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Willingness to Invest in Peripheral Ports: Perceptions of Indonesian Port and Maritime Industry Stakeholders

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Abstract

The growth of containerisation and the increase in ship sizes has resulted in a greater need for transshipment hubs. Hence, some peripheral ports are upgrading to become secondary hub ports. However, it remains unclear why these ports would move towards this strategic direction. The aim of this study is to investigate stakeholders' perceptions on the importance of *peripherality*, so as to understand their willingness to invest in secondary hub ports. Stakeholders from the Indonesian port and maritime industry were chosen as the focus of our study, representing a connected network of peripheral and hub ports at a country level. The study used a mixed methods approach. Qualitative interviews were conducted with 46 respondents, while, quantitative data were collected through an online survey involving 171 respondents. The data was subsequently analysed through Exploratory Factor Analysis and correlation tests. Results show a pattern in stakeholder behaviour, explaining their reasoning, locational decisions, their perceptions on the importance of peripheral locations, and their willingness to invest. It is believed that our findings will prove of value both for governments *and* the private sectors of international shipping and port operations.

Keywords: peripheral ports peripherality, stakeholders, willingness to invest, Indonesian ports, regional development, infrastructure, investment

Introduction

Indonesia is one of the world's largest archipelagic countries. Key areas of economic activity have been developing on Java Island, where the capital Jakarta and the Port of Tanjung Priok are located. The country is making significant efforts to increase cargo volumes and economic growth in its less developed eastern region, including the development and upgrading of the smaller ports in this region.

Monios (2017) argued that greater *rationalisation* is needed among smaller container ports in their efforts to upgrade. Jansen et al. (2018) sustained that conditions for *inclusive* port development need to be in place, so as to enable ports in developing countries achieve social benefits, both at corporate and public level. The authors identified methods of partnership and communication among stakeholders, from a specific Indonesian example of small-port development at Tanjung Carat (Jansen et al. 2018).

The issue of peripheral ports, peripheral port challenges (PPC), and the concentration and de-concentration factors have been extensively discussed (Notteboom 1997; Slack and Wang 2002; Ducruet et al. 2009; Wiradanti et al. 2018). Traffic de-concentration from existing large hub ports to smaller and peripheral ones can occur because of new port development; carrier selection; global operational strategies of carriers; governmental policies; congestion; or lack of space at existing main load centres (Ducruet et al. 2009). Other studies on de-concentration¹ showed that the phenomenon mostly occurs because of hinterland-foreland changes, traffic specialisation and congestion in existing hub ports. In the period 1990 to 2008, de-concentration appeared to be caused mostly because of diseconomies of scale; the strategies of transnational operators; port selection; shipping lines concentration; port competition; and national and regional development plans. These factors intensified between 2008 and 2018, giving rise to secondary hub ports and more port devolution (Wiradanti et al. 2018, p.382).

Peripheral ports are often small ports located in an unfavourable location, either geographically or politically / institutionally (Monios and Wilmsmeier 2012), and 'desperate' to attract ship calls, so as to improve their position in the port hierarchy (Hayuth 1981). They are also very much dependent on a neighbouring hub port(s) for connections to trade routes (Ducruet 2008). Remoteness leads to low connectivity, limited volumes of cargo and, hence, higher transport costs (Dunbar-Nobes 1984). The concept of a 'Peripheral Port Challenge' was first mentioned by Hayuth (1981), who detailed the development of the container port industry in the United States from the 1970s, highlighting the growth of smaller ports that were early adopters of containerisation. Smaller ports challenging existing large hubs, leading to the emergence of secondary hubs was also explained by (Monios 2017, pp. 3-4):

'... Able to insert themselves as second-tier regional hubs, between large hub ports and smaller local ports. This role becomes possible because, as container ships on the main routes get larger and container drops at each call increase, hub and spoke and interlining networks become more complex. This process of de-concentration in turn may be expected to lead to concentration at small ports because some will lose traffic to these new second-tier hubs'

The aim of our study is to investigate how stakeholders perceive the importance of *peripherality*; to understand their behaviour in the maritime transport business; and their willingness to invest in secondary hub ports. Moreover, understanding peripherality in archipelagic developing countries is important, as there is a need to manage concentration and de-concentration, so that peripheral locations can access global markets (Wiradanti et al. 2018). Stakeholders from the Indonesian port and

¹ Particularly in the period between 1970 and 1990.

maritime industry were chosen as the focus of our study, because Indonesian ports represent a connected network of peripheral and hub ports at the level of one country.

