE theory is not applicable when a transaction does not involve uncertainty. When the price of a commodity is certain to be the cheapest and best price, there is no need for the organization to consider alternative sources since the cost is already the lowest available in the market, example of area that TCE theory is not applicable is procurement of security assets, as quality is the only aspect that to be considered. This means that according to TCE theory, external sources will be given priority, as long as the external sources provide high cost efficiency at low cost and high quality of business values (Tsay, 2014).
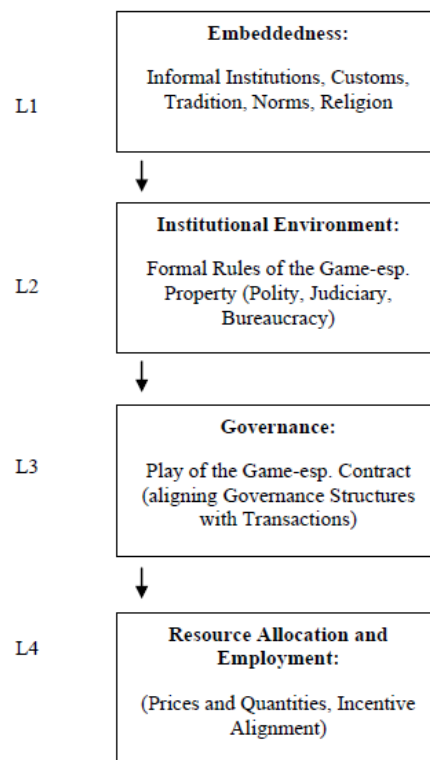

Figure 11. First Model that Studied on Transaction Cost Economics Theory

Source: Popov (2014)

Figure 11 showed that Popov (2014) has proposed a model to study factors affecting TCE theory. These factors are embeddedness, institutional environment, governance and resource allocation, and employment. The researcher notes that an organization's decisions on whether to produce internally or outsource their production are influenced by how controlling their government is or is not.
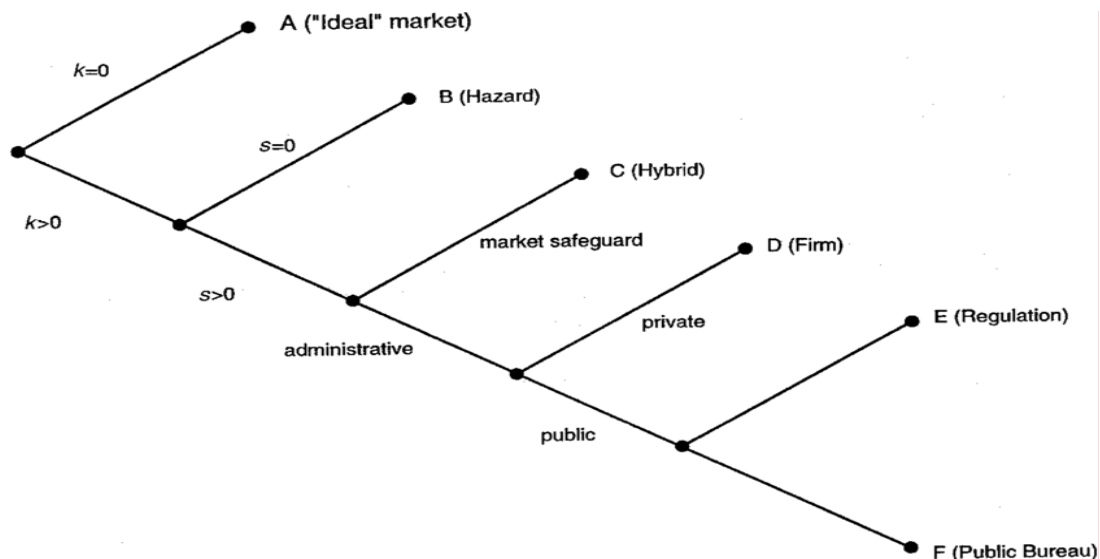

Figure 12. Second Model that Studied on Transaction Cost Economics Theory

Source: Nicita & Vatiero (2014)

Figure 12 showed that Nicita & Vatiero (2014) have also proposed their own model to study the factors affecting TCE theory. These include administrative regulations, the nature of the organization, market safeguards, and the nature of commodities.

Similarly, proposed models by Popov (2014) and Nicita & Vatiero (2014) are that they have both considered the administration and regulations as factors that explain the transactional cost and method used to regulate transactional costs. Both researchers agreed that the governance and policies of an organization stipulate whether an organization should outsource or make products internally. However, the proposed model by Popov (2014) emphasized that transactional cost depends on institutional customs and practices. The researcher argued that the purchasing policy depends on the practices of the organization. In contrast, the proposed model by Nicita & Vatiero (2014) showed that the transactional cost depends on the nature of the organization in terms of whether it is private or public. Private organizations are seen to be good in internal development while public organizations mainly outsource products.

The extant literature shows that the present issue is an under-researched area in terms of transshipmen port particularly in Sabah. Theoretically, the outcome of this research would help in enriching the current body of knowledge on the issue of transshipment port strategy as an economic catalyst for future growth of business values. By exploring this issue, appropriate strategy responses can be initiated.

2.2 The Factors that Shape Strategy to Build Transshipment Port in Sabah

The strategy to build a transshipment port in Sabah through enhancing offshore shipping function with Mainland China will ensure improvement and greater importance to networking of agents with geographic proximity. That is, there will be a strong link between customers in Mainland China and agents in transshipment port in Sabah (Daily FT, 2018b; Lu, Lin, & Lee (2010). Facilitating employee training and knowledge will lead to efficient operations, therefore, increasing business values performance as well as reliable customer service delivery. Conducting task-related training activities will make sure employees are empowered by adequate knowledge on how to serve customers (Jayaram & Xu, 2016). Also, through improvement of port information systems, based on customer-supplier relations, will lead to vigorous competition with other locally-based rivals and will strengthen the distribution networks (Antara News, 2018; Wu & Lin, 2015).

Through the development of service routes between Hong Kong and Mainland China, the Sabah port will enhance infrastructure investments, and become a viable solution to overcapacity in other ports (Morley, 2018; Wu & Lin, 2015). Encouraging private-sector equity participation in the port will lead to increased cargo

movements and industrial competition (Wilmsmeier & Sanchez, 2017; Lu, Lin, & Lee, 2010). While management reorganization will make it possible to examine the effects of decisions made on investments, price policies, and ownership on profits (Tejvan, 2019). Strategies to build a transshipment port in Sabah need to include a flexible rate to respond to market changes, as the consequences of not correctly adapting to market uncertainty may lead to higher opportunity costs (Cho, 2014). Establishing free trade zones marketing and shipping in the transshipment port will enhance port capabilities. This, in turn, will lead to an increase in traffic volumes and a decrease in logistics costs in container ports (AJOT, 2018). Also, by providing incentives for local cargo to use the Sabah Port, transactional costs will be lower. This will increase the frequency of using the port as well as lower opportunity costs when the market changes (Accounting College, 2016).

Building a transshipment port in Sabah is possible since the Malaysian federal government has already allocated RM 1.02 billion in 2016 to the state government of Sabah through the Sabah Economic Development and Investment Authority to transform the Sapangar Bay Container Port (SBCP) into the transshipment hub of the East (Press Reader, 2017). The expansion project was predicted to raise the port's yearly capacity to more than 1.25 million TEUs by 2030 (Ascutia, 2016). However, the federal government has yet to allocate the required funds of RM 1.8 billion, hence limiting the port's handling capacity to about 280,000 20-footer containers annually for the moment. Presently, vessels calling on bigger ports have higher volume. The lack of a capacious port of a transshipment class has undermined the business values opportunity for Sabah's port. The forecast is an expansion in the manufacturing industry from 7.5% to 30% of the state's total GDP (Patrick, 2018).

