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# Target Market Selection Using MCDM Approach: A Study of Rolling Stock Manufacturer

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## Abstract

**Purpose:** This study examines the market segmentation and strategy of PT INKA, a rolling stock manufacturer in Indonesia. **Research design, data and methodology:** The study used the MCDM (Multiple Criteria Decision Making) method specifically the AHP (Analytical Hierarchy Process). The AHP method was applied to identify the target market. This method or approach considers the market attractiveness and competitive strength criteria with quantified parameters. **Results:** a) Australia, Kenya, Tanzania, New Zealand, and India emerge as the top five target markets; b) There is justification for rolling stock manufacturers to allocate their resources in winning the market share. **Conclusion:** The main challenge confronting the rolling stock manufacturer is limited resources to acquire a particular market share despite abundant opportunities in this sector. Despite the mastery of technology and long experience in the industry, selecting a target market with multiple criteria could be difficult for an emerging rolling stock manufacturer in South East Asia

**Keywords :** Multiple Criteria Decision Making (MCDM), Analytical Hierarchy Process (AHP), Market share, Limited resources, Rolling Stock manufacturer

**JEL Classification Code:** M31, O31, O32.

## 1. Introduction

The development of transportation system services in the world is currently developing rapidly, including developments in the railway transportation system, which subsequently raises the need for a large market for trains. Several research institutes conduct and publish these results,

one of which is The Association of The European Rail Industry (UNIFE), and it concludes the same result too. With a market this big, every rolling stock manufacturers are eager to enter the competition to win the market share. Nevertheless, blindly chasing all the market opportunities will quickly exhaust the company resources without significant gain. As a company, thoughtful consideration to select its target market, competition, and capability in winning the market. Winning the market share for a rolling stock manufacturer in fierce global competition is not an easy task for a company in general. Thus, winning the market requires a precise target market selection.

Considering how fierce the global competition is, companies still have to open up to new markets to develop and increase their competitiveness in the globalization and technological revolution era (Tosun, Unt, & Wadensjö, 2017). The qualification of international market selection is not denoting and multicriteria decision-making problem. The appropriate classification has enormous problems and

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lack of objective information regarding the product qualitative characteristics (Zhang, Zhuang, & Gao, 2007). Moreover, the market environment becomes more competitive, and companies have to produce the effective marketing decisions. One of the critical matters is market segmentation and selection (Aghdaie & Alimardani, 2015).

Furthermore, to solve this problem, enterprises need to implement the information into an actionable decision. The importance of the use of market information for analytical target market selection arise due to empirical through modeling causal relationship is not only costly but also requires expert knowledge. And because companies and organizations have to pay a huge cost for the manpower needed to perform this process can't guarantee effectiveness, it can not exclude the possibility of worsening the situation (Yang, Huh, & Yang, 2018).

As companies give more importance to these technologies, more effectiveness in the process is obtained, which will trigger an increase in the use of those tools to achieve the objective of international negotiation processes and, therefore, generate international agreements and satisfactory contracts for imports and exports (Cano & Baena, 2015). One of the forms of the use of information technology is to solve the target market selection. Market segmentation and selection is a crucial managerial marketing decision for every enterprise. Market segment or segments help the company focus on its competitive advantages and marketing strategies on effectively satisfying customers' needs (Aghdaie, Zolfani, Rezaeinia, & Mehri-Tekmeh, 2011). Nevertheless, still, as a requirement to implement the proposed methodology, it is suggested to know the characteristics of the product to be exported, know how to extract information from the suggested databases, can establish priorities and weightings to the criteria and sub-criteria (Cano, Campo, & Gómez-Montoya, 2017).

