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A Case Analysis of Explaining the Main Factors that Contribute to ROK's Decision Making in Procurement of Defense Articles

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A CASE ANALYSIS EXPLAINING THE MAIN FACTORS THAT CONTRIBUTE TO ROK'S DECISION MAKING IN PROCUREMENT OF DEFENSE ARTICLES

THESIS

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Abstract

The purpose of this research was to explore the various factors that contribute to ROK's decision making in procurement of foreign countries defense articles. South Korea is one of the largest weapon purchasers from the U.S. and needs a more self-reliant defense force that can maintain its security with its own authority under the current cease-fire situation. Thus, this study focused on identifying the main factors to consider in deciding whether to purchase a major defense weapon system from other countries. Through the interview of experts who participated in specific weapon programs, thirteen specific factors were evaluated including Interoperability, Offset valuation, Mission performance capability, Integrated Logistics Support (ILS), Lifecycle, Timely Deployment, Depot Maintenance, National Security, U.S.-ROK Alliance, Northeast Asia Strategy, Defense Budget Levels, ROK Political Environments and Trends in Public Opinion in order to explain what the essential elements in the process of ROK's decision making are. The focus of this thesis is to identify the critical factors to support foreign weapon programs.

Finally, this study revealed that mission performance capability, interoperability, integrated logistics support, and offset valuation were primary considerations in the process of ROK's decision-making. This information will provide valuable lessons learned which can be applied to future ROK military defense procurement.

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P.S. I also want to give my thesis to my future wife as a “Proposal Present.”

Kim, Se Young

Table of Contents

List of Figures

Page

List of Tables

Page

A CASE ANALYSIS EXPLAINING THE MAIN FACTORS THAT CONTRIBUTE TO ROK'S DECISION MAKING IN PROCUREMENT OF DEFENSE ARTICLES

I. Introduction

In early 2005, the United States (U.S.) and the Republic of Korea (ROK) launched the Strategic Policy Initiative, a cooperative effort aimed at updating the alliance to meet the security threats of the post-9/11 world, restructuring the U.S. presence on the Korean Peninsula, and adjusting command relationships within the alliance (Institute for Defense Analyses, 2007: 1).

For over half a century, the primary purpose of the alliance has remained the deterrence of North Korea. Threat perceptions in both the United States and the Republic of Korea have changed since the late 1990s. The key issue confronting the alliance today is the strategic dissonance regarding North Korea, but other challenges face the alliance: the rise of China, threats to international order posed by terrorists, and proliferation of weapons of mass destruction, as well as the need to restructure the alliance to meet changing international and domestic realities in both countries (INSS Special Report, 2007: 1). The following statement more specifically defines this transformation:

> Overall, we judge alliance transformation the best option to address both the military and political dimensions of the alliance. Transforming the alliance, including the transfer of wartime operational control, will not only strengthen the alliance politically but also open new avenues for security cooperation. We believe that a transformed alliance will safeguard peace on the Korean Peninsula, support the process of Korean unification, and contribute to a stable and peaceful Asia-Pacific region (INSS Special Report, 2007: 1).

South Korea continues to grow its economy and technology and in the changing security environment in the world, there are suggestions that South Korea needs a self-defense military strength to cope with new threats in the future. Therefore, it is important to understand what factors determine what our country considers in deciding to purchase a major weapon system from foreign countries.

Although this paper details some of the history that has led to this point, the purpose of this study is not merely to analyze the weapon procurement process. Rather, the goal is to explore the various factors that contribute to ROK's decision making in procurement of defense articles.

Background

Historical and Geographical Situation of South Korea

Throughout history, Korea has experienced invasions from powerful countries. Korea, both the South and North, was under the occupation of Japan for 36 years (1910-1945). It has also been invaded by China, Mongolia, and numerous other times by Japan. This long history of invasions has caused South Korea to require its own defense capability in order to protect itself. The defense system desired by South Korea is not simply for the satisfaction of an immediate need, but also an inevitable necessity (Kim, 2001).

Geographically, Korea is surrounded by some of the most powerful countries in the world, such as Japan, Russia, and China. For instance, as described below, China is definitely one of the main countries to build up its military capability:

> China's defense expenditures are much higher than Chinese officials have published. It is estimated that China's is the third largest military budget in the world, and clearly the largest in Asia. China appears to be expanding its missile forces, allowing them to reach targets in many areas of the world, not just the Pacific region, while also expanding its missile capabilities within this region. China also is improving its ability to project power, and developing advanced systems of military technology (Secretary Rumsfeld, June 2005).

The U.S., the most powerful military country in the world, has also stationed its strong troops in South Korea and Japan. South Korea should increase its military strength in response to North Korea's constant threat and confrontation, other reasons include the lack of certainty about where the North is heading with its nuclear weapons program and the recent dispute with Japan for Dokdo, an island between Korea and Japan, the control of which would help Korea prevent future national security problems. For these reasons, South Korea realized that it will not be able to live without the ability to defend itself in the future (Bak, 2005).

Restructuring the U.S.-ROK Alliance in Korea

In the decade following the terrorist attacks of September 11, 2001, which testified to the emergence of a new global security environment, one defined by the threats posed by international terrorism and the proliferation of weapons of mass destruction, the United States called for a fundamental transformation in the structure of the U.S. military (INSS Special Report, 2007: 6).

There has also been significant discussion concerning the timing of the military transfer between U.S. and ROK at the White House on September 14, 2006. This resulted

in the need to restructure the alliance between the U.S. and the ROK. Recently, the ROK is looking ahead to identify further ways in which the two countries can work together to realize our goals and face shared challenges based on the strong bonds of friendship and common political values as following statement:

> The Republic of Korea (ROK) is a key ally of the United States in Asia and around the world. Like us, the ROK is dedicated to maintaining regional security and to promoting peace and stability around the globe. But our alliance represents more than a defensive balance of power. It is also a positive force for progress. We now have a historic opportunity to transform our alliance to meet the challenges of the 21st century including both traditional and new security, economic, and transnational challenges (Christopher Hill, Sep 2006).

Looking further into the future, the restructuring of the U.S. and ROK military alliance could evolve toward not only a new cooperative structure of security in Northeast Asia but also a shifting of more responsibility to the ROK's armed forces to defend the Korean Peninsula in time of crisis (DISAM Journal, February 2007).

Endeavor of Military Buildup for Self-Defense

1) Present Government's Direction for Military Buildup

The former South Korean President Noh Mu Hyeon has advocated military reform policies of military defense from his inauguration (Lawless, 2006). Traditionally, self-reliant defense had been desired to enable a nation to protect itself by one's own power alone. However currently, it is impossible to protect a nation by oneself, and cooperation with friendly nations is needed (Lee, 2005).

To secure peace on the Korean peninsula, the present government of South Korea should establish a strong, self-reliant defense while sustaining the alliance with the U.S. as a priority (Lee, 2005). That is to say, the national security goals of cooperative self-

reliant defense are the management of the alliance and the strengthening of the nation's defense. In particular from the view of self-reliant defense, it is crucial that South Korea develop the necessary war potential to control North Korea's military strength (Lee, 2005).

2) Opening New Agency for Acquisition: DAPA

In Jan 2006, the South Korean government established a new agency called the Defense Acquisition Program Administration (DAPA), which is charged with providing military supplies and acquiring weapon systems from foreign countries.

This project originated in 2003 as part of a military reform because South Korea realized that efficient weapon system acquisition is the foundation for building strong military power. DAPA was set up to integrate several departments dispersed throughout the Ministry of National Defense, Army, Air Force, and Navy.

South Korea established DAPA with the goal of contributing to the national interest by pursuing customer-centric defense acquisition programs and enhancing two-fold the military's transparency, efficiency, expertise, and competitiveness by 2010. The increasing number of weapon systems imported from foreign countries results in a weakened South Korea's R&D and military industry.

In order to overcome these problems, DAPA established two objectives. The first objective is to increase defense R&D instead of purchasing from foreign countries if circumstances allow. To do this, DAPA will strengthen competitiveness in the defense industry and will join academic institutions with industry to develop core technology. The second objective is to promote transparent procedures and efficiency. DAPA will

pursue obtaining technology with more offsets to improve its technology when it buys weapon systems from foreign countries. From these fundamental concepts, South Korea will increase defense R&D as well as strive for growth in its domestic military industries.

3) Defense Reform 2020

The South Korean government setup the plan reforming the defense structure for preparation of cooperative self reliant defense by 2020. This plan includes projects for possessing new and core technology weapon systems to provide a strong, self-reliant defense. The key desire is to secure technological information from the U.S. and have operational power for executing war through one's own ability (Dong-A Newspaper, 2006).

This implies that South Korea will need much new technology and more and better weapon systems in the future. These new weapon systems will be supplied both by R&D domestic industries and by purchasing from foreign countries through Foreign Military Sales (FMS) or Direct Commercial Sales (DCS).

4) Need for Promoting of South Korea Military Indigenous Production

No country is able to defend itself without support and alliances with other countries. This is also true in the case of South Korea. There are always some mutual benefits and interests behind any alliance and military ties. But few alliances are strong and long-lasting (Seo, 1997). For example, we saw how South Vietnam was conquered by the communist North Vietnamese regime in the1970's. South Vietnam was very dependent on the U.S., but after the withdrawal of U.S. troops, it surrendered eventually because it

did not have any military production of its own. South Korea might follow the same path if it does not start developing its own independent military power, because it can no longer exclusively rely on the alliance with the U.S in the future (Ro, 1975).

Moreover, it is time to look again at ROK military strategies and policies because of the recent changes both in the world and the region. South Korea's priorities in military and politics have changed drastically in recent years. It no longer needs the simple weapon system that was provided by the U.S. in the early 1960s. Rather, South Korea needs to have high technology weapon systems from the U.S. in order to keep the alliance strong and cope with future circumstances (Seo, 1997).

South Korea also has to deal with North Korea, the main enemy of South Korea even today. However, there might come a time in the near future when the two Koreas will unite. If so, what countries could be the main enemies for Korea at that time? As stated above, China and Japan could build an alliance and change the whole dynamics, not only in the Northeast Asian region, but also in the world at large as other countries must cope with coming dangerous situations (Kwun, 1999). To avoid the inevitable future problems mentioned above, South Korea definitely needs to have its own military production capability soon.

Research Question & Investigative Questions

In order to establish a clear direction for the research and a framework for data analysis, several research questions were developed. This study was guided by the following overarching research question:

What factors explain what the ROK military considers in deciding to purchase a major weapon system from foreign countries? How can various factors explain main weapon programs to achieve future weapon systems?

The following investigative questions were established to provide a means for answering the research question. They served as guides for the development of the interview questions in that they directed the nature of the inquiries.

1. What are the most important factors that contribute to ROK's decision making in the procurement of defense articles?

2. Would any significant differences be affected by factors between the U.S. and other countries' programs?

3. In general, are there any significant differences that are affected by factors among the Army, Navy and Air Force?

4. Which factors best each program?

Research Objective

Today, the ROK military has to reach many decisions concerning purchasing any of the many military systems produced by foreign countries. The reason for the preference for purchasing from some foreign countries' relates to the various political, military and economic advantages derived from the U.S. and the other countries using the same military equipment. This thesis addresses the question of how various factors can explain main weapon programs to achieve future weapon systems while simultaneously building long-term indigenous industrial capability.

The decision process must consider various factors to include system interoperability, cost, performance, delivery schedule, lifecycle logistics support, and industrial utilization, as well as the political implications of the selected source such as U.S.-ROK Alliance, Northeast Asia Strategy, and Defense Budget Levels. For all these, the ROK military must rank the priorities in their selection process and diligently evaluate the relative advantages.

The purpose of this chapter is not to promote one procurement method over another. In reality, what method is best for the ROK military depends on a number of factors. The purpose of this chapter is to look at the various factors that should be considered in making the FMS/DCS decision. By understanding these factors and applying them to the ROK military situation, a better decision can be made regarding which method offers the best approach for a future acquisition program.

Methodology

Interviews were conducted with DAPA personnel who carry out the combined functions of weapons procurement and munitions supply. A series of questions was presented to personnel who had significant acquisition experience with each specific program. For each program, case studies provided valuable insight into lessons learned by personnel involved with past contract initiatives. Each expert provided a big picture view that confirmed lessons learned from multiple programs. Therefore, interviews were conducted with two experts in each program.

Summary

This chapter introduced the history and current situation of Korea as they relate to weapons procurement, presented the research and investigative questions, and provided a summary of the ROK's acquisition situation and methodologies, and described the research objective. Chapter II presents an in-depth review of the existing literature on the subjects of Foreign Military Sales and Direct Commercial Sales. Chapter III further describes the research and data collection methodologies used to accomplish the objectives of this study. Chapter IV presents the findings and analysis, While Chapter V provides conclusions and recommendations.

II. Literature Review

Chapter Overview

In today's global economy, the ROK military is a large purchaser of FMS and DCS military systems produced by the foreign countries. The selection process must consider many factors including system interoperability, cost, performance, delivery schedule, lifecycle logistics support, and industrial utilization as well as the political implications of the selected source. The ROK military must rank the priorities in their selection process and evaluate the relative benefits and shortcomings of the systems from the historical perspective, organizational perspectives, and the FMS process.

This chapter prescribes procedures of U.S. defense articles and reviews previous research to explain the U.S. acquisition process and development history, especially the comparison of FMS and DCS programs, then, looks briefly at the history of military transfer development between the U.S. and South Korea.

Comparison of Foreign Military Sales and Direct Commercial Sales

In the case of the U.S., the DoD is officially neutral regarding the choice of other countries to purchase from them via foreign military sales or direct commercial sales. Under law, U.S. military systems can be purchased through the FMS process or through DCS. Table 1 and 2, will compare the FMS and DCS process.

Table 1: Foreign Military Sales – Potential Advantages and Consideration

Potential Advantages	Considerations
● Total package approach based on U.S. military experience	● Purchaser must decide whether the total package may exceed its needs or financial capabilities
● USG uses its own procurement procedures and acts as procurement agent for foreign countries	● Sophisticated foreign purchasing staff may achieve better overall deal by negotiating directly with the contractor
● Proven and established logistics support for items common to DoD	● Contractor may be able to offer a similar range of contractor logistics support
● Federal Acquisition Regulations, economic order quantity buys, use of GFE or GFM tends to reduce price	● Compliance with DoD procedures also tends to increase lead times, thus emphasizing need for country planning to start procurement process earlier
● Facilitates establishment of design configuration and enhances potential for standardization	● Purchaser must decide on the degree of standardization required for a purchase
● Purchaser pays only the actual cost to DoD with profits controlled by the FAR	● While initial LOA estimates tend, in the aggregate, to be higher than final LOA costs, final costs fluctuate both
● Cross-leveling on the FMS trust fund can maximize use of country funds	● Firm fixed price contracts and fixed payment schedules can be obtained under direct commercial contracts
● Quality control to assure item meets MILSPECs is done by USG personnel	● This service can be purchased under FMS for certain commercial contracts
● Items may be available from DoD stocks in times of emergency	● Availability is significantly dependent on DoD's own priorities
● Government-to-government obligation, assuring involvement of DoD personnel in military planning.	● Due to the political climate, the purchaser may prefer procuring from the U.S. contractor rather than the USG
● Better access to training at U.S. military schools	● Purchaser can procure hardware under commercial contract, and generally obtain associated training at U.S. military schools via FMS
● Availability of end item, facilities, maintenance capabilities, configuration control, technical data, modifications, and catalog information	● Arrangements for maintaining configuration commonality with DoD could be requirements in the DCS contract
● FMS customers can use ILCS system	● Commercial customers must rely on the commercial telecommunications

Source: DISAM's Online Green Book, 2007: 15-10

Table 2: Direct Commercial Sales – Potential Advantages and Considerations

Potential Advantages	Considerations
● Potential for fixed delivery or fixed price, with penalty if contractor fails	● Requires considerable experience and sophistication by country negotiators
● Business-to-business relationship allows country to negotiate cost and contract terms	● If closer military-to-military relationships are a purchaser's objective, FMS provides an avenue to achieve this objective
● Direct negotiations with contractor can result in a quicker response	● Requires considerable experience and sophistication by country negotiators
● Generally better support for nonstandard items	● Purchaser must decide upon desired degree of standardization with U.S. forces
● More capability to tailor package to unique country needs	● Tailored package may detract from standardization desires
● Continuity of personal contacts with contractor technical personnel	● Value of continuity must be compared to the value of direct military-to-military contacts
● New equipment directly from production line	● Option exists to request only new and unused items via FMS
● Lower process possible under certain circumstance	● Final price may be dependent on experience and sophistication of country contract negotiators
● Generally fixed payment schedule which eases budgeting problems	● Payment schedules may be more front-loaded than under FMS
● Purchaser can include offset provision in one contract	● Purchaser can negotiate offsets (directly with contractor) and still procure under FMS
● FMS administrative surcharge and DoD Management costs can be avoided	● Purchaser must consider entire cost of transaction, including its contracting staff costs and possibly increased contractor administrative costs
● Commercial purchases of some types of items could help to create and develop a procurement capability	● Scarcity of resources and time may not allow for this type of on-job training for procurement staffs

Source: DISAM's Online Green Book, 2007:15-11

The FMS and DCS systems are simply different contracting methods which a foreign government may employ for the purchase of U.S. defense articles and services. In

the commercial case, a U.S. contractor and a foreign government enter into a direct contract in accordance with U.S. law and regulations and provisions of international commercial law. The USG is not a party to these commercial contractual transactions. The foreign government has the responsibility in such purchases to select the source and manage the contract directly with the U.S. contractor (DISAM's Online Green Book, 2007: 15-8).

Under the FMS system, the USG and the foreign purchaser enter into an agreement which specifies the terms and conditions of the sale. Thereafter, except for items supplied directly from the DoD inventory, the USG buys the desired item or weapon system from the U.S. manufacturer or the system was being purchased for U.S. needs. The USG, not the foreign government, selects the source and manages the contract, consistent with the provisions of the FAR and the LOA (DISAM's Online Green Book, 2007: 15-8).

In reviewing the pertinent factors associated with the two procurement systems, one should bear in mind that unless the Department of State has determined that a specific item or service will only be offered via FMS, there are few absolutes which dictate that all countries should select exclusively either FMS or commercial channels for a given purchase requirement. Rather, there are many considerations, unique both to the individual purchaser and to the items being procured, that are involved in such a choice. The final decision on purchasing channels varies from country to country, and even from purchase to purchase. Given the variety of factors involved, it is important that the

purchasing government's decision encompass as many factual considerations as possible (DISAM's Online Green Book 2007: 15-9).

Foreign Military Sales Program Overview

Foreign Military Sales (FMS) is defined as a process through which eligible foreign governments and international organizations may purchase defense articles and services from the United States Government (FMS Customer Financial Management Handbook, 2007). It is the largest program of the overall U.S. security assistance program. The FMS government-to-government agreement is documented on an LOA. FMS is accomplished in two basic ways, as follows:

- FMS cash purchases whereby the purchaser pays in cash (U.S. dollars) all costs that may be associated with a sale.
- Foreign military financing (FMF) wherein U.S. government grants/non-repayable and repayable loans are involved. These credit/loan arrangements are negotiated by the foreign government and the U.S. government.

The U.S. government provides the articles or services from stock, but often will issue a contract with industry to acquire the items or services for subsequent delivery to the FMS customer. In this case, the U.S. government is acting on the FMS customer's behalf (DISAM, 2007)

Then why does the U.S. government have a FMS program? There are many reasons. Since World War II, the United States has provided various forms of security assistance to other nations in furtherance of the principle of collective security. In

furtherance of this principle, section 1 of the Arms Export Control Act (AECA) establishes the rationale for FMS:

> There Congress recognizes…that the United States and other free and independent countries continue to have valid requirements for effective and mutually beneficial defense relationships…Because of the growing cost and complexity of defense equipment, it is increasingly difficult and uneconomic for any country, particularly a developing country, to fill all of its legitimate defense requirements from its own design and production base (DISAM, 2007)

There are many benefits that resulted in the FMS purchasing countries and the United States as a result of FMS. Some of these benefits include:

- Lowered unit production costs and shared research and development costs.
- Progress toward standardization and interoperability of equipment between the United States and friendly foreign nations.
- Utilization of Cooperative Logistics Supply Support Arrangements by selected countries, which permits support of the foreign nation's equipment from U.S. stocks on an equal basis with comparable U.S. forces having a similar mission.