The Willingness to Pay Concept

Willingness-to-pay (WTP) studies emerged from economic theory (e.g. Samuelson 1954; Bohm 1972; Johansen 1977) aiming at understanding consumer preferences for public goods. Samuelson (1954) explained it in the context of *public goods* and *collective consumption* (if a public good is consumed by an individual, this does not affect (reduce) consumption by another individual). A collective decision making system is thus needed because individuals, as consumers in a group or society, might hope to become a 'free-rider', benefitting from the public good (Johansen 1977). In willingness studies, consumers are often asked about their personal preference for a particular public good. In spite of prolific research on port choice (Murphy et al. 1992; Lirn et al. 2004; Guy and Urli 2006; Tongzon and Sawant 2007; Talley 2014; Nazemzadeh and Vanelislander 2015), the willingness-to-pay concept has not been used explicitly.

Timing is a critical aspect in port development. Wilmsmeier and Monios (2016) pointed out that, in maritime transport, first-mover advantage is critical since delayed action caused by a time-lagged investment, or development, may no longer be suitable to a new state-of-the-art system. This implies that a willingness to invest in infrastructure might make a difference to the success of a port within a network, and whether they can develop as a hub port. As such, our interest here (and the use of the concept) is not only to understand the circumstances needed for a port to evolve from peripheral to hub, but also to understand who, among port stakeholders, are willing to make the first move and invest in peripheral locations.

Although the number of port stakeholders is large, studies have frequently demonstrated the comparative power of shipping lines, in terms of their prerogative to choose their ports of call (Song and Yeo 2004; De Langen 2007; Lin 2015; Jansen et al. 2018). This said, the role of the public sector (central and regional government) is also important, particularly in Asia (Debie et al., 2007). For emerging ports in Asia, Wang and Slack (2004) developed a conceptual framework for port development in a regional context, from the case of China's ports in the Yangtze River Delta. They found that shipping lines and global terminal operators do not have as much power as they do in the western world (Wang and Slack 2004). This is supported by Lee and Flynn (2011), who found that government has a critical role in major container port developments in Asia, allowing cross-subsidization, and other strategic and administered port pricing mechanisms.

Slack and Wang (2002) argued that the reasons behind the Peripheral Port Challenge (PPC) phenomenon in Asia are institutional factors. Amongst them, they list '*the roles of port authorities and terminal operators and their relationship with the shipping lines*'. They argue that institutional factors emerge because of the recent trends in global/international terminal operations. Global terminal operators are willing to expand their business in peripheral locations whenever they find lower land and labour costs (Hong Kong's case) or better access to markets (Shanghai's case) (Wang 1998; Slack and Wang 2002). Shipping lines are also intensifying efforts to expand their business by having their own dedicated terminals, with their own standards in facilities and operations, as seen in Singapore. Congestion, water depth constraints, diseconomies of scale, distance from shipping lanes -as often quoted in the US and Europe's cases of PPC- are not considered applicable to either Hong Kong or Singapore, and only partially relevant in Shanghai (Slack and Wang, 2002). Besides the aforementioned institutional factors, and drawing upon qualitative and quantitative research, we furnish additional, and to our view important, reasons why port operators are willing to invest in peripheral locations.

Methodology

This research was part of an empirical study carried out for the Indonesian ports and maritime industry. The main purpose of the research was to explore ways in which a peripheral port could capture growth

opportunities, reduce its peripherality, and thus attain 'container hub' status. In such a context we also explore stakeholders' *willingness to invest*. A sequential *mixed method* approach, with a qualitative-, then quantitative step was selected. Qualitative interviews were conducted to explore stakeholders' perceptions. This was followed by a quantitative online survey to measure stakeholder perceptions in variables, test, validate existing theories, and enable our findings to be generalised (Johnson and Onwuegbuzie 2004, p.19).

Interviews were held with 46 respondents. They were asked about the location of their business (and why there); their perception on the importance of peripheral ports (and peripheral locations); their perception on who the main stakeholders are in peripheral port development; and their willingness to invest in peripheral ports (or in peripheral locations). Cargo owners representing different types of cargo were also asked. Their cargoes were: liquid bulk (oil and gas, palm oil); manufacturing (automotive, electronic goods); construction; fruit products; and fast-moving consumer goods (2 companies of the world's top FMCG). Respondents' profiles are shown in Table 1. Data were collected through an online survey; 171 completed responses were received. For the survey, additional respondent types included (among others) academics and maritime lawyers. Survey respondents' profiles are described in Table 2. Cargo Owners were the most dominant stakeholder type in the survey.

