PT PAL Empowerment Strategy as a Lead Integrator at ALPALHANKAM KCR 60 to Support State Defense at Sea

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Abstract. Research on the empowerment of PT PAL as a Lead Integrator on the KCR 60 Defense Security Equipment Tool (ALPALHANKAM) to support national defense at sea as part of the Alutsista readiness within the scope of Defense Management. This study is important because according to the Law Decree No: 16 of 2012 on Defense Industry which states that one of the government-owned defense industries designed as Lead Integrator (main guide) is PT. PAL Indonesia Persero. The tasks and functions of the 60 m Fast Missile Ship (KCR 60) are very significant with a relatively small size but because it is equipped with Anti-Surface Missiles, the "deterrence effect " becomes very large both regionally and globally. This study has the objective to analyze the condition of the involvement of PT PAL as Lead Integrator in the development and maintenance of KCR 60 and empowerment strategies that must be implemented in order to promote the progress of shipbuilding companies nationwide ground water either owned by the government (SOEs) and private (BUMS) to support national defense at sea. In addition to PT PAL, the role of the TNI-AL as the user of the KCR 60 is very important and dominant so that research is carried out starting from the TNI-AL Headquarters, Koarmada, the Fast Boat Unit in the Koarmada and KRI as a tactical unit carrying out field operations. The research method used is qualitative where primary data collection is done by interview, observation and secondary data derived from literature review and researching facts and data in the field up to the smallest unit, namely KRI and from various publications in the form of books, journals and mass media and social media related to the object of research. The data analysis technique used is the interactive model of Miles & Huberman.

1. Introduction
Indonesia is an archipelago which only one se pert ribs of its area is land. This makes Indonesia worthy of being called the largest archipelagic state in the world. It has a national jurisdiction area of ± 7.8 million km² with two-thirds of which is an ocean of ± 5.9 million km² which includes the Indonesian Exclusive Economic Zone (EEZ) covering an area of ± 2.7 million km² followed by territorial seas, archipelagic waters and inland waters covering an area of ± 3.2 million km². In addition, Indonesia also has a coastline length of ± 81,000 km which is the second longest in the world after Canada and has 17,504 islands spread over 34 provinces [1].

Meanwhile, Indonesia also has a very strategic geographical position, which is between two continents and two oceans. There is a lot of trading and shipping activities in this
region. This requires increasing awareness of the environment around the area of Indonesia. In addition, of the 9 world choke points, 4 choke points are in Indonesia, namely the Malacca strait, Sunda strait, Makassar strait and Lombok strait [2]. Based on these facts, state defense in the sea area is something that cannot be negotiated and must always be improved in order to maintain the security and sovereignty of the state.

Indonesia as a sovereign state does not escape from threats and harassment, both who come from outside the country as well as the emerging domestic [3]. National defense has a vital role for the country. National defense is held to maintain the integrity of the state and the safety of its nation from threats and disturbances that endanger the territorial integrity and safety of the nation. In the Law of the Republic of Indonesia Number 3 of 2002 concerning National Defense, State defense is all efforts to defend the sovereignty of the state, the territorial integrity of the Unitary State of the Republic of Indonesia, and the safety of the entire nation from threats and disturbances to the integrity of the nation and state [19].

The role of PT. PAL strengthened after the issuance of [4] concerning the Defense Industry where strategic SOEs were given a wider space. Based on the Act, PT. PAL professionally has been able to fulfill their duty and obligation to play an active role in supporting the fulfillment of alutsista naval and serves as the primary guide for naval. In accordance with the initial purpose of its establishment as a center of excellence for the national maritime industry, PT. PAL has proven its reputation as a major force in the development of the national shipping and maritime services industry [5].

The Missile Fast Ship (KCR) 60 which has a length of 60 meters is a ship designed by the nation's own children which is a development of the FPB 57 type warship (the result of a production collaboration between PT PAL and the leading German shipping company Friedrich Lurssen Werft (FLW) in the 1990s.). KCR 60 has been successfully produced by PT PAL since 2014 for the first batch. This ship has a special ability to carry out fast attacks using missile weapons and can do fast evasive movements from enemy attacks [6-7]. The "Hit and Run" method is to carry out an attack with a sudden main blow, generally carried out in a unit / team (several KCR) then dodge quickly. This ship is a ship that is required to be able to go fast. KCR 60 to be able to carry out the task faced with threats and water conditions with waves, it is necessary to design to have good stability and be supported by a reliable weapon control system and electronic communication [8-9].