Historical Perspective of Foreign Military Sales

The military support to foreign alliances by the U.S. began in World War Ⅱ. The United States has always maintained non-entanglement and non-commitment policies from foreign wars (DISAM Online Green Book, 2007). However, in 1939 Congress revised the "Neutrality Act," thereby permitting the sale of arms during peacetime to the British on a cash-and-carry basis. The next major U.S. decision for the British was the "Lend-Lease" program initiated by an Act of Congress on March 11, 1941. Lend-Lease

eventually supplied about $50 billion of arms, food, and other aid to Allies, including, as they became engaged in the war, the Russians and the Chinese (DISAM, 2003: 17-20).

Table 3: Change in Policy for Weapon Sales

Periods	President	Situation / Basic Policy	Practice
1945's~1950's	•Truman •Eisenhower	•Check from threat of Communism •Protect Alliances	• The methods for protecting from Soviet. • Stockpiles of surplus : free of charge
1960's	•Kennedy •Johnson	•The policy of "massive retaliation" against Soviets • Improve revenue •Reduce stockpile post war	• Change free→pay • Sales promotion actively to the according to the country's ability
1970's	•Nixon •Ford •Carter	• Control the sales weapon	• Negative perspective for weapon sale • Make regulations Congress permission •Continue sale to sustain check for communism and relationship with alliances
1980's	•Reagan	•Arms transfer as an essential element global defense policy •Improve the U.S. economy by stable defense production base	• Increase sales weapon •Reinforce military capabilities to assist in the deterrence of aggression from the USSR
1990's	•Bush •Clinton	•Collapse Iron Curtain •Serious domestic economic problem •mutual burden	•New arms transfer policy include the promotion of control and transparency • The excess sales weapon is negative for U.S. security

Source: DISAM Online Green Book, 2007: A2 1-18

After this, the U.S. changed the FMS policy coincident with the changing world environment. The change of weapon sales is shown by period in Table 3.

This FMS program is based on the U.S. Security Assistance Program which includes general defense services. It is necessary that we should know the change of the Security Assistance Program to understand the FMS program more.

Figure 1: U.S. Security Assistance Program Change (Lee, 2001)

The U.S. Security Assistance program was started by the "Lend-Lease program" in 1941. It was amended to the Mutual Security Act in 1951, the Foreign Military Sales Act in 1968, and reformed as the Arms Export Control Act in 1976 (see Figure 1). The most recent changes that are applicable to the current research are discussed below:

1. Foreign Assistance Act (1968): FAA

   The Foreign Assistance Act was made by amending the previous act which assisted military and economic programs. The Foreign Assistance Act stated clearly

that U.S. security might be strengthened more by ensuring the alliances' security. By this Act, the U.S. could provide all the assistance such as lease, exchange, free charge military aids, loan, and sale without limitation if needed. (DISAM Online Green Book, 2007)

2. Foreign Military Sales Act (1968): FMSA

The Foreign Military Sales Act was made by separating Military sales from the Foreign Assistance Act. Before 1968, the basic authority for foreign military sales was the FAA. This Act enabled the U.S. legalized unit law for defense material sales including co-production to the alliances and the international organization. (DISAM Online Green Book, 2007)

3. Arms Export Control Act (1976): AECA

The Arms Export Control Act of 1976 changed the title of the FMSA to the AECA. This 1976 Act also repealed the Mutual Security Act of 1954 (which provided authority for commercial licensing through the International Traffic in Arms Regulation); this authority was placed in a new Control of Arms Exports and Imports of the AECA which governs the licensing and sale of items through direct commercial channels. The AECA is the statuary basis for the conduct of foreign military sales and the control of commercial sales of defense articles and services. And the Arms Export Control Act of 1976 changed the title of the FMSA to the AECA. This Act makes clear that the U.S. can exercise initiative for reducing

weapon system trade between countries in the World and present FMS policy complying with this Act. (DISAM Online Green Book, 2007)

Organizations and Process

Organization of DAPA for Procurement

As mentioned earlier, DAPA was activated on first of January, 2006, to improve defense capabilities through effective management of Armed Force Enhancement Program and Plans, timely delivery of military supplies and better support and promotion of the defense industries. It has been requested to make further effort and constant transformation to satisfy emerging new era's requirements. The function of DAPA is shown in Figure 2 (DAPA Online official homepage, http://www.dapa.go.kr/eng).

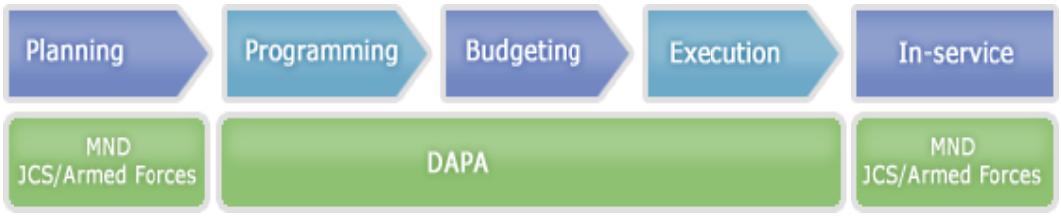


Figure 2: the function of DAPA in acquisition programs

DAPA supports Defense plans of building an elite, strong, and advanced military forces by providing state of art equipment and material procured in timely and effective manners based on establishment of thoroughly client oriented defense project management process, enhancement of professional project management skill, and implementation of work place oriented project management. DAPA policies in

strengthening the defense technology and the competitiveness of the defense industry are as follows:

1) Reinforcement of R&D in the National Defense

Future battle field environments are drastically changing due to the introduction of new technology. At the same time developed countries are not willing to transfer core technologies. What is more, Korea's national defense research and development environment is rapidly changing due to changes in the domestic security environment, radical changes in science and technology, and improvements in national R&D capabilities. The Defense Acquisition Program Administration plans to continually expand national defense research and development along with core technology development to ensure our armed forces are highly developed elite forces as well as build independent defense strength.

2) Prioritization of Domestic R&D

In order to sustain economic growth and develop our country's national competitiveness in this ever competing world, we should develop domestic technology first. Therefore, the Defense Acquisition Program Administration, to effectively perform industry creation, production, and acquisition, first adopts civil standards when there are two different standards between national defense and civil groups and find a way to use national defense and civil technologies in a cooperative fashion. What is more, by pursuing the development of joint technology of national defense and civil groups at a

pan-government level, it maximizes the synergistic effect of research and development and raises the effectiveness of technology investments.

3) Reinforcement of the Global Competitiveness of the Acquisition Program

The Defense Acquisition Program Administration reinforces collaboration with national science and technology within national science and technology innovation systems in order to establish and execute national defense research, development methods and prepare the foundation for the promotion of national defense science and technology.

4) Strengthening the Cooperation with the Nation-Wide Science and Technology

Because of recent changes in the domestic and international defense industry environment, the Defense Acquisition Program Administration abolishes it policy of defense industry protection and nurturing. This policy weakens the competitiveness of the existing defense industry and abolishing it will help develop a reasonable defense industry based on competition. However, in the event that the current system becomes extremely competitive, DAPA encourages the industry not to hoard their know-how and invested facilities. In that situation, DAPA also establishes a system that will protect small and medium enterprises with relatively weak competitiveness and duplicated investment due to over-heated competition. Furthermore, DAPA plans to manage items requiring secure acquisition such as major strategic weapon systems so as not to create any problems regarding the war potential of the armed forces.

5) Expansion of Expert Support for the Defense Industry

Defense industry product export is one of the objectives of the establishment of the Defense Acquisition Program Administration. DAPA plans to foster pan-governmental international cooperation along with a market expansion system to increase export. It also supports the export marketing departments of each defense industry enterprise as well as promotes association with the KOTRA (Korea Trade-investment Promotion Agency). The National Assembly, the government, the armed forces, and industry concentrate all their efforts and seek distinctive export revitalization methods for each country. To achieve these principles, the summary of DAPA organization and process are shown in each Figure 3, Figure 4 (DAPA Online official homepage, http://www.dapa.go.kr/eng).

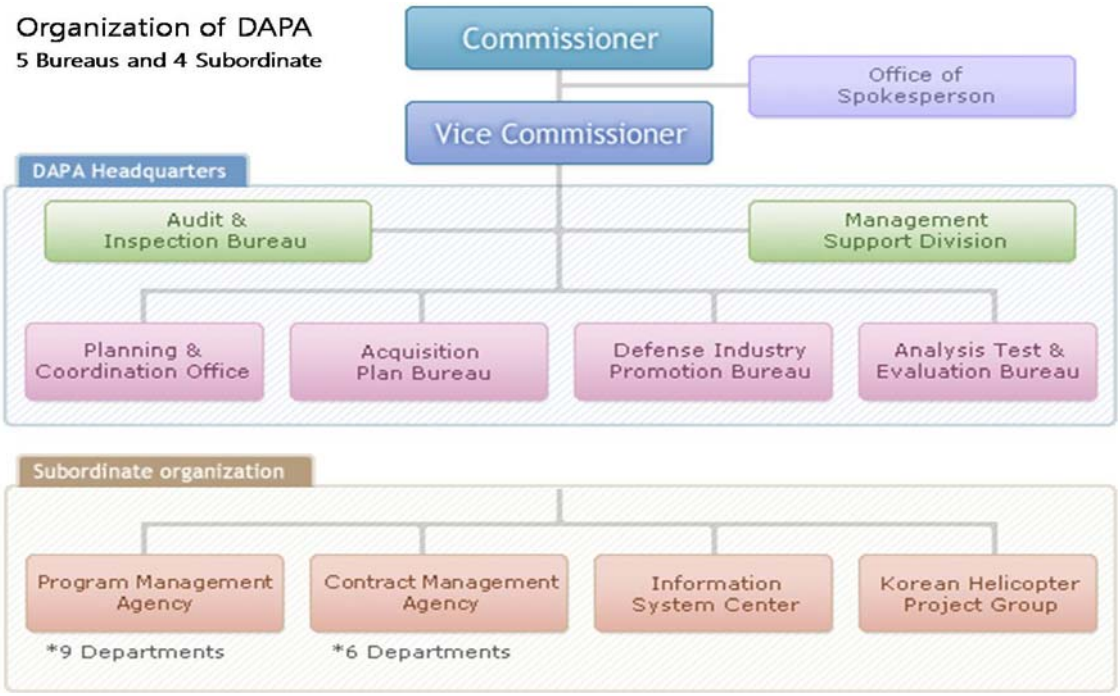


Figure 3: Organization of Defense Acquisition Program Administration

Figure 4: DAPA Procurement Process from Foreign Countries

U.S. Government Organization for FMS

In U.S. government organization for security assistance, the president is responsible for all of the activities of the executive branch as the chief executive. The president has numerous assistants, cabinet officers, and other subordinate officials to oversee the conduct of the U.S. security assistance program.

1) Department of State

In accordance with section 2 of the AECA (Arms Export Control Act), the Secretary of State is responsible for:

- The continuous supervision and general direction of sales (FMS) and commercial exports licensed under the AECA

● Determining whether there shall be a sale to a country and the amount, and the under Secretary of State for Security Assistance, Science, and Technology is the principal advisor and focal point for security assistance(including FMS) matters within the Department of State.

2) Department of Defense

The overall security assistance program is under the supervision and general direction of the U.S. Secretary of State. However, the Secretary of Defense is responsible for administering certain security assistance program elements, one of which is FMS. In accordance with the AECA, the Secretary of Defense has primary responsibility for:

● The determination of military end-item requirements

● The procurement of FMS in a manner which permits its integration

● The supervision of the training of foreign military personnel

● The movement and delivery of military end items

● Within the Department of Defense, the performance of any other functions with respect to sales and guarantees

3) Department of Treasury

The Department of Treasury is involved in FMS in the following ways

● Receiving and reviewing periodic reports of accountability from the Security Assistance Accounting Center (SAAC)

● Overseeing the functions of the Federal Financing Bank (FFB) which provides guaranteed loans to finance FMS and commercial export sales

● Setting the rate of interest in the event of FMS payment arrearages on the part of the foreign government

4) Congress

The Congress of the U.S. is vested with all legislative powers. With regard to conventional arms transfers/sales, which constitute a major dimension of the U.S security framework, the Constitution assigns Congress the power to regulate commerce with foreign nations. In terms of FMS, Congress has the authority for approving sales of MDE (Major Defense Equipment).

5) Defense Security Cooperation Agency (DSCA)

DSCA is the main agency for managing FMS. It is established as a separate agency of the DoD under the direction, authority, and control of the Under Secretary of Defense for Policy and receives policy direction and staff supervision and is responsible for:

● Determination with respect to the allocation of FMS administrative funds

● Conducting international logistics and sales negotiations with foreign countries

● Serving as the DoD focal point for liaison with U.S. industry

In addition to the above, there are many separate agencies which connect with FMS, and these organizations play a crucial role for granting and managing FMS. These

organizations and processes are operated in the system of Security Assistance. The summary of government organizations for Security Assistance is shown in Figure 5 (DISAM Online Green Book, 2007: 3-2).

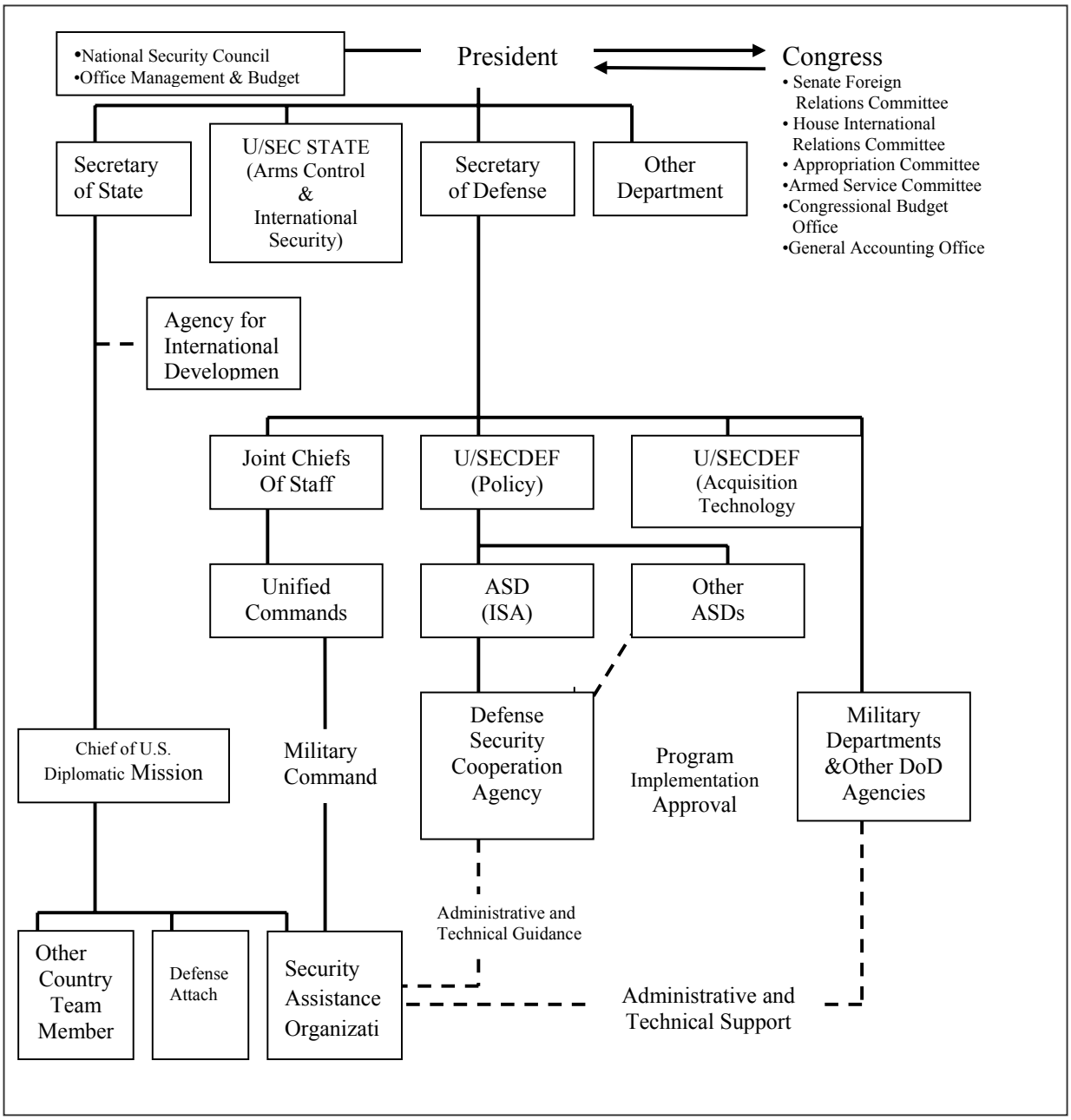


Figure 5: United State Government Organization for Security Assistance

FMS Process

Much of the literature discussed above applies in various phases. However, the DISAM book mentions the core process briefly and demonstrates it in below. The FMS process is divided into three supporting processes as below:

1) Letter of Request (LOR) / Offer (LOO) Process

LOR is a formal diplomatic letter requesting articles, military construction, or other services submitted by an eligible foreign country. LOR must be reviewed and validated by the military department, Defense Security Cooperative Agency (DSCA), and the Department of State, to ensure that the prospective FMS purchaser is eligible, that the articles/services may be sold, and that the request went through proper channels.

After LOR is approved, the IA (Implementing Agency, e.g., U.S Army, Air Force, Navy, etc.) definitizes the Purchaser's requirements in the form of a Price and Availability (P&A) data worksheet and develops a Letter of Offer (LOO). The price is developed in accordance with current pricing practice and is based upon the IA's understanding of the customer's requirements. The Purchaser, in accordance with the stated terms and conditions on the LOO, agrees to pay all costs once determined.

2) Letter of Acceptance (LOA) / Implementation Process

Once the FMS Purchaser accepts/signs the LOO, it becomes a Letter of Acceptance (LOA). Upon receipt of the signed LOA and, if required, an initial deposit, SAAC (Security Assistance Accounting Center) is in position to issue Obligational Authority (OA) to the IA. OA enables the IA to prepare requisitions that will result in Material

Release Orders (MROs). Most FMS cases are implemented by means of an IA implementing directive.

3) Execution / Performance Reporting Process

Performance on a FMS case is demonstrated to the FMS purchaser through the receipt of status cards, or the quarterly requisition report from the IA, or the reporting of the performance/delivery in the Delivery Listing accompanying each quarterly FMS Billing Statement. The FMS process and periods are described in Table 4 (DISAM Online Green Book, 2007: 5-2).

Table 4: Foreign Military Sales Process

PROCESS	CONTENTS
Preliminary (Indefinite)	• Customer determines requirements. • Customer obtains specific systems information.
Definition (Indefinite)	• Customer and U.S. exchange tech information.
Request (Indefinite)	• Customer prepares and submits a letter of request (LOR) for price and availability (P&A) data. • Customer prepares and submits LOR for a letter of offer and acceptance (LOA).
Development of Offer (Policy for the response to LOR by LOA is 120 days for 80% of LORs)	• Implementing agency (IA) receives the LOR. • State/DSCA/Congress review LOA. • IA issues LOA to customer.
Acceptance of the Offer (Policy is 60 days to accept a LOA)	• Customer signs LOA. • Customer sends signed copy of LOA and initial deposit to DFAS-DE. • Customer sends signed copy of LOA to IA.
Implementation (15 days average.)	• DFAS-DE issues obligational authority (OA). • IA issues implementing directive. • IA activates FMS computer systems.
Execution (Depends on delivery schedule.)	• Case and line managers order articles. • Articles and services shipped and expended. Training conducted.
Reconciliation and Closure (Policy is 2 years from last delivery.)	• MILDEP/DFAS-DE and customer reconcile records. • MILDEP sends closure certificate to DFAS-DE. • DFAS-DE issue final bill to customer.

