Knowledge Sharing Program

2014 Modularization of Korea's Development Experience:

Development of Korean Statistical System

2014

STATISTICS KOREA

KSPI
Korea Statistics Promotion Institute

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Preface

The study of Korea's economic and social transformation offers a unique window of opportunity to better understand the factors that drive development. Within about one generation, Korea transformed itself from an aid-recipient basket-case to a donor country with fast-paced, sustained economic growth. What makes Korea's experience even more remarkable is that the fruits of Korea's rapid growth were relatively widely shared.

In 2004, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) to assist partner countries in the developing world by sharing Korea's development experience. To provide a rigorous foundation for the knowledge exchange engagements, the KDI School has accumulated case studies through the KSP Modularization Program since 2010. During the first four years, the Modularization Program has amassed 119 case studies, carefully documenting noteworthy innovations in policy and implementation in a wide range of areas including economic policy, admistration·ICT, agricultural policy, health and medicine, industrial development, human resources, land development, and environment.Individually, the case studies convey practical knowhow and insights in an easily accessible format; collectively, they illustrate how Korea was able to kick-start and sustain economic growth for shared prosperity.

Building on the success during the past four years, we are pleased to present an additional installment of 19 new case studies completed through the 2014 Modularization Program. As an economy develops, new challenges arise. Technological innovations create a wealth of new opportunities and risks. Environmental degradation and climate change pose serious threats to the global economy, especially to the citizens of the countries most vulnerable to the impacts of climate change. The new case studies continue the tradition in the Modularization Program by illustrating how different agents in the Korean society including the government, the corporations, and the civil society organizations, worked together to find creative solutions to challenges to shared prosperity. The efforts delineated include overcoming barriers between government agencies; taking advantage of new opportunities opened up through ICT; government investment in infrastructure; creative collaboration between the government and civil society; and painstaking efforts to optimize

management of public programs and their operation. A notable innovation this year is the development of two "teaching cases", optimized for interactive classroom use: Localizing E-Government in Korea and Korea's Volume-based Waste Fee System.

I would like to express my gratitude to all those involved in the project this year. First and foremost, I would like to thank the Ministry of Strategy and Finance for the continued support for the Modularization Program. Heartfelt appreciation is due to the contributing researchers and their institutions for their dedication in research, to the former public officials and senior practitioners for their keen insight and wisdom they so graciously shared as advisors and reviewers, and also to the KSP Executive Committee for their expert oversight over the program. Last but not least, I am thankful to each and every member of the Development Research Team for the sincere efforts to bring the research to successful fruition, and to Professor Taejong Kim for his stewardship.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessarily represent those of the KDI School of Public Policy and Management.

December 2014

Joon-Kyung Kim

President

KDI School of Public Policy and Management

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Summary

Official statistics played an important role in Korea's immense development. However, the Korean Statistical System began with many problems. One of the largest issues was that there were not enough statistical resources to carry out the necessary functions. The Korean Statistical System is decentralized, and its development stage is comprised of improving the problems of having a decentralized system and finding solutions for the shortage of statistical resources.

Since the Financial Crisis of 1997, Korea has established remarkable development plans. Efforts to improve the system include incorporating more characteristics of a centralized statistical system, the merger of statistical agencies, the introduction of a statistical quality assessment program, strengthening of statistical coordination, and introduction of a sponsored survey system. The characteristics and development story of the Korean Statistical System can serve as an important resource for developing countries that wish to establish or improve their own statistical system.

This research introduces various institutional strategies of the Korean Statistical System: 1) policies to improve quality of official statistics and 2) policies to increase the usability of statistics.

For policies to improve the quality of official statistics, there are (1) the statistical coordination system, (2) the statistical quality assessment program, (3) the use of administrative data in producing statistics, and (4) the sponsored survey system.

There are policies to increase the usability of official statistics, which include: (1) the statistics dissemination system, (2) evidence-based policy evaluation system, and (3) the pre-announcement of advance release calendar.