2. Materials and Methods
Qualitative research method is a method used to properly describe about the approach and the type of research, subject and object, informants/sources of research, data collection techniques, and data analysis of the proposal and or research report required a good understanding of each of these concepts [10-14]. This is important to ensure that the type of research up to the analysis of the data set forth in the research proposal and report is in accordance with the required rules of scientific writing. The time of the research was carried out for ± 6 months from April 2020 after the research proposal was approved.

The research subject is the informant / resource person. The definition of an informant is a person who has understanding, knowledge and involvement in the research background used to provide all information about the conditions regarding the research background.

The main research object is PT PAL itself as the government's largest and most comprehensive state-owned industrial and shipbuilding company which has successfully designed, built, and maintained KCR 60 since 2012. The next object is the TNI-AL which has been using the KCR 60 starting from the TNI-AL Headquarters as the highest organization that has the highest authority and policy in the navy up to the KRI type KCR 60 which is already operating under the guidance of the Commander of the Fast Ship Unit of the First Commando Armada and II [20].

In obtaining information from the resource persons/informants to make it more structured and supported the completion of the study, research questions are made. These written questions and questionnaires will be distributed to the resource persons / informants to be able to provide answers. The resource persons/informants of this research were divided into 3 groups, namely:
a. Group A. Questions in group A about the informant's point of view on the development and maintenance activities of Alpalhankam KCR 60 at PT PAL Surabaya to support national defense at sea.

b. Group B. Questions in group B about the informant's point of view on the development and maintenance of Alpalhankam KCR 60 at TNI AL Headquarters Cilangkap, East Jakarta to support national defense at sea.

3. Results

The result of the accumulation of power factor of 1.64 and 1.24 so that the assumption is obtained that the strength of the PT PAL is greater to be able to cover the weakness factor, shown in Table 1. IFAS matrix below.

| Table 1. IFAS (Internal Factor Analysis Summary) Matrix | Source: Processed by Researchers (2020) |
|--------------------------------------------------------|-----------------------------------------|
| Factor | Weight (1-100%) | Value scale | Weight mark | Information |
|---|---|---|---|---|
| a. Excess / strength | 0.50 | 0.13 | 1.64 | 0.39 | value scale: 1 = bad, 2 = medium, 3 = good, 4 = very good |
| 1. The current human resources are competent enough with the required expertise. | 0.13 | 3 | 0.36 | |
| 2. The facilities and infrastructure that are already available are quite complete. | 0.12 | 3 | 0.36 | |
| 3. The experience and quality of the work on the implementation of the Development & Harkan KCR 60 is quite good and on time | 0.14 | 4 | 0.56 | |
| 4. The location of the shipyard is quite strategic so that it is easy to reach and close to material suppliers | 0.11 | 3 | 0.33 | |
| b. Weaknesses | 0.50 | 0.12 | 1.24 | 0.36 | The inverse value scale of the excess factor: 1 = very good, 2 = good, 3 = medium, 4 = bad |
| 1. The facilities and equipment are old so they need to be rejuvenated and add new ones | 0.12 | 3 | 0.36 | |
| 2. It is necessary to procure equipment with advanced technology so that the implementation of the Development and Harkan of KCR 60 is maximized | 0.12 | 2 | 0.24 | |
| 3. Human resources are still lacking in quantity | 0.14 | 2 | 0.28 | |
| 4. Land has been fixed and cannot be expanded anymore, development is only through replacement (rebuild), multi-storey buildings and or under ground | 0.12 | 3 | 0.36 | |
| Total | 1.0 | 2.88 | |

In the EFAS Matrix (External Factor Analysis Summary) will be obtained an assessment of the external strategic factors which are opportunities (opportunities) and threats PT PAL company. Stages by determining factors into the opportunities and threats the company in column 1, then gave the weight of each of these factors on a scale from 1.0 (most important) to 0.0 (not important) based on the influence
of factors of the company's strategy (all weights must not exceed a total score of 1.00), column 3 is filled with a rating for each factor by giving a scale ranging from 4 (outstanding) to 1 (poor) for strength, while for weakness the opposite is where a scale of 1 is very good to 4 is bad, based on the influence of these factors on the condition of the company. Column 4 to obtain the total weighting score for PT PAL is 2.48. The result of the accumulation of the chance factor of 1.39 and 1.09 so that the assumption is obtained that the opportunity of PT PAL is greater to reduce the threat factor, as shown in Table 2. EFAS matrix below.