This study's purpose is to propose an alternative in selecting a target market. Due to its importance in this activity for a company, every company seeking to internationalize exporting goods must identify the optimal alternative, considering that there are various essential barriers, criteria, and institutional mechanisms that can affect an export process (Lall, 1991). The methodology we are proposing in this study is to use the Multi-Criteria Decision Making (MCDM) with the Analytic Hierarchy Process (AHP) appropriate to help rolling stock manufacturer in tailoring marketing strategy and selecting target market selection. The method used in this study is reviewing previous papers related to the use of MCDM AHP in target market selection.

Target market selection has been an exciting topic in the last decades. Various methods using MCDM has been proposed, deployed, and applied in target market selection.

One of the methodologies is the AHP. AHP Research by (Zhao, Li, & Li, 2011) evaluated selecting the market segments for China's export of textile and garment. (Zhao, Li, & Li, 2011), used AHP to evaluate the main factors that influence the country's textile and garment trade. There are five criteria in the AHP structure are: marketing purchasing power, capacity, monopoly, political condition, and the level of requirement. The structure used all those five criteria at a single level. The result of (Zhao, Li, & Li, 2011), shows that this method can rank the top four out of six given alternatives. (Haddad, Sanders, & Tewkesbury, 2020) has used AHP and PROMETHEE II to prioritize four global market areas selection for the aircraft market. Furthermore, both methods produced the identic outcome. The criteria used by (Haddad, Sanders, & Tewkesbury, 2020) were market size, development, share, political influence, price, quality, and product knowledge. Though the requirements used in the Decision-Making process yielded a good result, the research findings suggest that future work should consider the essential 4-Ps (Product, Place, Price, Promotion). (Kotler, Keller, Brady, Goodman, & Hansen, 2019), popularize these 4-Ps, and this so-called marketing mix applies to all industries. Moreover, according to (Al-shabeeb, 2015), AHP often contibutes good results, provides and evaluate alternatives, and gives a powerful steps model to conceive the problem.

Thus, this paper will try to use the 4-Ps criterion in selecting the target market with the Multiple-Criteria Decision Making (MCDM) process using AHP. The first P, the product, will be restricted to the non-self-propelled passenger car. The second P, the Place, will be restricted only to a serviceable obtainable market; the third P, the price will be as one of the criteria, while promotion will be as a follow-up action with its justification based on the result of this paper. By doing so, a rolling stock manufacturer will have a justification reference in tailoring its marketing strategy, selecting the target market using quantitative criteria, and allocating its limited resources to win the market share as much as possible, considering a vast market opportunity & fierce competition among global rolling stock manufacturers.

## 2. Literature Review

### 2.1. Rolling Stock Market

UNIFE as the representations of the European rail manufacturing industry consists of more than 100 of Europe's big and SME rail supply enterprise active in design, manufacture, maintenance, and refurbishment of rail transport systems, subsystems, and related equipment. UNIFE has conducted a study that predicts the growth of the

rail market industry worldwide. UNIFE study by (Berger, 2020) estimates that the world rail market will grow by an average growth of 2.7% worldwide for the 2021 to 2023 period. The Africa/Middle East and Latin America are the areas with the most significant growth rates, at 5.2% and 4.8%, respectively, followed by NAFTA at 3.1%. The substitution and extension of rolling stock in Denmark, Germany, the UK, and France are a positive incentive in Western Europe, where growth is about 2.2%.

Knowing the opportunity is that big, the competition in the rolling stock market is quite fierce as well. Not only in the domestic market, where the manufacture is headquartered but also in the overseas market as well. However, the good news is, there is no ultimate winner who owns the market share entirely. Moreover, there is low to no monopoly practice is exercised within this industry, and the majority of the market has low to moderate loyalty to a particular manufacturer. Hence, it is an open opportunity to map all of the potential new railway line projects. We can locate precisely where the markets are and have a picture of the market behavior.

Market behavior in this industry is the drivers; the reason a market decides to buy new rolling stock. These are three drivers' categories: (1) increasing capacity; (2) rejuvenating the old fleet; (3) and filling the need of rolling stock in a new railway line. The new railway line project, besides requires an infrastructure, will also need a rolling stock to be operated within this new line. The Total Addressable Market is a map distribution of rolling stock projects, regardless of the type of railway vehicle. Figure 1 shows the Railway Project Distribution Map.