===== insert Table - 1 here =====

===== insert Table - 2 here =====

The wording of the main question in the survey was: "*we are willing to invest in expanding business/project in peripheral locations if...*". Detailed questions consisted of 8 items. To measure *willingness*, the first 3 questions (X1 to X3) were adopted from Guy and Urli (2006) since this was considered to be the most relevant study for our research context. As explained earlier, their study aimed to measure the preference of shipping lines to call at New York as their main hub, and at Montreal as a peripheral port.

The unique feature of our questions was to create scenarios for respondents. These scenarios enable respondents to express their preference in contrasting situations involving service levels and cost. The next 4 questions (X4 to X7) were formulated from interview results. Emerging item variables from the interviews were added, after having been verified by experts to prevent redundancy. Lastly, an open question was added as the last item (X8).

For measurement we employed a 7-point Likert scale which was then analysed using Exploratory Factor Analysis (EFA) and Correlation Tests. The Chang et al. (2008) study, identifying important factors in port selection by shipping lines used a similar approach, consisting of a survey and Exploratory Factor Analysis. Our Likert scale, used to measure *willingness*, was composed as follows: *1-very unwilling; 2-unwilling; 3-slightly unwilling; 4-neutral; 5-moderately willing; 6-very willing; 7-already investing*. A list of item questions and Likert score responses from the survey are detailed in Table 3.

===== insert Table - 3 here =====

Items with the highest mean or willingness were '*We can contribute to economic growth in the region*' (X6). The item of lowest importance was '*We get a dedicated terminal*' (X4) and Others (X8). Overall, the 8 items were normal for skewness and kurtosis statistics within ± 2.58 and a significance level of

0.01 (Hair et al. 2010, pp.72-76). Other reasons for 'willingness' were asked in open question X8. EFA was then used to test whether the 8 items represent a summated scale which is a valid and reliable construct. Summated scales for Willingness to Invest (W) were used to enable replication of work in further studies (Hair et al. 2010, p.144). Lastly, a correlation test was carried out, with a non-parametric approach, to understand whether different stakeholders have a significantly different willingness to invest. A non-parametric approach was used because it ensures sufficient statistical power for small sample sizes of less than 30 responses (Hair et al. 2010, p.453; Pallant 2016, p.214).

Measures to overcome response bias were also taken. The online survey was useful to confirm the interviews and to reduce social desirability bias. This enabled respondents to articulate their responses without being seen by the researcher, but still able to provide unique responses (X8). Lindner et al. (2001) found that commonly used methods to detect non-response bias compared early responses with those received later. T-test results for *willingness to invest* between early and late response groups showed a t-value of -0.06 and sig = 0.995 with a significance value >0.05, meaning there were no differences, and non-response bias was thus not an issue. Furthermore, since respondents' locations were quite centralised on Java Island, a t-test also compared respondents from Java and outside Java. Results from both groups showed a t-value = 0.393 and sig = 0.695 with a significance value >0.05, meaning there were no differences, and hence non-response bias based on respondents' location was not an issue.

Interview Findings

The interviews were used to identify perceptions about *willingness to invest* and the expansion of business to include peripheral ports or peripheral locations. Responses from the interview wordings, expression and actions were analysed and classified using *magnitude coding*. Responses were classified into three categories: 'willing', 'willing with conditions' and 'unwilling'. Figure 1 highlights the coding for stakeholders' willingness to invest and the frequency for each.

Responses indicating willingness to invest were predominantly 'willing to add ships' to existing routes in order to increase the number of services available (8 sources) and 'develop additional facilities' (7 sources). The types of facilities suggested included processing units for products (e.g. fisheries, CPO, oil refinery), industrial logistics facilities, warehouses, cold storage systems / cold chain, reefer containers, cross-docking facilities, trucking facilities, branch offices, and more broadly approaches to allow development to take place such as special economic zones. Responses came from central government, local government, cargo owners and logistics companies. This suggests that the government is willing to invest in facilities which could boost cargo volumes from peripheral locations.

The predominant response, indicating 'willingness under conditions' was mostly 'willing to invest if it is financially feasible' (16 sources). Such responses came from all stakeholder types except local government. These included answers related to feasibility studies, returns on investment and the profitability of projects. Responses indicating 'willingness under conditions' included 'if followed by support from the government'; 'if integrated with logistics/factories'; 'if there is an identifiable economic impact'; 'if there is human capacity to develop the project'; and 'if there is a strategic value and feasibility to implement a project'. Respondents who heavily relied on such investments being financially feasible include cargo owners, logistics companies, domestic port operators and funding institutions, as they follow government and shipping lines' business expansion plans. As an example, a financial institution respondent stated, "*our decision to provide loans for ports depends on the central government's request*", with a cargo owner respondent stating, "*not yet, because we haven't heard a concrete plan from the government*".