Table 2. Matrix EFAS (External Factor Analysis Summary)

| Source: Processed by Researchers (2020) |
|----------------------------------------|
| Factor | Weight (1-100%) | Value scale | Weight mark | Information |
|--------|-----------------|-------------|-------------|-------------|
| c. Opportunity: | 0.50 | 1.39 | Value scale: 1 = bad 2 = medium 3 = good 4 = very good |
| 1. The market potential KCR 60 on the outside and inside the country is still quite large | 0.11 | 3 | 0.33 |
| 2. Government regulations / regulations on the defense industry that oblige users to maintain and repair the Defense and Security Agency KCR 60 domestically | 0.14 | 4 | 0.56 |
| 3. The need for KCR 60 for the Navy is still quite a lot until the end of the 2020 to 2024 Strategic Plan, only 6 of the 16 planned. | 0.14 | 2 | 0.28 |
| 4. Supporting companies (suppliers) are located near shipyards so that delivery speeds and costs are low. | 0.11 | 2 | 0.22 |
| d. threats: | 0.50 | 1.09 | The inverse value scale of the probability factor: 1 = Very good 2 = good 3 = medium 4 = bad |
| 1. There are competitors/competitors of similar shipbuilding companies at home and abroad. | 0.12 | 3 | 0.36 |
| 2. Old work support equipment and old technology can reduce business competition. | 0.13 | 2 | 0.26 |
| 3. The company's management is less than optimal, causing workers' rights to be received late. | 0.14 | 1 | 0.14 |
| 4. Insufficient and limited supply of raw materials causes delays in the completion of work | 0.11 | 3 | 0.33 |
| Total | 1.00 | 2.48 |

The results of the accumulation of internal factors 2.88 and external factors 2.48 so that the assumption is obtained that the internal factors owned by PT PAL are larger in order to reduce external factors.

Table 3. Factors Internal and External Empowerment Strategy PT PAL

Source: Processed by Researchers (2020)

| INTERNAL FACTORS |
|------------------|
| Strength | 1. The current human resources are competent enough with the required expertise. 2. The facilities and infrastructure that are already available are quite complete. 3. The experience and quality of the work execution of development and harkan KCR 60 is pretty good and timely. 4. The location of the shipyard is quite strategic so that it is easy to reach and close to the port and material suppliers. |
| Weakness | 1. The facilities and equipment are old so they need to be rejuvenated and added new ones  
2. It is necessary to procure equipment with advanced technology so that the implementation of development & harkan KCR 60 can be maximized  
3. The quantity of human resources owned is still lacking so it needs to be added.  
4. Fixed land cannot be expanded, development is only by rebuilding, level buildings and/under ground |

| EKSTERNAL FACTORS | Opportunity | 1. Market potential from within and outside the country is still quite large  
2. Government regulations/regulations on the defense industry that require users to carry out the Development & Harkan of KCR 60 domestically  
3. The need for KCR 60 for the TNI-AL is still a lot until the end of the 2024 strategic plan, only 6 of the 16 are planned.  
4. Supporting companies (suppliers) are located near shipyards so that shipping speeds and costs are low. |

| Threats | 1. There are competitors/competitors of similar shipyards at home and abroad.  
2. Old supporting equipment and old technology can reduce business competition  
3. The company's management is less than optimal, causing workers' rights to be received late  
4. Insufficient and limited supply of raw materials can cause delays in completing work |

4. Discussion

4.1. Discussion on the involvement of PT PAL as Lead Integrator

Based on research data that has been carried out and presented in the previous section to identify the involvement of PT PAL as Lead Integrator on Alpalhankam KCR 60 to support the country's defense at sea as well as the formulation of strategic priorities that have been formulated

4.1.1. Involvement of PT PAL as Lead Integrator on Alpalhankam KCR 60

a. Construction of KCR

The need for KCR 60 for the Navy is still quite large, as planned by the ministry of defense until the end of the 2020-2024 Strategic Plan, there are 16 units of KCR 60 and 16 units of KCR 40. At this time the condition of the newly built KCR 60 is 6 units, with information 4 the unit has been completed and has been operated by the TNI-AL while 2 more units are still under construction, from the first installation of the Kiel in September 2019 with a construction time of about 2.5 years, it is estimated that it will be completed in mid-2022. If more KCR 60 are built and handed over to Users in this case the TNI-AL, there will be more maintenance and repairs that must be carried out to be able to carry out their operational tasks optimally which will involve PT PAL as a Lead Integrator with other national shipbuilding companies.