The greatest strength of the Korean Statistical System is the active pursuit for change and improvement. Since statistics is a specialized field, statistical agencies are often passive towards change. Furthermore, even the government, which is the primary user of statistical information, has a low comprehension of statistics. Therefore, the statistical agencies are often obtuse in feeling the need for change. However, Korea acknowledged these issues and responded dynamically to become an active participant in improving the Korean Statistical System. When a problem of the system is found, Korea immediately seeks for an improvement. This dynamic nature is the greatest strength of the Korean Statistical System.

Leadership of Statistics Korea is the foremost factor that allows the dynamic nature of the Korean Statistical System. Statistics Korea proactively look for necessary changes of statistical needs for the country, even when there are no specific demands from statistics consumers. Another factor that contributes to the dynamic nature of the Korean Statistical System is active communication with outside experts. Statistics Korea maintains a strong network of experts from various fields such as ICT (Information and Communications Technology), administration, organizations, and policies so that a variety of information can be incorporated in the improvement of the National Statistical System.

Each country has its unique political, social, and cultural environment with its own speed of development. Therefore, one perfect system cannot exist to fulfill the needs of all nations. The most important aspect will be the desire to build and sustain a statistical system that will fit the characteristics of one's nation. The founding and development of the Korean Statistical System is a good example for other nations that wish to build their own statistical system.

The individual components of the Korean Statistical System introduced in this report will be an informative blueprint for other nations building a new statistical system. While some elements will need modification before implementation, others may be used without any changes.

Chapter 1

Overview

1. Background and Purpose of Research
2. Direction of Research and its Content

Overview

1. Background and Purpose of Research

In the past 50 years, the Korean economy has grown at incredible speeds never seen before in world history and has tranformed from a "developing" country into a "developed" country. It is believed that this success was a result of diligence, integrity, and creativity innate in the Korean people and the desire for a better future. However, we need to also consider the fact that during Korea's developing process the then "developed" countries contributed enormously to the growing economy. Therefore, since Korea is now "developed," we should contribute to current "developing" countries by sharing this economic success story, which is important to promote a better world.

Statistics were an important part of Korea's economic growth. After the Korean War (1950~53), Korea employed various development policies in order to rise from the ruins. A series of 5-year Economic Development Plans began in 1962, and the plans resulted in great success. The 5-year Economic Development Plans had different characteristics at various periods, but the overall framework was created after the government's decisions based on the then-current economic state. The goals were created following the overall framework and relevant national resources were divided accordingly. Statistics played an important role in terms of policy information and also as a scientific basis in this development strategy. Therefore, Korean official statistics and the statistical system were developed in parallel with the development of Korea's economy and society. The goal of this research is to aid in further development of the developing countries by sharing how statistics contributed to Korea's societal growth.

In Korea, the Decentralized Statistical System is used where Statistics Korea produces the nation's basic statistics and other government departments and public institutions produce the statistics required for their related works. Although the Korean statistical system is decentralized, Statistics Korea has the most statistical resources such as human resources and budget. Therefore, the statistics produced by other agencies were found to have various aspects that needed improvements. For these reasons, Korea implied several policies in order to improve the problems of having a decentralized statistical system.

Statistical use of administrative data to maximize the use of statistical resources, statistical coordination to prevent producing duplicate statistics and to coordinate divided roles among various statistical agencies, and to strengthen statistical consistency, statistical quality assessment program to improve the quality of statistics, and national statistics portal system for expansion of dissemination of statistics are the results of the efforts invested. These experiences will be important contributions to developing countries.

This research aims to introduce the advantages and disadvantages of the Korean Statistical System by discussing the reasons that the statistical system originally started from a decentralized statistical system, the problems that came about when the decentralized statistical system was used, and attempts to fix those problems. The economic growth rate is different in each developing country and some developing countries will have a very modest National Statistical System, while others will have been developing at an accelerated rate.

This research introduces the development process of the Korean Statistical System so that various developing countries may incorporate Korea's growth experiences based on their own development stages.

The purpose of this research is to develop a standardized module based on the experiences of developing the Korean Statistical System so that such a module may be shared with other countries. Sharing experiences of success and failure in developing the Korean Statistical System will be an important resource that can be used by developing countries for their own development. This study will discuss not only the advantages of the Korean Statistical System but also the experiences of success and failure, and areas that need improvement to provide a reference model of knowledge sharing program in the field of official statistics.