The main response indicating *unwillingness* was 'not willing to develop a dedicated terminal' (11 sources). These responses came from all respondent types except central government, local

government and funding institutions. Cargo owners explained that their cargo volume was not large enough to have a dedicated terminal, or their cargo type did not require a dedicated terminal. Terminal Operators explained that dedicated terminals were not their focus or that they prefer to serve general customers.

Responses indicating 'unwillingness to invest' were related to factors such that they were 'unwilling to develop new factories'; 'faced difficulties in getting suppliers'; 'unprofitability'; 'tough competition'; 'unwillingness to develop new ports'; and 'unwillingness because they were not the responsible party'.

===== insert Figure - 1 here =====

Survey Results

Analysis of the online survey data consisted of Exploratory Factor Analysis (EFA) and Correlation Tests. First, in EFA, the Kaiser-Meyer-Olkin (KMO) test was used to indicate sampling adequacy (Field 2018, p.798), returning a 'meritorious result' of 0.905. Bartlett's Test of Sphericity was significant under 0.05. Initial unrotated results showed 'communalities' above 0.30, except for X8 (willing for other reasons). A *communalities* value below 0.3 means the item does not fit well with other items in its component (Pallant 2016, p.200); an outcome reasonable for X8, as it is an open question. After using Varimax rotation, results showed that the 8 item variables were represented by 1 factor, with a percentage of variance explaining 60.45% and factor loadings varying between 0.4 and 0.9. Considering that factor loadings between ±.30 to ±.40 are an acceptable minimum level for interpretation of structure (Hair et al. 2010, p.117), 'willingness to invest' as 1 factor with its 8 items was deemed acceptable. Moreover, Alpha Cronbach = 0.890, AVE = 0.605 and CR = 0.922, all indicate the construct is valid and reliable. Thus, the construct was renamed as 1 factor: Willingness to invest (W).

Second, in Correlation Tests, the median was compared for W between groups of stakeholders as a summated scale and results are summarised in Table 4. The Kruskal-Wallis test was used, as it is a non-parametric test, to compare groups or conditions with unrelated or independent scores (Field 2018, p.306). Results showed that there is no statistically significant difference in W between different stakeholder types -- Chi-square (9.813) and significance value (sig 0.199). A significance value higher than 0.05 means that stakeholder type does not significantly affect W.

===== insert Table - 4 here =====

However, this result should be analysed further, since findings from the qualitative interviews showed a difference between stakeholder types. Moreover, responses for 'other willingness' (X8) showed that stakeholders are not concerned with 'transit cost' (X1), 'port service cost' (X2) or both combined (X3). Among various responses to X8, there were similar reasons across different stakeholder types which shows that they are willing to invest if there are clear and consistent policies/regulations, less bureaucracy, ease to invest, as well as support and subsidy from the government. Hence, new summated scales were created to split W into two groups of items: W1, representing item variables from the literature (X1 to X3) and W2, representing item variables from interview results (X4 to X8). Items in W2 reflect willingness to invest motivated by more long-term benefits accruing to stakeholders, instead of short-term benefits in the W1 items.

As seen in Table 4, the Kruskal-Wallis test for W1 shows that there is no statistically significant difference in W1 between different stakeholder types -- Chi-square (5.896) and significance value (sig 0.552). Surprisingly, the Kruskal-Wallis test for W2 shows that there is a statistically significant difference in W2 between different stakeholder types -- Chi-square (14.14) and significance value (sig 0.049). This means that there are significant differences of W2 (items X4 to X8) for each stakeholder type, indicating that stakeholders' willingness to invest in peripheral locations varies according to whether they can get a dedicated terminal (X4); they can get twofold storage cost advantage (X5); they can contribute to economic growth in the region (X6); they could be the first to dominate the business/market in that area/region (X7); and other reasons (X8). Hence, this shows that respondents are more willing to invest, or attracted to the long-term benefits. Respondents with the highest median for W2 respectively are central government (5.5), port operators (5.4), shipping lines (5.4), logistics companies (5.2), local government (5.0), funding institutions (5.0), cargo owners (4.8) and others (4.8).

Discussion: Pattern of Stakeholder Willingness to Invest

This section identifies patterns in stakeholders' willingness to invest, shown in the Decision Tree diagram of Figure 2. In qualitative data analysis, decision trees are used to build a logical chain of evidence (Miles and Huberman 1994, p.261) showing the sequences of events and focusing on the logical consequences of decisions (Gladwin 1989 cited in Miles and Huberman 1994, p.261). Stakeholders' perception indicated that decisions on business location, business expansion and willingness to invest are based on 4 main aspects: 1) ownership; 2) business location (customer, supplier, raw materials); 3) financial conditions; and 4) specific goals (e.g. to conduct Corporate Social Responsibility, support the government, improve human capacity, etc.).