Summary

This chapter summarized the ROK military procurement process for weapon systems from foreign countries. This chapter also presented the organizations and FMS process so that the selection process of foreign weapon systems considering many factors. Also this chapter detailed the comparison of FMS and DCS Programs with the history of military transfer development between the U.S. and South Korea.

III. Methodology

Chapter Overview

This chapter begins by presenting the research design and describing the research methods used to conduct the study. Next, the purpose of qualitative research and the methods of qualitative research are addressed with emphasis on each definition. Finally, the interview questions are analyzed, along with an explanation of the standardized questions used to make the comparisons.

Qualitative Research Purpose

One of the chief reasons for conducting a qualitative study is that the study is exploratory, not much has been written about the topic or population being studied, and the researcher seeks to listen to informants and to build a picture based on their ideas (Creswell, 1994). Qualitative research refers to any kind of study that makes findings not arrived by means of statistical procedures or any other means of quantification (Strauss and Corbin, 1990). Qualitative methodology provides rich "context-bound" information leading to patterns or theories that help explain a phenomenon (Creswell, 1994). The Table 5 discusses several of the qualitative research purposes (Peshkin, 1993).

Table 5: Purposes of Qualitative Research

Factors	Qualitative Research Purpose
Description	Reveal the nature of certain situations, settings, processes, relationships, systems, or people
Interpretation	Gain insight about the nature of a particular phenomenon, develop new concepts or theoretical perspectives about the phenomenon, and/or discover the problems that exist within a phenomenon
Verification	Allow the researcher to test the validity of certain assumptions, claims, theories, or generalizations within real-world contexts
Evaluation	Provide a means through which a researcher can judge the effectiveness of particular policies, practices, innovations

Source: Peshkin 1993

Research Design & Methods

A research design is as "a blueprint of research, dealing with at least four problems: what questions to study, what data are relevant, what data to collect, and how to analyze the results" (Philliber, Schwab, & Samsloss, 1980). According to Yin (2003), the main purpose of the design is to help to avoid the situation in which the evidence does not address the initial research questions (Yin, 2003). Through the right research design dealing with a logical problem, the research could avoid incorrect conclusions.

The case study was selected for this research because "Case study is the preferred strategy when "how" or "why" questions are used, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin, 2003). The research question in this effort is "how and why are certain contracts chosen as defense articles considering main factors?" this research will address this question by investigating "how and why certain factors influenced decisions to purchase defense weapon systems from other countries?" The data for this study comes from individuals who participated in each defense weapon program.

Yin (2003) states five components of a research design:

> A research design should include five components….the complete research design should not only indicate what data are to be collected-as indicated by (a) a study's questions, (b) its propositions, and (c) its units of analysis. The design also should tell you what is to be done after the data have been collected-as indicated by (d) the logic linking the data to the propositions and (e) the criteria for interpreting the findings (Yin, 2003: 28).

The first component, the study's questions, provides an important clue regarding the most relevant research strategy based on "why". As for the second component, study proposition directs attention to something that should be examined within the scope of the study. Therefore, this study is not appropriate to study proposition because study proposition's topic is the subject of "exploration" for exploratory case study. The unit of analysis, as the third component, is related to the fundamental problem of defining what the "case" is. This research's unit of analysis is on each defense weapon program between the ROK and foreign countries. Each program is the primary unit of analysis. Information about six programs should be included in a multiple-case study. Yin (2003) states that "selection of the appropriate unit of analysis will occur when you accurately specify your primary research questions." The logic linking data to propositions and criteria for interpreting the findings, as the final two components, are "the least well developed in case studies. These components foreshadow the data analysis steps in case study research, and a research design would lay a solid foundation for this analysis." (Yin, 2003).

The data for this study are qualitative in nature; therefore a qualitative design will serve best to answer the research question of this study. According to Creswell(1994), the

six assumptions of qualitative research should be addressed. The following Table 6 lists the assumptions and explains the research characteristics.

Table 6: Assumptions of Qualitative Designs

Assumption	Research Characteristic Addressing Assumption
Process oriented	Study of the process and implementation of defense acquisition
Focus on meaning	Focus on identifying the main factors that consider in deciding to purchase a major defense weapon system from other countries
Research is the primary instrument	Researcher must review published data, conduct interview with experienced experts of defense purchases
Involves fieldwork	Conduct telephone interview with Korean experts
Descriptive in nature	Purpose is to explain the various factors that contribute to ROK's decision making in procurement of defense articles
Inductive	There is no current data on how ROK have been able to decide to purchase a defense weapon articles

Source: Creswell, 1994

In a case study, especially qualitative research represents a specific method of collecting, organizing, and analyzing data. In a qualitative study, Creswell refers to "pattern theories" as an explanation that develops during qualitative research. Rather than the deductive form found in quantitative studies, these pattern theories represent a "pattern" of interconnected thoughts or parts linked to a whole (Lincoln and Guba, 1985). Neuman provides additional information about pattern theories:

> Pattern theory does not emphasize logical deductive reasoning. Like causal theory, it contains an interconnected set of concepts and relationships, but it does not require causal statements. Instead, pattern theory uses metaphor or analogies so that relationship "makes sense." Pattern theories are systems of ideas that inform. The concepts and relations within them form a mutually reinforcing, closed system. They specify a sequence of phases or link parts to a whole (Neuman, 1991)

The analysis of case study data is typically a five-step process, as described by the following Table 7.

Table 7: Five-Step Process

Steps	Five-Step Process
1. Organization of details about the case	The specific facts about the case are arraigned in a logical order
2. Categorization of the data	Categories are identified that help cluster the data in to meaningful groups
3. Interpretation of single instances	Specific documents, occurrences, and other bits of data are examined for the specific meanings that they might have in relation to the case
4. Identification of patterns	The data and their interpretations are scrutinized for underlying themes and other patterns that characterize the case more broadly than a single piece of information can
5. Synthesis and generalization	An overall portrait of the case is constructed. Conclusions are drawn that may have implications beyond the specific case that has been studied

Source: Creswell, 1994

Yin's multiple case study method described below in Figure 6 (YIN, 2003: 50). The Figure 6 indicates that the initial step in designing the study must consist of theory development and then shows that case selection and the definition of specific measures are important steps in the design and data collection process. Each individual case study consists of a "whole" study, in which convergent evidence is sought regarding the facts and conclusions for the case. The multiple-case results can and should be the focus of a summary report. For each individual case, the report should indicate how and why a particular proposition was demonstrated. Across cases, the report should indicate the extent of the replication logic and why certain cases were predicted to have certain results, whereas other cases, if any, were predicted to have contrasting results (Yin, 2003). For

this research, the level one question will be accomplished by each program expert over the phone. After that, each individual case study was written. Next, these case studies are completed through the review of the advisor and each program's participant effort to increase the construct validity of the research.

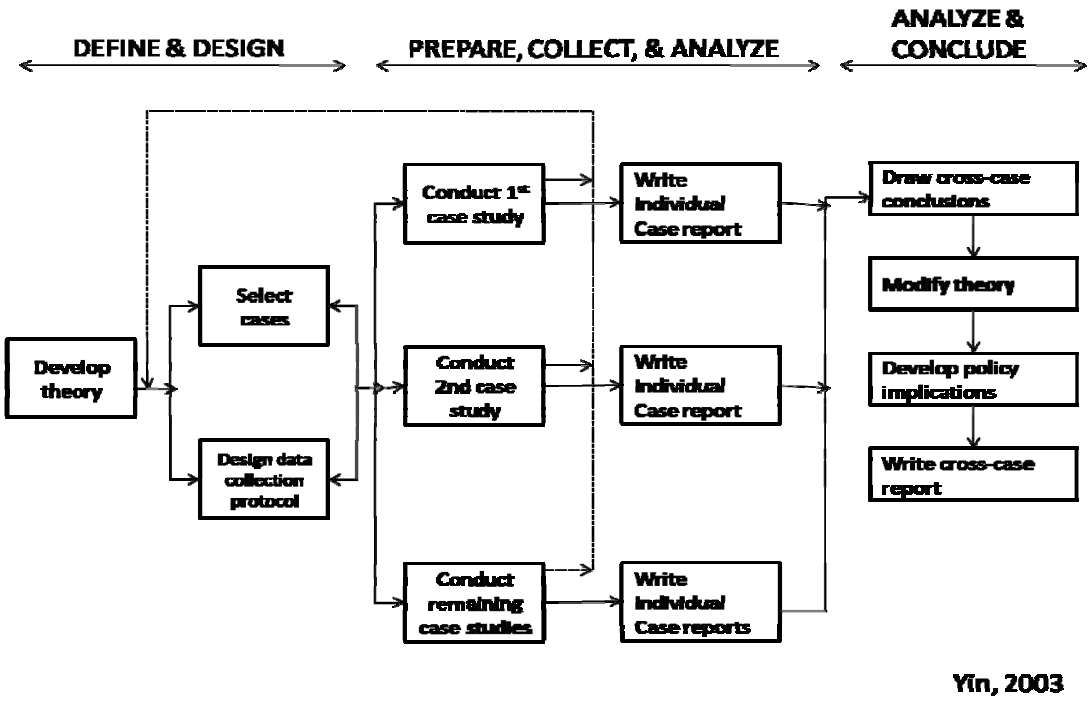


Figure 6: Case Study Method

Data collection

The data collection steps involve (a) setting the boundaries for the study, (b) collecting information through observations, interviews, documents, and visual materials, and (c) establishing the protocol for recording information (Creswell. 1994). Creswell defines the qualitative data collection types in Table 8 below.

Table 8: Qualitative Data Collection Types, Options, Advantages, and Limitations

Data Types	Options	Strengths	Weaknesses
Observations	Complete participant Observer as participant Participant as observer Complete observer	Researcher has firsthand experience with informant. Researcher can record information as it occurs. Unusual aspects can be noticed during observation.	Researcher may be seen as intrusive. Researcher may not have good attending and observing skills.
Interviews	Face-to-face: one on one, in person interview Telephone: researcher interviews by phone Group: researcher interviews informants in a group	Useful when informants cannot be directly observed. Informants can provide historical information. Allows researcher "control" over the line of questioning.	Provides "indirect" information filtered through the views of interviewees. Provides information in a designated "place," rather than the natural field setting. Researcher's presence may bias responses. Not all people are equally articulate and perceptive.
Documents	Public documents such as minutes of meetings, newspapers Private documents such as journal or diary, letter	Enables a researcher to obtain the language and words of informants. Can be accessed at a time convenient to researcher. It saves a researcher the time and expense of transcribing.	May be protected information unavailable to public or private access. Requires the researcher to search out the information in hard-to-find places. Requires transcribing or optically scanning for computer entry Materials may be incomplete.
Audiovisual Materials	Photographs Videotapes Art objects Computer software Film	May be an unobtrusive method of collecting data Provides an opportunity for informant to share directly his or her "reality." Creative in that it captures attention visually.	May be difficult to interpret. May not be accessible publicly or privately. The presence of an observer may be disruptive and affect responses

Source: Creswell, 1994: 150

This research selects the interview technique as its major method of data collection. This interview technique provided valuable insight into lessons learned by knowledgeable personnel associated with each programs from Defense Acquisition Program Administration (DAPA). According to Yin (2003), "the interview is one of the most important sources of evidence for the case study." Therefore, availability and willingness of the respondent to participate in a timely manner was the most significant

consideration for this interview-intensive research methodology. The study incorporated interviews with personnel from the Army, Air Force, and Navy, as well as several defense contractors. The majority of interviews were initially coordinated based upon recommendations from the thesis advisor, Lt Col Stanley E. Griffis. Based on recommendations from the thesis advisor, 12 contractors were contacted based on the Army, Air Force, and Navy. Interviews were conducted with each program's experts who have had significant experience (preferably at least 5 years). Although not every interviewee worked at the senior levels of organization, all personnel had a respectable amount of experience with defense weapons contract-related career fields. Altogether, the interviewees possessed an average of approximately 10 years of experience in acquisition department. The selected contractors were interviewed, in an attempt to gain an unbiased and balanced perspective on each program. Unfortunately, this was not possible in every situation due to a lack of timely responses or willingness to participate from personnel interview over the phone.

Before achieving interviews, an e-mail message which explained my thesis summary was sent to them which served as a starting point for confirming each contract with experts who were qualified and willing to assist with the research. So, the purpose of this e-mail message was not only to establish initial communication between the researcher and the interviewee but also to publicly endorse the research effort in hopes of soliciting a broader range of participation. For all these, with assistance from thesis advisor and DAPA contractors, certain criteria were recommended for program selection, in order to confirm the appropriate defense programs. Included in these criteria were:

- Defense weapon system
- Only terminated programs
- Selected programs through overseas competition
- Include the Army, Air Force, and Navy
- Include major & non-major defense programs
- Include U.S. & Non-U.S. weapon system

After verified the criteria among programs, they were organized into six programs. The process of choosing these programs for case studies was drawn out over several months. Ultimately, the 3 U.S. contract programs and the 3 Non-U.S. countries' contract programs were studied, which entailed interviews with a total of 12 individuals from DAPA:

1. F-X (F-15K) first program (U.S.)
2. E-X (E-737) program (U.S.)
3. KDX II 5-inch Warship Gun program (U.S.)
4. WLR-X (ARTHUR) program (Sweden)
5. KDX II (GOAL KEEPER) program (Holland)
6. KDX I 5-inch Warship Gun program (Italy)

Interview Questions

Interview questions were developed with the goal of comparing the 6 main defense programs based on the various identified factors that contribute to ROK's

decision making and provide background information to allow for a basic comparison of the programs. The main focus of the questions centered on integration of each respective program's information (see Appendix 1 for examples).

The interview questions were changed several times to provide a framework for the research and guide conversations with personnel. In terms of data-gathering, they were intended to accomplish several goals:

- Clearly answer the interview questions
- Explain the limitations of the contract considering various factors
- Understand certain criteria were suggested as guidelines in each factor
- Clearly understand "how" or "why" questions that required exploratory investigation

Participants were given the choice to answer questions over the telephone. Interview questions were developed into the following 13 factors with 3~4 sub-questions. By understanding these factors and applying them to the ROK's specific situation, a better decision can be made regarding which method offers the best approach for a particular acquisition:

1. Interoperability
2. Offset Valuation
3. Mission performance capability
4. Integrated Logistics Support (ILS)
5. Life Cycle
6. Timely Deployment

7. Depot Maintenance
8. National Security
9. U.S.-ROK Alliance
10. Northeast Asia Strategy
11. Defense Budget Levels
12. ROK Political Environments
13. Trends in Public Opinion

Throughout the interviewing process, the question sets underwent several iterations as it became apparent that adjustments, additions, and deletions were required, As a result, not every interviewee was asked every question in the exact same manner.

Summary

This chapter provided an explanation of the methodology used to answer the basic research question. The research methodology is qualitative and exploratory using a multiple –case study approach. The chapter began with an introduction to the qualitative research purpose, provided research design & methods for the selection of the case study, discussed the data collection, and explained the interview questions. The next chapter will provide the findings and analysis followed by the conclusions and recommendations.

IV. Analysis and Results

Chapter Overview

This chapter provides the results of the interviews and analyses of the data that were gathered. The content was examined with the aim of answering the investigative questions to look at the various factors that should be considered in ROK's decision-making. Interview participants at each program level were asked to express their program's meaningful lessons and their degree of consideration of each factor and to assess the contract's effectiveness.

Therefore, this research details the pattern for the investigative questions which were combined, analyzed, and organized with tables and figures, and also discusses the issues that were most frequently raised by participants in the context of these interviews.

Investigative Questions

This research discusses the results within the framework of the investigative questions. It is challenging to summarize and exhibit the various views that respondents had throughout all of these programs. Therefore, this chapter uses two different tables. The first tables of each factor (see Table 9 for example) present the quantitative values assigned to each factor by the respondents within the programs evaluated. These data make comparisons among the programs and and between the U.S. and the other countries. The second tables of each factor (see Table 10 for example) express each factor's

decision making criteria to provide the pattern so that this research could explain how and why certain factors influenced the process of each program's decision making. As mentioned earlier, investigative questions were developed with the goal of comparing the six main defense programs based on the various factors that contribute to the ROK's decision making. This chapter also provides many ideas for additional lessons that will help the ROK's defense decisions to develop a process of procurement that fosters contract skills which promote indigenous industrial capability in the future.

1. Interoperability

Interoperability is described as the capability of two or more systems to work together. This means the ability of two or more items or equipment components to execute the same functions. In other contexts, it means the capability of complementing each other irrespective of the technical characteristic differences between the systems, and without conducting additional training for the related personnel (DAMR, Appendix 10: 531). Table 9 shows the influence of interoperability across the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

1-1. Possibility of integrated operations during the combined exercises

1-2. Possibility of systematic connection with the existing weapon systems

1-3. Existence of the system-integrated service & construction of the environment for interoperability

Table 9: The Influence of Interoperability on Contracts

	U.S.							Other Countries							
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns		U.S. Average	WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns		Non-U.S. Average	Overall Average
Interoperability	**7**	**7**	**7**	**6**	**7**	**4**	**6.3**	**7**	**7**	**6**	**7**	**4**	**6**	**6.2**	**6.25**
Sub-Question 1-1	**7**	**7**	**7**	**5**	**6**	**4**	**6.0**	**7**	**6**	**6**	**6**	**4**	**6**	**5.8**	**5.92**
Sub-Question 1-2	**7**	**2**	**7**	**6**	**6**	**4**	**5.3**	**1**	**7**	**7**	**6**	**4**	**6**	**5.2**	**5.25**
Sub-Question 1-3	**7**	**6**	**6**	**5**	**7**	**4**	**5.8**	**7**	**6**	**5**	**7**	**4**	**5**	**5.7**	**5.75**

As seen in Table 9, a consistently high level of consideration for interoperability was found among U.S. and Non-U.S. programs. That is, interoperability was mentioned repeatedly as a success factor for most of the programs. For this reason, the ROK military appears to weigh interoperability heavily in defense contracts.

Ironically, the sub question 1-2, systematic connection with the existing weapon systems, was not graded as highly in the F-X program and the WLR-X program. At the time, the ROK military was considering a new weapon system that was first introduced to the ROK military, because the previous system was behind the times or not appropriate to eliminate a potential security vacuum in future operations. One interviewee for the WLR-X program mentioned that "even though the Arthur from Sweden had a handicap in terms of an interoperability compared with the previous existing U.S. radar (the AN/TPQ-37), offset valuation made up for the weak point of the interoperability in that contract."

Simply stated though, many participants for other countries' programs recognized interoperability as an influencing factor to accomplish the contract. Therefore, it seems to

be an obvious disadvantage to other countries' programs in the process of contracts, because system upgrade costs to connect with a previous system which consists of U.S. articles cannot be ignored, and the upgrade total costs would reach a much higher price. Moreover, the consequences of the system upgrade usually include a delayed schedule and degraded performance. In the worst case, the ROK military would have to construct new logistics supply systems with the relevant country considering technical training, maintenance facilities and support equipment except for mission performance capability. However, the KDX program interviewee who had experience with both KDX-I (Italy) and KDX-II (U.S.) programs commented "although interoperability seems to be considered as an important factor in the early phase of the U.S. programs so that this factor seems to be against other countries' contracts, actually this factor was not considered very highly at the moment as a disadvantage in the KDX-I contract with Italy because the KDX-I warship gun is an independent weapon system which needs to only match with an avionics computer system."

There was little evidence to suggest that interoperability is not one of the key issues in contracts, but the Army interviewee for the WLR-X program did not believe that this factor had as much of impact on contract decisions as did the price issue. On the contrary, the ROK military could achieve benefits from this situation which other countries' contractors suppose that interoperability seems to be against other countries' contracts because they already recognize and consider the U.S.-ROK alliance environment so that they could be more flexible to other negotiation factors, such as offset valuation, contract price, and the ROK military's requirements.