World container ports by volume in 2017 ('000 teu*)

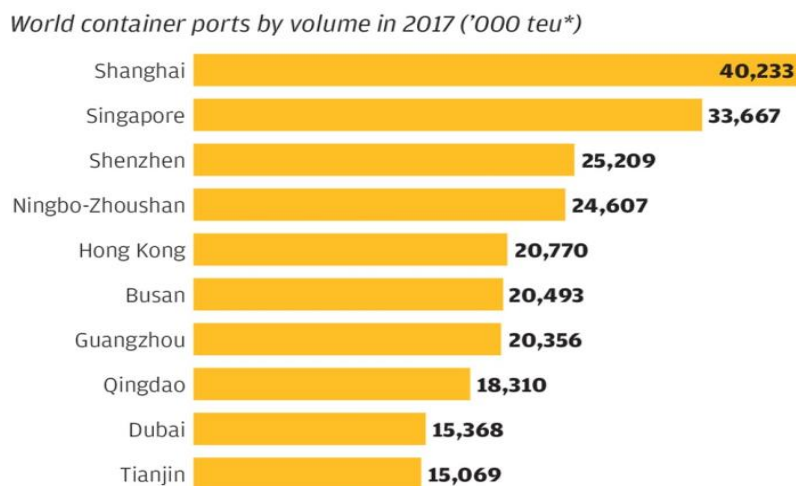|	
Shanghai	40,233
Singapore	33,667
Shenzhen	25,209
Ningbo-Zhoushan	24,607
Hong Kong	20,770
Busan	20,493
Guangzhou	20,356
Qingdao	18,310
Dubai	15,368
Tianjin	15,069

Figure 13. Shanghai has Served More Than 40.2 million TEU and Singapore has Served More Than 33.6 million TEU

Source: Wong (2018)

Figure 13 showed that current ports in Sabah are far below the world's top ten container ports by volume. Causes of these challenges include the federal government of Malaysia holding the required funds for the project on strategy to build transshipment port in Sabah that cost RM 1.8 billion, as only RM 1.02 billion were allocated, hence causing issues of financing to develop Sabah port industry (Patrick, 2018). The high logistics and operation cost, as well as lack of efficient connectivity to global markets, are the critical causes to inefficient logistic infrastructure and support, which are affecting formulation of strategy to build transshipment port in Sabah (Ferreira, Marques, & Pedro, 2018). International competitiveness intensification for port market across international markets and lack of cargo liability regulation acts, FDIs and economic development plans are also the causes of ineffective and integrated government policy on the strategy to build transshipment port in Sabah (World Shipping Council, 2019). Moreover, delaying of funding from the federal government has led to the challenge of mobilizing the strategy to build a transshipment port in Sabah on the stipulated cost (Cedillo, Lizarraga, & Martner, 2017).

The first main reason that is affecting the formulation of a strategy to build a transshipment port in Sabah is availability. Availability affects formulation because adapting to the changing market will eliminate the possibilities of facing opportunity costs as a result of increased market uncertainty. This will enhance proximity

to the export area and in the market niche, as the capacity to have the available flexible rate at the onset of market uncertainty leads to increased financial performance (Cho, 2014; Kim, Kang, & Dinwoodie, 2016). If Sabah port can find its available capability strategies to increase traffic volume and decrease logistics costs through utilizing its facilities or infrastructures which in turn will enhance offshore shipping with Mainland China, therefore decreased logistics and operational costs mean that there will be an increased flow of shipping activities between the Sabah port and Mainland China (Sabah Development Corridor, 2016; SEDIA, 2016). The process of producing internally or acquiring over the market by a particular company depends on the availability of the lowest transaction costs. If the cost of producing internally is too high, then the firm will want to acquire over the market. By contrast, if the transactional costs of acquiring over the market are too high, the company will turn to internal production (Wiesner, 2017).

The second main reason affecting the formulation of a strategy to build a transshipment port in Sabah is operational efficiency because localization of firms that compete and collaborate to achieving efficiency through supply chain corporation will enhance offshore shipping function with Mainland China (Chhetri, Butcher, & Corbitt, 2014). An indicator of the benefits of forming industrial districts by firms in the same geographical location includes a reduction in operational and logistics costs, as well as serving a large customer base (Ng, 2013; Tadic, Zecevic, & Krstic, 2014). The presence of research centers and educational institutions within or near the port location will lead to enhancing employee training and knowledge ideal for efficient cargo handling; thus, increasing cargo handling speed (Liu et al., 2018). Having experienced and knowledgeable employees will increase the overall productivity of the port through increased terminal productivity and effective cargo handling procedures (Borsch-Supan & Weiss, 2016). Also, sharing technologies, labour resources, and consumer networks, will lead to increased hinterland development, which in turn strengthens the port's reputation towards its marketing and promotion activities (Su, Hsieh, & Tai, 2016). The factor inputs are based on quantity and cost of resources such as natural resources, human resources, capital resources, capital infrastructure (Seguir, 2011).

As containerization and privatization lead to increased cargo movements and competitions, there will be a significant impact on terminal productivity. Through the encouragement of private-sector equity participation in port, the terminal productivity will increase as more goods are exported or imported by private investors (Cho, Lee, & Moon, 2018). Analyzing the port competition and the strategies behind port managerial decisions are crucial for managers to attain the success of the firm while carrying out the operational activities in the port. It is the responsibility of the managers to come up with simplified procedures and decisions on investments, pricing policy, and social welfare that will ensure efficient operations and management reorganization around the port (Bridge & Dodds, 2018). Specialization as a solution to overcapacity enhances increased cargo handling speed by providing incentives for local cargo carriers to use the port. Therefore, there will be more available spaces in ground slots or stack slots; which will attract larger ships to call. Consequently, since there is no congestion in the port, cargo handling will be efficient (Hidalgo, Nunez, & Coto, 2017; Kim, Kang, & Dinwoodie, 2016).

As decreasing logistics cost in container ports and increasing traffic volumes through enhancing free trade zones marketing lead to high terminal productivity. Since firms incur fewer logistics costs in the established free trade zones, there is an incentive to increase their port operations (AJOT, 2018; Accounting College, 2016).The transaction costs, whether from internal resources or external resources, has a huge impact on the success of operations. If the transaction costs are high, this could be an indication of poor operational efficiency. However, if the transaction costs are low, this is an indication of good operational efficiency; thus, more terminal productivity (Cho, 2014; Zant, 2018). Adapting to the changing market conditions would lower the risk of opportunity costs. This will lead to an increased hinterland development as more capital is available for development activities, management reorganization as well strategies to improve port information systems; therefore, ensuring better operational efficiency (Jeevan, Chen, & Lee, 2015).

The third main reason affecting such a formulation of a strategy is because there are multiple cost-generating demands associated with the high reliance of maritime environment for its resources and trade. Yet, the current SBCP port is in close proximity with those of other nations. This includes 218 ports in Indonesia, 127 ports in the Philippines, 63 ports in Vietnam, 37 Thailand, 13 ports in Singapore, 5 ports in Brunei (Jeevan, Chen, & Lee, 2015; Ports.com., 2019). The port in Sabah faces the need to stay competitive while it sets aside funds for upgrading and repair its facilities. At the same time, maintaining favourable charges to stay competitive within the cluster of international ports around it by reducing transshipment costs, port service costs, and port charges. This will increase the strength of economic activities and geographical separation from other international ports (Bandara & Nguyen, 2016). Port cost affects strategies in administrative procedures, personnel training, multiple stakeholder's engagements, flexibility, and provision of incentives. Investing in modern information technology while promoting integration focuses on the need for building this transshipment port (Antara News, 2018).

As the port authorities face the imperative to increase its port charges with the goal to increase the returns on investment. This strategy would, however, be counter-productive as other nations that stand to lose from the increase in charges will change their trading routes in response (Hidalgo, Nunez, & Coto, 2017). Malaysia will have to spend more on training its human resources so as to increase its capacity to handle technical aspects of operations. However, a cost-benefit analysis refutes this claim as other nations are also improving their already experienced workers (Kim, Kang, & Dinwoodie, 2016). Strategic planning has to be moderated to factor in the counter-measures that other competitors will design for the purposes of eliminating unprofitable expenditures (Heilig & Voß, 2017).

Transshipment involves frequent transactional costs. Loading and unloading of cargo require an investment in automated port facilities. Port costs have a significant effect on the level of inter-regional trade and competitiveness because port users will opt to use gateways that are cost friendly and provide minimal transit time loss while transitioning between sea and land transport channels (Cho, 2014). Port costs are the major influencers of strategy. These costs raise decision-making problems with regards to the quality of administration, level of investment in cargo handling facilities, and offering incentives to promote the use of the port (Liu et al., 2018).