The 4 units of KCR 60 that have been completed and operated by the Indonesian Navy consist of two batches, the first batch of 3 ships consisting of KRI Sampari-628, KRI Tombak-629 which was launched in July 2014 are included in the ranks of Koarmada II Surabaya and under the guidance of the Commander of the Fast Ship Unit of Koarmada II and based in Ujung Surabaya. The other is KRI Halasan-630, which was launched in September 2014 and is included in the ranks of the Jakarta I Corps and is under the guidance of the Commander of the Jakarta I Jakarta Fast Boat Unit and is based in Tanjung Uban, Bintan Island, Riau Archipelago Province. The second batch consisted of only 1 KRI Kerambit-627 ship which was launched in February 2018 and subsequently included in the guidance of the Commander of the Fast Boat Unit of Koarmada II based in Tanjung Uban, Bintan, Riau Islands Province [20].

At the time of the construction of the first batch of KCR consisting of 3 KRLs, the Fitted for But Not With (FFBNW) project system was used so that only the platform was built first, while the installation of sensors and weapons that had been prepared in place would await the budget of the following years. In the second batch, the KRI Kerambit-627 platform was built, followed by the Fitted for But Not With project for the Kerambit KRI-627 sensor and weapon systems. In
shipbuilding, it is known that there are two project systems, the first is only the platform (ship building), then after completion of the platform construction, it will be followed by the installation program of sensors and weapons systems in accordance with the needs and capabilities of the State Budget, which will be budgeted for the following year.

The second project system is a complete one, where the platform, sensor system and weapons are built and installed at the same time, only to be handed over to the user. The third batch consisting of two units using the system a complete project that at times handed over later to the users this case the Navy is already complete platform with a system of sensors and weapon so that when delivered to a user (TNI-AL) to the second vessel concerned has been able to directly used according to its original function.

The first batch of KCR 60 consisting of 3 KRIs was not continued with the installation of the sensor and weapon system, since it was launched and handed over to the TNI-AL even in the middle of its operation for KRI Sampari-628 and KRI Tombak-629 instead of installing weapons that were not as planned. Previously, in the bow, the 57mm cannon was installed. In fact, the Bofors 40mm L/70 cannon was installed. The former KRI Teluk Semangka-512 and at the stern was installed the CIWS NG-18 cannon made in China, modelled on Russia, which has 6 barrels of 30 mm calibre. -641 and KRI Kujang-642, so they had to remove 2 dummy C-705 AKPA missile launchers that had previously been installed at the stern of the ship.

Before the bow and stern guns were installed, the propulsion system condition was not very good because at high bearings to get maximum speed there was a tendency for the engine to heat up quickly. After conducting research and coordinating with PT PAL at the time of designing the KCR 60 to plan a propulsion system using 2 MPK MTU 2880 KW, it is actually only a relatively small excess of power tolerance, so that the impact when operated on high bearings, the temperature condition of the engine is basically the temperature. It's almost within the tolerance limit.

After the installation of the bow gun and stern CIWS cannon on the KRI Sampari-628, the condition of the propulsion system performance decreased again, plus there was a slight decrease in the bow trim which, although slightly, would certainly affect the propulsion system of the ship. During a visit to Sampari KRI-628 operated by the data obtained during Koarmada II vessel concerned has experienced three times the incidence of over-heating and the last in 2020. This resulted in the heaviest damage, which causes the machine to be fixed at the level of overhaul / down engine (replacing components faulty components on the machine).

b. KCR 60 Maintenance

The majority of the oldest KCR 60 type KRIs are currently only 6 years old because the first batch was launched in 2014, in general the condition of the ship building (platform) and supporting facilities are still in good condition; because the operating period is not too long, plus after being handed over to the TNI-AL there are several equipment and components that still receive guarantees from PT PAL and the factory that produces the equipment.