2. Direction of Research and its Content

The Korean Statistical System has various characteristics. The characteristics of Korean Statistical System is not a unified set but a compression of various systems that were incorporated while trying to overcome issues that came about while operating a decentralized system that eventually became one unique system. The separate systems incorporated in the Korean Statistical System themselves are not specific to Korea. These systems are also found in other nations and also the fact that Korea has been actively participating in recent international trends for the development of statistical system could contribute to the incorporation of these systems.

However, these universally known systems were incorporated into the Korean Statistical System, and these systems, in harmony with the Korea's socio-economic conditions, became established as Korea's own statistical system.

This research aims to describe the characteristics, advantages, and the disadvantages of the Korean Statistical System among the global statistical systems.

Along with the components of global statistical systems, the Korean Statistical System contains unique traits that originate from Korea's social, political, and economic characteristics. Furthermore, new policies are being applied for the development of the Korean Statistical System, and Korea is actively participating in international trends for the development of statistical systems. Rather than directly importing the international trends unaltered, Korea has been adopting the system to Korean circumstances.

This Research is divided into three parts.

The first part introduces the development of the Korean Statistical System and its overall characteristics. This section will provide a brief description of the development of the Korean Statistical System as well as its budget, organization, human resources, and current status of Korean official statistics.

The second part will discuss the establishment of the institutional foundation for improving quality of official statistics. Korea uses a decentralized statistical system but aside from Statistics Korea and a few other statistical agencies, there are issues with organization, human resources, and budget.

In order to overcome these issues and to produce better quality statistics, Korea has been strengthening its statistical coordination function and promoting the statistics quality assessment program.

Also, Statistics Korea is conducting a sponsored survey for those agencies with weak statistical analytic power, and using administrative data for statistical purposes to strengthen the use of statistical resources. Moreover, Statistics Korea is focusing on research and education to improve the statistical quality.

The third part will introduce the institutional framework for increasing utilization of official statistics. Korea is building a National Statistical Portal for easier access of information by various statistics consumers.

In addition, Korea maintains an Evidence-Based Policy Evaluation System to enhance the utilization of statistical information as a basis for policy development and implementation. Also for unbiased usage of statistical information, Korea pre-announces the Advance Release Calendar.

Chapter 2

Fundamental Perspective of the National Statistical System

Fundamental Perspective of the National Statistical System

1. What are Official Statistics?

1.1. Meaning of Official Statistics[1]

Statistics is a numerical description of social and natural phenomena. Statistics are measured based on a certain standard, it has limits in wholly understanding the social and natural phenomena. Despite these setbacks, quantitative characteristics contain the foundation of objectivity and neutrality. From these properties of statistics, statistics are able to perform reality recognition, planning function and post-evaluation function for all social phenomena.

For those especially important in the government, statistics that are in high-demand by society are called "official statistics". Recently, in order to incorporate the importance of statistics in national operations, the term "national statistics" is used. In international standards, official statistics are collected by the government to inform debate, decision-making, and research within government and by the wider community.[2]

Statistics have the role of soft infrastructure in national operations. Statistics are an objective way of representing the current situation and development process and is used as critical information to establish national goals and in developing new policies. They are also used as the fundamental basis for personal and corporate strategic planning and decision-

1. Lee, Jae Hyung (2004), pp.5~10.
2. UN (1994).

making. When new governmental policies are developed based on objective and accurate information, appropriate direction and effect are observed and evaluation of the adequacy of the policy is made possible when there is sufficient information.[3]

Box 2-1 | Statistical Reform and Self-Observation of the Insufficiencies: Korea's Experience

Korea has experienced difficulties due to lack of statistics. The Financial Crisis of 1997 was blamed on the government's shortsightedness about the situation. It was later noted that along with various problems with policies, there was an insufficient amount of statistical information.[4] Also in the early 2000s, when there was a dispute regarding fishing rights between Korea and Japan, Korea experienced difficulties due to lack of statistical information to support its arguments. Also when unemployment, poverty, housing problems and non-regular workers became key national issues in the 2000s, there was a dire need for statistical information to support the policy-making process. Based on these experiences and problems, Korea sought to improve the National Statistical System and from these efforts, the National Statistical System and the supporting policies have greatly improved.