Table 10: Interoperability related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Integrated operations during the combined exercise	X	X	X	X			4
Systematic connection with the other existing systems	X	X		X	X	X	5
Systematic connection with the previous system	X		X		X		3

As seen in Table 10, most respondents in these programs stated that systematic connection or integration is the biggest enabler to accomplish interoperability in the contract. In the case of the Army WLR-X program, representatives expressed that they did not consider the interoperability with the previous equipment, the AN/TPQ-37 as a serious disadvantage. Because the radar system as an independent unit only needs to transmit its signal to a higher command, the ROK Army chose to purchase the Swedish artillery radar system (Arthur). Arthur will be self-contained to process target data, identify artillery, mortar and rockets. This means all target data can be distributed to relevant units in the battlefield through network centric channels.

In the case of the E-X program, the contract objective is to send out a warning to land, air and sea troops simultaneously and to scan the area of operations. Therefore, the participants considered interoperability more highly in order to overcome the limits with a previous ground sensor and telecommunication such as data links and signal facilities. The Boeing E-737 airborne early warning and control (AEW&C) has a system track

capability of 3,000 targets and can track land, air and sea targets simultaneously. The radar system also provides a high level of operational capability because the system is dynamically structured to match the changing mission requirements in surveillance area. Due in part to these factors, the ROK military signed a contract with Boeing for four E-737 AEW&C.

Navy interview participants agreed upon one of the interesting findings that for Navy programs, interoperability in terms of the possibility of integrated operations during joint and combined exercise was not given significant weight in program consideration (see Table 10). Compared with Army and Air Force programs, the interviewees for Navy programs mentioned that the Navy usually takes on different missions and conducts an independent operation so that there are not many opportunities to participate in joint, combined exercises with other countries.

In conclusion, most respondents believed that this factor is best suited for consideration at the contract level. They believed that this factor had significant impact on contract decisions, and interoperability should be enhanced among U.S. allies in order to increase mission effectiveness. One respondent recommended that this factor should be emphasized more in the construction for the environment of the system-integrated service level.

2. Offset Valuation

Recently, the offset valuation can be seen as evidence of how successfully the program is accomplished, and participants are directed to attempt to get more offset valuation whenever possible. Defense offsets are a type of counter-trade obligations related to the transfer of core defense technologies and component parts production required by the importing country as part of a large defense procurement contract for export of arms, equipment and related services (Defense Offset Guidelines, 2003). Table 11 shows the influences of offset valuation over the programs and identifies its investigative questions (see Sub-Questions below) that support the factors in detail.

2-1. Contributory effects on R&D

2-2. Building up the foundation of technology for enlarging future exports

2-3. Satisfaction of offset

2-4. Effectiveness of cost reductions

Table 11: The Influence of Offset Valuation on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Offset Valuation	**7**	**7**	**3**	**6**	**6**	**6**	**5.8**	**7**	**6**	**5**	**6**	**4**	**5**	**5.5**	**5.67**
Sub-Question 2-1	**4**	**7**	**2**	**4**	**7**	**6**	**5.0**	**6**	**5**	**3**	**7**	**4**	**6**	**5.2**	**5.08**
Sub-Question 2-2	**5**	**6**	**2**	**3**	**5**	**5**	**4.3**	**3**	**4**	**3**	**6**	**3**	**6**	**4.2**	**4.25**
Sub-Question 2-3	**7**	**7**	**6**	**6**	**6**	**5**	**6.2**	**7**	**5**	**3**	**7**	**3**	**5**	**5.0**	**5.58**
Sub-Question 2-4	**5**	**1**	**3**	**6**	**6**	**6**	**4.5**	**7**	**4**	**6**	**5**	**4**	**5**	**5.2**	**4.83**

As the scale of foreign weapon procurement contracts grows in the ROK, the importance of defense offsets has been recognized as an efficient way of building up defense strength. This is due to the fact that defense offsets provide a window of opportunity to obtain defense core technologies from the more advanced countries. As you can see in Table 11, offset valuation was mentioned repeatedly as one of the crucial parts of successful contracts in all of the U.S. and Non-U.S. programs. One interviewee for the F-X program remarked, "this factor could potentially open doors for more effective contracts by alleviating the ROK government budgetary concerns and building long-term indigenous industrial capability in the future."

The interview participants for the F-X and WLR-X programs expressed some dissatisfaction with the effectiveness of cost reductions (see Table 11), stating that "if the ROK military only tries to cut down the size of a program in order to reduce the contract price, this would be contrary to the the correct procurement of efficiency in the long run." The interviewees for the E-X program also expressed a low level of consideration of offset valuation (see Table 11). The case of the E-X program for the Boeing E-737, Airborne Early Warning & Control (AEW&C) was first introduced in the ROK military as a reason for building self-defense in the process of the transfer of wartime operational control to the ROK in 2012, and less focused upon offset valuation such as contributing to domestic R&D and obtaining key technology.

In ROK military offset valuation, there are six different types of offset programs. It is important to keep in mind the various types of defense offset programs when the

ROK military purchases foreign weapon systems. Figure 7 displays six different types of offset programs (the DISAM journal, December 2007).

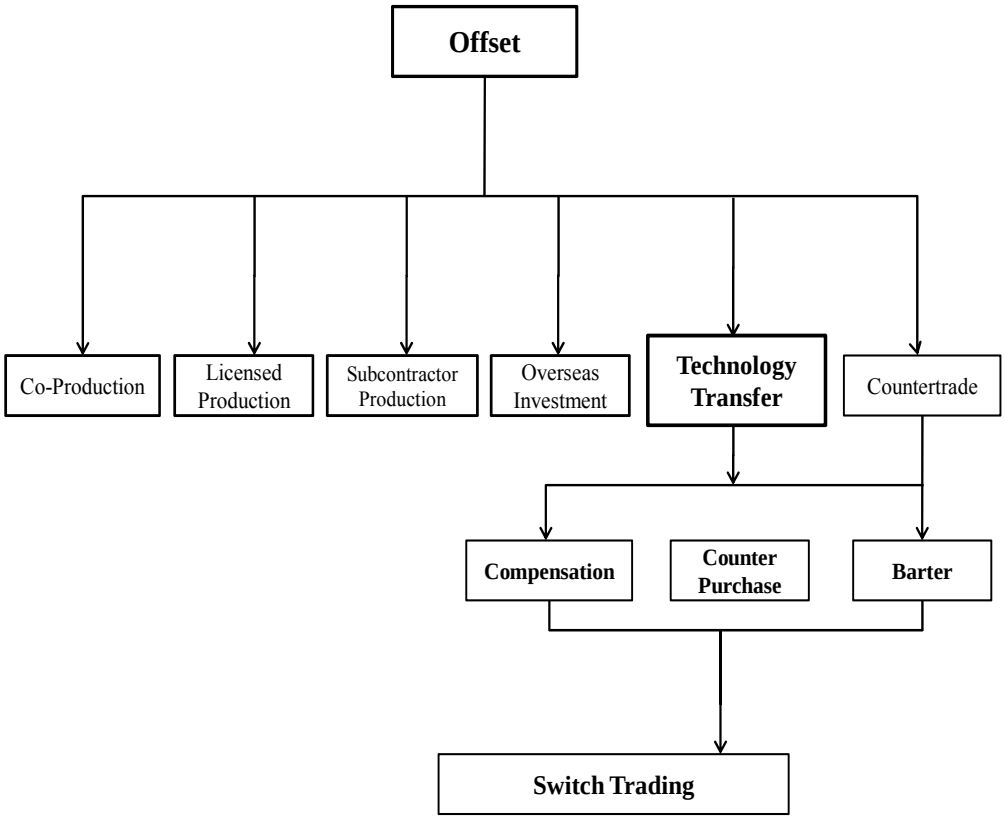


Figure 7: Types of Defense Offset Programs

According to the definitions of offset programs below in Table 12, technology transfer distinguishes itself quite substantially among the processes of co-production, licensed production, overseas investment and subcontractor production. It is important at the national level to build up self-reliant defense strength. The ROK's level of defense strength is largely determined by the rate of technological innovation. This rate of innovation is determined by the amount of Research and Development (R&D) that is

invested to create new technology and the capacity to pool and transfer technical resources.

Table 12: Definitions of Defense Offset Program

Types of Offset	Definition
Technology Transfer	Occurs as a result of an offset agreement that may take the form of research and development conducted in the buyer country, technical assistance provided to the subsidiary or a joint venture in the foreign country, or other activities under direct commercial arrangement between exporting manufacturer and the buyer entity
Co-production	Based on the government-to-government contract, either importing governments or commercial firms acquire relevant technology data and information in order to produce either the finished weaponry or component parts abroad.
Licensed Production	Based on the technology data from the firm-to-firm or the firm-to-government direct contract, the exporting manufacturer's weapons or parts of there are produced in the buyer's country
Subcontractor Production	The subcontractor produces component parts according to the direct contract between export manufacturers and foreign subcontractors, not necessarily involving the licensed production or technology transfer
Overseas Investment	Investment arising from an offset agreement, taking the form of capital investment to establish or expand a subsidiary or joint venture in the foreign country

Source: The Management of Security Assistance, 2003: 487-511

Technology transfer contains three types of technology, which is research and development (R&D), manufacturing, and depot level maintenance (DAPA regulation, 2006). Among these types, this research found that R&D is a crucial part of the technology transfer in all of the programs (see Table 13).

Table 13: Offset Valuation related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Contributory effects on R&D	X		X	X	X	X	5
Building up indigenous technology for exports	X						1
Degree of the offset technology transfer	X	X	X	X	X	X	6
Cost reductions			X	X			2

As you can see in Table 13, the ROK military is highly interested in a technology transfer rather than cost reductions because the ROK military is seeking to strengthen the capabilities of its indigenous industry for defense reform 2020. From the ROK's point of view, as a result of obtaining technology transfer, the ROK military could reduce costs over the long run and build up its own national defense capability. The interviewee for the KDX Goal Keeper program conveyed, "therefore, offset valuation was more important and considered than the contract price in the long run point of view."

As the DAPA regulation , the policy concerning offset programs include greater than $10M projects of foreign defense acquisition, and in this case, the ROK government announced a policy for acquisitions in which the minimum requirement is of 30 percent offset of the value of the amount in all defense acquisition contract. However, it is hard to practically estimate the offset valuation in monetary value early in a program because the ROK does not have an appropriate measurement tool and there is no common model that applies to many other importing countries. One interviewee for the E-X program

expressed, “this problem is going to be an obstacle to getting offset satisfaction from the selling countries.”

In conclusion, most respondents in this research expressed that offset valuation will enhance the ROK’s technical and manufacturing potential and help to increase investments in domestic R&D and depot maintenance. They stated, “the pursuit of offset valuation will be beneficial to both the ROK military industry and foreign collaborators as a win-win strategy.”

3. Mission performance capability

Mission performance capability can be attained by incorporating the desirable efficiencies and components of existing successful technology for multi-mission capable weapon systems. The ROK military has declared its plan reforming the defense structure for preparation of cooperative self-reliant defense by 2020. This vision requires appropriate integration of technology as part of the solution that will close gaps in maximum mission performance. Table 14 shows the influences of mission performance capability over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

3-1. Satisfaction of the ROK military & the degree of ROC

3-2. Satisfaction of the mission performance capability compared with competitor nations

3-3. Standard of improved capability compared with existing weapon systems & interoperability with related weapon systems

Table 14: The Influence of mission performance capability on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Performance	**7**	**7**	**5**	**6**	**6**	**7**	**6.3**	**7**	**7**	**6**	**7**	**7**	**7**	**6.8**	**6.58**
Sub-Question 3-1	**7**	**7**	**6**	**7**	**5**	**7**	**6.5**	**7**	**7**	**7**	**7**	**7**	**7**	**7.0**	**6.75**
Sub-Question 3-2	**1**	**3**	**4**	**5**	**6**	**7**	**4.3**	**7**	**4**	**6**	**6**	**7**	**5**	**5.8**	**5.08**
Sub-Question 3-3	**7**	**5**	**7**	**5**	**5**	**7**	**6.0**	**7**	**7**	**6**	**6**	**7**	**5**	**6.3**	**6.17**

Mission performance capability is the highest priority among the factors (see Table 2 in Appendix 4). This factor is defined as a requirement for national defense and military strategy through its operational capability. As you can see in Table 14, some participants for the F-X, E-X and WLR-X programs expressed, “mission performance capability is a necessary factor to consider in judging whether a product could satisfy the ROK’s required operational capability (ROC), but it is not a factor to compare with the other competitor nation’s products.” In the early stage of each program, all involved programs usually rely on the historical data provided by the participating nations in order to compare the competitor nation’s products. However, the participants for the E-X program stated that there were not enough detailed data for comparison with other countries’ product capability.

In conclusion, a consistently high level of consideration of mission performance capability was a core value among all factors. That is, this factor is essential when the ROK military makes decisions in the procurement of foreign countries’ defense weapon

system. As stated by the interviewee for the F-X program, “mission performance capability is a basic factor to determine the completion of the program.”

Table 15: Mission performance capability related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Satisfaction of the ROK military ROC	X	X	X	X	X	X	6
Performance compared with competitor			X		X	X	3
Interoperability with related weapon systems	X	X	X	X			4

Most respondents acknowledged that while mission performance capability is the final goal that must be accomplished through the required operational capability, it can be difficult to meet this goal while considering offset valuation, defense budget levels, interoperability, and integrated logistics support. The greatest interest, as agreed upon by all interviewees, is the satisfaction of the ROK military ROC (see Table 15). It came from comments offered by an Air Force representative for the E-X program who suggested, “recently, the two biggest enablers for the contract are to accomplish satisfaction of the ROK military ROC and to offer offset valuation with a reasonable price.”

In conclusion, the high level of mission performance capability is a crucial part of a successful contract for all programs. All representatives of each program repeatedly emphasized that “in the demonstration and validation phase of this factor, the ROK

military should not accept a contract unless the seller demonstrates that the desired technology actually worked." The demonstration should prove that the weapon's performance satisfies the ROC requirement to assess future capabilities in order to identify the specific measures that are needed. This research recognized that "the mission performance capability can be only achieved by numerous demonstrations and practical tests prohibiting unproven technology from other countries' defense weapon articles."

A challenge of solving these assignments that was pointed out by several respondents was that the ROK military should equip more military installation and research complexes for acquiring product quality and validation. Some programs have been widely viewed as being very successful in providing improved weapon system performance, because the product has satisfied the ROK's military expectations through numerous inspections in a well equipped research institute.

4. Integrated Logistics Support

The integrated logistics support is responsible for sustaining weapon systems readiness and managing a large part of the military's investment in defense weapon's capacity as integrator of weapon systems. Table 16 shows the influences of integrated logistics support over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

4-1. Convenience of procurement & follow-up support

4-2. Level of infrastructure for operational maintenance

4-3. Guarantee of most efficient capacity

4-4. Effectiveness of time savings and cost reductions

Table 16: The Influence of Integrated Logistics Support on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
ILS	**4**	**7**	**6**	**7**	**6**	**5**	**5.8**	**7**	**7**	**7**	**7**	**5**	**6**	**6.5**	**6.17**
Sub-Question 4-1	**4**	**7**	**6**	**6**	**7**	**5**	**5.8**	**7**	**7**	**7**	**7**	**5**	**6**	**6.5**	**6.17**
Sub-Question 4-2	**4**	**7**	**5**	**6**	**6**	**5**	**5.5**	**2**	**4**	**7**	**7**	**5**	**5**	**5.0**	**5.25**
Sub-Question 4-3	**4**	**7**	**6**	**7**	**6**	**5**	**5.8**	**7**	**5**	**7**	**7**	**5**	**6**	**6.2**	**6.00**
Sub-Question 4-4	**4**	**5**	**6**	**7**	**7**	**5**	**5.7**	**7**	**4**	**4**	**6**	**5**	**7**	**5.5**	**5.58**

In most programs, this factor seemed to be a significant issue, even though this factor has less priority than interoperability and offset valuation. This factor enables the ROK military not only to guarantee great performance but also to achieve cost reductions and time saving during defense system's lifecycle. Comparing U.S. and other countries' programs, the integrated logistics support were graded a higher score to the interviewees for other countries' programs (see Table 16). The interviewee for the WLR-X program commented that there were many difficulties in terms of previous equipment's (AN/TPQ-37, U.S.) integrated logistics support. In these results, they had chosen another country's article, the Arthur from Sweden, because this country guaranteed much integrated logistics support with offset valuation and a cheaper price, including the guarantee of logistics supports.

Relatively, the other countries were given a lower score than the U.S. in the level of infrastructure for operational maintenance (see Table 16), but the other sub-questions'

scores were higher than those of the U.S. programs. This indicates that other countries are more flexible in addressing the ROK's requests in terms of integrated logistics support.

Table 17: Integrated Logistics Support Process Elements

ILS Elements
1. Maintenance Planning
2. Maintenance Support Facilities
3. Direct-work Maintenance Staffing
4. Supply Support
5. Support Equipment
6. Training, Training Support, and Personnel Skills
7. Technical Data
8. Packaging, Handling, Storage, and Transportation
9. Computer Resources Support

As the Integrated Logistics Support Process Manual explains (ILSPM, 2007: 5), the ILS process begins during mission analysis and continues throughout the lifecycle of a product or service. Table 17 identifies the ILS elements (ILSPM, 2007: 8). It progresses from analysis and planning during mission and investment analysis to acquisition during solution implementation to steady-state operations during in-service management. ILS planning is adjusted to ensure services continue to be supported in a cost-effective manner.

Table 18: Integrated Logistics Support related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Convenience of the follow-up support	X	X		X	X		4
Level of operational maintenance	X	X	X		X	X	5
Guarantee of most efficient capacity	X	X		X			3
Effectiveness of time saving and cost reductions		X	X	X	X	X	5

As you can see in Table 18, of the twelve individuals who were asked about this factor, ten participants indicated that through integrated logistics support, the ROK military could accomplish certain cost reductions and could minimize operating costs that would benefit the long term relationship with the selling countries. Putting all considerations together in Table 18, the level of operational maintenance and guarantee of most efficient capacity are a benefit to the U.S. weapon industry, but other countries can take advantage of the effectiveness of cost reduction in the ROK's defense weapon negotiation.

There are other aspects to consider as well. One interviewee for the F-X program insisted that, although this factor seems to be considered an important factor in the early phases of a program, it is not considered highly in the process of a contract until the contract is accepted because the real effectiveness would come out after fnalizing a contract. Therefore, he suggested that the ROK military should consider this factor more seriously in the early stage of every contract so that the ROK could protect itself from

excessive lifecycle costs. Most of the interviewees, especially interviewees for the KDX I and KDX II programs, mentioned that the most important thing is to guarantee the mission performance capability. In order to achieve this capability, the ROK military has to require a timely deployment and durability. These factors can only be achieved through the integrated logistics support.

5. Lifecycle

The lifecycle management of a weapon system ensures its reliability, supportability, and total ownership cost. Therefore, many respondents felt that lifecycle is a part of the integrated logistics management system. Table 19 shows exhibits the influences of lifecycle over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

5-1. Minimize the cost of lifecycle

5-2. Systemize human resources management

5-3. Systemize operational management

Table 19: The Influence of Lifecycle on Contracts

	U.S.							Other Countries							
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns		U.S. Average	WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns		Non-U.S. Average	Overall Average
Lifecycle	**4**	**6**	**6**	**5**	**5**	**4**	**5.0**	**6**	**6**	**6**	**6**	**4**	**5**	**5.5**	**5.25**
Sub-Question 5-1	**4**	**7**	**6**	**5**	**6**	**4**	**5.3**	**7**	**6**	**7**	**6**	**4**	**6**	**6.0**	**5.67**
Sub-Question 5-2	**1**	**5**	**5**	**5**	**5**	**4**	**4.2**	**6**	**4**	**4**	**6**	**4**	**4**	**4.7**	**4.42**
Sub-Question 5-3	**1**	**5**	**7**	**5**	**4**	**4**	**4.3**	**6**	**5**	**7**	**7**	**4**	**5**	**5.7**	**5.00**

It is also recognized that this factor is an important part contributing to ROK's decision making in the procurement of defense articles (see Table 19). The interview participants for each program expressed a high level of concern for a cost-saving strategy associated with lifecycle costs. Ultimately, this consideration is for reducing weapons budgets over the long term. Comparing U.S. and other countries programs, the interviewees for other countries' programs gave a higher score to the lifecycle especially the systemization of operational management. In the case of the Navy programs, the participants mentioned that Navy tried to operate the same weapon system in every different type of warships for the entire lifecycle costs.