The main problem of the first batch of KCR 60 is in the field of the propulsion system where in fact, when making the design, in the decision making to determine the size of the MPK 2880 KW, there is a difference in the tolerance of the power produced and the tonnage load that is too small which will have an impact when using a high bearing, the MPK load becomes heavy. where the possibility of the engine temperature will easily rise is very large. This happened to the three ships of the first batch, namely KRI Sampari-629, KRI Tombak-629 and KRI Halasan-630.

The propulsion system problem got bigger after KRI Sampari-628 and KRI Tombak-629 were installed with some equipment that was not planned at the time of design, including; Bofors 40 mm L/70 bow cannon Ex KRI Teluk Semangka-502 and stern cannon CIWS NG-18 6 barrel 30 mm calibre made in China Ex KRI Clurit-641 and KRI Kujang-642, and several other equipment that can affect trim and and the ship's load which in the end also had an impact on the ship's propulsion system where the ship could not be loaded with high bearings because the engine
temperature immediately became high, even for KRI Sampari-628 and KRI Tombak-629 MPK had experienced several times over heating while carrying out operation task.

Meanwhile, in the future, according to the initial design for KRI Sampari and KRI Tombak, the bow gun from Bofors 40 mm can be replaced with a Russian 57 mm gun (new procurement). The replacement of the bow gun should have gone through a stability software test and a hydrodynamic test at PT PAL or the ITS shipbuilding engineering faculty because in general if the bow will be given an additional load, namely the difference in weight between the Russian 57 mm gun minus the Swedish 40 mm Bofors gun, there is a possibility of trimming the bow of the ship. will increase slightly due to the addition of the bow load.

Because of the problems mentioned above, finally, through good coordination and cooperation between PT PAL and the Koarmada and TNI-AL HQ managed to implement the proposed replacement of 2 MPK right and left from 2880 KW to 3900 KW and the results can be applied to the KCR 60 second batch of KRI Kerambit -627 and will be forwarded to the next batches of KCR 60. In addition to increasing MPK power, there is also an increase in the sensing system and weapons as well as the installation of a fin stabilizer, so that it is hoped that the KCR 60 will soon carry out its main tasks and functions optimally.

For KCR 60 whose assignment was at Koarmada II Surabaya for maintenance and repairs in the early years after being handed over to the TNI-AL, maintenance and repair activities were generally still carried out at PT PAL including underwater building maintenance or maintenance on top of the dock also using the facilities owned PT PAL. However, in the following years it began to be distributed to government and private shipyards around the Central and East Java areas.

For KCR 60 which is placed in Koarmada I or in the western region because the location is quite far from PT PAL in Surabaya, so that since the beginning the maintenance and maintenance has used companies and shipyards in the local area. Only for damages that the company and local shipyard cannot handle, the new KCR 60 will be brought to PT PAL in Surabaya. Actually, it is necessary to implement the role of PT PAL as the main guide for national companies and shipyards, consisting of those owned by the government (BUMN) and those owned by the private sector (BUMS) in the context of developing industrial companies and shipyards in the country.

### 4.1.2. Empowerment Strategy PT PAL as Lead Integrator Alphalhankam KCR 60 in support of national defense at sea

In the discussion of PT PAL’s empowerment strategy in the development and maintenance of Alphalhankam KCR 60, there are 3 strategies selected based on the results of observations and interviews with resource persons both at PT PAL and the TNI-AL organization at the TNI-AL Headquarters and Koarmada I and II levels. includes a development strategy (enabling), a strategy to strengthen power (empowering), and an independence strategy, which will be processed using the SWOT method and the AHP method to be selected as a priority strategy.

#### a. Analysis of Internal and External Factors

Based on the external analysis of the EFAS matrix (External Factor Analysis Summary) from the PT PAL company, it is concluded that the external factor is quite high, it can be seen from the total score obtained, which is 2.48. The results obtained from the sum of the opportunity factors of 1.39 and the constraints/threats of 1.09 so that the assumption is obtained that the opportunities owned by the PT PAL company have the opportunity to be able to reduce the threat/constraint factors. For a chance factor is the highest is regulatory / government regulations concerning the defense industry which requires users to build and maintain Alphalhankam KCR 60 in the country (56%), while the factors threats / constraints as the highest, the competitor / competitor’s shipyard kind of inside and outside country (36%). Can be seen in Table 2. Matrix EFAS.