As shown in Figure 2, the 4 aspects discussed earlier become the branches of the tree, while stakeholders' decisions are represented by the 'leaves' identified as either 'unwilling' (grey boxes) or 'willing' (white boxes). Decisions on the location to start a business, and where business expansion should be, are shown here. The first branch determines whether government institutions or state-owned companies are willing to invest in peripheral locations, as part of their overall obligation in the case they are mandated to serve those particular locations. Instead, firms in the private sector would not initially be willing to invest, hence, further continuation of their decision to the second and third branches.

Second, the business needs to locate near its customers, suppliers or raw materials, because it directly influences their product, service or operations. This is reflected by the second branch. International port operators are unwilling to invest in peripheral locations, as their intended customers are large ships calling at hub ports with high volumes of cargo. On the third branch, stakeholders who are unable to shift the location of their production, suppliers or raw materials sources are unwilling to invest in peripheral locations. Respondents identified in this situation are international port operators and cargo owners with complicated manufacturing operations (e.g. FMCG, automotive).

Third, *business* needs to identify its profitability, financial strength, and position towards its competitors. This is reflected in the fourth branch. Domestic shipping lines and logistics companies who consider themselves to be in a difficult financial situation or facing difficult competition, are unwilling to invest. One of the respondents (domestic shipping line) in this position expressed themselves as follows: *"We focus on serving Nusa Tenggara region... if there is a chance, we would want to increase our ship size"* (SL_3).

===== insert Figure - 2 here =====

Lastly, *business* needs to fulfil its specific goals, reflected in the fifth branch. Port operators, shipping lines, cargo owners, logistics companies or financial institutions in this position are willing to invest as part of their business expansion, when other conditions are met such as financial feasibility, return on

investment or having sufficient human capacity. The project must be 'do'-able. If they have considered those conditions, then they will be willing to invest in order to reach specific goals. Examples of these are shipping lines' interest in investing to support Corporate Social Responsibility (CSR) programmes; e.g. decarbonisation; supporting sustainable development, reducing loss in the supply chain; extending their services to peripheral locations, and collaborating with local producers to reduce food loss.

Specifically, in the case of Indonesia, a developing-archipelagic country with state-owned companies as its port operators, specific issues were identified. First, there is a need to have a clear division of tasks between government and private sector. The government need to allow the private sector to enter the market for services in locations where cargo volume or population is rising. Hence, the government can allocate subsidies to new pioneer services with limited access to sea transport. Second, the government also has a critical role in peripheral port development which is in contrast to the case of small-peripheral ports in developed countries, such as Canada and France. The Canadian and French governments have often prioritised the transfer of their smaller ports to the private sector in order to reduce the economic burden on local and regional government. (Debie et al. 2007).

Third, the private sector's willingness to invest in the eastern part of Indonesia means that they are willing to sacrifice short-run profitability in the sake of first-mover longer-term benefits. This might lead to more private sector involvement in secondary hub ports and supports previous studies according to which manufacturing in strategic locations has possibilities of being successful also in secondary hubs (Wang and Ng 2011; Wilmsmeier and Monios 2013; Wilmsmeier et al. 2014). This also confirms that institutional factors are important, in the sense of having port authorities or operators collaborating with shipping lines, leading to *peripheral port challenge* similar to the case of Hong Kong and Shanghai (Slack and Wang 2002). Lastly, empowerment of local government, local businesses and industries is needed to generate larger cargo volumes and thus entice shipping lines to enter the region.

Findings and discussion from Indonesia's case, particularly on *willingness to invest*, could be applicable to other developing countries. These lessons are beneficial in providing guidelines to ports in emerging economies, in the development of their infrastructure, so as to increase connectivity especially in peripheral locations. Needless to say, generalisations from Indonesia's case should still be considered along with other factors, specific and unique of that particular country or region.

Conclusions

This study aimed to assess port stakeholders' willingness to invest in peripheral ports and peripheral locations. A mixed approach was carried out using interviews and an online survey. Overall, findings reveal an identifiable pattern across stakeholders' willingness to invest, represented here in the form of a decision tree diagram. The tree explains the reasons -and consequent decisions- behind stakeholders' business locations; perceptions on the importance of peripheral locations; and willingness to invest across four main themes: 1) ownership; 2) business location (customer, supplier, raw materials); 3) financial conditions; 4) specific goals (e.g. Corporate Social Responsibility, support to the government, improve human capacity, etc.).