The fourth main reason affecting formulation of a strategy is service quality because of its spatial proximity to many other national ports. This means that there are many activities done on a daily basis, hence port users would be engaging with the stakeholders that are adding value to their supply chain only (Heilig & Voß, 2017). Given the wide scope of activities emanating from the geographical proximity and the heavy reliance of the marine environment to drive the economy, quality of services and safety issues will arise. The port's management has to focus on reliable services and safety, such as prompt loading and offloading of goods (Kim, Kang, & Dinwoodie, 2016). To address service quality and safety issues, strategic planning ought to consider the use of information technology software to monitor the progress and completion of activities within the supply chain to guarantee reliable service delivery (Rancourt, Bellavance, & Goentzel, 2014).

Service quality can also affect the formulation of a strategy to build a transshipment port because a fixed number of port users use various ports throughout the ASEAN economies. Many countries have invested in quality services to attract port users. There will be a decrease in the returns of port users for countries that have poor services (Homosombat, Ng, & Fu, 2016). At the moment, the port in Sabah is relatively small but handles many operations ranging from offloading, loading, and dispatching of goods; however, to stay competitive, there is a need to train employees on how to transition merchandise in the shortest amount of time to counter the rapidly increasing skill set of other neighboring ports and economies (Yang & Chen, 2016; Su, Hsieh, & Tai, 2016). It is crucial to continually investigate and compare competitive ports. Comparing port management decisions on managing employees' performance will affect reliability of service performance provided to port users. This way, strategies can be laid out for improved offerings over competitors (Hidalgo, Nunez, & Coto, (2017).

Technologies deployed in ports and the shipping industry changes rapidly. Facilities required to provide quality services also change rapidly. Higher transactional cost can also be incurred through the failure to upgrade internally or externally as per the changing needs of customers and market conditions (Cho, 2014). Past researchers have studied and determined the metrics for port quality services have a very wide range. Their correlation with customer satisfaction varies and is not always defined in the same way. Other volatile market forces, such as a change in the political environment of one country, affects another country's incurred cost as well as quality of the services provided to meet the needs of port users (Lopez et al., 2014). Transactional costs highly affect the provisions of service delivery, profitability, and even survival of the port operators; hence, there is a need to constantly adjust measures and share information. This helps to establish that the equipment and operations that will effectively meet the needs of port users while avoiding cost of idle resources (Tse & Gong, 2009; Scott, 2015; Hu & Sheng, 2014).

2.3 Conceptual Framework

The conceptual framework guides the path of research and places it firmly in theoretical constructs in order to offer the foundation for establishing its credibility. It provides the structure in showing all the major variables, relationships, concepts, constructs and the direction of study as proposed by past research (Hesse-Biber & Leavy, 2011). The conceptual model of this study (Figure 14) originated from the prior literatures by different authors. The author has consolidated all these works into the conceptual model for this study. There are three levels of variables contained in the conceptual framework of the present study, which are the antecedent variables of transshipment port strategy, transaction cost as a mediating variable and advancement of business values as well as economic growth for transshipment port in Sabah as implication variable. The study attempts to shed light on

what state and federal governments of Malaysia should do in order to become more economic sustainable for transshipment port development.

2.3.1 The Justification for Using Teo & Yu's (2005) and Cho's (2014) Framework

The justification for using this model is for several reasons:

First, transshipment port strategy has become more prominent in the boardroom discussion even though it was not just for the immense benefits from the implementation but also meeting the needs to achieve environmental sustainability as well as economic growth. Unfortunately, most research that tried to link transshipment port to economic growth did not distinguish between the different factors for transshipment port clearly. Second, previous studies that use transshipment port to link with economic performance encounter difficulty in finding causal interdependencies. Therefore, this study needs a theoretical framework to examine such relationship in detail using transaction cost as a mediating variable before the link can be evaluated effectively.

And finally, the truth of the importance of advancement of business values as an enduring asset cannot be falsified. It is fundamental for organizations to build up strategy for a transshipment port as a catalyst to achieving critical mass for economic growth in Sabah. This research framework has ultimately able to examine advancement of business values as well as economic growth as the ultimate output of conducting transshipment port initiatives.

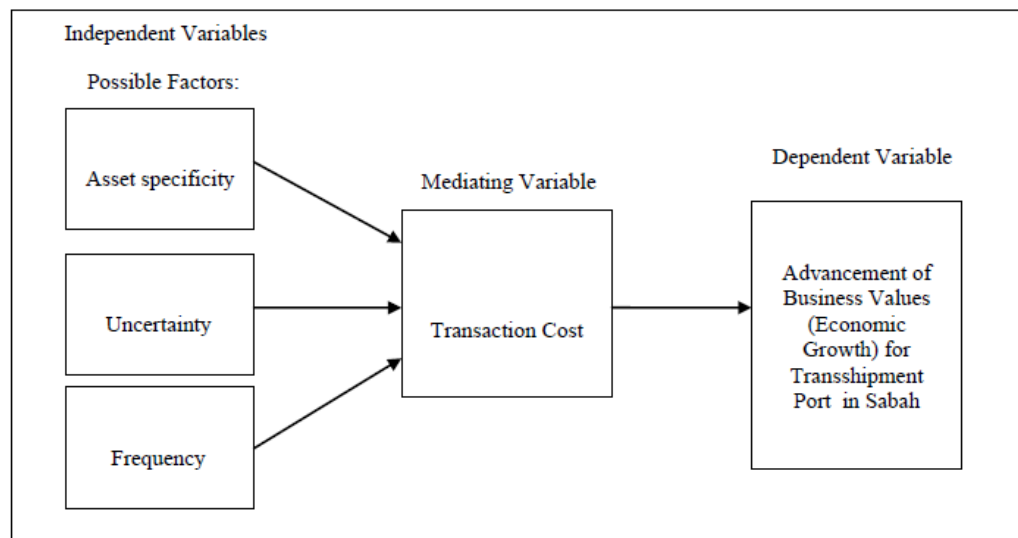**Conceptual Framework Based on Constructs Developed**

Figure 14. The Refined Conceptual Model

Source: Adapted from Teo & Yu (2005) and Cho (2014)

The study would be able to postulate that advancement of business values may form a feedback loop that can be seen as contributing to better economic growth in Sabah. Though a lot of studies have been done to conclude advancement of business values as well as economic growth as implication variable there is still a vast margin of researches to be conducted in different spheres of this construct. Hence, this study intends to verify the relationship and add on to the previous studies that only had confirmed part of the relationship, as stipulated in the research framework above (Teo & Yu; Cho, 2014). This is the 'gap' that this research intends to address in the context of maritime industry in Malaysia specifically in Sabah.

2.4 Contribution of Study

Managers of organizations in Sabah rely on a strategy to build a transshipment port in Sabah because they need to expand their operations while continuing to operate optimally with low costs and improved service quality (Business Standard, 2018). This will, in turn, create a competitive advantage that increases the capacity by local organizations while providing them with the ability to compete at the global level via enhanced operation efficiency; especially when importing and exporting large volumes of goods and services (Beard, 2018; Mooney, 2018). According to Wiegmans et al. (2009), building a transshipment port will enable mass container handling operations that will create a competitive advantage for the port. In turn support demand-oriented mass production of goods and services among the organizations in this area.

The government of Malaysia relies on the strategy to build a transshipment port in Sabah because they need to enhance the economic growth in this area as well as to create more yield for the government to enable support for its development agenda. According to Lu, Lin, & Lee (2010), the transshipment port will afford incentives for local cargo to use the port, encourage long-term berth leasing agreement, set up hub-and-spoke contracts with MLO carriers, provide flexible rate to respond to market change, improve port information systems, simplify administrative procedures, as well as enhance the services of direct shipping. This is crucial for the growth of the economy within the state. This also encourages both local and foreign investments to be made in this area; hence improving its economic growth rate by making the port area a multi-functional business center (Kim, Kang, & Dinwoodie, 2016; Egyptian, 2018; Jacobs, Ducruet, & De Langen, 2010). As the economy grows, government revenues will improve from tax revenues, including custom's duty and levy tax.