Based on the Internal Factor Analysis Summary (IFAS) Matrix analysis of the PT PAL shipyard, it can be concluded that the internal factors are high with a total score of 2.88 obtained from the accumulation between the Strengths (Strengths) 1.64 and
Weaknesses \(	ext{(Weaknesses)}\) 1.24 so that obtained the assumption that the strength of the company is greater able to reduce the weakness factor. For the highest advantage factor, namely experience and quality of work implementation is quite good and on time (56%), while the weakness factor is facilities and equipment that are old so they need to be rejuvenated and added new (36%). Can be seen in Table 1. Matrix IFAS.

b. Empowerment Strategy Planning

In the discussion of empowerment strategy planning using the SWOT method, which is divided in analysis Empowerment Strategy SWOT Matrix which includes[15]:

1) Development Strategy \((\text{Enabling})\)

The strength factor is the experience and quality of the work on the construction and maintenance of KCR 60 which is quite good and on time, as well as the location of the shipyard which is quite strategic so that it is easily accessible and close to material suppliers. The weakness factor is that the facilities and equipment are old so they need to be rejuvenated and added new ones, as well as the need to procure equipment with advanced technology so that the implementation of development and maintenance can be maximized. The opportunity factor is that the supplier company is located near the shipyard so that it speeds up shipping and the cost is relatively low. Threat factor is their competitor / competitor’s similar shipyard in and outside the country, as well as supporting equipment work the old aged and old technology can either u Rangi competition.

2) Strategy to strengthen power \((\text{Empowering})\)

Its power factor is human resources owned by now quite competent with skills according required. The weakness factor is the lack of human resources in quantity. The opportunity factor is that there are still many needs for KCR 60 until the end of the 2024 Strategic Plan, there are only 6 units out of the 16 units that have been planned. The threat factor is that the company's management is less than optimal, causing workers' rights to be received late.

3) Independence Strategy

The strength factor is that the facilities and infrastructure that are already available are quite complete. The weakness factor is PT PAL’s fixed (fixed) land cannot be expanded anymore so that for development only through the replacement of new buildings (rebuild) and multi-storey and or underground buildings, all of which require high costs. Factors chances of market potential within and outside the country which is still quite large, and regulatory / government regulations concerning the defense industry that requires the user to carry out development and maintenance an Alphalhanka KCR 60 in the country. The threat factor is the supply of raw materials, which is sometimes lacking and limited, can cause delays in completing work.

c. Determination of Priority Empowerment Strategies

Discussion on the determination of priority empowerment strategies using AHP to construct the first stage of a hierarchical system SWOT model as in Figure 5.7 Space Matrix SWOT divisible by 4 are quadrants 1 SO strategy (strengths and opportunities) with a growth strategy , quadrant 2 strategy ST (strength and threat ) with a competitive strategy , quadrant 3 WO strategy (weaknesses and opportunities) with a reverse strategy , and quadrant 4 WT strategy (weaknesses and threats) with a defensive strategy .

Based on the results of field observations made Analysis SWOT matrix that is divisible by 4 criteria [16]: strengths, weaknesses, opportunities and threats equipped with the factors, then according Figure 5.8 created chart empowerment strategies PT PAL with 4 grooves that power factor. Weaknesses, opportunities and threats are finally combined and 4 strategies are made, namely SO, ST, WO, WT Strategies:

a) SO Strategy \((\text{Strengths}-\text{Opportunity})\) strategy of exploiting opportunities by optimizing power is to:
1) Improvement of PT PAL's shipyard infrastructure such as replacing or rebuilding old buildings that are no longer productive with new buildings that adapt to technological advances and PT PAL's organizational needs, in addition to being able to develop the concept of multi-storey and underground buildings as needed.

2) Marketing enhancing cooperation with the Navy, Military Headquarters and the Ministry of Defense of natural development and maintenance of KCR 60 is sustainable (sustainable) in coordination with the users (Koarmada I, II and III) that can be implemented service improvement Harkan involving companies and shipyards belonging the government and the private sector around the KRI type KCR 60 base.

b) ST Strategy (Strengths-Threats) Strategy using strength to overcome threats, namely by:
   1) Prioritizing human resource competencies to send the employee/employee of his education, courses and training internal and external both inside and outside the country in human development PT PAL.
   2) Evaluating and selecting work subcontractors supported by skilled supervision and quality control and raw material subcontractors that can support the supply of good quality materials and in large quantities to improve the quality of the construction and maintenance of KCR 60.