Source: Lee, Jae Hyung (2004).

Statistics have an important function of maintaining and improving the efficiency of national system. Statistics have the innate function of neutrality, objectivity, and quantitative ability, which can provide fact-finding, planning function, and post-evaluation function of social phenomena. Therefore, if a country is suffering from excessive population growth, statistics can be used to find the current population, population growth rate, and how it will affect the country as a whole. Based on the statistical results, proper population size can be established and the policies needed in order to achieve the ideal population size may be devised. Afterwards, statistics may be used to evaluate the efficiency of the policies. Therefore, statistics act as essential information for national organizations, individuals or corporations that pursue rationality and efficiency. The government utilizes statistics to plan and establish rational national policies, and statistics can objectively evaluate the efficiency of the policies. Corporations use statistics to understand the constantly changing corporate environment and also as an indicator to establish market analysis and corporate strategy as well as the performance level of the company. Individual citizens use statistics as a source of objective judgment to seek the rationality of his or her individual needs.

3. Lee, Jae Hyung (2004), p.5.
4. Lee, Jae Hyung (2004), p.7.

Statistics also contribute in increasing the quality of life of people and the unification of society by establishing a mature and civil society. In a democratic society, nationwide societal unification is possible on the basis of voluntary participation and agreement of individual citizens. For this, recognition of the overall social phenomena is required, and statistics can contribute to the societal unification by providing the necessary information. 10 years ago, the British government provided a report called "Building Trust in Statistics." In this report, Prime Minister Tony Blair stated "I believe that having access to official statistics which we can all trust is essential in any healthy society. Statistics encourage debate, inform decision-making both inside and outside government and allow people to judge whether the Government is delivering on its promises. For official statistics to play that key role effectively in a democracy, we need to have confidence in the figures themselves."

1.2. Types of Statistics

In Korea, statistics can be divided based on legal standards.

By the Korean Statistics Act, "designated statistics" and "general statistics" are separated by standards based on importance, usability, scale of survey, and the specific standards are specified and notified by the Commissioner of Statistics Korea.[5]

5. Article 17 (Designation of Designated Statistics and Revocation of Designation)

(1) Pursuant to an application by the head of a statistics collecting agency, the Commissioner of the Statistics Korea shall designate statistics which are widely utilized for the formulation and evaluation of various government policies or for the collection, etc. of other statistics and which fall under any of the following subparagraphs as designated statistics:

1. Statistics which are collected as covering the whole country;
2. Statistics which become the basic data for the formulation of policies for regional development and for the evaluation thereof;
3. Statistics that can be utilized as population data of other statistics;
4. Statistics collected in accordance with uniform standards and the method of collection which are recommended by an international organization, such as the United Nations;
5. Other statistics recognized by the Commissioner of the Statistics Korea as regarding designation as designated statistics.

(2) In cases where designated statistics cease to meet the requirements for designation under paragraph (1), the Commissioner of the Statistics Korea may revoke such designation.

(3) When the Commissioner of the Statistics Korea designates designated statistics or revokes the designation of designated statistics, he/she shall announce it publicly.

The term "designated statistics" means the statistics that the Commissioner of the Statistics Korea designates and announces to the public. General statistics are the statistics except designated statistics among the statistics compiled by statistical agencies. Designated Statistics are comprised of the most important Korean official statistics.

Table 2-1 | Types of Statistics based on Legal Standards

Approved Statistics	Designated Statistics	Statistics that the Commissioner of the Statistics Korea designates and announces publicly
	General Statistics	Statistics except designated statistics among the statistics compiled by statistical agencies
Other Statistics		Statistics which are produced by non-statistical agencies, and are not included in the official statistics by the Statistics Act

Source: Lee, Jae Hyung (2004).

1.3. Role of Government in Production and Dissemination of Statistics[6]

Due to the importance of information provided by statistics, the government takes a significant role in the production and dissemination of data. There are multiple reasons why the governments' role is emphasized.

First, intervention is unavoidable due to the public nature of statistics.

Statistics as a public good hold the utility which warrant its production. However, since statistical data often holds a public utility which, as a whole, is greater than the production cost, the government should be the agent of the production of statistics.