Sabah and its people rely on the strategy to build a transshipment port in Sabah because they need to accelerate investments while creating employment opportunities that will promote improvement to the standards of living, as well as a social welfare support system in the state. This is because transshipment will increase mixed development, both from residential perspectives as well as commercial perspectives. According to Chhetri et al. (2014), enhancing transshipment creation or expansion leads to an increase in employment within the logistics sector, as well as jobs in other sectors. This includes air and space transport, postal services, and road freight; which is beneficial for the unemployed but skilled workforce that can work in these sectors.

The theoretical research framework was refined from the model developed by Teo & Yu (2005) and Cho (2014). The study found this model to be useful in achieving the research objective and filling in the knowledge gap of the literature. The study has offered some insights for the adaptation of model in the maritime industry, where research on transshipment port topic was found to be lacking. The model was developed to assimilate with the economic environment to form a theoretical foundation with relevant data sources for other researchers to carry out further in-depth studies in the maritime industry in other countries.

This study provides valuable ideas, facts, and figures that can be used by management practitioners and consultants in understanding the resultant effects and the dynamics of such relationships. Meanwhile, the proposed strategic conceptual framework in this study can be utilised as a decision-making instrument in planning and enhancing Sabah economic growth. Overall, this research is significant as it contributes very much to the knowledge and practice for future research. The current study also discussed a detailed discussion on the theoretical foundations as well as the possible factors that shape strategy to build transhipment port in Sabah which become a noteworthy basis for the establishment of future research.

2.5 Knowledge Gaps and Research Outcomes

In the literature review, a gap of study has been identified and explored, with sufficient evidence signalling the need to study the strategy to build a transshipment port as a catalyst to achieving critical mass for economic growth in Sabah. The study will take this research a step further to evaluate the theory captured in the literature review together with research practice to lend support and complete substantiation. Study in this area is highly relevant as the knowledge in this study is useful for the transshipment port in Sabah to acknowledge in their operations and its implications towards economic growth in Sabah.

Due to lack of knowledge and awareness of the transhipment port development, reporting on strategy to build a transshipment port as a catalyst to achieving critical mass for economic growth in Sabah is still being debated. The study aims to fill this gap. Moreover, there is also limited empirical research on the strategy to build a transshipment port in Maritime industry in Malaysia, which is important for developing economies. As there are no standard definition or universally-used indicators of transhipment port strategy, the extended framework on transaction cost economics theory (Teo & Yu, 2005; Cho, 2014) is adopted in this study to investigate if asset specificity, uncertainty and frequency with transaction cost as mediating factor could impact advancement of business values as well as economic growth for a transshipment port in Sabah. In essence, it is of great importance to undergo such study to bridge the gap that exists in Teo & Yu's and Cho previous researches.

As enunciated earlier, the strategy to build a transshipment port as a catalyst to achieving critical mass for economic growth in Sabah has not been largely studied, although transshipment port is becoming increasingly significant in maritime industry from a practical as well as theoretical point of view. The study also hopes to fulfil other research gaps highlighted by previous researches should be conducted in specific industry settings and in this case: the maritime industry. Instead of just focusing on the input side of its involvement in an economic cause, the researcher hopes to generate useful outcome to evaluate the benefits from the output side of its transshipment port endeavour, that is, the economic impact, or the actual benefits that have accrued (or will accrue) toward the advancement of business values for a transshipment port in Sabah. The study aims to fill this

gap in the knowledge by underpinning the research framework developed by Teo & Yu and Cho's model in Sabah context. The lack of research, particularly its acceptance and ideology within Teo & Yu and Cho's conceptualisation approach rationalises this study.

Potential outcomes of the research can be illustrated in this study. First, the conceptual framework contributes to how asset specificity, uncertainty and frequency with transaction cost as mediating factor influence advancement of business values for a transshipment port in Sabah, by applying maritime industry lens to study the perceived transshipment port role towards economic growth in Sabah. Seeking the relationship between asset specificity, uncertainty and frequency with transaction cost as mediating factor and advancement of business values for a transshipment port in Sabah, provides a well-founded conceptual framework for this study. The outcomes will also assist the state and federal governments of Malaysia to chart strategies to address contributions to societies' economic progress more effectively. Second, because transshipment port development has been receiving inefficient attention, this paper intends to develop theoretical evidence based on literature review which is applicable to the maritime industry. The outcome of the study may be regarded as adequate eye-opening veracity of the Malaysian maritime industry especially transshipment port in Sabah.

3. Conclusion

3.1 Overview of the Study

Difficulties in justifying the availability, operational efficiency, port cost, service quality are due to gaps not covered in past research conducted on the strategy to build a transshipment port in Sabah. This lack of information has created challenges on formulating the strategy needed to build a transshipment port as a catalyst to achieve critical mass for Sabah's economic growth (Kim, Kang, & Dinwoodie, 2016). Besides that, the current strategy to build a transshipment port as a catalyst to achieving critical mass for economic growth in Sabah is still in its infancy and not strategic as there is no specific approach to carry out transshipment port initiatives that the maritime industry could rely on. The established models have indicated that all the key variables identified were considered to have significant effect of the advancement of business values as well as economic growth for transshipment port in Sabah. Moreover, so far there are no research articles that explore the potentials of the Sabah port industry on the state's total GDP in Malaysia (Patrick, 2018). As we know that Sabah port industry is poised to record greater volume of cargos on the back of the positive projection of the nation's economic and trade growth. It is necessary to conduct this research due to the lack of a comprehensive discussion on this issue. Designating a transhipment port should fall to a port that enjoys clear competitive advantage. It is most important that Sabah take measures by initiating collaborative and complementary actions to handle more transshipment port in the region.

3.2 Implications and Recommendations

In terms of theoretical implications, this study is focused on the conceptualisation of the proposed framework which was guided by a wide review of literature and relevant theoretical construct. A comprehensive framework that investigates the relationship between asset specificity, uncertainty and frequency with transaction cost as mediating factor could impact advancement of business values, as well as economic growth for a transshipment port in Sabah, is still at its infancy. The conceptual framework used in this study, therefore, offers a platform for future work. In addition, the set of the key variables proposed for this study were generalised. These characteristics have contributed to the novelty of this study. This study further discovers the prior studies on various theories and offers an important contribution in comprehending this issue. It is hoped that the outcomes can be a valuable guide for future improvement of the research model. For practical implications, this study is capable of providing the maritime industry in Malaysia with information on the implementation of transshipment port. It is important to emphasize on similar research in the future may gain insight from this study and use it as a platform by possibly adding other variables into the study. Besides that, a more focus and collaborative approach in planning for transshipment port within the maritime industry that is characterised by flexibility and an ongoing ability to exploit foreseen and unforeseen opportunities with the information provided by this study.

Cluster theory supported the influences of availability, operational efficiency, and port cost, as well as the service quality of the formulation. By reflecting the interdependencies among industries, increasing alliances and networking have aided the increase in port capacity and reduction in total transport needs and cost per container (Alexandra, 2011). Regionally agglomeration of inter-firm networks creates a distinct competitive advantage for the clustered firms and regions where they are located. This is achieved through the encouragement of private sector equity participation in port; which, in turn, enhances operational efficiency and service availability. Game theory supported the influences of availability, operational efficiency, port cost, and service quality by exploring influences of port management decisions such as investments, price policies and ownership on profits, social

welfare and on competitive ports. Also, containerization and privatization lead to increased cargo movements and competition, thus enhancing low congestion in a port, and produces an increase in terminal productivity and cargo handling speed. TCE theory also supported the influences of availability, operational efficiency, port cost, and service quality by emphasizing that the Sabah port operator can correctly adapt to market uncertainty to eliminate the risk of incurring opportunity costs. Decreasing port costs, such as cargo handling charges and port service costs, and thus, encouraging more direct shipping with Mainland China. In turn, enhances availability, operational efficiency, port cost, and service quality of the port in Sabah. Moreover, decreasing the logistics cost in container ports enhances operational efficiency and increases in traffic volumes; therefore, developing service routes with Hong Kong and Mainland China to resolve overcapacity issue.