c) WO Strategy (Weakness-Opportunity) Strategy to minimized weakness to take advantage of opportunities, namely by:
   1) Modernization of equipment that is old and in declining condition so that it is more sophisticated and can improve the implementation of the construction and maintenance of KCR 60.
   2) Addition of professional human resources and integrated with the hiring of new employees through a good and transparent recruitment process to ensure the recruitment of quality that has the capacity and expertise in the development and Maintenance ship.
   3) no land fixed and cannot be extended again by the development of new buildings that are applying the principles of effectiveness, efficiency, technological development and organizational interest’s PT PAL and utilizes the concept of multi-storey buildings and underground
   4) Enhanced cooperation with the Headquarters TNI - AL along with the ranks below, TNI and the Ministry of Defense in development and maintenance is increasingly reliable KCR 60 to support the country's defense at sea.

d) WT Strategies (Weakness-Threats) Strategy minimized weaknesses and avoid threats, namely by:
   1) Maintenance tool equipment and infrastructure so awake condition that can still be used to smooth the work of maintenance and repair.
   2) Enhancing cooperation with supplier material that remains smooth support the process of shipbuilding and ship repair.
   3) Improve the management of PT PAL in managing company finances and smoothly paying workers and smoothly paying debts to material suppliers in the construction and maintenance of KCR 60 which is getting better, more reliable and of good quality.
   4) Improve the quality and accuracy of completion of the construction and maintenance work of KCR 60 so that the quality of the work is maintained and on time so that consumers are satisfied and trust.

Then calculate the AHP analysis and generated from our data Pairwise Comparisons among the factors with the highest score factor SWOT Strengths (Strengths) 36.7%. Analysis Pairwise Comparisons between factor SWOT Strengths with the highest value on the experience and work
(39.1%). Analysis Pairwise Comparison of SWOT Weakness Factors with the highest scores on old facilities and equipment (69%). Analysis Pairwise Comparison of the SWOT Opportunity Factors with the highest value at suppliers located close to each other (31%). Analysis Pairwise Comparison of SWOT Threat Factors with the highest score of competitors / similar competitors in the country (45%) [17-18].

Furthermore, from the analysis Pairwise Comparisons make Analysis of Priority Joint SWOT factors with the highest value Priority Group Strengths 36.7% Weakness 14.6% Opportunity 36.5% and Threats 12.3%. Then made analysis Priority Strategies Overall SWOT factors which rank 1 SO Strategy (Strengths-Opportunities / Strengths and Opportunities) value of 33.6%; rank 2 Strategy WO (Weakness-Opportunity / Weaknesses and Opportunities) value of 25.1%; rank 3 Strategy ST (Strengths-Threats / Strengths and Threats) value 21.1%; and ranked 4th WT Strategy (Weakness-Threats / Weaknesses and Threats) a value of 20.2%.

In conclusion empowerment strategy in Analysis Matrix SWOT strategy with AHP priority 1 SO Strategy (Strengths-Opportunities / Strengths and Opportunity), a strategy to exploit the opportunities to optimize the strength is improved infrastructure shipyard PT PAL such as the development of effective new building, efficient, applying technological advances and utilizing the concept of multi-storey / underground buildings and in accordance with the priority needs of PT PAL. Furthermore, the marketing division increased cooperation with the Navy in the development and maintenance of KCR 60 sustainable manner (sustainable) coordinate to the party user that TNI-AL, as well as the TNI Headquarters and the Ministry of Defense as well as users in Koarmada I, II, and III in order to be more re - increase KCR 60 both in quality and quantity for its construction and maintenance.

5. Conclusion
   a. The involvement of PT PAL as Lead Integrator in the construction and maintenance of KCR 60 to support national defense at sea

   PT PAL’s involvement in the construction and maintenance activities of Alphalhankam KCR 60 has been planned since the beginning around the period of 2010. The construction of the first batch of KCR 60 project began in 2012, which is quite proud for the design of KCR 60 is purely the work of the nation's children from PT PAL. The proposal for the KCR 60 project was carried out earlier which was actually a continuation of the successful FPB 57 Nav I to Nav V project with a total of 12 units from 1984 – 2013, in collaboration with the leading German shipbuilding company Friedrich Luersen Werft (FLW). Planning for KCR 60 started from the TNI AL Headquarters through the preparation of Opsreq and Spectek in accordance with the needs and the field of naval operations. It is proposed in stages starting from the TNI-AL Headquarters involving the Koarmada to the TNI Headquarters and then to the Ministry of Defense. In accordance with the mandate of Law number 16 of 2012 concerning the Defense Industry where PT PAL is appointed as Lead Integrator for the defense industry in the maritime sector which has an obligation to foster all national companies and shipyards in the country, both owned by the government (SOEs) and privately owned [4].