In lifecycle management, there are four phases and milestones for cost reduction throughout the life cycle of the weapon system (see Figure 8).

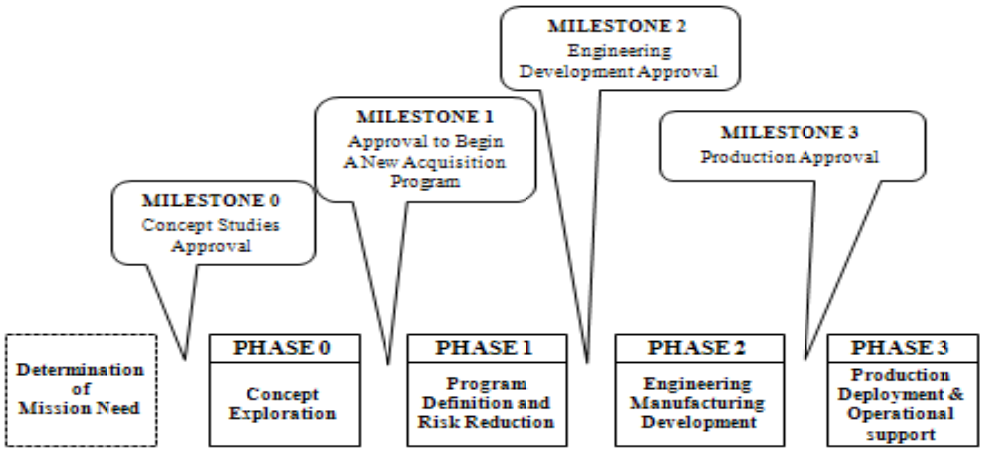


Figure 8: The Acquisition Cycle-Four Phases & Milestones

(Weapon Systems Intelligence Integration Handbook, 1999)

Table 20: Lifecycle related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Minimize the cost of lifecycle	X	X	X	X	X	X	6
Systemize operational management		X		X	X		3

In all programs, minimizing the lifecycle cost seemed to be a critical issue (see Table 20). The focus of this factor is minimizing the lifecycle costs. There are multiple points to be considered that minimize the lifecycle costs such as procurement cost, inventory cost, and disposal cost. The respondents for the WLR-X program mentioned that they added a new contract clause for the first time in the defense improvement program in order to curb wasting operational management budgets post contract award. Actually, there was evidence to show that many sellers try to expand their contract profit by supplying higher priced weapon parts during the lifecycle, resulting in wasting of money in the contract. Especially, in case of a foreign weapon purchase, there were many case of wasting money on the operational management. For these reasons, the interviewees for the E-X program were introduced to the Airborne Early Warning & Control Support Facility (AEW&CSF) in order to support the systemization of operational management.

6. Timely Deployment

A simple definition of deployment is the placing of a new weapon system into the hands of a prepared user. Therefore, the timely deployment should be considered as an element for attaining an advantage relative to other countries in a critical situation. Table 21 shows the influences of timely deployment over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

6-1. Appropriate time-period from contract to disposition

6-2. Possibility of eliminating the war potential vacuum

6-3. Achievement of the comparative advantage of a fully operational system

Table 21: The Influence of Timely Deployment on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Deployment Time	**7**	**5**	**6**	**7**	**6**	**5**	**6.0**	**6**	**7**	**5**	**6**	**3**	**4**	**5.2**	**5.58**
Sub-Question 6-1	**7**	**5**	**6**	**7**	**5**	**5**	**5.8**	**1**	**7**	**7**	**7**	**3**	**4**	**4.8**	**5.33**
Sub-Question 6-2	**7**	**5**	**6**	**7**	**6**	**4**	**5.8**	**7**	**6**	**4**	**7**	**2**	**4**	**5.0**	**5.42**
Sub-Question 6-3	**7**	**5**	**6**	**7**	**7**	**5**	**6.2**	**3**	**6**	**6**	**7**	**3**	**4**	**4.8**	**5.50**

Even though this factor has less priority than interoperability and offset valuation, this factor also seemed to be a significant issue in most programs. Comparing U.S. and other countries programs, the respondents for U.S. programs graded a higher score in deployment time (see Table 21). This is because timely deployment is one of most heavily weighed factors and a necessary condition to ROC satisfaction in the early stage

of contract process. If this factor is not satisfied for the ROC at the starting point, the ROK defense acquisition program should not be awarded any kind of weapon systems regardless of its mission performance capability.

Although the majority of interviewees agreed that this factor should be accomplished to eliminate the war potential vacuum and attain of the comparative advantage of a timely operational system, it would be difficult to achieve and it often creates public criticism. Especially, military commentators denounce defense contractors for neglect of duty. For instance, in case of the F-X program, there existed much negative public opinion that the ROK military should have chosen Lockheed Martin F-35 Lightning, the product of the joint strike fighter program or another country's aircraft, such as France's Rafale or Russia's Sukhoi because of the problems with performance and price. However, the participants for the F-X program recognized that the ROK military would have to wait until 2014 to deploy the F-35 joint strike fighter. It is too late to attain a timely deployment whenever the ROK considers the transfer of wartime OPCON in 2012. For this reason, even if U.S. Air Force does not purchase F-15 anymore, the ROK Air Force had chosen the F-15K, the next term mainstay of air defense.

7. Depot Maintenance

Depot maintenance is the act of repair, overhaul, upgrade or rebuild of weapons systems, support equipment, component parts, and embedded operating software programs when the level of effort required to meet specified conditions exceeds the capabilities of lower level maintenance activities by improving materiel reliability and availability (army posture statement, 2008). Table 22 shows the influences of depot

maintenance over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

7-1. Achieve efficiency through Depot maintenance

7-2. Convenience of maintenance & Capability of maintenance

7-3. Convenience of acquiring extra equipment & technical training

Table 22: The Influence of Depot Maintenance on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Depot Maintenance	**4**	**4**	**6**	**4**	**5**	**3**	**4.3**	**6**	**4**	**4**	**6**	**3**	**6**	**4.8**	**4.58**
Sub-Question 7-1	**4**	**4**	**6**	**4**	**4**	**3**	**4.2**	**1**	**3**	**4**	**7**	**3**	**6**	**4.0**	**4.08**
Sub-Question 7-2	**4**	**5**	**6**	**4**	**5**	**3**	**4.5**	**7**	**4**	**4**	**7**	**3**	**6**	**5.2**	**4.83**
Sub-Question 7-3	**4**	**4**	**6**	**4**	**6**	**3**	**4.5**	**6**	**3**	**4**	**6**	**3**	**6**	**4.7**	**4.58**

Multiple interview participants agreed that depot maintenance is a part of the integrated logistics management system. The greatest interest in this factor was to focus on aspects of cost and effect. One participant of the WLR-X programs gave a lower score to the establishment of depot maintenance (see table 22). He iterated the point that the ROK military forced contractors to secure the capability of depot maintenance by taking full advantage of other factors from offset valuation and integrated logistics support. For these reasons, Air Force representatives stated that there is no need to establish depot maintenance whenever the ROK purchase the defense weapon systems.

Table 23: Depot Maintenance related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Existence of depot maintenance					X		1
Efficiency of maintenance through outsourcing	X	X	X	X	X	X	6
Capability of technical training		X		X	X		3
Convenience of acquiring component parts	X	X	X	X	X	X	6

As you can see in Table 23, two things that are more considered is to outsource maintenance system in order to save money as part of the offset negotiations and secure sub component parts readily. Outsourcing is the best way to invest defense budgets to build up national defense strength in terms of cost effectiveness. The interviewee for the KDX-II Goalkeeper commented that the previous established depot maintenance in Korea could not have the capability for repairing/upgrading the main system because the contract could not transfer core technologies from the buyer at the time. This situation many times resulted in the main system's having to place an urgent order, and to depend upon the buyer's depot maintenance system. Therefore, the outsourcing to private sector is likely to be beneficial for both the ROK military and domestic weapon companies in terms of cost saving. Outsourcing also enables the ROK military to attain convenience in acquiring component parts.

There are other aspects to consider as well. The interviewee for the F-X program insisted that, although this factor seems to be considered as an important factor in the

early stages of the program, the actual effectiveness is proved after a contract is awarded so that this factor is not given too much importance at the moment of the conclusion of the contract. Other interviewee for the WLR-X program commented that recently the ROK military could overcome the disadvantages of depot maintenance through offset negotiations.

Although it is still reasonable for the ROK military to consider depot maintenance as an important factor, the ROK military is trying to outsource to domestic weapons companies in order to reduce operating maintenance price. That is, ROK military operating costs can be minimized through the pooling of common resources such as technical training, maintenance facilities and support equipment.

8. National Security

National security refers to the requirement to maintain the nation-state through the use of military and political power. South Korea is a very dangerous region of the world, particularly with regard to North Korea. Table 24 shows the influences of national security over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

8-1. Maintenance of peace on the Korea Peninsula

8-2. Realization of the strategic policy toward North Korea

8-3. Developing strategic military power through military transformation

Table 24: The Influence of National Security on Contracts

	U.S.							Other Countries							
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns		U.S. Average	WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns		Non-U.S. Average	Overall Average
National Security	**5**	**5**	**2**	**4**	**3**	**3**	**3.7**	**4**	**7**	**4**	**4**	**3**	**4**	**4.3**	**4.00**
Sub-Question 8-1	**5**	**5**	**2**	**3**	**3**	**3**	**3.5**	**4**	**7**	**4**	**5**	**3**	**4**	**4.5**	**4.00**
Sub-Question 8-2	**5**	**5**	**2**	**5**	**4**	**3**	**4.0**	**4**	**6**	**4**	**5**	**3**	**3**	**4.2**	**4.08**
Sub-Question 8-3	**5**	**7**	**2**	**4**	**3**	**3**	**4.0**	**4**	**6**	**7**	**5**	**3**	**5**	**5.0**	**4.50**

There is no great difference among the programs for national security, and most respondents did not give a high score to national security (see Table 24). Several respondents noted that this factor was managed by headquarters ROK Joint Chiefs of Staff, a group of chiefs from each major branch of the armed services for attaining military strategies. For both U.S. and Non-U.S. programs, this factor was not a main element considered in the contract process, but a precondition for deciding on mission performance capability before contract process. The respondents for the E-X program noted that this was a necessary condition in an acquiring phase, not in contract process. However, they believed that national security was considered indirectly. For instance, this factor was a prior condition that shapes a defense weapon contract.

Table 25: National Security related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Maintenance of peace on the Korean Peninsula	X			X			2
Realization of the strategic N. Korea policy	X	X		X			3
Making the strategic military transformation	X	X	X	X	X		5

The most interesting finding by multiple interview participants was that national security is ultimately one of the objectives of acquiring a defense weapon system for the wartime OPCON 2012 and defense reform 2020 despite the belief that national security had little impact on each program's decision making (see Table 25).

This factor seems to be considered in the early phases as a political consideration, but not considered in the process of each contract. One interviewee for the E-X program stated that in processing the defense weapon systems, price and mission performance capability had a much greater impact on contract decisions than national security. The Navy interviewee for the KDX-II Goalkeeper program expressed that the KDX-II goalkeeper is just an individual weapon system, not a strategic war vessel like a naval warship, so that National security was not considered as much higher than other factors in terms of a significant issue in the process. The participants for the KDX I program commented that this factor depends on the security environment of the Korean peninsula including U.S.-ROK military relationships and North Korean provocation.

9. U.S.-ROK Alliance

The U.S.-ROK alliance, a pillar of East Asia security for more than 50 years, is still strong on the Korean Peninsula. The influence of this relationship is felt in many foreign affairs. Therefore, there is a consistent perception that the U.S.-ROK military partnership will directly influence the decision making in purchasing defense articles from foreign countries. Table 26 shows the influences of U.S.-ROK alliance over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

9-1. Denuclearization of the Korean Peninsula & Obstruct North Korean provocations

9-2. Intensification of the U.S.-ROK mutual assistance structure

9-3. Building up strategic alliance

Table 26: The Influence of U.S.-ROK Alliance on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
U.S-ROK Alliance	**5**	**1**	**6**	**4**	**4**	**5**	**4.2**	**4**	**3**	**4**	**4**	**3**	**4**	**3.7**	**3.92**
Sub-Question 9-1	**5**	**1**	**7**	**4**	**5**	**5**	**4.5**	**5**	**3**	**4**	**5**	**3**	**4**	**4.0**	**4.25**
Sub-Question 9-2	**5**	**1**	**6**	**4**	**3**	**5**	**4.0**	**4**	**3**	**4**	**4**	**3**	**4**	**3.7**	**3.83**
Sub-Question 9-3	**5**	**1**	**6**	**4**	**4**	**5**	**4.2**	**4**	**3**	**4**	**4**	**3**	**4**	**3.7**	**3.92**

Comparing U.S. and Non-U.S. programs (see Table 26); the participants for U.S. programs gave a little more score to the U.S.-ROK alliance. This is a natural consequence

of the fact that the U.S. military is still stationed on the Korean peninsula, and the ROK military has acquired U.S. defense weapon systems for over fifty years. However, this result is not relative to the perception that the U.S.-ROK military partnership will directly influence the decision making in purchasing defense articles. It comes from several other reasons:

1. Interoperability for integrated operation during the combined exercises
2. Integrated Logistics Support for convenience of procurement / follow-up support
3. Timely deployment for achievement of the comparative advantage of time period
4. Depot Maintenance for convenience of technical training

As mentioned earlier, the ROK military considers these factors very highly in the process of decision making, and these four factors relatively favor to U.S. weapon systems. For these reasons, the ROK has acquired the U.S. defense articles. Therefore, there was little evidence to suggest that, most respondents believed that, the U.S.-ROK partnership had much impact on contract decisions. The Army interviewee stated “it usually depends on the size of a program.” In the case of the small WLR-X Army program, this program was designed to reduce a product price and compete with other countries for a program contract in its early phases, because the ROK military had used U.S. articles, the AN/TPQ-36 and the AN/TPQ-37, during 30 years without change. Therefore, the ROK military suggested that the two enablers for contract accomplishment should be a lower price and mission performance capability. But, as mentioned earlier, the radar system as an independent unit just needs to transmit its signal to a higher command only so that the

ROK military could achieve the mission performance capability from the Arthur made by Sweden with a lower price.

Table 27: U.S.-ROK Alliance related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Denuclearization of the Korean Peninsula		X	X	X	X		4
Intensification of the U.S-ROK mutual assistance		X					1
Political consideration and understanding	X	X	X			X	4

It is interesting to note that while most participants in this study believed that the U.S.-ROK alliance was an influential factor that should be considered, most of interviewees did not consider this factor much in the process of decision making. As you can see in Table 27, the contract awards were influenced in specific situations by events or change of the times such as North Korea's provocation and the change of government. For instance, the interviewee for the KDX-II conveyed that after the KDX-I contract was signed between the ROK military and Italy, the U.S. complained and pointed out many problems such as the possible difficulties with integrated operations. At the same time, there were also some issues that came up like the IMF (International Monetary Fund), which is an economic crisis, and the Naval battle of the Yun-Pyung when North Korea invaded South Korea's Northern Limit Line (NLL). For these reasons, the ROK military chose U.S. warship guns as the next defense weapon system for KDX II program.

10. Northeast Asia Strategy

The strategic environment of the Northeast Asian region is undergoing rapid change. China and Russia are strengthening their strategic ties. Faced with the threat of North Korean missiles and nuclear weapons as well as China's growing power, Japan appears to be speeding up its own military buildup and strengthening military alliances. For these reasons, the ROK military should consider these situations heavily in building up a self-defense strength. Table 28 shows the influences of Northeast Asia strategy over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

10-1. Maintenance of the military power balance with bordering states

10-2. Systematization of northeast Asian multi-national security cooperation

10-3. Maintenance of cooperative relationships with bordering states based on U.S.-ROK Alliance

Table 28: The Influence of Northeast Asia Strategy on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Northeast Asia Strategy	**5**	**5**	**2**	**3**	**3**	**4**	**3.7**	**4**	**3**	**4**	**4**	**3**	**3**	**3.5**	**3.58**
Sub-Question 10-1	**5**	**5**	**2**	**2**	**3**	**5**	**3.7**	**4**	**3**	**6**	**5**	**3**	**3**	**4.0**	**3.83**
Sub-Question 10-2	**5**	**5**	**2**	**2**	**3**	**3**	**3.3**	**4**	**3**	**3**	**5**	**3**	**3**	**3.5**	**3.42**
Sub-Question 10-3	**5**	**5**	**2**	**4**	**3**	**3**	**3.7**	**4**	**3**	**3**	**4**	**3**	**3**	**3.3**	**3.50**

Comparing U.S. and Other countries programs, most respondents did not give a high score to the Northeast Asia strategy (see Table 28). Multiple interview participants agreed that the Northeast Asia strategy is a part of national security. In the early phases of each program, both the ROK military and each program's participants considered various risks for strategic purposes. They conclude that one of the main risks in the future would be working out of the context of the Northeast Asia strategy. But, in most programs, the Northeast Asia strategy did not seem to be a significant issue, sometimes having no significance at all, because the ROK was more focused on getting better capability and lower prices through competition with foreign countries. One respondent for the F-X program also commented that the Northeast Asia Strategy is a prior condition for achieving the mission performance capability and the national security.

Table 29: Northeast Asia Strategy related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Military strength balance with bordering states	X		X		X		3
Multi-national security cooperation	X				X		2
Political & Strategic viewpoint	X	X	X		X	X	5

As you can see in Table 29, the political philosophy with the change of the times highly influences this factor in specific situations like the preceding factor. While the Northeast Asia strategy is important from the political and strategic point of view, in the

contract process, this factor was not considered highly. Comparatively, in the case of Army contract, the interviewees for the WLR-X program remarked that the Army didn't consider this factor. In Army programs, the participants were more focused on North Korea's provocation than the Northeast Asia strategy.

Most Army weapon systems are produced by domestic companies, but at that time, the ROK military did not have capability to build a locating radar warning receiver. Therefore, they decided to purchase this system from foreign countries. The Army contractors for the WLR-X program were more concerned with lower price and offset value than with the Northeast Asia strategy, which was not considered in the contract process. As a result, the Arthur made by Sweden was selected.

11. Defense Budget Levels

South Korea will sharply increase its military spending in the next twelve years (by 2020) as an effort to transform its military into a more agile, high-tech force equipped with sophisticated weapons. Therefore, the ROK military defense budget will be increased to 3.5% of the total gross domestic product by 2020 (2.9% in 2008). Table 30 shows the influences of defense budget levels over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

11-1. Pertinence of the business size

11-2. Budgetary allocations considering lifecycle costs

11-3. Effort for the transfer of wartime operational control to the ROK in 2012

Table 30: The Influence of Defense Budget Levels on Contracts

	U.S.							Other Countries							
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns		U.S. Average	WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns		Non-U.S. Average	Overall Average
Defense Budget	**7**	**5**	**6**	**6**	**5**	**3**	**5.3**	**5**	**6**	**6**	**6**	**3**	**4**	**5.0**	**5.17**
Sub-Question 11-1	**3**	**5**	**6**	**6**	**5**	**3**	**4.7**	**6**	**6**	**7**	**6**	**3**	**4**	**5.3**	**5.00**
Sub-Question 11-2	**1**	**5**	**6**	**6**	**5**	**3**	**4.3**	**6**	**5**	**7**	**6**	**3**	**5**	**5.3**	**4.83**
Sub-Question 11-3	**5**	**5**	**7**	**6**	**5**	**3**	**5.2**	**4**	**4**	**4**	**5**	**3**	**3**	**3.8**	**4.50**

Most of the programs recognized that defense acquisition budgeting was considered highly in terms of deciding a program size (see Table 30). The participants pointed out current defense acquisition budgeting system's problems. The ROK military contractors want the flexibility to make changes within the current five year national budget plan.