Improving port availability as a strategy by ensuring there is an increase in local volume cargo to attract external firms. This will lead to more economic development in Mainland China; also providing incentives for local cargo to use Taichung Port. Increasing the port's physical capacity to accommodate more volumes while increasing the amount of cargo handled annually will attract larger cargo ships. An increase in local volume cargo and port physical capacity will enhance proximity to the market and to the export/import area. Overall, this will bring a noticeable increase in the availability of local and international cargo. The managers in Sabah organizations will improve operational efficiency by simplifying procedures for port customs to enhance the services of direct shipping with Mainland China and free trade zones. Enhancing terminal productivity through increased cargo handling speed allows more operational efficiency as more cargo can be handled with refined procedures. This, in turn, enhances the flow of cargo in and out of the port and benefits the supply chain cooperation with Mainland China and Hong Kong through the development of service routes. The after effect will be an increase in operational efficiency and will contribute to an increased hinterland development.

The managers in Sabah organizations will be able to improve service quality by ensuring reliability of service performance strategies that will lead to increased quality of services delivered. The enhancement of security around the port through the engagement of security services and use of remote tracking devices to check the cargo movement will cut congestion in the port through containerization and privatization. With proper security, the enhancement of cargo movements and competition can be achieved while developing service routes with Hong Kong and Mainland China. Not only will this enhance cargo flow but will also deal with overcapacity. The state and federal governments of Malaysia can improve availability by increasing economic size of the transshipment port, which refers to making the port capacious and increasing its ability to handle the busy inflows of vessels and other operations at lower costs. Improving proximity refers to strategic placement of the transshipment facility in an easily accessible location for port users. This involves the reduced distance between the import and export facilities in the shipping area. Improving market niche refers to the identification of a certain market area that the state government of Sabah intends to serve.

The state and federal governments of Malaysia can improve operational efficiency by improving terminal productivity; this refers to the level of goods and services that a terminal can handle for a given amount of time. It is important for the Malaysian government to promote collaboration among stakeholders and the availability of the right machinery and equipment to boost terminal productivity. Improving cargo handling speed refers to the handling rate of ship-to-shore cranes, gantry cranes, ridge stackers, prime movers, forklifts and other machinery at the yard. Having modern equipment like the Internet of Things (IoT) technology and well-trained personnel will also enhance cargo handling speed. The state and federal governments of Malaysia can also improve port cost by reducing port charges or by providing better harbour facilities at lower rates. Reducing cargo handling charges for the handling of the cargo that port users deliver, use of modern cargo-handling techniques at the port may cut cargo handling charges. Another avenue could be through the reduction of port service costs that are incurred in the servicing port, or by having quality equipment and qualified operators at a reduced port service fee.

Another recommendation for the state and federal governments of Malaysia on how they can improve service quality would be to improve upon the reliability of services and performance provided at the port. Referring to the provisioning of services that meet or exceed customer expectations. Such quality of services will enable the state and federal governments of Malaysia to enhance the services delivered in the transshipment force. Improving safety and security itself from internal and external threats, more shipping companies will be willing to use the facility when they are assured of their safety. Improving on the application of information technology (IT) and exploring innovations like the Internet of Things (IoT) and Data Architecture and Analytics will aid in the automation of services and communication at the transshipment port; boosting its operations.

Further study needs to consider a moderating variable appropriate for the maritime industry perhaps worth exploring as a supplementary study to this framework. The proposed hypothetical model can be extended to take

the above rationale into consideration and to conclude with an exploration of what implications exist. This will enable clearer and more robust conclusions to be drawn to in order to further comprehend the vital attributes of transshipment port aspects, to increase the precision of outcome and finally to enable firmer conclusions to be drawn.

Apparently, the outcomes will not remain valid if the key variables or possible factors for transshipment port change rapidly in the near future; rapid changes and development are now occurring in the maritime industry environment. These changes and development will definitely affect the aspects of transshipment port involved and the business values as well as economic growth in Sabah. Some significant factors might be disappearing due to the new innovation, while the other factors related to the environmental factor might also become more critical. As a consequence, future values of the proposed framework may decline and its applicability for the future will be limited.

Acknowledgements

"Today having power means knowing what to ignore." ~ Harari, 2015

References

Accounting College. (2016). ACCA P1 Transaction Cost Theory. [Online]. Available at: https://www.youtube.com/watch?v=Er3CsGqq-KY(Accessed on 13th February 2019).

AJOT. (2018). Port Freeport Announces New Global Carrier Service. [Online]. Available at: https://www.ajot.com/news/port-freeport-announces-new-global-carrier-service (Accessed on 2nd February 2019).

Alan, M. F. (2019). A Cluster of Possibilities Throughout Cluster of Possibilities Ontario. [Online]. Available at: https://canadiansailings.ca/a-cluster-of-possibilities-throughout-ontario/(Accessed on 2nd February 2019).

Alexandra, K. (2011). The role of port clusters in theory and practice. *Regional and Business Studies, 3*(2), 51-60.

Antara News. (2018). Digital Transformation to Usher in New Era of Port Development. [Online]. Available at: https://www.hellenicshippingnews.com/digital-transformation-to-usher-in-new-era-of-port-development/(Accessed on 2nd February 2019).

Ascutia, R. (2016). Plans to Upgrade Sabah Port to Transshipment Hub. Port Calls. [Online]. Available at: https://www.portcalls.com/plans-upgrade-sabah-port-transshipment-hub/#(Accessed on 2nd February 2019).

Aumann, R. J. (2017). Game Theory. The New Palgrave Dictionary of Economics, 1-40. https://doi.org/10.1057/978-1-349-95121-5_942-2

Bandara, Y.M. & Nguyen, H.O. (2016). Influential factors in port infrastructure tariff formulation, implementation and revision. Transportation Research Part A: Policy and Practice, 85, 220-232. https://doi.org/10.1016/j.tra.2016.01.011

Beard, J. (2018). How Hong Kong's Port Can Stay Competitive, and Ahead of Rivals in the Greater Bay Area. [Online]. Available at: https://www.scmp.com/comment/insight-opinion/hong-kong/article/2162201/how-hong-kongs-port-can-stay-competitive-and-ahead(Accessed on 2nd February 2019).

Bhawsar, P. & Chattopadhyay, U. (2018). Evaluation of industry cluster competitiveness: A quantitative approach. *Benchmarking: An International Journal, 25*(7), 2318-2343. https://doi.org/10.1108/BIJ-02-2017-0022

Bonney, J. (2016). Panama Canal Expansion will Affect Shipping-But How?. [Online]. Available at: https://www.joc.com/port-news/panama-canal-news/panama-canal-expansion-will-affect-shipping-how_20160625.html(Accessed on 19th February 2019).

Borsch-Supan, A., & Weiss, M. (2016). Productivity and age: Evidence from work teams at the assembly line. *The Journal of the Economics of Ageing, 7,* 30-42. https://doi.org/10.1016/j.jeoa.2015.12.001

Bridge, J., & Dodds, J. C. (2018). Managerial Decision Making. Routledge. https://doi.org/10.4324/9781351200479

Bulander, R. (2010, July). A conceptual framework of serious games for higher education: Conceptual framework of the game INNOV8 to train students in business process modelling. In e-Business (ICE-B), Paper presented at the *Proceedings of the 2010 International Conference on (pp. 1-6).* IEEE.

Business Standard. (2018). Gadkari Flags Off First Container Mainline Vessel at Tuticorin. [Online]. Available at: https://www.business-standard.com/article/pti-stories/gadkari-flags-off-first-container-mainline-vessel-at-tut icorin-118121201201_1.html(Accessed on 2nd February 2019).

Byung, I. P., & Hokey, M. (2011). The selection of transshipment ports using a hybrid data envelopment analysis/analytic hierarchy process. *Journal of Transportation Management, 22*(1), 47-64. https://doi.org/10.22237/jotm/1301616240

Caputo, M. R., & Ling, C. (2017). How to do Comparative Dynamics on the Back of an Envelope for Open-Loop Nash Equilibria in Differential Game Theory. *Optimal Control Applications and Methods, 38*(3), 443-458. https://doi.org/10.1002/oca.2264

Cedillo, C. M. G., Lizarraga, L. G., & Martner, P. C. D. (2017). MiF3 method: Modeling intermodal fluidity freight flows. *Research in Transportation Economics, 61,* 15-24. https://doi.org/10.1016/j.retrec.2017.01.001

Charoen, D. (2016). Creation of greater Mekong subregion regional competitiveness through cluster mapping. World Academy of Science, Engineering and Technology, *International Journal of Economics and Management Engineering. 10*(8), 2970-2973.