Figure 1: Railway Project Distribution Map

## 2.2. Market Segmentation

An enterprise can not link with all customers in large, wide, or distinct markets (Kotler et al., 2019), the potential market discussed in this paper will only focus on the market of rolling stock of a new railway project. The building of a new railway line is one of the three primary market drivers. Focusing on only one driver will reduce the amount of

potential rolling stock ordered in reality, but sufficient to simulate the AHP process for selecting target market selection. However, knowing the distribution of these drivers in shaping the market capacity will give a hint about how big the market will eventually be. Figure 2 shows the proportion of these three drivers affecting market capacity in the last five years.

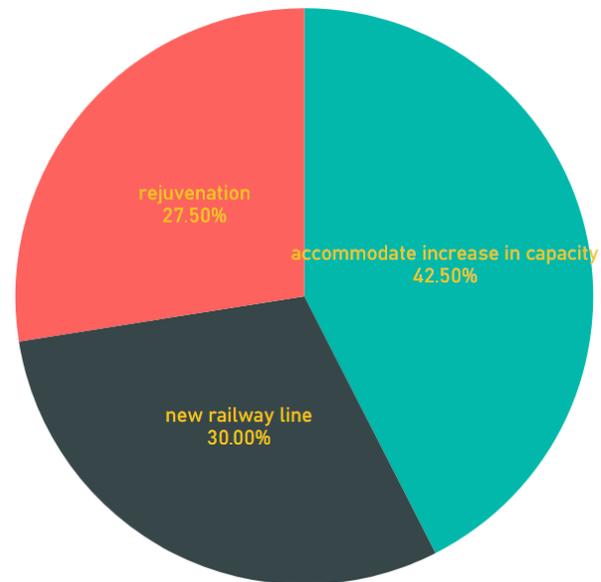


Figure 2: Rolling Stock Market Driver

Other boundaries consideration in this paper is the technology and geographic segmentation (Keegan, 2017). Railway vehicles have various types, from freight wagon to high-speed trains. Being various as it is, one paper will not be sufficient to cover whole segmentation to that matter. As the technology segmentation, this paper will consider focusing on the competitive advantage's technology that a developing manufacturer, which is to produce a non-self-propelled passenger car. Knowing the geographic boundary is also crucial since one manufacturer will not be able to acquire the Total Addressable Market due to its limitation. Knowing the Serviceable Market will be beneficial for the manufacturer to put its resources into winning the market. Furthermore, since this study is in South East Asia, it will be the epicenter for determining the serviceable area.

Once the epicenter determined, the boundary of the serviceable area in this paper can be limited. As this paper's title suggests that this method is determined to provide a guide to a developing rolling stock manufacturer in South East Asia, South East Asia is used as the epicenter to determine the serviceable obtainable market (SAM). The SAM is restricted to Africa, South Asia, South East Asia, Australia & Pacific, South, and Latin America. This restriction will exclude Europe and North America for