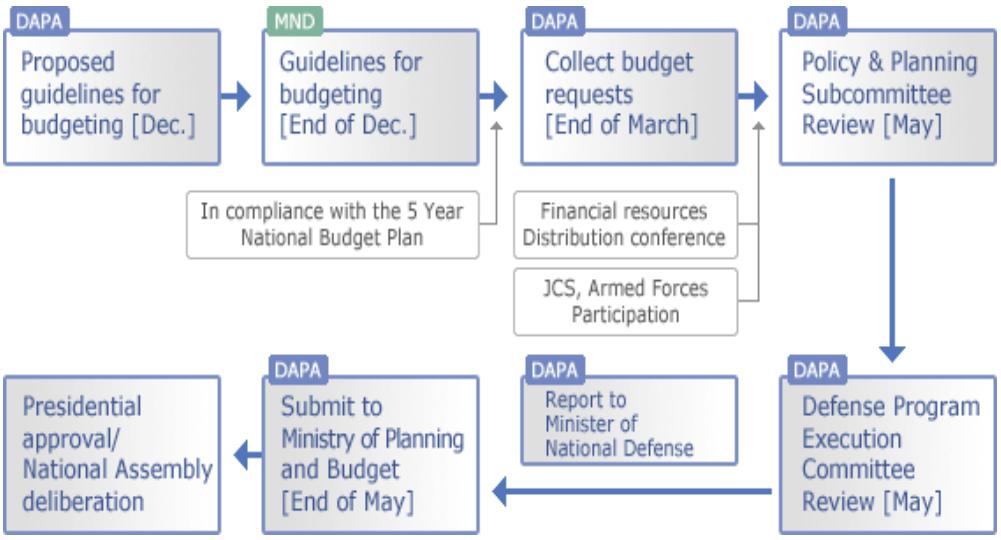


Figure 9: Defense Acquisition Budgeting Procedure

(DAPA Online official homepage, http://www.dapa.go.kr/eng).

A current budget procedure is limited by a mid-term defense planning process in compliance with the five year national budget plan (see Figure 9). A mid-term defense plan is developed in line with the five year national budget plan. Therefore, every program size is restricted by the given defense budget plan, usually making a program size smaller than it was in the original plan. For instance, in the F-X program, the ROK Air Force planned to introduce 120 Boeing F-15Ks as a target number for replacing its aging fleet of F-4s and F-5s within the original plan. However, they had to changed their first plan into introducing 40 units by 2012 because of budget constraints. One of interviewees for the ROK defense acquisition program expressed that "this factor will be considered as key factor in the process of each program after changing the current budgetary system, because the majority of the participants are limited by the uncertainty of each program's budget over program periods that would generally be considered long-term contract periods." The bottom line is that, the ROK military needs to consider changing the current defense budget regulation in order to meet U.S. export budget policy and other countries' budget policies.

Table 31: Defense Budget Levels related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Pertinence of the program size		X		X	X		3
Budgetary allocations considering lifecycle		X	X	X	X		4
Effort for the transfer wartime OPCON in 2012	X	X					2

In most programs, even respondents recognized that defense acquisition budgeting was considered highly in terms of deciding a program size, but defense budget levels did not seem to be as significant issue as was the Northeast Asia strategy. The participants recommended that current defense acquisition budgeting system should be considered corresponding to the selling countries' budgetary system. Several respondents acknowledged that this factor has no power to influence each program, because they only consider this factor as a boundary of given budget levels. Interview participants generally assume that the budget level is approved by the ROK congress, even if they considered it personally as an important factor. One interviewee for the E-X program noted that this factor should be considered in the national interest rather than in the viewpoint of a specific program. Therefore, the defense budget level has been growing since 2006 because the wartime OPCON issue for a self-defense operation came out after late 2006. This factor will be considered much more in the future.

12. ROK Political Environment

The ROK political environment could influence on the ROK administration's policy and foreign policy assessing security risks. It allows easy comparison of threats to ROK military's current operations and future plans. The ROK military could gain valuable insights through the political environment. Table 32 shows the influences of political environment over the programs and identifies the investigative questions (see Sub-Questions below) that support the factors in detail.

12-1. Recognition of U.S.-ROK Alliance

12-2. Direction of the government policy toward North Korea

12-3. Effort to move toward peaceful unification

Table 32: The Influence of ROK Political Environment on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
ROK Political Issue	**5**	**5**	**2**	**3**	**3**	**5**	**3.8**	**4**	**4**	**5**	**4**	**3**	**3**	**3.8**	**3.83**
Sub-Question 12-1	**5**	**5**	**2**	**3**	**3**	**5**	**3.8**	**4**	**3**	**4**	**4**	**3**	**3**	**3.5**	**3.67**
Sub-Question 12-2	**5**	**5**	**2**	**4**	**3**	**5**	**4.0**	**4**	**4**	**6**	**5**	**3**	**3**	**4.3**	**4.17**
Sub-Question 12-3	**5**	**5**	**2**	**3**	**3**	**4**	**3.7**	**4**	**3**	**4**	**5**	**3**	**3**	**3.7**	**3.67**

Comparing U.S. and Non-U.S. programs through Table 32, there is no difference in factor's average. Neither U.S. nor Non-U.S. program's interviewees gave high grade to the political environment factor. They stated that the ROK's political environment did not have much impact on the contract process. Comparatively, the interviewees for the F-X program graded this higher than did those from the other programs. They stated that "even though this factor was not a main consideration, and this was one of the political elements, the F-X program contractor considered this factor more in the contract process because the F-X program was one of a national big business." In other words, ROK political environment is influenced by the size of a business program. For instance, in the case of the F-X program, the F-15K, a mainstay of the country's air defense, was a big project to eliminate the potential security vacuum. This program will become a crucial

national defense asset as the ROK military prepares to be taken over wartime operational control of its armed forces by U.S. on April 2012. It will intensify precision strike capabilities of the ROK Air Force, replacing its aging fleet of F-4s and F-5s.

Table 33: ROK Political Environment related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Consideration of U.S.-ROK alliance	X		X				2
Direction of the government political issue	X	X	X	X	X	X	6
Effort to move toward peaceful unification							0

In most programs, the ROK political environment was not be considered as a significant issue for interviewees as for the Northeast Asia strategy, because a political environment is outside the scope of their authority, and this factor can be considered as a nationally undertaken project. In addition, this factor depends on the domestic environment of Korean peninsula such as government policy and relationship of alliance with around countries (see Table 33). Therefore, the interviewee for the F-X program pointed out that the ROK political environment cannot be the main factor for consideration in the process of introducing foreign defense system but can be a factor for reflecting domestic political considerations. The other interviewee for the KDX-II Warship guns program commented that this factor is influenced by the current government policy. That is, it depends on a specific government at a certain time.

13. Trends in Public Opinion

Public opinion is the distribution of opinions and attitudes held by the public by measuring common opinions at the individual level and aggregating them. It is also useful to know how strongly the public holds particular opinions and the direction those opinions seem to be moving. The role of public opinion in a representative democracy is highly important. Table 34 shows the influences of public opinion over the programs and identifies the supplementary questions (see Sub-Questions below) that support the factors in detail.

13-1. Achievement of positive public opinion through the press

13-2. Reflection of transparency & fairness

13-3. Creation of a national consensus

Table 34: The Influence of Trends in Public Opinion on Contracts

	U.S.						U.S. Average	Other Countries						Non-U.S. Average	Overall Average
	F-X(F-15K)		E-X(E-737)		KDX-II Warship guns			WLR-X Arthur		KDX-II Goalkeeper		KDX-I Warship guns			
Public Opinion	**2**	**1**	**6**	**6**	**4**	**3**	**3.7**	**4**	**6**	**4**	**5**	**4**	**3**	**4.3**	**4.00**
Sub-Question 13-1	**2**	**1**	**6**	**6**	**3**	**2**	**3.3**	**2**	**4**	**4**	**5**	**2**	**3**	**3.3**	**3.33**
Sub-Question 13-2	**2**	**1**	**7**	**7**	**4**	**4**	**4.2**	**7**	**6**	**7**	**5**	**4**	**4**	**5.5**	**4.83**
Sub-Question 13-3	**2**	**1**	**6**	**6**	**4**	**3**	**3.7**	**4**	**5**	**4**	**5**	**3**	**3**	**4.0**	**3.83**

Table 34 shows the interviewees think that the reflection of transparency is one of most important sub-factors in considering the public opinion. However, the interviewee

for the F-X program gave a low score to this factor. Interviewees expressed the opinion that "a contract award was determined by contractors during the process of a program, and we played a central role based on the defense acquisition regulations. Therefore we did not need to consider public opinion." They remarked that public opinion is not subject to one of empirical main factors because of deficiencies in the historical data.

On the contrary, in case of the latest E-X program, the interviewees stated that a main contract award will be influenced by the effect of public opinion especially in the future, because much information is revealed in the middle of contract process and the government is following the trend of public opinion. That is, the public opinion would influence both the contractor and ROK military during contract period.

Table 35: Trends in Public Opinion related Contract Decision Criteria

	U.S.			Other Countries			Total
	F-X(F-15K)	E-X(E-737)	KDX-II Warship guns	WLR-X Arthur	KDX-II Goalkeeper	KDX-I Warship guns	
Reflection of transparency	X	X	X	X	X	X	6
Achievement of positive opinion		X		X			2
Creating a national consensus		X			X		2

Although most programs recognized that national public opinion was too important to ignore, this factor was not acknowledged as an effective component in the past contract process. Among the sub questions, every interviewee especially mentioned transparency and public reputation (see Table 35). They insisted that interviewees should

consider issues such as transparency that would help to earn another future program, because positive public opinion can be achieved by a program's transparency at completion. It can make the people of a nation confident in every single defense weapon contract.

The most notable program causing dissatisfaction in public opinion was the F-X program. For instance, one of interviewees for the F-X program disagreed with the fact that contractors should consider public opinions and create a positive atmosphere from the citizenry in the process of each program. He regarded transparency and public reputation as a factor to be presented to the public after contract is awarded. That is, the awarding of a contract, presentations on program accomplishment with transparency were more important than presenting incomplete information about their transparency process to get a positive public reputation during the process of each program. Many interviewees mentioned the fact that public opinion can be more influential in future programs The ROK military should prepare to create a regulation to reflect these trends, such as a survey of public opinion and committee meetings consisting of members who are interested in defense procurement.

Summary

This chapter discussed the research results within the framework of the investigative questions (see Table 1 and Table 2 in Appendix 4). There were many aspects and recommendations to consider as pointed out by the interviewees throughout this research. These were founded solid evidence of how successful contract award are

evaluated. These opinions seem to represent what our acquisition needs are and should be. The next chapter examines what conclusions can be drawn from these findings in order to answer the research question, and discusses implications of the conclusions.

V. Conclusions and Recommendations

Chapter Overview

Chapter four provided the results of interviews and analysis of the data that was gathered, and it detailed the pattern for the investigative questions which were combined and analyzed with tables and figures so that this study could discuss the issues that were most frequently raised by participants.

This chapter summarizes the research effort. It will answer the research question and investigative questions, and discuss other relevant observations relating to this study. There was considerable acknowledgment from interviewees that several factors should be considered by the ROK military in order to acquire contract advantages whenever the ROK military procures defense articles. Additionally, this chapter continues with a discussion of factors that limit this research and recommendations for future research effort. The chapter concludes by summarizing the research.

Research Objective

The focus of this research was to address the question of *how various factors can explain how main weapon programs achieve future defense articles while simultaneously building long-term indigenous industrial capability*.

The decision process considered various factors including: Interoperability, Offset valuation, Mission performance capability, Integrated Logistics Support (ILS), Lifecycle,

Timely Deployment, Depot Maintenance, National Security, U.S.-ROK Alliance, Northeast Asia Strategy, Defense Budget Levels, ROK Political Environments and Trends in Public Opinion for explaining what the essential elements are in the process of ROK's decision making.

Through this study, the ROK military would rank the priorities in their selection process and diligently evaluate the relative advantages. The purpose of this chapter is not to promote one procurement method over another. In reality, what method is best for the ROK military depends on a number of factors. The purpose of this chapter is to look at the various factors that should be considered in making the FMS/DCS decision. By understanding these factors and applying them to the ROK military situation in the future, a better decision can be made regarding which method offers the best approach for a future acquisition program.

Conclusions of the Research

As discussed in Chapter one, this research determined, after a review of selected programs, that there are main factors to consider in deciding on a major defense weapon system. However, there are also sensitive, but significant differences. The results of this research seem to indicate that some of factors such as interoperability, offset valuation, and integrated logistics support should be considered more highly in the process of future programs. Consequently, this research has prioritized the factors that should be addressed in the process of ROK's decision making (see Table 36).

Table 36: Factor Priority in the ROK's Decision Making

Factor	Total Average	Rank	Group
Mission performance capability	6.58	1	A
Interoperability	6.25	2	A
Integrated Logistics Support	6.17	3	A
Offset Valuation	5.67	4	B
Timely deployment	5.58	5	B
Lifecycle	5.25	6	B
Defense Budget Levels	5.17	7	B
Depot Maintenance	4.58	8	C
National Security	4.00	9 (tie)	D
Trend of Public Opinion	4.00	9 (tie)	D
U.S.-ROK Alliance	3.92	11	D
ROK Political Environment	3.83	12	D
Northeast Asia Strategy	3.58	13	D

An important lesson learned in this research was that some of the core factors (Group A) among the thirteen factors to be considered in foreign weapon procurement contracts highly motivate the military to build up defense strength (see Table 2 in Appendix 4). This research resulted in general conclusions from the outcome of interviews and recommends some considerations in future programs:

1. Purchasing weapon systems which satisfy the ROK military ROC on the basis of mission performance capability and interoperability.
2. Reviewing the convenience of integrated logistics support, including depot maintenance.
3. Evaluating & considering economical efficiency through offset valuation and lifecycle costs.

To attain these effects, these core factors' constraints must be clearly defined, and the ROK military needs to understand all of the constraints. To meet the constraint requirements in future Korean military acquisition programs, this research explains the prioritized factors especially Group A in order below.

Mission Performance Capability

Mission performance capability is the highest priority among the factors (see Table 36). In this research, a consistently high level of consideration was given to mission performance capability among all programs. That is, this factor is essential when the ROK military makes decisions in the procurement of foreign countries' defense articles. Most respondents also acknowledged that mission performance capability is the final goal that must be accomplished through the end of the contract. That means, mission performance capability is a crucial part of successful contracts for all programs. Because every effort to attain offset valuation, interoperability and integrated logistics support is ultimately to guarantee the mission performance capability.

However, the ROK contractors must keep in mind that mission performance capability can only be achieved by numerous demonstrations and practical tests eliminating unproven technology in the demonstration and validation phase. In the early stage in each program, all involved programs also should try to find out ways to solve the data shortage from foreign countries in order to compare the competitor nation's products more in detail.

Interoperability

Interoperability is the second priority in Group A (see Table 36) and the ability of two or more defense weapons capable of executing basically the same functions or otherwise capable of supporting each other irrespective of the technical differences of between systems. This factor was mentioned repeatedly as a success factor for most of the programs. Most respondents believed that this factor had significant impact on contract decisions because the system which cannot operate with previous weapon systems could waste time, money and energy, and ensuring interoperability would enhance the ability among U.S. allies to increase mission effectiveness. Especially, the systematic connection with the existing systems is the biggest enabler towards accomplishing interoperability in the contract process.

In the case of other countries, the ROK military could receive many advantages such as offset valuation, contract price, and the ROK military's requirements from importing countries using strategy of weighing these factors against U.S products' benefits in terms of interoperability. Because other countries' contractors already

recognize and take into consideration the environment by which the U.S. has achieved many benefits of interoperability from ROK, the ROK military could get more benefits and flexibility from other factors such as integrated logistics support, offset valuation and price.

Integrated Logistics Support

Integrated logistics support as a critical functional discipline factor which impacts on product structures as a support system for the full lifecycle and services is the third priority in Group A (see Table 36). Integrated logistics support enables not only to guarantee a great performance but also to achieve cost reductions and time saving. ILS processes and activities are to be undertaken during a product lifecycle and the acquisition management lifecycle. Most participants expressed that the ROK military could achieve certain cost reductions and could minimize operating costs that would benefit throughout long term relationships with the selling countries through this factor.

Putting all considerations together, the level of operational maintenance and guarantee of most efficient capacity can be benefit of the U.S. weapon industry, but other countries can take advantage of the effectiveness of cost reduction in the ROK's defense weapon negotiation. After all, the integrated logistics support could be responsible for sustaining weapon systems readiness and managing a large part of the military's investment in defense weapon's capacity as integrator of weapon systems.

Offset Valuation

Technology valuation has been spurring increasingly growing attention since the beginning of the 1990's. As distinct from the issue of technology assessment, technology valuation is an activity to review technology, industrialization, and market factors to gain intangible benefits. As mentioned earlier, no one denies that offset is a powerful factor, even though it is the fourth priority among the factors (see Table 36). In the research, however, offset valuation was confirmed as one of the most influential factors for the future.

Recognizing the importance of defense offset programs, the purchasing countries have scarce means and poor models of estimating the defense offset value due to the lack of an objective and credible technology valuation model. Actually, the value is quite different from the cost itself. In the matter of defense offset estimation, as mentioned in chapter four, this factor is difficult to estimate as a value. From the buyer's point of view, the value is greater because the offset program gives the ROK a chance to acquire intangible assets including technology, parts production opportunity and co-production. Therefore, the buyer continues to attempt to obtain advanced defense technology and other valuable opportunities by using offset programs.

The ROK defense offset technology valuation is slightly different from the definition of technology valuation. It focuses on the valuation of defense technology from the offset contracts. It presents also the technical values in monetary terms and other considerations. Therefore, it creates an evaluation activity for defense technology itself to describe in monetary terms a review of its technical, economical, and defense strength

effects. For these reasons, the ROK military should develop a framework for evaluation of defense offset technology using the appropriate technology valuation approaches under the current situation. It is firmly believed that offset valuation could be a great contribution to meeting the objective of defense weapon procurement and should be a solid bridge to developing a win-win relationship/strategy between the buyer and the seller in the future.

Limitations of the Research

As discussed thoroughly in the previous chapters of this research, this study explained what factors had more impact on considering the purchase of military systems produced by foreign countries, and several investigative questions were answered in order to explain the research question. In these processes, this study discovered limitations with the defense acquisition process. The program participants believed the DAMR had significantly influenced each contract. They are faced with some challenges from the regulation. For instance, several interviewees mentioned repeatedly that the contract priority allowed by the DAMR was not on the mission performance capability but on contract price in the final phase. They acknowledged that if weapon system is satisfied the ROK's ROC, the contract price would become the highest priority among all factors in the contract process. For these reasons, some of interviewees suggested that ROK must consider and manage the three elements of the defense acquisition.

1. Defense weapon system in terms of monitoring and tracking

2. Contractor management providing feedback to guarantee risk, making organize cross-functional teams, providing an appropriate disciplines
3. Deregulation/Reformation of the defense acquisition considering the world acquisition environment.

In the case of the researcher, one should be aware that, although many limitations came out through this case study, there are three main limitations to the research. The first limitation was the lack of experience in acquisition and knowledge of the relative regulations. For instance, Defense Acquisition Management Regulation (DAMR) complicates the understanding in terms of the process and method of defense weapon procurement. The reason is that defense weapon systems' definitions are complex, and acquisition processes and management are more complex. The researcher should be aware of not only how the factors relate to each program's process but also how each factor relates to the other factors connected with the many practical experiences of the interviewees integrating their diverse opinions. However, understanding specific knowledge or background of Air Force and Navy contract processes was hard-not just because of communication challenges, but, more importantly, because the researcher didn't have enough experience.

The second limitation was the range of the interviewee's point of view according to their position. This made the experts estimate each factor differently, and allowed the participants a greater possibility of misinterpretation. Although their different positions generally did not seem to be a significant issue on the data over all the programs, some of

the programs made it difficult to make generalizations that could be applied to these programs. For instance, the interviewees for the F-X program evaluated the interoperability factor much differently, because one man was a contract manager in charge of the F-X program, but the other was an assistant officer at that time. For these reasons, this study struggled with integrating interviewees' opinions and finding the set pattern through the research. The different military positions seem to lead to differing philosophies about many factors.