Cheon, S., Dowall, D. E., & Song, D. W. (2010). Evaluating impacts of institutional reforms on port efficiency changes: Ownership, corporate structure, and total factor productivity changes of world container ports. *Transportation Research Part E, 46,* 546-561. https://doi.org/10.1016/j.tre.2009.04.001

Chhetri, P., Butcher, T., & Corbitt, B. (2014). Characterising spatial logistics employment clusters. *International Journal of Physical Distribution & Logistics Management, 44*(3), 221-241. https://doi.org/10.1108/IJPDLM-03-2012-0086

Cho, H. S. (2014). Determinants and effects of logistics costs in container ports: The transaction cost economics perspective. *The Asian Journal of Shipping and Logistics, 30*(2), 193-215. https://doi.org/10.1016/j.ajsl.2014.09.004

Cho, H. S., Lee, J. S., & Moon, H. C. (2018). Maritime risk in seaport operation: A cross-country empirical analysis with theoretical foundations. *The Asian Journal of Shipping and Logistics, 34*(3), 240-248. https://doi.org/10.1016/j.ajsl.2018.09.010

Chou, C. C. (2014). A model for analysing the transshipment competition relationship between the port of Hong Kong and the port of Kaohsiung. *Journal of Ocean University of China, 8*(4), 377-384. https://doi.org/10.1007/s11802-009-0377-1

Clark, G. L., Gertler, M. S., & Whiteman, J. E. (2017). Regional Dynamics: Studies in Adjustment Theory. Routledge. https://doi.org/10.4324/9781315103297

Daily Express. (2018). Focus on Sepanggar Port, not Kudat: FSI. [Online]. Available at: http://dailyexpress.com.my/news.cfm?NewsID=125068(Accessed on 2nd February 2019).

Daily, F. T. (2018a). Development of Indian Ports and its Impact on Sri Lankan Port Performance. [Online]. Available   at: www.ft.lk/shippingaviation/Development-of-Indian-Ports-and-its-impact-on-Sri-Lankan-Port-performance/ 21-657361(Accessed on 2nd February 2019).

Daily, F. T. (2018b). Rohan Masakorala Speaks on Maritime, Shipping and Logistics as IMO Turns 70. [Online]. Available   at: www.ft.lk/columns/Rohan-Masakorala-speaks-on-maritime--shipping-and-logistics-as-IMO-turns-70/4-663 585(Accessed on 2nd February 2019).

Darayi, M., Barker, K., & Santos, J. (2017). Component Importance Measures for Multi-Industry Vulnerability of a Freight Transportation Network. *Networks & Spatial Economics, 17*(4), 1111-1136. https://doi.org/10.1007/s11067-017-9359-9

Duchatel, M., & Duplaix, A. S. (2018). Blue China: Navigating the Maritime Silk Road to Europe. [Online].

Available at:
https://www.ecfr.eu/publications/summary/blue_china_navigating_the_maritime_silk_road_to_europe(Acce ssed on 2nd February 2019).

Egyptian. (2018). Egyptian Container Ports Eye Expansion. [Online]. Available at: https://www.joc.com/port-news/egyptian-ports-eye-expansion-amid-double-digit-volume-gains_20181116.h tml(Accessed on 2nd February 2019).

Felder, S. (2018). The Indian Achilles Heel: Indirect and Hidden Costs of Trade. [Online]. Available at: www.forbesindia.com/blog/economy-policy/the-indian-achilles-heel-indirect-and-hidden-costs-of-trade/(Ac cessed on 2nd February 2019).

Ferreira, D. C., Marques, R. C., & Pedro, M. I. (2018). Explanatory variables driving the technical efficiency of European seaports: An order-α approach dealing with imperfect knowledge. *Transportation Research Part E, 119,* 41-62. https://doi.org/10.1016/j.tre.2018.09.007

Geiger, P. M., Knebel, J., & Frey, E. (2018). Topologically robust zero-sum games and Pfaffian orientation-How network topology determines the long-time dynamics of the antisymmetric Lotka-Volterra equation. arXiv preprint arXiv:1806.07339. https://doi.org/10.1103/PhysRevE.98.062316

Goldstein, D. A. (2014). Industrial Cluster in the Global Economy. Slidesharenet. [Online]. Available at: https://www.slideshare.net/iraktobing/dr-andrea-goldstein-industrial-cluster-in-the-global-economy(Accesse d on 2nd February 2019).

Gudrun, J., & Jenny, U. (2017). Renewable Energy Clusters Recurring Barriers to Cluster. UK: Springer.

Gurpreet, S. K., & Richa, K. (2018). Making Waves. [Online]. Available at: www.maritimeindia.org/View%20Profile/636583248203352600.pdf(Accessed on 19th February 2019).

Hanley, N. (2016). Environmental Economics: In Theory and Practice. Macmillan International Higher Education.

Hansen, H. A. & Maria, W. I. (2016). Transaction Costs and the Sharing Economy. *Info, 18*(1), 1-15. https://doi.org/10.1108/info-09-2015-0044

Heilig, L., & Voß, S. (2017). Inter-terminal transportation: An annotated bibliography and research agenda. *Flexible Services & Manufacturing Journal, 29*(1), 35-63. https://doi.org/10.1007/s10696-016-9237-7

Hesse-Biber, S.N. & Leavy, P.L. (2011). The Practice of Qualitative Research. 2nd ed. SAGE: Thousand Oaks.

Hidalgo, G. S., Nunez, S. R., & Coto, M. P. (2017). Game theory and port economics: A survey of recent research. Cost economics perspective. *The Asian Journal of Shipping and Logistics, 30,* 193-215. https://doi.org/10.1111/joes.12171

Homosombat, W., Ng, A. K. Y., & Fu, X. (2016). Regional transformation and port cluster competition: The case of the pearl river delta in South China. *Growth & Change, 47*(3), 349-362. https://doi.org/10.1111/grow.12128

Hu, Z. H., & Sheng, Z. H. (2014). A decision support system for public logistics information service management and optimization. *Decision Support Systems, 59,* 219-229. https://doi.org/10.1016/j.dss.2013.12.001

Hummert, S., Bohl, K., Basanta, D., Deutsch, A., Werner, S., Theißen, G., & Schuster, S. (2014). Evolutionary game theory: Cells as players. *Molecular BioSystems, 10*(12), 3044-3065. https://doi.org/10.1039/C3MB70602H

Huo, W., Zhang, W., & Chen, P. S. L. (2018). Recent development of Chinese port cooperation strategies. *Research in Transportation Business & Management, 26,* 67-75. https://doi.org/10.1016/j.rtbm.2018.01.002

Hwang, J. S. (2018). Characteristics and Development of Industrial Districts: The Case of Software Clusters in Seoul, South Korea. In Knowledge, Industry and Environment: Institutions and Innovation in Territorial Perspective (pp. 125-142). Routledge.

Iammarino, S., & McCann, P. (2014). The structure and evolution of industrial clusters: Transactions, technology and knowledge spillovers. Research Policy, 35(7), September, 1018-36. *International Library of Critical Writings in Economics, 287,* 388. https://doi.org/10.1016/j.respol.2006.05.004

Idris, R., & Idris, R. Z. (2017). The silver lining in cabotage policy: Issues and policy recommendations. Paper presented at the *3rd Academic International Conference on Law, Economics and Finance (pp. 27).*

Jacobs, W., Ducruet, C., & De Langen, P. (2010). Integrating world cities into production networks: The case of port cities. *Global Networks, 10*(1), 92-113. https://doi.org/10.1111/j.1471-0374.2010.00276.x

Jayaram, J., & Xu, K. (2016). Determinants of quality and efficiency performance in service operations. *International Journal of Operations & Production Management, 36*(3), 265-285. https://doi.org/10.1108/IJOPM-03-2014-0122

Jeevan, J., Chen, S., & Lee, E. (2015). The challenges of Malaysian dry ports development. *The Asian Journal of Shipping and Logistics, 31,* 109-134. https://doi.org/10.1016/j.ajsl.2015.03.005

Jeevan, J., Salleh, N. H. M., & Othman, M. R. (2018). Thai canal and Malacca straits: Complementing or competing stratagem for trade development in South East Asia. *Journal of Sustainable Development of Transport and Logistics, 3*(2), 34-48. https://doi.org/10.14254/jsdtl.2018.3-2.2

Jiang, X., Chew, E.P., Lee, L.H., & Tan, K..C. (2014). Short-term space allocation for storage yard management in a transshipment hub port. *Quantitative Approaches in Management, 36*(4), 879-901. https://doi.org/10.1007/s00291-014-0366-7

Kaplan Financial Limited. (2012). Governance and Transaction Cost Theory. [Online]. Available at: <kfknowledgebank.kaplan.co.uk/KFKB/Wiki%20Pages/Governance%20and%20transaction%20cost%20th eory.aspx>(Accessed on 2nd March 2019).