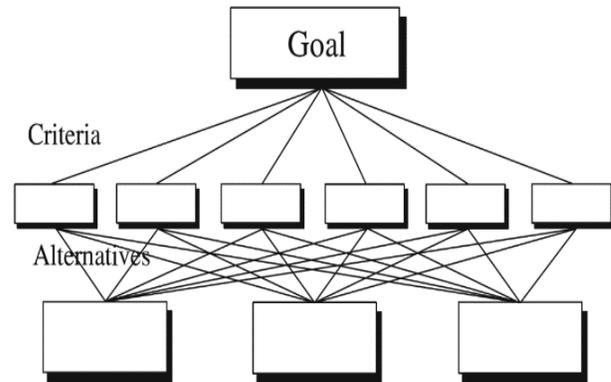
several reasons: Europe and North America market already saturated with the well-known rolling stock manufacturer, which will render it impossible for a developing rolling stock manufacturer to enter. Moreover, the US is set very high localization hurdles with the Buy America requirements for the transportation sector. Asia countries will also exclude those who use protection policy that prohibits a foreign manufacturer from entering the market, namely: China and Japan. These geographic and technology segmentations can filter out the database of all new railway lines in the Total Addressable Market (TAM), thus defining the Serviceable Available Market. Given the opportunity within the boundaries, the number of potential projects is significant for a developing rolling stock manufacturer. Thus, a developing rolling stock manufacturer located in South East Asia will require a sound marketing strategy before being forced to enter the international competition. To collect all necessary information regarding the parameters of the potential countries, the enterprises should make extensive market research efforts. Thus, this AHP simulation includes only a country with complete parameters. The evaluation to get a comprehensive policy-making process to justify a marketing strategy, considering various limitations.

### 3. Research Method and Design

The Analytical Hierarchy Process is a methodology promoted by Thomas Saaty in 1970. The methodology is about solving a complicated situation by breaking down into parts. The parts hierarchically listed in a ranked. The parts also consist of quantifying and comparing variables that facilitate decision making (Saaty, 1990). The AHP process has been used to assist numerous decision problems, which decomposed into a hierarchy of criteria and alternatives, and resulting in a decision matrix with elements compared in pairs (González-Prida, Viveros, Raman, & Crespo, 2015).

AHP provides the management to solve a problem with conflicting subjective criteria, for example, place or investment solution and project priorities (Ishizaka & Labib, 2009) or to select supplier in textile and apparel industry in Vietnam (Nong & Ho, 2019). The AHP application is done by analyzing large and sophisticated problem into easier sub-problems. It aggregates the completion of all simpler problems into one overall answer (Saaty, 1994). AHP relies on the conclusion of experts to obtain priority scales through pairwise comparison to know how much one criterion controls another concerning a given alternative. The decision-maker can focus on specific criteria and sub-criteria when giving a judgment using a hierarchical structuring—the structure of the decision hierarchy initiated from the top management. The goals come from a wide perspective, through the middle levels to the lowest one, which

commonly is a set of solutions (Saaty, 2008).. A simple AHP model shown in figure 3 as follow:



**Figure 3:** Simple three-level decision hierarchy (Saaty, 2012)

These simple hierarchies describe multi-level decision models with hierarchies of tangible or intangible criteria, such as benefits, opportunities, costs, and risks. This method is to preserve with both tangibles and intangibles, plausible and intuitive, to select the best from several alternatives (Saaty & Vargas, 2012). For example, many areas already applied the AHP (Forman & Gass, 2001). The areas already applied the AHP with some considerations: (1) Choice – The choosing of an alternative, usually when multiple decision criteria are available. (2) Ranking – Ranking is arranging a set of alternatives in order from the most to the least desirable. (3) Prioritizing – Effort of selecting the merit of a set of solutions. (4) Resource allocation – Apportioning resources among a set of solutions. (5) Benchmarking – Comparing the business conversion processes in one's organization with those of other best organizations. (6) Quality management – Effort of dealing with the multiple factors of quality and quality development. (7) Conflict resolution – Settling conflicts between parties with seemingly contrary objectives or occupations.

In this paper, AHP will be used to rank and prioritize the known available market. This process is known as targeting, which is a step after the segmenting process completed.

These are the steps of AHP method to reach a decision (Saaty, 2008):

- [1]. The development of a model: decay the problems into a level of objectives, characteristic, and options.
- [2]. Obtain priorities: The importance of criteria is the pairwise comparison for the expected objectives to achieve their weights.
- [3]. Obtain priorities for the alternatives: Derive preferences for each criterion.
- [4]. Synthesize the model: All options preferences are as a

weighted sum: to consider the weight of each criterion and develop the overall preferences of the options. The option with the highest overall preferences produce the best option.