One identifiable motivation for *willingness to invest* was found to be their potential contribution to economic growth in the region (highest mean score from the survey). Stakeholders (from the highest to the lowest score in respect to their perceptions of *willingness to invest*) were central government, port operators, shipping lines, logistics companies, local government, funding institutions, cargo owners and others. While the motivation to develop economic growth is primarily a public sector objective, the private sector's interest in investing in peripheral locations over and above that of the government, was evident in the study. The interest of shipping lines and port operators in economic growth was underpinned by the need for a clear division of tasks to exist between the government and the private sector, the latter being largely profit motivated and therefore having differing objectives

to those of the government. Finally, empowerment of local government and local businesses is needed to enable further de-concentration to more peripheral locations. Stakeholders who are willing to invest in peripheral locations may be willing to forego short-run profitability in favour of longer-term benefits. Thus the findings might be beneficial for other emerging economies, in terms of providing guidelines for port development, aiming to increase connectivity and growth in peripheral locations.

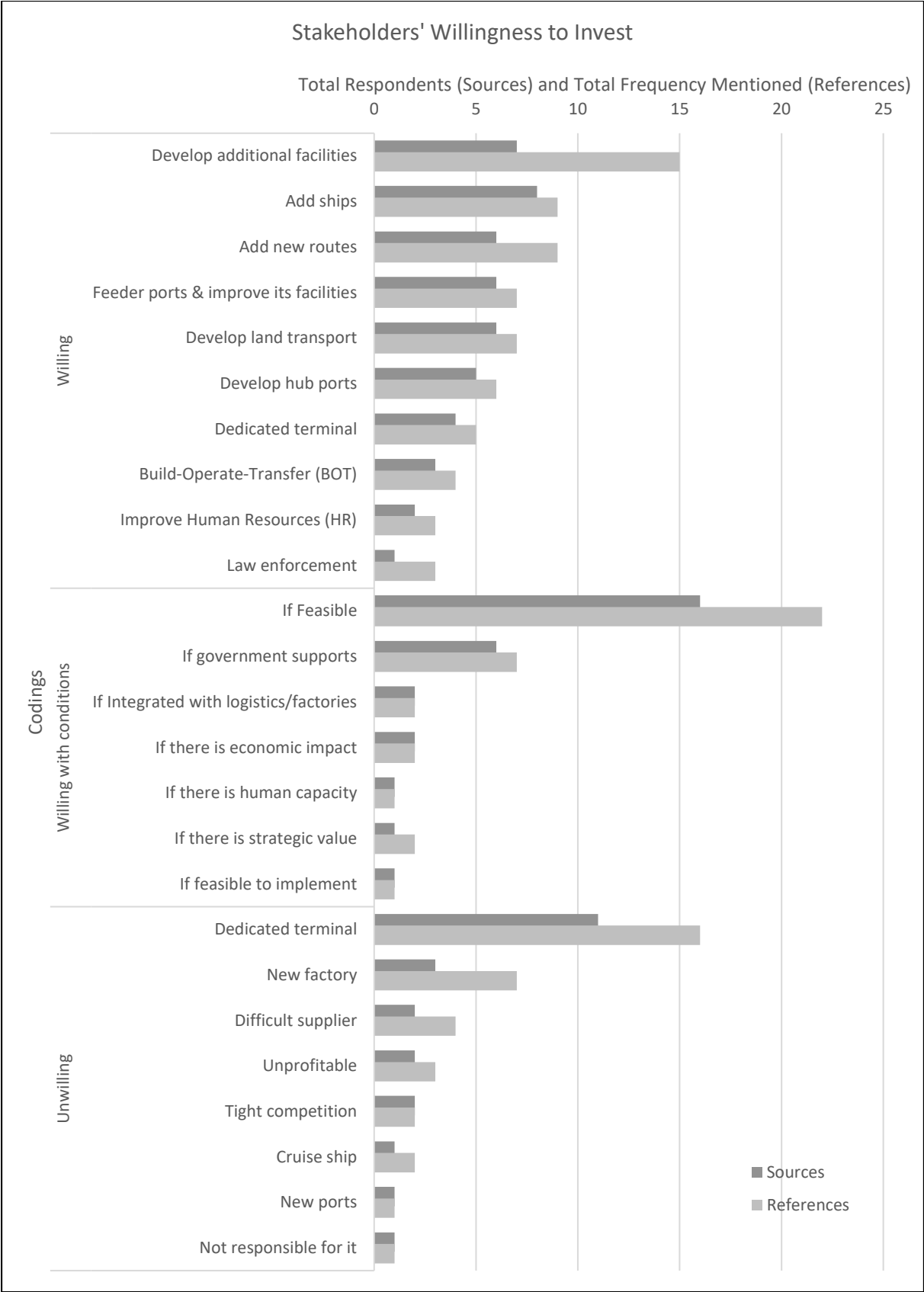
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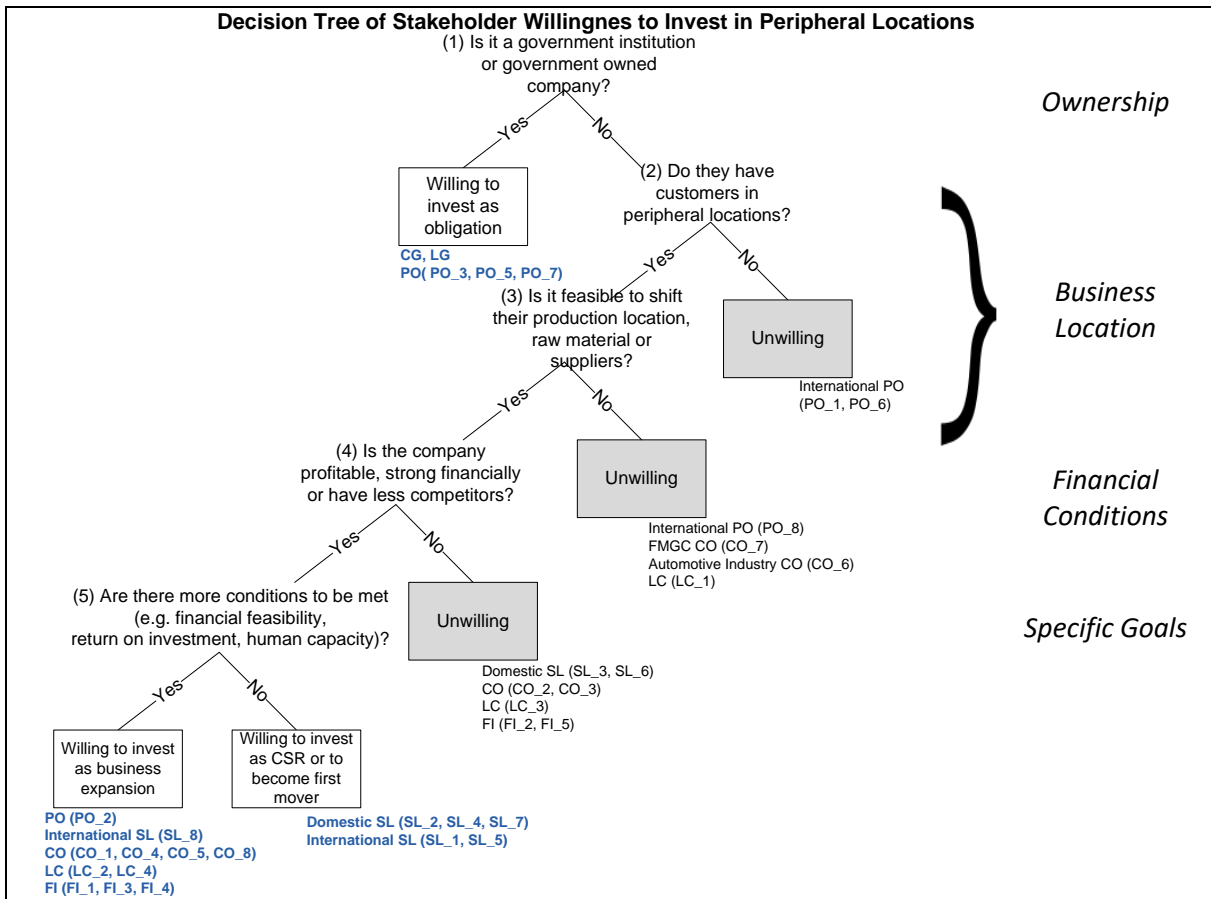
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Source: Authors

Figure 1: Perceptions on *Willingness to Invest*



Source: Authors

Figure 2: Decision tree of stakeholder *Willingness to Invest* in peripheral locations

Table 1: Interview respondents' profile

| Stakeholder | Company/Institution | Respondents | % of Transnational Companies | Average Time of Interview |
|---------------------|---------------------|-------------|------------------------------|---------------------------|
| Port Operator | 8 | 8 | 50 % | 51.12 minutes |
| Shipping Lines | 7 | 8 | 50 % | 53.75 minutes |
| Cargo Owner | 8 | 8 | 50 % | 49.12 minutes |
| Logistics Companies | 4 | 4 | 50 % | 51.00 minutes |
| Central Government | 6 | 9 | n.a | 53.44 minutes |
| Local Government | 4 | 4 | n.a | 41.75 minutes |
| Funding Sources | 4 | 5 | 80 % | 52.80 minutes |
| Total | 41 | 46 | | |