Khalid, N. (2005a). Maritime Economic Activities in Malaysia: Planning towards Sustainable Development. [Online]. Kuala Lumpur: Maritime Institute of Malaysia (MIMA). Available at: http://www.mima.gov.my/mima/wpcontent/uploads/nazery-maritime-economic-activities-in-Malaysia.pdf (Accessed on 3rd June 2019].

Kim, S., Kang, D., & Dinwoodie, J. (2016). Competitiveness in a multipolar port system: Striving for regional gateway status in Northeast Asia. *The Asian Journal of Shipping and Logistics, 32,* 119-125. https://doi.org/10.1016/j.ajsl.2016.05.005

Konzelmann, S., & Wilkinson, F. (2016). Co-operation in Production, the Organisation of Industry and Productive Systems: A Critical Survey of the "District" Form of Industrial Organisation and Development. Centre for Business Research, University of Cambridge.

Kuzmicz, K. A., & Pesch, E. (2018). Approaches to Empty Container Repositioning Problems in the Context of Eurasian Intermodal Transportation. Omega. https://doi.org/10.1016/j.omega.2018.06.004

Lexicon. (2019). Definition of Cluster Theory. [Online]. Available at: http://lexicon.ft.com/Term?term=cluster-theory(Accessed on 2nd February 2019).

Liu, Z. L., Mi, C., Postolache, O., Mi, W. J., Yang, Y. S., Wang, J. F., Zhang, M. W., Feng, L. J., & Zhao, L. F. (2018). Advances in sustainable port and ocean engineering. *Journal of Coastal Research, 83.* https://doi.org/10.2112/1551-5036-83.sp1.ii

Lopez, N. M. A., Angel, M. M., Rodriguez, R. M., & Sanchez, J. (2014). Accompanied versus unaccompanied transport in short sea shipping between Spain and Italy: An analysis from transport road firms perspective. *Transport Reviews, 31*(4), 425-444. https://doi.org/10.1080/01441647.2010.528588

Lu, C. S., Lin, C. C., & Lee, M. H. (2010). An evaluation of container development strategies in the port of Taichung. *The Asian Journal of Shipping and Logistics, 26,* 93-118. https://doi.org/10.1016/S2092-5212(10)80013-6

Lubell, M., Mewhirter, J. M., Berardo, R., & Scholz, J. T. (2017). Transaction costs and the perceived effectiveness of complex institutional systems. *Public Administration Review, 77*(5), 668-680. https://doi.org/10.1111/puar.12622

Lund, T. P., Lindgreen, A., & Vanhamme, J. (2016). Industrial clusters and corporate social responsibility in developing countries: What we know, what we do not know, and what we need to know. *Journal of Business Ethics, 133*(1), 9-24. https://doi.org/10.1007/s10551-014-2372-8

Mak, J. N. (2017). Securitizing Piracy in Southeast Asia: Malaysia, the International Maritime Bureau and Singapore. In Non-Traditional Security in Asia (pp. 78-104). Routledge: London.

Martin, E., Salvador, J., & Saurí, S. (2014). Storage pricing strategies for import container terminals under stochastic conditions. *Transportation Research Part E, 68,* 118-137. https://doi.org/10.1016/j.tre.2014.05.009

Merkel, A. (2017). Spatial competition and complementarity in European port regions. *Journal of Transport Geography, 61*, 40-47. https://doi.org/10.1016/j.jtrangeo.2017.04.008

Mooney, T. (2018). Ocean carriers benefiting from bigger ships, as terminals strain. [Online]. Available at: https://www.joc.com/port-news/ocean-carriers-benefiting-bigger-ships-terminals-strain_20180830.html(Accessed on 2nd February 2019).

Morley, H. R. (2018). After Strongest US Growth, Philadelphia Port to Double Capacity. [Online]. Available at: https://www.joc.com/port-news/us-ports/port-philadelphia/after-strongest-us-growth-philadelphia-port-double-capacity_20180405.html(Accessed on 2nd February 2019).

Munck, G. L. (2018). Rational Choice Theory in Comparative Politics. In New Directions in Comparative Politics (pp. 165-188). Routledge. https://doi.org/10.4324/9780429494932-9

Neale, L. (2017). Leveraging Social Capital for Knowledge Development in Clusters. Augsburg,

Ng, A. K. Y. (2013). The evolution and research trends of port geographypass:[*]. Professional Geographer, 65(1), 65-86. https://doi.org/10.1080/00330124.2012.679441

Nicita, A., & Vatiero, M. (2014). Dixit versus Williamson: The fundamental transformation reconsidered. European Journal of Law and Economics, 37(3), 439-453. https://doi.org/10.1007/s10657-012-9299-2

Patrick, T. (2018). Will Sepanggar Transshipment Hub Get Funds, Wonders DCM. Free Malaysia Today. [Online]. Available at: https://www.freemalaysiatoday.com/category/nation/2018/09/04/will-sepanggar-transhipment-hub-get-funds-wonders-dcm/(Accessed on 2nd February 2019).

Podimata, M. V., & Yannopoulos, P. C. (2015). Evolution of game theory application in irigation systems. *Agriculture and Agricultural Science Procedia, 4,* 271-281. https://doi.org/10.1016/j.aaspro.2015.03.031

Popov, E. (2014). Transaction estimation of institutions. *Advances in Economics and Business, 2*(1), 58-64.

Ports.com. (2019). Ports in Asia (1719). [Online]. Available at: <ports.com/browse/Asia/>(Accessed on 1st February 2019).

Press Reader. (2017). Malaysia Moves to Boost Port Capacity. [Online]. Available at: https://www.pressreader.com(Accessed on 2nd March 2019).

Rancourt, M. E., Bellavance, F., & Goentzel, J. (2014). Market analysis and transportation procurement for food aid in Ethiopia. *Socio-Economic Planning Sciences, 48,* 198-219. https://doi.org/10.1016/j.seps.2014.07.001

Sabah Development Corridor. (2016). Sabah Development Corridor Expansion of Sapangar Bay Container Port. SEDIA: Malaysia.

Sabah Development Corridor. (2018). National Conference on Economic Corridors: Challenges and Prospects. [Online]. Available at: http://www.SEDIA.com.my/sdc10/program.pdf(Accessed on 3rd February 2019).

Sahu, P. K., Sharma, S., & Patil, G. R. (2014). Classification of Indian seaports using hierarchical grouping method. *Journal of Maritime Research, XI*(III), 51-57.

Scott, A. (2015). The value of information sharing for truckload shippers. *Transportation Research, Part E 81* (2015), 203-214. https://doi.org/10.1016/j.tre.2015.07.002

SEDIA. (2016). Development to Expand Sapangar Bay Container Port (1.25 Million TEU/ Year). Laboratory Purification Value Financing Session. SEDIA: Malaysia.

Seguir. (2011). Cluster Theory Diagram. [Online]. Available at: https://pt.slideshare.net/anicalena/cluster-theory-diagram(Accessed on 2nd February 2019).

Sforzi, F. (2015). Rethinking the Industrial District: 35 Years Later.