- [5]. Deciding a final solution: The sensitivity analysis and results will produce the solution.

Following those steps, the first thing to do is to set the goal. This paper aims to select the target market based on the boundaries of the rolling stock manufacturer. Once the company has set a goal, then we will look into quantitative parameters, which will help in selecting the criteria needed in modeling the AHP hierarchy. The data gathered from reputable media in rolling stock news, such as railway pro, international railway journal, and railway gazette international in the last five years. For the country risk data, the risk of non-payment collected from Euler-Hermes, a world's top credit risk consultancy. Furthermore, the other macro-parameters of a country are following world bank data. Table II in the appendix shows all the data gathered already filtered from noise and administrated to ease filtering and shorting function.

In selecting the target market criteria, logical thinking is necessary: to sell, and demand has to be there first. Once demand is there, the observation the ability of the potential customer has to be observed; in addition to this, the lower the risk of non-payment will make the potential buyer more attractive, moreover, if the legal index in that country is strong enough. Having all those criteria, its loyalty to rolling stock manufacture needs to overlook; this is where the competitive strength of the company comes in useful to sway the potential customer loyalty. This criterion selection is also demonstrated by (Zhao, Li, & Li, 2011) but in a different criterion, namely: Market Purchase Power, Market Capacity, Market Monopoly, Political Stability, and The Level of Requirement. (Daim, Udbye, & Balasubramanian, 2013) exhibits how Boeing uses AHP in its Strategic Market Decision. In the example, it divides the criteria into two significant criteria: Market Attractiveness and Competitive Strength. The discussion would like to combine all the criteria used on both papers and apply them to selecting a target market for rolling stock manufacturers.

Thus, as the second step suggest, we would like to propose these criteria and its priorities consecutively:

### 3.1. The Ideal Buyers' Criteria.

Market attractiveness describes how difficult or easy it will be for an enterprise to compete in the market and to win the market share. The indicators proposed in this paper are the number of potential projects, the risk of non-payment is low, this should be backed up by legal strength index, and low to no monopoly in the market.

- [1]. There is a need to buy rolling stock – reflected on each country's railway development, a strategic plan, or so-called "Market Capacity." In this paper, the market capacity will be represented by the quantified number of projects in each country, specifically for the non-self-propelled railway car. This data is gathered from reputable third party specializing in rolling stock market research.
- [2]. There is the ability to buy the rolling stock from a self-fund, loan, or the government fund. "Market Purchase Power," as (Zhao, Li, & Li, 2011) paper said. Nevertheless, determining that the customer has the budget or whether the country has secured funds for this project will render impossible, this paper will propose another quantitative parameter, the low risk of non-payment. This data are quantified parameters based on independent rating organizations, Euler-Hermes.
- [3]. There is a robust legal index, where if there is a dispute, the solution can be through a court in a justice manner. This parameter is from world bank data with a range of numbers from 1-12, with 12 being the most reliable legal index. Besides, the risk of no payment of each country or by (Zhao, Li, & Li, 2011) may be called "Political Stability."
- [4]. The loyalty to a particular rolling stock manufacturer is low. A high market loyalty may indicate that the country is practicing market monopoly. The loyalty terminology used here is the number of projects available on the country divided by the number of rolling stock manufacturer won the project. A Country that has many projects but is continuously won by a single manufacturer dictates a strong loyalty towards that manufacturer. Furthermore, if a country has many projects and won by various manufacturers, that means the country has a low to medium loyalty index.

### 3.2. The Level of Requirement

The level of requirement indicates that the market is suitable for the company's capability in order to supply the potential market. The indicators proposed are price, the technology of the product, and the expected delivery time. This data collected from various news found over reputable railway industry news provider, namely: railwaypro, international railway journal, or railway gazette.

- [1]. Ability to provide competitive prices. This data can be from extensive market research, from the data gathered from market research. The expected price from a potential customer or at least the acceptable price for a product on a regional or global scale can be an estimated expected price.