   Planning for the development of the KCR 60 project began in the 2007-2011 Strategic Plan, where there was also the process of forming the Defense Industry Policy Committee in April 2010, a committee under the President tasked with coordinating national policies in planning, formulation, implementation, control, synchronization and evaluation in the defense industry. KKIP also supervised the KCR 60 project which was built at PT PAL Surabaya and KCR 40 which was built at a national private shipyard company in Batam (PT Palindo Marine and PT Karimun Anugrah Sejati). Until the end of the 2020-2024 Strategic Plan, it is planned to build a total of 16 KCR 60, each equipped with 4 C-802 Anti-Surface Missiles and 16 KCR 40, each equipped with 2 C-705 Anti-Surface Missiles made in China. But so far, what has been built by PT PAL and has been operated by the TNI-AL, only 4 ships consisting of 2 ships have been operated by Koarmada I and 2 other ships have also been operated by Koarmada II.
Until now, PT PAL has built 6 units of KCR 60, 4 units have been completed and operated by the Indonesian Navy and the remaining 2 units are still in the process of construction which will be completed in mid-2022. The 4 units operated by the Indonesian Navy, in every major and significant platform activity/change will involve PT PAL including in maintenance and repair, especially for ships based in Surabaya. Meanwhile for ships with far bases from PT PAL in Surabaya, it will prioritize the participation of local shipbuilding companies whose capacities and capabilities have met the requirements and this is in accordance with PT PAL's role as Lead Integrator.

After units 5 and 6 have been built and can be operated optimally, it is hoped that PT PAL and the TNI-AL will have obtained one of the best KCR 60 prototypes that can be used as a blueprint to build a large number of KCR 60. The further development of KCR 60 by prioritizing the role of PT PAL as Lead Integrator can then be dispersed to other national shipbuilding companies in the country that have met the requirements for capacity and capability, using the FFBNW project system, namely the platform minus the sensing system, combat management system and weapons.

b. Empowerment Strategy PT PAL development and maintenance of KCR Alpalhankam 60

Based on the SWOT analysis and AHP analysis, the factors that are significant to the development of PT PAL’s shipbuilding business are the Strengths (36.7%); Opportunity (Opportunity) 36.5%; Weaknesses (Weaknesses) 14.6% and Threats (Threats) 12.3%. Of the four paired strategies, namely SO (Strengths-Opportunity), WO Weakness-Opportunity), ST (Strengths-Threats) and WT (Weakness-Threats), the priority strategy according to AHP analysis is SO 33.6% (Strengths Opportunity/strengths and opportunities) are strategies that take advantage of opportunities to optimize the strength that is also at the same time a recommendation from the results of this study are:

1) Improving infrastructure, the shipyard PT PAL, given owned land already cannot be extended again, the improved infrastructure the shipyard PT PAL by means of the development of new buildings (rebuild) the effective, efficient, shortly implemented progress Ilpengtek and harnessing right concept of multi-storey buildings and or underground buildings and in accordance with the priority needs of the organization's development

2) Field Marketing through p Enhancing cooperation with the Navy, TNI and The Ministry of Defense in the development and maintenance of KCR 60 sustainable manner (sustainable) to continue to coordinate to the user (Koarmada I, II and III ) that can be implemented increase maintenance and repair services with an alternative to building a shipyard subsidiary in its operational area and or involving government and private shipbuilding companies around the base and operational area of KRI type KCR 60 mainly in the eastern region (Sorong, Jayapura, Merauke, Ambon and Tarakan)

3) For infrastructure development support KCR 60 that has been too long and no longer efficient including new equipment needed for the construction of ships need to be implemented in stages according to priority procurement so that construction of ships can more effectively and efficiently

4) For the field of Human Resources, it is necessary to anticipate the regeneration of employees who have qualified professional capacities in accordance with their vocational skills which must be managed properly and sustainably, including in this case implementing training and education programs.

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