Song, J. & Wen, J. (2015). A non-cooperative game with incomplete information to improve patient hospital choice. *International Journal of Production Research, 53*(24), 7360-7375. https://doi.org/10.1080/00207543.2015.1077284

South China Morning Post. (2019). In Cutthroat Shipping Industry, Singapore's Moves to Increase its Berth Rate are Paying Off. [Online]. Available at: https://www.hellenicshippingnews.com/in-cutthroat-shipping-industry-singapores-moves-to-increase-its-berth-rate-are-paying-off/(Accessed on 2nd February 2019).

Su, D. T., Hsieh, C. H., & Tai, H. H. (2016). Container hub-port vulnerability: Hong Kong, Kaohsiung and Xiamen. *Journal of Marine Engineering & Technology, 15*(1), 19-30. https://doi.org/10.1080/20464177.2016.1140551

Suffian, F., Rosline, A. K., & Karim, M. R. S. A. (2015). The cabotage policy: Is it still relevant in Malaysia? Paper presented at the *Proceedings of the Colloquium on Administrative Science and Technology (pp. 19-28).* Springer, Singapore. https://doi.org/10.1007/978-981-4585-45-3_3

Sumner, M., & Rudan, I. (2018). A hybrid MCDM approach to transshipment port selection. *Pomorstvo, 32*(2), 258-267. https://doi.org/10.31217/p.32.2.11

Tadic, S., Zecevic, S., & Krstic, M. (2014). A novel hybrid MCDM model based on fuzzy DEMATEL, fuzzy ANP and fuzzy VIKOR for city logistics concept selection. *Expert Systems with Applications, 41,* 8112-8128. https://doi.org/10.1016/j.eswa.2014.07.021

Tan, W. Z. (2018). You'll Never Guess Why Penang is the Only Debt-Free State in Malaysia. [Online]. Available at: https://cilisos.my/youll-never-guess-why-penang-is-the-only-debt-free-state-in-malaysia/(Accessed on 3rd February 2019).

Tejvan. (2019). Economics of Game Theory. [Online]. Available at: https://www.economicshelp.org/university/game-theory/(Accessed on 2nd February 2019).

Teo, T. S., & Yu, Y. (2005). Online buying behavior: A transaction cost economics perspective. *Omega, 33*(5), 451-465. https://doi.org/10.1016/j.omega.2004.06.002

The Economist. (2009). Idea Clustering. [Online]. Available at: https://www.economist.com/news/2009/08/24/clustering(Accessed on 19th February 2019).

The Heritage Foundation. (2019). Malaysia. [Online]. Available at: https://www.heritage.org/index/country/malaysia(Accessed on 3rd February 2019).

The Malaysian Insight (2018). Reprioritizing economic development in Salah. [Online]. Available at: https://www.themalaysianinsight.com/s/106700(Accessed on 2nd February 2019).

Thibaut, J. W. (2017). The Social Psychology of Groups. Routledge. https://doi.org/10.4324/9781315135007

Tsay, A. A. (2014). Designing and controlling the outsourced supply chain. Foundations and Trends in Technology, Information and Operations Management, 7(1–2), 1-160. https://doi.org/10.1561/0200000030

Tse, M. S. C., & Gong, M. Z. (2009). Recognition of idle resources in time-driven activity-based costing and resource consumption accounting models. *Journal of Applied Management Accounting Research, 7*(20), 41-54.

Tu, N., Adiputranto, D., Fu, X., & Li, Z. C. (2018). Shipping network design in a growth market: The case of Indonesia. *Transportation Research Part E, 117,* 108-125. https://doi.org/10.1016/j.tre.2017.10.001

Valentinov, V., & Chatalova, L. (2014). Transaction costs, social costs and open systems: Some common threads. *Systems Research and Behavioral Science, 31*(2), 316-326. https://doi.org/10.1002/sres.2204

Vega, L., Cantillo, V., & Arellana, J. (2019). Assessing the impact of major infrastructure projects on port choice decision: The Colombian case. Transportation Research Part A, 120, 132–148. https://doi.org/10.1016/j.tra.2018.12.021

Wai, D. (2008). Positioning Bintulu Port as the Regional Load Center. Maritime Institute of Malaysia.

Wang, B., & Yang, T. (2014). Multi-objective and stochastic optimization model of transit containers storage in a transshipment port yard. Applied Mechanics and Materials, 2680-2683. https://doi.org/10.4028/www.scientific.net/AMM.411-414.2680

Wang, Y., Yang, L. Q., Li, S., & Zhou, Y. (2015). Game theory paradigm: A new tool for investigating social dysfunction in major depressive disorders. *Frontiers in Psychiatry, 6,* 128. https://doi.org/10.3389/fpsyt.2015.00128

Webster, T. J. (2018). Introduction to Game Theory in Business and Economics. Routledge. https://doi.org/10.4324/9781315497259

Wiegmans, B. W., Konings, R., & Priemus, H. (2009). Critical mass for the development of a new container port in Vlissingen. *Maritime Economics & Logistics, 11*(4), 399-417. https://doi.org/10.1057/mel.2009.14

Wiesner, E. (2017). Transaction Cost Economics and Public Sector Rent-Seeking in Developing Countries:

Toward a Theory of Government Failure. In Evaluation and Development (pp. 108-131). Routledge.

Wilmsmeier, G., & Sanchez, R. J. (2017). Evolution of national port governance and interport competition in Chile. *Research in Transportation Business & Management, 22,* 171-183. https://doi.org/10.1016/j.rtbm.2017.01.001

Wong, O. (2018). Carrie Lam to Offer Boost for Hong Kong Shipping Industry in Policy Address As it Battles Singapore and Mainland Chinese Ports. [Online]. Available at: https://www.scmp.com/news/hong-kong/hong-kong-economy/article/2166837/carrie-lam-offer-boost-hong-kong-shipping-industry(Accessed on 2nd February 2019).

Woo, J. (2019). In Cutthroat Shipping Industry, Singapore's Moves to Increase its Berth Rate are Paying Off. [Online]. Available at:
https://www.scmp.com/week-asia/economics/article/2182645/cutthroat-shipping-industry-singapores-moves-increase-its-berth(Accessed on 2nd February 2019).

World Shipping Council. (2019). Industry Issues. [Online]. Available at:
http://www.worldshipping.org/industry-issues(Accessed on 2nd February 2019).

Wu, W. M., & Lin, J. R. (2015). Productivity growth, scale economies, ship size economies and technical progress for the container shipping industry in Taiwan. *Transportation Research Part E, 73,* 1-16.

Xing, C. C., & Huang, J. (2018). Adding game theory into computer science. Journal of Computing Sciences in Colleges, 33(4), 92-100.

Yang, D., Wang, K. Y., Xu, H., & Zhang, Z. (2017). Path to a multilayered transshipment port system: How the Yangtze river bulk port system has evolved. *Journal of Transport Geography, 64,* 54-64. https://doi.org/10.1016/j.jtrangeo.2017.08.011

Yang, G., Sheng, W., Li, S., Wang, Y., & Xu, F. (2017). Game-theoretic evolutionary algorithm based on behavioral expectation and its performance analysis. *Applied Artificial Intelligence, 31*(5/6), 493-517. https://doi.org/10.1080/08839514.2017.1378205

Yang, Y. C., & Chen, S. L. (2016). Determinants of global logistics hub ports: Comparison of the port development policies of Taiwan, Korea, and Japan. *Transport Policy, 45,* 179-189. https://doi.org/10.1016/j.tranpol.2015.10.005

Yoon-Jun, L. (2010). Green Cluster to Vitalize Regional Economy. Korea Herald. [Online]. Available at: http://www.koreaherald.com/view.php?ud=20100930000451(Accessed on 2nd February 2019).

Zant, W. (2018). Trains, trade, and transaction costs: How does domestic trade by rail affect market prices of Malawi agricultural commodities? *The World Bank Economic Review, 32*(2), 334-356. https://doi.org/10.1093/wber/lhx011

Zheng, S., Ge, Y. E., Fu, X., Nie, Y., & Xie, C. (2017). Modeling collusion-proof port emission regulation of cargo-handling activities under incomplete information. *Transportation Research Part B, 104,* 543-567. https://doi.org/10.1016/j.trb.2017.04.015

Zimmermann, S., & Rentrop, C. (2014). On the Emergence of Shadow IT-a Transaction Cost-Based Approach.