- [2]. The company owns the technology to deliver such a product. As mentioned earlier, one of the constrain in this paper is technology segmentation. This paper will only focus on a non-self-propelled passenger vehicle.
- [3]. The company can deliver the product promptly. Alternatively, sometimes called the expected delivery time. Delivery time is one of the crucial criteria in determining the level of requirement as one unable to complete a product within the expected delivery time. The supplier may bear the late delivery penalty. Thus, selecting a target market based on this criterion is paramount. This data also can be gathered from market research.

Once the criteria are agreed, the challenge is to collect all the necessary information for all the alternatives in given market segmentation. Besides, the 4-*Ps* criteria, or at least the first 3*Ps*, must be accommodated as alternatives' parameters. This step can be done by extensive market research to the segmented market, as described above. Doing market segmentation will narrow the number of alternatives and reduce the person-hours to do market research. The collected parameters for each alternative an as follows: the distribution of a new railway line project and the potential customer buying history, which includes: (1) From which customers bought their rolling stock; (2) he expected delivery time; (3) And at what price, (4) Besides, the macroeconomic parameters.

The AHP structure follows the decision of goal and the criterion. Figure 4 shows the AHP structure.

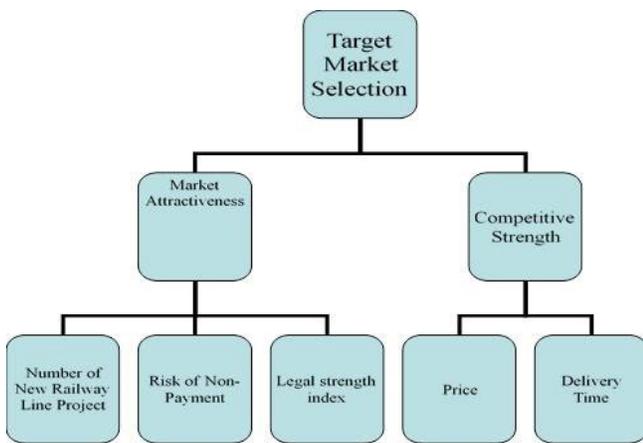


Figure 4: AHP Hierarchical Structure Model

This structure is a combination of the two-level structure of AHP used in the Boeing case as described in the secure choice software's sample, and divide the five criteria introduced by (Zhao, Li, & Li, 2011) into the two primary criteria; Market Attractiveness and Competitive Strength. The criteria are as the 4-*Ps*, as suggested by (Haddad,

Sanders, & Tewkesbury, 2020).

Once the company has determined the structure, the next thing is to derive priorities for the criteria by making a pairwise comparison between criteria for the expected objective to achieve their weights. In the first level, we will compare the market attractiveness against competitive strength. In this perspective, the market attractiveness is almost equal with competitive strength. But, with a slight tendency to competitive strength.

The market attractiveness criterion. A pairwise comparison consists of four criteria, namely: Number of Railway Project, Risk of Non-Payment, Legal Strength Index, and Customer Loyalty. Table 1 shows the pairwise comparison table among those criteria.

Table 1: Pairwise Comparison Matrix of Market Attractiveness

	Number of Railway Project	Risk of Non-Payment	Legal Strength Index	Customer Loyalty
Number of Railway Project	1	7	5	7
Risk of Non-Payment		1	5	5
Legal Strength Index			1	5
Customer Loyalty				1

The number administrated inside the table is from the meaningful scale of absolute numbers (Saaty, 2008). A scale is needed to understand the meaning of the numbers and how one number represents how many times more crucial one element is over another. Thus, table 2 is provided to exhibits such scale.

While in the competitive strength, the price and delivery time is as equal importance. Once the company has made the criteria of the pairwise comparison, the company can calculate a pairwise matrix using alternatives' parameters provided in table 3. The pairwise comparison between each pair is made by dividing the quantitative data provided in each alternative's parameter one by one in each respective field. Alternatives' parameters provided in the table are gathered from various reputable sources. First, number of future project is gathered from reputable third party in rolling stock market research. Second, the rate of non-payment risk is gathered from reputable rating agencies, Euler Hermes. Third, the strength of legal index is gathered from world bank data.