Source: Authors

Table 2: Online survey responses

| Stakeholder Type | Respondents contacted | | | | Responses received | | | |
|-----------------------|--------------------------------|-----------------------|-------------|------------------|------------------------|------------|-----------------------|---|
| | Profes- sional messaging | Personal messaging | Total | Not completed | Completed Responses | Total | Response Rate (%)^ | Response Rate of Completed Responses |
| Port Operator | - | 160 | 160 | 9 | 29 | 38 | 23.8 | 18.1 |
| Shipping Line | 536 | 70 | 606 | 26 | 26 | 52 | 8.6 | 4.3 |
| Cargo Owners | 4953 | - | 4953 | 44 | 49 | 93 | 1.9 | 1.0 |
| Logistics Companies | 659 | - | 659 | 9 | 26 | 35 | 5.3 | 3.9 |
| Central Government | - | 50 | 50 | 10 | 14 | 24 | 48.0 | 28.0 |
| Local Government | - | 280 | 280 | 3 | 3 | 6 | 2.1 | 1.1 |
| Financial Institution | - | 18 | 18 | 5 | 5 | 10 | 55.6 | 27.8 |
| Others | - | - | - | 11 | 19 | 30 | - | - |
| TOTAL | 6148 | 578 | 6726 | 117 | 171 | 288 | 4.2 | 2.5 |

^) Response rate(%) = Total response received / Total respondents contacted * 100%

^^) Response rate of Completed Responses = Completed Responses / Total respondents contacted * 100%

Source: Authors

Table 3: Online survey responses: descriptive statistics for items in *Willingness to Invest*

| Item Variables | Min | Max | Mean | Std. Dev | Skewness | | Kurtosis | |
|--|-----|-----|------|----------|-----------|------------|-----------|------------|
| | | | | | Statistic | Std. Error | Statistic | Std. Error |
| X1 We get twofold transit cost advantage* | 1.0 | 7.0 | 4.99 | 1.30 | -.897 | .189 | 1.281 | .376 |
| X2 We get twofold port service advantage* | 1.0 | 7.0 | 5.17 | 1.29 | -1.282 | .189 | 1.817 | .376 |
| X3 We get twofold transit and port service advantage* | 1.0 | 7.0 | 5.13 | 1.18 | -1.133 | .189 | 1.604 | .376 |
| X4 We get a dedicated terminal^ | 1.0 | 7.0 | 4.98 | 1.28 | -.742 | .189 | .355 | .376 |
| X5 We get twofold storage cost advantage^ | 1.0 | 7.0 | 5.10 | 1.22 | -1.106 | .189 | 1.605 | .376 |
| X6 We can contribute to economic growth in the region^ | 1.0 | 7.0 | 5.22 | 1.25 | -1.171 | .189 | 1.602 | .376 |
| X7 We can become the first to dominate the business/ market in that area/region^ | 1.0 | 7.0 | 5.10 | 1.32 | -1.045 | .189 | 1.198 | .376 |
| X8 Others (fill in the blank)^ | 1.0 | 7.0 | 4.79 | 1.75 | -.907 | .189 | -.045 | .376 |

Source: Authors, *)from Guy and Urli (2006). ^) from interview results

Table 4: Correlation Tests

| No. | Procedures and Aim | Results | Interpretation |
|------------|--|--|--|
| 1. | Kruskal-Wallis test for W To test whether the median of willingness to invest (W) is significantly different for each stakeholder type. | Chi-square of 9.813 and significance value of 0.199. | There is no significant difference of W between the groups of stakeholders. |
| 2. | Kruskal-Wallis test for W1 (representing item variables X1 to X3 in Table 3) | Chi-square of 5.896 and significance value of 0.552. | There is no significant difference of W1 between the groups of stakeholders. |
| 3. | Kruskal-Wallis test for W2 (representing item variables X4 to X8 in Table 3) | Chi-square of 14.14 and significance value of 0.049. | There is significant difference of W2 between the groups of stakeholders. |

Source: Author

Figure 1: Perceptions on Willingness to Invest

Figure 2: Decision Tree of Stakeholder Willingness to Invest in Peripheral Locations

Table 1: Interview respondents' Profile

Table 2: Online Survey Responses

Table 3: Online Survey Responses Descriptive Statistics for Items in Willingness to Invest

Table 4: Correlation Tests