The last limitation was a time restriction with interviewees working for DAPA. As mentioned earlier in chapter two, this study focused on the identification of the factors. Therefore, the researcher tried to get respondents to participate in the telephone interview about each contract in order to identify a success factor with the interviewees, because each program studied was greatly dependent upon the responsiveness of the interviewees and their willingness to participate. Therefore, the researcher must capture the interviewee's core explanation concentrating on "how" or "why", and the interviewees must answer the researcher's expectations about each factor. However, the researcher could not control the interviewees because of their schedule, rank, and interview time over the phone. The researcher usually was not satisfied with the interviewee's final answers, because every interviewee was working for another contract, and some of them did not want to explain in detail. The time allotted was not sufficient to guarantee that the researcher fully understood each program's information which interviewees had given over the phone. For these reasons, the researcher was subject to the pressure of interview conditions.

An additional limitation of this research was that the researcher only focused on the given factors during the telephone interviews. That is, interviewees replied to researcher's interview questions focusing on "how" or "why". Therefore, other factors or useful suggestions may be available which the research was unable to identify through the telephone interview.

Recommendations for Future Research

This research has identified how various factors can explain main weapon programs' justification to achieve future weapon systems while simultaneously building long-term indigenous industrial capability. During the process of this research, the researcher identified many opportunities for further research that could apply to continuous improvement.

Therefore, future research can focus on identifying shortfalls or drawbacks from the future programs related to factors that mentioned, because future program participants can expect to continue to face the challenge of these disadvantages such as offset estimation and improvement of performance. It also may be beneficial to compare this study's results with the contract that was made after organizing DAPA focusing on efficiency. Another possible focus of future research is to explain only one factor or Group A in detail among the factors and programs already dealt with. For instance, the interoperability is the one of examples. How interoperability is achievable and affordable, and which factor in Group A is the best suited to the ROK military environment would make an excellent subject for research.

This research could provide the information required to enhance the ROK's decision making in the future. This study also would enable the ROK contractor to provide criteria used to select core factors and useful information when they consider various factor to procure a large defense article.

Appendix 1. Interview Questions

<table>
<tr><th>번호</th><th>항 목</th><th colspan="7">① ｜---------- ｜⑦
Not at all Consider Extremely Consider</th></tr>
<tr><td colspan="9">Cost & Technical Performance</td></tr>
<tr><td>1</td><td>Interoperability(상호운용성)</td><td>①</td><td>②</td><td>③</td><td>④</td><td>⑤</td><td>⑥</td><td>⑦</td></tr>
<tr><td colspan="9">✓ 연합작전 시 통합운용 가능성(_____)
✓ Possibility of integrated operations during the combined exercises
✓ 기존 무기체계와의 체계적 연계성(_____)
✓ Possibility of systematic connection with the existing weapon systems
✓ 시스템 통합 서비스의 존재 및 상호운용을 위한 환경구축(_____)
✓ Existence of the system-integrated service & construction of the environment for interoperability
이유(Why):</td></tr>
<tr><td>2</td><td>Offset Valuation(절충교역)</td><td>①</td><td>②</td><td>③</td><td>④</td><td>⑤</td><td>⑥</td><td>⑦</td></tr>
<tr><td colspan="9">✓ 국내 연구개발에 기여효과(_____)
✓ Contributory effects on R&D
✓ 향후 수출 증대 및 해외시장 개척을 위한 기술기반 구축(_____)
✓ Building up the foundation of technology for enlarging future exports
✓ 절충교역의 충족도(국내 군수업체 참여, 핵심기술 획득 및 공동개발 등) (_____)
✓ Satisfaction of offset (i.e. join domestic weapons companies, obtain key technology, and co-development etc.)
✓ 비용절감 효과(_____)
✓ Effectiveness of cost reductions
이유(Why)</td></tr>
<tr><td>3</td><td>Performance Capability(임무수행능력)</td><td>①</td><td>②</td><td>③</td><td>④</td><td>⑤</td><td>⑥</td><td>⑦</td></tr>
<tr><td colspan="9">✓ 소요군의 만족도 및 ROC 충족 정도(_____)</td></tr>
</table>

- ✓ **Satisfaction of the ROK military & degree of ROC**
- ✓ 경쟁사와의 비교 가치를 통한 임무수행 능력의 만족도(_____)
- ✓ **Satisfaction of the mission performance capability compared with competitor nations**
- ✓ 무기체계 능력향상수준 및 관련 무기체계와의 상호운용능력(_____)
- ✓ **Standard of improved capability compared with existing weapon systems & interoperability with related weapon systems**

이유(Why):

Implementation & Management

4	**Integrated Logistics Support**(종합군수지원)	①	②	③	④	⑤	⑥	⑦

- ✓ 획득 및 후속지원의 용이성(_____)
- ✓ **Convenience of procurement & follow-up support**
- ✓ 운영유지를 위한 기반 정도(_____)
- ✓ **Level of infrastructure for operational maintenance**
- ✓ 장비의 최대 성능발휘 보장(_____)
- ✓ **Guarantee of most efficient capacity**
- ✓ 시간절약 및 비용절감 효과(_____)
- ✓ **Effectiveness of time savings and cost reductions**

이유(Why):

5	**Lifecycle**(수명주기)	①	②	③	④	⑤	⑥	⑦

- ✓ 수명주기비용의 최소화(_____)
- ✓ **Minimize the cost of lifecycle**
- ✓ 인력유지비의 시스템화(_____)
- ✓ **Systemize human resources management**
- ✓ 운영유지의 체계화(_____)
- ✓ **Systemize operational management**

이유(Why):

6	**Timely Deployment** (전력화시기)	①	②	③	④	⑤	⑥	⑦

- ✓ 계약~운용까지 운용시기의 적절성(_____)
- ✓ **Appropriate time-period from contract to disposition**
- ✓ 전력공백 달성 가능성(_____)

- ✓ **Possibility of eliminating the war potential vacuum**
- ✓ 적기 전력화를 위한 비교 우위 달성(_____)
- ✓ **Achievement of the comparative advantage of timely deployment**

이유(Why)

7	**Depot Maintenance**(창정비)	①	②	③	④	⑤	⑥	⑦

- ✓ 창정비를 통한 효과달성(시설, 기술) (_____)
- ✓ **Achieve efficiency through Depot Maintenance**
- ✓ 정비능력 및 정비의 용이성(_____)
- ✓ **Convenience of maintenance & Capability of maintenance**
- ✓ 추가적 소요장비 및 기술교육의 용이성(_____)
- ✓ **Convenience of acquiring extra equipment & technical training**

이유(Why):

Domestic Political Issues

8	**National Security**(국가안보)	①	②	③	④	⑤	⑥	⑦

- ✓ 한반도 평화체제 유지(_____)
- ✓ **Maintenance of peace on the Korean Peninsula**
- ✓ 전략적 대북정책 실현(_____)
- ✓ **Realization of the strategic policy toward North Korea**
- ✓ 군사적 변화를 통한 전략적 군사력 형성(_____)
- ✓ **developing the strategic military strength through Military transformation**

이유(Why):

9	**U.S.- ROK Alliance**(한미동맹)	①	②	③	④	⑤	⑥	⑦

- ✓ 한반도 비핵화 및 북한의 도발 저지(_____)
- ✓ **Denuclearization of the Korean Peninsula & Obstruct North Korean provocations**
- ✓ 한미공조체제 강화(_____)
- ✓ **Intensification of the U.S.-ROK mutual assistance structure**

- ✓ 전략적 동맹관계 형성(_____)
- ✓ **Building up strategic alliance**

이유(Why):

10	**Northeast Asia Strategy**(동북아전략)	①	②	③	④	⑤	⑥	⑦

- ✓ 주변국과 군사적 세력평형 유지(_____)
- ✓ **Maintenance of the military strength balance with bordering states**
- ✓ 동북아 다자안보협력의 제도화(_____)
- ✓ **Systematization of Northeast Asian multi-national security cooperation**
- ✓ 한미동맹을 바탕으로 한 주변국과의 협력관계 유지(_____)
- ✓ **Maintenance of cooperative relationships with bordering states based on U.S.-ROK Alliance**

이유(Why):

11	**Defense Budget Levels**(국방비수준)	①	②	③	④	⑤	⑥	⑦

- ✓ 사업규모의 적절성(_____)
- ✓ **Pertinence of the business size**
- ✓ 장비수명을 고려한 예산편성(_____)
- ✓ **Budgetary allocations considering lifecycle costs**
- ✓ 2012 년 전시작전권 환수를 위한 자국방위의 노력(_____)
- ✓ **Effort for the transfer of wartime operational control to the ROK in 2012**

이유(Why):

12	**ROK Political Environments**(정치환경)	①	②	③	④	⑤	⑥	⑦

- ✓ 한미동맹의 인식(_____)
- ✓ **Recognition of U.S.-ROK Alliance**
- ✓ 정부의 대북정책 방향(_____)
- ✓ **Direction of the government policy toward North Korea**
- ✓ 평화통일을 위한 노력(_____)
- ✓ **Effort to move toward peaceful unification**

이유(Why):

13	**Trend of Public Opinion**(여론)	①	②	③	④	⑤	⑥	⑦

- ✓ 언론을 통한 여론의 긍정적 효과달성(_____)
- ✓ **Achievement of positive public opinion through the press.**
- ✓ 투명성과 공정성의 반영(_____)
- ✓ **Reflection of transparency & fairness**
- ✓ 국민의 공감대 형성(_____)
- ✓ **Creation of a national consensus**

이유(Why):

추가항목(Other Factors):

Appendix 2. Abbreviation & Acronyms

AECA: Arms Export Control Act

AEW&C: Airborne Early Warning & Control

AFIT: Air Force Institute of Technology

AFLC: Air Force Logistics Command

AFSAC: Air Force Security Assistance Center

ALC: Air Logistics Center

AMC: Army Materiel Command

ASD: Assistant Secretary of Defense

ASF: Airborne Early Warning & Control Support Facility

BO: Blanket Order

CAS: Contract Administration Services

CFC: US-ROK Combined Forces Command

CLSSA: Cooperative Logistics Supply Support Arrangement

CSP: Concurrent Spare Part

DAMR Defense Acquisition Management Regulation

DAPA: Defense Acquisition Program Administration in South Korea

DCAA: Defense Contract Audit Agency

DCMA: Defense Contract Management Agency

DCS: Direct Commercial Sales

DFARS: Defense Federal Acquisition Regulation Supplement

DFAS: Defense Finance and Accounting Service

DFAS-DE: Defense Finance and Accounting Service-Denver Center

DISAM: Defense Institute of Security Assistance Management

DLA: Defense Logistics Agency

DoD: Department of Defense

DSAA: Defense Security Assistance Agency

DSAMS: Defense Security Assistance Management System

DSCA: Defense Security Cooperation Agency

EDA: Excess Defense Article

EEZ: Exclusive Economic Zone

FAA: Foreign Assistance Act

FAA: Federal Aviation Administration

FAR: Federal Acquisition Regulation

FFB: Federal Financing Banks

FLO: Foreign Liaison Office

FMF: Foreign Military Financing

FMFP: Foreign Military Financing Program

FMS: Foreign Military Sale

FMSA: Foreign Military Sales Act

GAO: General Accounting Office

GFE: Government Furnished Equipment

GFM: Government Furnished Materiel

IA: Implementing Agency

ILS: Integrated Logistics Support

ILSPM Integrated Logistics Support Process Manual

IMET: International Military Education and Training

INSS: Institute for National Strategic Studies

ISA: International Security Affairs

ITAR: International Trade in Arms Regulation

JSF: Joint Strike Fighter

JUSMAG: Joint U.S. Military Affairs Group

KDX: Korean Destroyer Experimental

KHP: Korean Helicopter Program

KMA: Korea Military Academy

KOTRA: Korea Trade-investment Promotion Agency

LC: Lifecycle Cost

LOA: Letter of offer and Acceptance

LOO: Letter of Offer

LOR: Letter of Request

LSC: Logistics Support Cost

MAP: Military Assistance Program

MDE: Major Defense Equipment

MILSPEC: Military Specification

MND: Ministry of National Defense

MROs: Material Release Orders

NLL: Northern Limit Line

NRC: Non-Recurring Cost

NSC: National Security Council

OA: Obligational Authority

OMB: Office of Management and Budget

OPCON: Operational Control

P&A Data: Price & Availability Data

P&A: Price & Availability

PATO: Patent And Trademark Office

PBL: Performance-Based Logistics

PC&H: Packing, Crating & Handling

R&D: Research & Development

RFP: Request For Proposal

RMA Reliability, Maintainability and Availability

ROC: Required Operational Capability

ROK: Republic Of Korea

SAAC: Security Assistance Accounting Center

SAMM: Security Assistance Management Manual

SCC: Security Cooperation Committee

SCM: US-ROK Security Consultative Meeting

SECDEF: Secretary of Defense

T&E Test and Evaluation

USAF: United States Air Force

USG: U.S. Government

USML: US Munitions List

WMD: Weapon of Mass Destruction

Appendix 3. Definition of Terms

1. Foreign Military Sales: FMS

This is a system under which the U.S. government sells military supplies based on external payment means and/or foreign loans to the U.S. friendly nations, allies or international organizations in accordance with inter-government contracts. The sales are classified into defined order, blanket order, and military supplies support agreements.

2. Foreign Military Sales Act

In Oct, 1968, the U.S. Government established the Foreign Military Sales Act to separate military sales from the Foreign Assistance Act enacted in 1961. The U.S. thus established a single legislative system aimed at selling defense materials and services to its friendly nations and international organizations, including joint production and cooperative military support

3. Price and Availability Data: P&A

This refers to the data containing information on reliability equal to that of a requisition and Letter of Acceptance (LOA) in respect to the purchase under FMS credit system and detailed prices, and this information is provided by the Department of Defense, U.S.A. to the Purchase Bureau within 45 days from the date of request.

4. Technology Transfer

An act of providing new technologies by the technology owner to other persons requiring such technologies, such as the transfer of industrial property rights, or the provision of the industrial property rights license or related technical data.

5. Interoperability

Indicates the ability of 2 or more items or of equipment components capable of executing basically same functions or otherwise capable of supplementing with each other irrespective of the technical characteristic difference of a system, and almost without conducting additional training for the related personnel.

6. Life Cycle Cost: LCC

Refers to overall cost required from the time an equipment is developed and acquired until the equipment is dismissed, which includes R&D cost, investment, operational and maintenance cost.

7. Offset

This is a conditional trade based on which the government, when acquiring military equipment, materials and services, requests foreign contractors for a specific consideration, such as the technology transfer and/or parts buy-back. This offset trade is classified into a direct offset trade dealing in the technology transfer and parts exports

related to the military supplies to be acquired, and an indirect offset trade not having direct relation with the military supplied to be acquired.

8. Integrated Logistics Support: ILS

This is an act of comprehensively managing, in order to ensure effective and economical logistics support, all logistics support elements (Maintenance programs, support and testing equipment, supply support, transportation, handling, packing, personnel and training, facilities, technical data, logistics support funds, logistics management information) covering the entire processes from the weapon system requirement planning stage to design, development, acquisition, operation and abandonment.

9. Budget

This is the financial plan covering 1 fiscal year which is subject to approval by the National Assembly. The plan shows balanced expenditures and revenues divided into types and amounts by function and nature, and is divided into a regular budgets and special budgets

10. Letter of Agreement: LOA

This is a document jointly prepared by the using military service components, Agency for Defense Development and the principal contractors with respect to the weapon systems R&D projects covering operation concept, required data, performance, required time,

technical approach, development schedule, support element for deployment, and cost analysis. This document forms the basis for the preparation of a system development plan.

11. Letter of Request: LOR

These are standard forms used by the U.S. Department of Defense or its subordinate agencies to request for information or offers on materials to be purchased through FMS.

12. Letter of Intent: LOI

This is used as a payment guarantee prior to the issuance of a requisition and/or LOA for items which require long period of production or as a payment guarantee until the time the products are accepted after LOA is issued.

13. Defense Acquisition Development Plan

This is a document which contains acquisition policies and the weapon and major equipment acquisition plan (introduction from foreign countries; R&D) based on Military Strategy Plan and Joint Force Requirement Plan, and is used as a basis for the establishment of a medium range defense plan

14. Direct Purchase from Foreign Countries

One of foreign introduction methods, this refers to an act of purchasing the weapon systems developed and produced in foreign countries, in the form of end products.

15. Licensed Production: LP

This is a form of technology introduced production under which specific products are manufactured without foreign country's technical support, after receiving or leasing the production rights from foreign countries.

16. Industry Self-Development

Refers to an act of developing products using industry self-developed facilities and technological capability. All expenses related to the development project are defrayed by the developing industries, and the Government does not take any responsibility with respect to the compensation for development expenses in case of development failure; nor is the Government obligated to purchase the products after development.

17. Defense Products

Indicate the materials designated among those provided for military use (military supplies) in accordance with the provisions of Special Law governing defense industry. In principle, materials falling under this category are those classified as weapon systems. However, materials currently under development which are expected to be classified as weapon systems after the completion of development may be designated as defense products.

18. Acquisition

Acquisition is a term used to denote integrated efforts made to develop, produce, and supply weapon systems for users (military service components requiring weapon systems). This involves activities starting from the concept creation stage to the time when the final products are delivered to users. Operating the supplied weapon systems by using units to carry out assigned missions is not included in these activities.

19. Procurement

This is an act of facilitating economic activities by acquiring, at the required time and place, appropriate type of materials, facilities or services required for the economic activities

20. Government-to-Government Purchases

This is one of the direct purchase methods under which Korean government buys products with external payment means or loans based on an agreement signed between Korea and foreign countries, and this includes FMS of the U.S.A.

21. Performance Based Logistics (PBL)

Performance-based logistics is the acquisition of support as an integrated, affordable performance package designed to optimize product readiness and meet performance goals through long-term support arrangements with clear lines of authority and responsibility. PBL involves buying performance outcomes.

22. Maintainability

The ability of an item to be retained in, or restored to, a specified condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair.

23. Reliability

The probability that a facility or service will perform its intended mission for the given mission time, expressed a percentage.