**Table 2:** The Imperative Scale of Absolute Numbers

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective.
2	Weak or slight	Experience and judgment slightly favor one activity over another.
3	Moderate importance	
4	Moderate plus	Experience and judgment strongly favor one activity over another.
5	Strong importance	
6	Strong plus	An activity is favored very strongly over another; its dominance demonstrated in practice.
7	Very strong or demonstrated importance	
8	Very,very strong	The evidence favoring one activity over another is of the highest possible order of affirmation.
9	Extreme importance	

**Table 3:** Alternatives' parameters

Country	Region	Number of Future Project	Rating of Non-Payment Risk* (1 = low to 4 = high)	Strength of Legal Rights Index (0=weak to 12=strong)	Customer Loyalty Index** Source:market research (1 = low to 3=high)	Average Price*** (Thousand USD) Source: market research	AverageDelivery Time**** (months) Source: market research
Algeria	Africa	1	1	2	1	550	10
Angola	Africa	1	1	1	2	550	10
Botswana	Africa	1	4	5	1	550	10
Ethiopia	Africa	2	2	3	1	550	10
Ghana	Africa	2	3	6	1	550	10
Kenya	Africa	9	2	10	2	550	10
Nigeria	Africa	5	2	9	1	550	10
South Africa	Africa	4	2	5	3	550	10
Sudan	Africa	2	1	5	1	550	10
Tanzania	Africa	10	2	5	1	550	10
India	Asia	5	2	9	2	470	13
Iran	Asia	2	1	2	2	470	13
Pakistan	Asia	1	1	2	2	495	13
Sri Lanka	Asia	1	1	2	2	470	13
Myanmar	South East Asia	2	1	2	2	470	6
Thailand	South East Asia	4	3	7	2	470	6
Australia	Australia & Pacific	3	4	11	1	495	29
New Zealand	Australia & Pacific	1	4	12	2	495	29
Argentina	South/Latin America	3	1	3	1	495	10
Brazil	South/Latin America	2	2	2	3	495	10
Chile	South/Latin America	4	3	4	3	495	10
Colombia	South/Latin America	5	3	12	3	495	10
Mexico	South/Latin America	5	3	10	2	495	10
Peru	South/Latin America	1	4	7	1	495	10

\*Adjusted into goal preference low country risk is more desirable = 4 and high country risk is less desirable = 1

\*\*Adjusted into goal preference low loyalty is more desirable = 4 and high loyalty is less desirable = 1

\*\*\*If the price for a country is not available, the acceptable price in each region or global will be proposed

\*\*\*\*If the delivery time for a country is not available, the acceptable delivery time in each region or global will be proposed

## 4. Results

A developing rolling stock manufacturer based on South East Asia should allocate their resources on following top 5 target market:

- [1]. Australia. Australia's federal government published its 2019-20 budget focusing infrastructure spending for a growing population and ease congestion on major corridors. The budget allocates \$A 2bn (\$US 1.4 bn) from 2020-21 onward towards the upgrading of the Melbourne – Geelong line, a \$A 700m in the budget towards track doubling between Geelong and Waurin Ponds, and else. Australia is an attractive market in addition to the first country's parameters (Mark, 2019).
- [2]. Kenya. China's Exim Bank will provide \$ US 1.5bn for the Nairobi – Naivasha section, representing 85% of the total cost of the project. The Kenyan government will raise the remaining 15% through the Railway Development Levy Fund (Briginshaw, 2017). Though China heavily influences it at its first stage, Kenya has started to open the project to other manufacturers other than China. A right combination of enormous market capacity, medium country loyalty, and a not very demanding in the form of technology, making Kenya a good target market selection.
- [3]. Tanzania. Tanzania's president declared that the World Bank is helping Shillings 300bn (\$ US 134.7m) to help with the management of Tanzania Railway's 2700 km meter-gauge network (Oirere, 2014). This mark Tanzania has a relatively lot of railway projects on hands. Though the country parameters are lower than Kenya, its the number of projects is attractive enough to consider Kenya as the top 5 target market. Even though China supported Tanzania in building its railway infrastructure, PT INKA still has an opportunity to sway its loyalty.
- [4]. New Zealand; New Zealand has unveiled its 10-year rail strategy; New Zealand has already announced several railway project tenders, making this country is an attractive target market. In Jan 2020, New Zealand Minister of Transport has announced that NZD to allocate 1.1 billion (USD 717.4 million) for railway projects across the country (Briginshaw, 2020). Supported by other useful parameters, New Zealand making itself as an ideal target market.
- [5]. India; India's finance minister, Ms. Nirmala Sitharaman, announced an outlay of Rs 1610bn (\$ US 22.4bn) for Indian Railways (IR) for the 2020-21 financial year on 1st February, including a gross budgetary support of Rs 700bn. This increase is up slightly from the Rs 1600bn provided for 2019-20

(Jha, 2020). With this massive number of projects in India, surely making itself an attractive target market.

Prioritizing those five target markets will give more precise guidance in tailoring marketing strategy, obviously, without neglecting other potential markets as well.

## 5. Discussion

(Haddad, Sanders, & Tewkesbury, 2020) have successfully used the two-layer criteria in ranking the four regions as Boeing's target markets using AHP and PROMETHEE II, and both approaches resulted the similar outcome. Moreover, (Zhao, Li, & Li, 2011) has successfully analyzed the main factors that influence China's textile and garment trade. The listed suitable criteria as the basis for selecting target markets for the industry in Asia is combined with the AHP structure introduced by (Haddad, Sanders, & Tewkesbury, 2020). By combining the two things earlier, this paper has proven that this method successfully ranks target markets of a railway manufacturer from several countries with known quantitative parameters.

The future work from this paper should not only focusing on the ranking process. Nevertheless, also to prioritize all known projects, into quadrants based on the attractiveness of the market and the enterprise's competitive strength known as the GE-McKinsey Matrix.

The nine-box matrix gives a systematic method for the decentralized enterprise to select where best regions to invest its cash. Rather than rely on each business unit's forecasting of its prospects, the enterprise can decide a unit by two elements that will chose whether it will do better in the future: the attractiveness of the related industry and the unit's competitive strength within that industry (Quarterly, 2008).

As the type of rolling stock is varied, each market can be as each industry. Hence market attractiveness can also be described as industry attractiveness. Moreover, the effort to penetrate a particular market can also be an investment. Therefore, selecting and ranking the target market is not a final decision; future work should consider putting the known market into GE-McKinsey nine-box matrix. Thus, the company will have several options once the market is identified and ranked. Those options are to invest, earn, or to divest.

## 6. Conclusion

This paper has concluded that AHP, using the 4-P criteria, works in selecting target market selection in the

rolling stock market. The finding is that the top five markets are among 24 alternatives; those are Australia, Kenya, Tanzania, New Zealand, and India. This paper will provide a theoretical base on selecting a target market for a rolling stock manufacturer. Thus, the implementation will have to consider each company's experts judgments to use this AHP method, especially on the pairwise comparison of the criterion.

Following the objectives of this research, the results can be used as a reference for rolling stock manufacturing to select specific target markets. The use of criterion and the options' parameters can also be adjusted based on the company's resources, limitation, and certainly considering the company's experts' discretion.

The application of this study will require a technology adoption in making software or an app out of this methodology, then embedded it in a Customer relationship Management to ease the decision-making process. By doing so, the process of decision-making will be faster and more justifiable. As in today's world, "it is not the big that eat the small; it is the fast that eats the slow."

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