24. Acquisition Logistics

Technical and management activities conducted to ensure supportability is considered early and throughout the acquisition management process to minimize support costs and provide the user with the resources to sustain the product or service in the field

Appendix 4. Result of the Research

Table 1: Overall Outcome of the Research

	U.S.							Other Countries							
	F-X		E-X		KDX-II			WLR-X		KDX-II		KDX-I			
							average							average	Total.Ave.
1. Interoperability	7	7	7	6	7	4	**6.3**	7	7	6	7	4	6	**6.2**	6.25
	7	7	7	5	6	4	**6.0**	7	6	6	6	4	6	**5.8**	5.92
	7	2	7	6	6	4	**5.3**	1	7	7	6	4	6	**5.2**	5.25
	7	6	6	5	7	4	**5.8**	7	6	5	7	4	5	**5.7**	5.75
2. Offset Valuation	7	7	3	6	6	6	**5.8**	7	6	5	6	4	5	**5.5**	5.67
	4	7	2	4	7	6	**5.0**	6	5	3	7	4	6	**5.2**	5.08
	5	6	2	3	5	5	**4.3**	3	4	3	6	3	6	**4.2**	4.25
	7	7	6	6	6	5	**6.2**	7	5	3	7	3	5	**5.0**	5.58
	5	1	3	6	6	6	**4.5**	7	4	6	5	4	5	**5.2**	4.83
3. Mission performance capability	7	7	5	6	6	7	**6.3**	7	7	6	7	7	7	**6.8**	6.58
	7	7	6	7	5	7	**6.5**	7	7	7	7	7	7	**7.0**	6.75
	1	3	4	5	6	7	**4.3**	7	4	6	6	7	5	**5.8**	5.08
	7	5	7	5	5	7	**6.0**	7	7	6	6	7	5	**6.3**	6.17
4. Integrated Logistics Support	4	7	6	7	6	5	**5.8**	7	7	7	7	5	6	**6.5**	6.17
	4	7	6	6	7	5	**5.8**	7	7	7	7	5	6	**6.5**	6.17
	4	7	5	6	6	5	**5.5**	2	4	7	7	5	5	**5.0**	5.25
	4	7	6	7	6	5	**5.8**	7	5	7	7	5	6	**6.2**	6.00
	4	5	6	7	7	5	**5.7**	7	4	4	6	5	7	**5.5**	5.58
5. Lifecycle	4	6	6	5	5	4	**5.0**	6	6	6	6	4	5	**5.5**	5.25
	4	7	6	5	6	4	**5.3**	7	6	7	6	4	6	**6.0**	5.67
	1	5	5	5	5	4	**4.2**	6	4	4	6	4	4	**4.7**	4.42
	1	5	7	5	4	4	**4.3**	6	5	7	7	4	5	**5.7**	5.00
6. Timely deployment	7	5	6	7	6	5	**6.0**	6	7	5	6	3	4	**5.2**	5.58
	7	5	6	7	5	5	**5.8**	1	7	7	7	3	4	**4.8**	5.33
	7	5	6	7	6	4	**5.8**	7	6	4	7	2	4	**5.0**	5.42
	7	5	6	7	7	5	**6.2**	3	6	6	7	3	4	**4.8**	5.50
7. Depot Maintenance	4	4	6	4	5	3	**4.3**	6	4	4	6	3	6	**4.8**	4.58
	4	4	6	4	4	3	**4.2**	1	3	4	7	3	6	**4.0**	4.08
	4	5	6	4	5	3	**4.5**	7	4	4	7	3	6	**5.2**	4.83
	4	4	6	4	6	3	**4.5**	6	3	4	6	3	6	**4.7**	4.58
8. National Security	5	5	2	4	3	3	**3.7**	4	7	4	4	3	4	**4.3**	4.00
	5	5	2	3	3	3	**3.5**	4	7	4	5	3	4	**4.5**	4.00
	5	5	2	5	4	3	**4.0**	4	6	4	5	3	3	**4.2**	4.08
	5	7	2	4	3	3	**4.0**	4	6	7	5	3	5	**5.0**	4.50
9. U.S.-ROK Alliance	5	1	6	4	4	5	**4.2**	4	3	4	4	3	4	**3.7**	3.92
	5	1	7	4	5	5	**4.5**	5	3	4	5	3	4	**4.0**	4.25
	5	1	6	4	3	5	**4.0**	4	3	4	4	3	4	**3.7**	3.83
	5	1	6	4	4	5	**4.2**	4	3	4	4	3	4	**3.7**	3.92
10. Northeast Asia Strategy	5	5	2	3	3	4	**3.7**	4	3	4	4	3	3	**3.5**	3.58
	5	5	2	2	3	5	**3.7**	4	3	6	5	3	3	**4.0**	3.83
	5	5	2	2	3	3	**3.3**	4	3	3	5	3	3	**3.5**	3.42
	5	5	2	4	3	3	**3.7**	4	3	3	4	3	3	**3.3**	3.50
11. Defense Budget Levels	7	5	6	6	5	3	**5.3**	5	6	6	6	3	4	**5.0**	5.17
	3	5	6	6	5	3	**4.7**	6	6	7	6	3	4	**5.3**	5.00
	1	5	6	6	5	3	**4.3**	6	5	7	6	3	5	**5.3**	4.83
	5	5	7	6	5	3	**5.2**	4	4	4	5	3	3	**3.8**	4.50
12. ROK Political Environment	5	5	2	3	3	5	**3.8**	4	4	5	4	3	3	**3.8**	3.83
	5	5	2	3	3	5	**3.8**	4	3	4	4	3	3	**3.5**	3.67
	5	5	2	4	3	5	**4.0**	4	4	7	5	3	3	**4.3**	4.17
	5	5	2	3	3	4	**3.7**	4	3	4	5	3	3	**3.7**	3.67
13. Trend of Public Opinion	2	1	6	6	4	3	**3.7**	4	6	4	5	4	3	**4.3**	4.00
	2	1	6	6	3	2	**3.3**	2	4	4	5	2	3	**3.3**	3.33
	2	1	7	7	4	4	**4.2**	7	6	7	5	4	4	**5.5**	4.83
	2	1	6	6	4	3	**3.7**	4	5	4	5	3	3	**4.0**	3.83
Total	256	255	265	272	262	234	**257.3**	275	269	277	310	199	249	**263.2**	260.25

Table 2: Scatter Graph of Comparing Factors

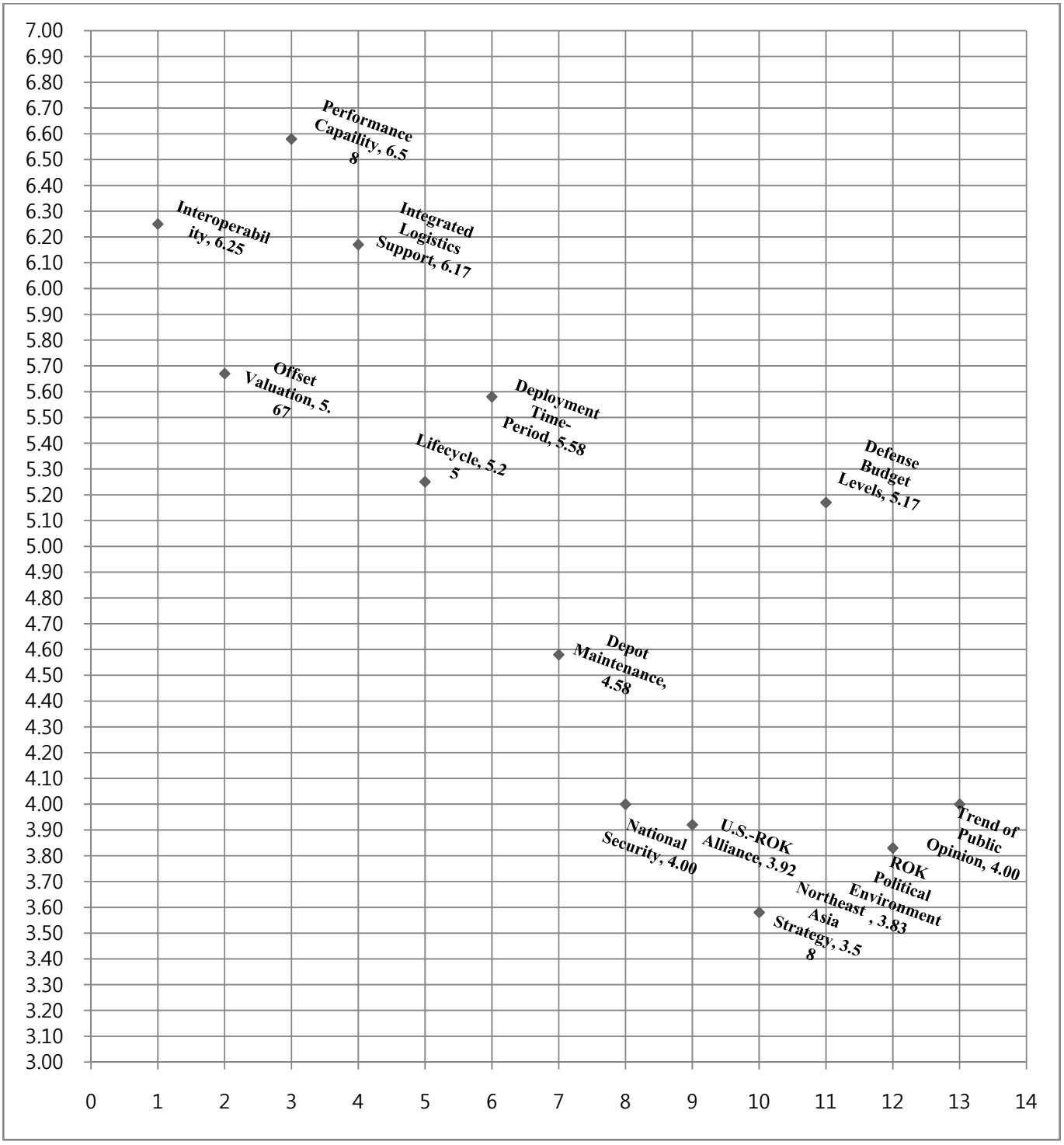


Table 3: Factor Priority & Outcome of the Research

Factor	Rank
1. Interoperability	2
2. Offset Valuation	4
3. Mission performance capability	1
4. Integrated Logistics Support	3
5. Lifecycle	6
6. Timely deployment	5
7. Depot Maintenance	8
8. National Security	9
9. U.S.-ROK Alliance	11
10. Northeast Asia Strategy	13
11. Defense Budget Levels	7
12. ROK Political Environment	12
13. Trend of Public Opinion	9

	U.S							Other Countries								
	F-X		E-X		KDX-II			WLR-X		KDX-II		KDX-I				
							average							average	total average	average sum
1. Interoperability	7	7	7	6	7	4	6.3	7	7	6	7	4	6	6.2	6.25	12.5
2. Offset Valuation	7	7	3	6	6	6	5.8	7	6	5	6	4	5	5.5	5.67	11.33
3. Performance Capability	7	7	5	6	6	7	6.3	7	7	6	7	7	7	6.8	6.58	13.17
4. Integrated Logistics Support	4	7	6	7	6	5	5.8	7	7	7	7	5	6	6.5	6.17	12.33
5. Lifecycle	4	6	6	5	5	4	5.0	6	6	6	6	4	5	5.5	5.25	10.5
6. Timely deployment	7	5	6	7	6	5	6.0	6	7	5	6	3	4	5.2	5.58	11.17
7. Depot Maintenance	4	4	6	4	5	3	4.3	6	4	4	6	3	6	4.8	4.58	9.167
8. National Security	5	5	2	4	3	3	3.7	4	7	4	4	3	4	4.3	4.00	8
9. U.S.-ROK Alliance	5	1	6	4	4	5	4.2	4	3	4	4	3	4	3.7	3.92	7.833
10. Northeast Asia Strategy	5	5	2	3	3	4	3.7	4	3	4	4	3	3	3.5	3.58	7.167
11. Defense Budget Levels	7	5	6	6	5	3	5.3	5	6	6	6	3	4	5.0	5.17	10.33
12. ROK Political Environment	5	5	2	3	3	5	3.8	4	4	5	4	3	3	3.8	3.83	7.667
13. Trend of Public Opinion	2	1	6	6	4	3	3.7	4	6	4	5	4	3	4.3	4.00	8
total	69	65	63	67	63	57	64.0	71	73	66	72	49	60	65.2	64.58	129.2
Average	5	5	5	5	5	4	4.92	5	6	5	6	4	5	5.01	4.97	9.936

Table 4: Radar Graph of Comparing Factors between U.S. & Other Countries

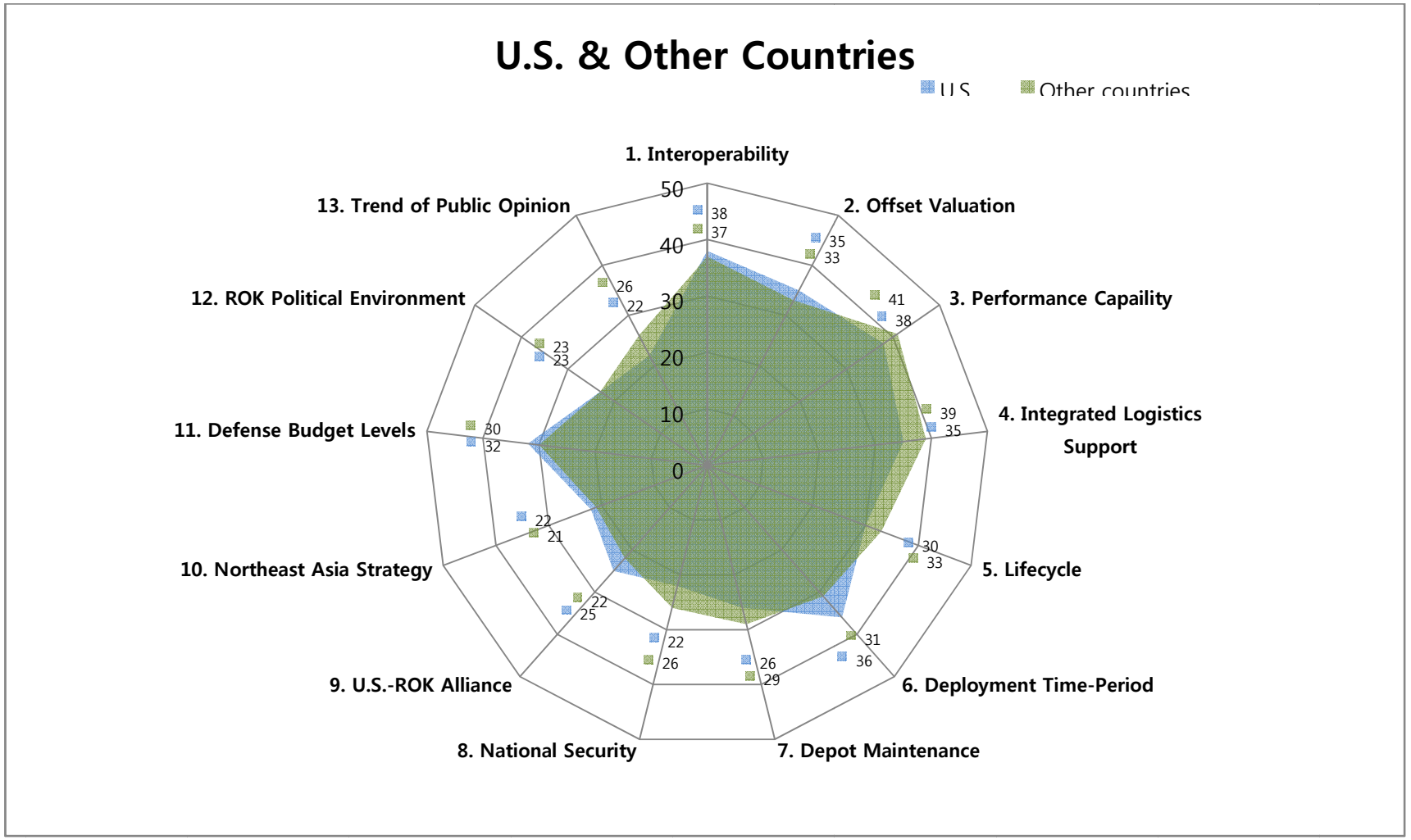
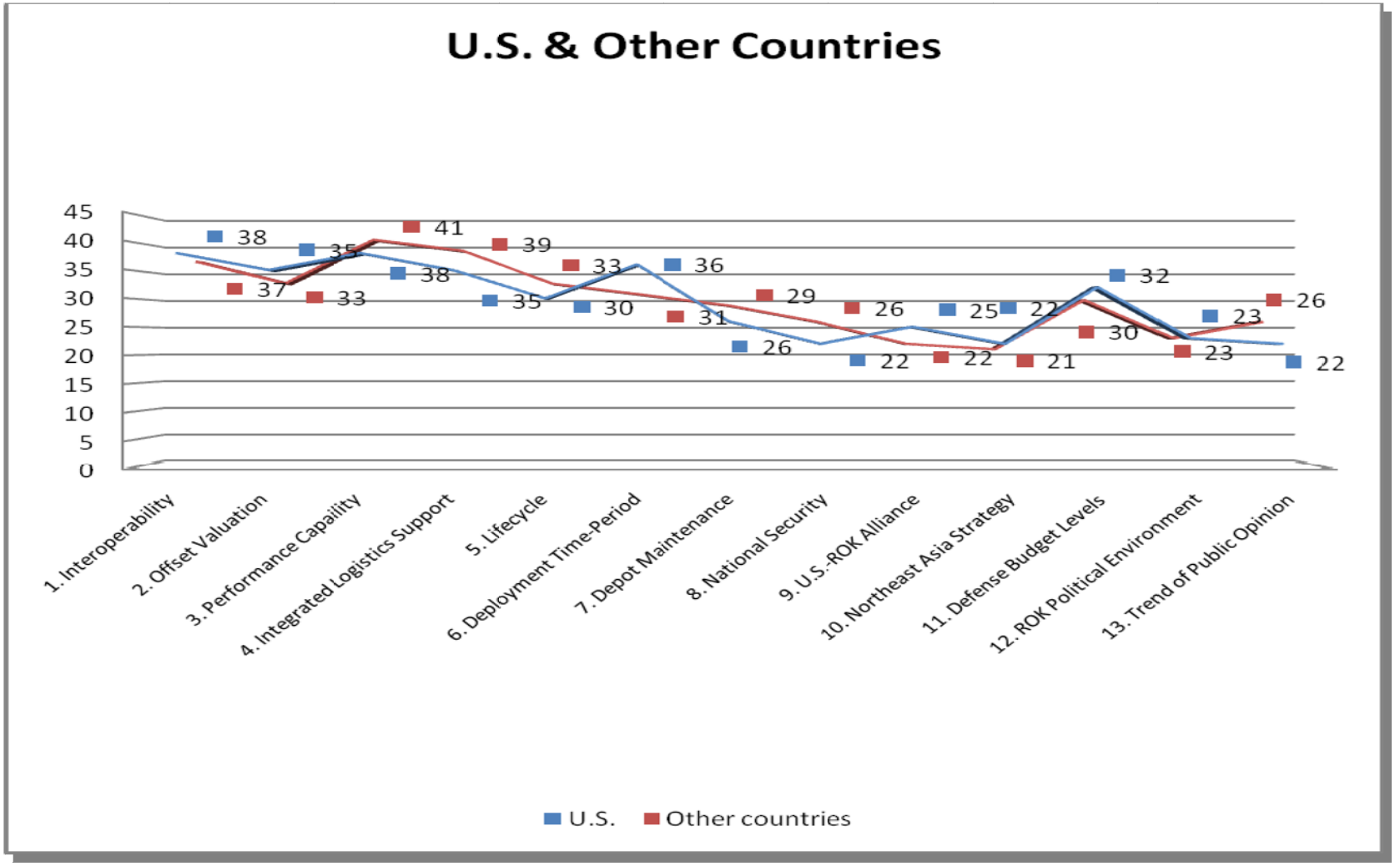


Table 5: Line Graph of Comparing Factors between U.S. & Other Countries



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Vita

Captain Kim, Se Young graduated with a Bachelor of Arts degree from Korean Military Academy (KMA) in March 2002. Upon graduation, he was commissioned as a second lieutenant with infantry branch.

His first assignment was at Reconnaissance Company under the 80th Regiment in the 28th Division as the 3rd platoon leader in July 2002. In March 2003, he was assigned to the 80th Regiment at the same Division where he served as a personnel officer. The following year in January, his assignment was as an aide-de-camp for the Logistics Commander in Busan. He entered in the Military English Course in December 2004 to spend six months, and again in July 2005 to the Officer Advanced Course to prepare for a company commander during five months.

In August 2006, he entered the Graduate School of Engineering and Management at the Air Force Institute of Technology. Upon graduation, Captain Kim, Se Young will be assigned to the 3rd Battalion under 32nd Regiment in the 2nd Division as 10th company commander in July 2008.

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14. ABSTRACT

The purpose of this research was to explore the various factors what contribute to ROK's decision making in procurement of defense articles. South Korea is one of the largest weapon purchasers and needs more self-reliant defense strength that can maintain its security with its own authority under the current cease-fire situation. Thus, this study focused on identifying the main factors that consider in deciding to purchase a major defense weapon system from foreign countries. Through the interview of experts who participated in each specific contract, thirteen specific factors were evaluated including (1) Interoperability (2) Offset valuation (3) Mission performance capability (4) Integrated Logistics Support (ILS) (5) Lifecycle (6) Timely deployment (7) Depot maintenance (8) National Security (9) U.S.-ROK Alliance (10) Northeast Asia Strategy (11) Defense Budget Levels (12) ROK Political Environments (13) Trends in Public Opinion for explaining what the essential elements are in the process of the ROK's decision making. The focus of this thesis is to identify the critical factors to support the research questions

15. SUBJECT TERMS

Procurement of defense articles, Foreign Military Sale(FMS), Direct Commercial Sale(DCS), weapon purchasing, main purchasing factors, offset valuation, interoperability, mission performance capability, integrate logistic support, lifecycle, operational time-period, depot maintenance, national security, U.S.-ROK Alliance

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