Second, public authority is often necessary in the collection of data and the government is most suitable for exercising this power. Statistical surveys can cause a strain for the respondent in different ways. At times, this calls for a coercive measure in the process of collecting data and the government is the best organization to provide a justified public authority with the greatest efficacy.

Third, procedure in production of statistics is very important and the government has a greater incentive to follow protocol than the private sector. In general, products are assessed by the market. But statistics are typically a monopoly and therefore difficult to be

6. Lee, Jae Hyung (2004), pp.16~19.

objectively evaluated by the market and its consumers. Therefore, the market often does not have the ability to eliminate low quality statistics. In order to maintain quality, the procedure in production of statistics must be emphasized. The private sector may abuse this monopoly and neglect protocol to reduce production costs. However, since the government has no need to generate profit, they are more likely to follow procedures. This could be deemed as a governmental inefficiency. However, this inefficiency is a necessary element for producing high quality official statistics.

Fourth, production of statistics must retain its neutrality and the government should be the most non-partisan organization.

2. Design of the National Statistical System

2.1. Form of the National Statistical System[7]

The National statistical system refers to the overarching structure that produces and disseminates the statistics required by society. This means that the government responds to the statistical needs of the public by producing the necessary statistics and distributing the results to consumers.

In general, the statistical system is divided into the centralized system and the decentralized system, according to the responsible organizations and statistical function.

Statistical systems are centralized when all, or most, of the products of the statistical system are produced and disseminated by the central organization. The decentralized systems occur when statistical agencies generally located in different government departments according to which has responsibility for that sector. There are strengths and weaknesses to both the centralized and the decentralized models. The advantages and disadvantages of the two models can be summarized as follows.

First, for countries with insufficient statistical resources or trained human resources, the centralized statistical system may be a better option.

Second, the centralized statistical system has its advantages as it can decrease the statistical budget and lessen the burden to respondents and users. Under the centralized statistical system, there is one overarching statistical organization that oversees all official statistics and this can help avoid duplicate statistical production.

7. Lee, Jae Hyung (2004), pp.24~30.

Third, the centralized statistical system can protect accuracy and reliability of the statistics. In order to retain the accuracy and reliability, neutrality and professionalism of the statistical organization is crucial. By being independent from administrative and political power, the statistical organization can focus solely on producing statistics from an objective standpoint.

Fourth, the centralized statistical system can help in efficient management and protection of confidential statistical information.

Fifth, from these advantages, the centralized statistical system can help unify the statistical organizations nationwide. By creating unified standards, definitions and classifications, statistical consistency can be retained.

Although there are many advantages, there are also numerous disadvantages in the centralized statistical system.

First, the largest disadvantage is that the statistics produced by the central statistical organization could detour from the needs of the statistical user. Therefore it is difficult to properly respond to the statistical needs of separate organizations in a timely manner.

Second, it is difficult to efficiently employ the expertise of separate institutions under the centralized statistical system. When expertise from differing organizations is combined, superior results are produced. However, since the person overseeing the projects lack this expertise, this can interfere with the quality of statistics produced.

Third, under the centralized statistical system, the central statistical organization might form a rigid structure among the differing institutions and this can interfere with necessary changes that users require. Therefore, the statistical production may be followed without making adjustments needed in the changing situations.

Fourth, the usage of the centralized statistical system does not guarantee unification among the organizations. When there is not enough holistic insight of statistical agencies, only statistical unification with no consideration of reality can exist.

In conclusion, the advantages of the centralized statistical system will be the disadvantages of decentralized statistical system and the advantages of decentralized statistical system the disadvantages of centralized statistical system. At first glance it may seem like the centralized statistical system has more advantages, but it is a difficult conclusion The advantages and disadvantages of each system will vary according to the environment, as

will the traditions of differing government agencies of many countries. In some cases, one disadvantage will be so monumental that it can offset all of the advantages. Also, the disadvantages of both systems can be minimized by efficient cooperation among different organizations and policy reforms.

2.2. Considerations in Building a National Statistical System

When building a proper national statistical system, two elements must be considered. First, the national statistical system must be built in such a way that it can properly provide for the statistical demands of society. Second, the national statistical system must be built with consideration to the limits of the statistical resources of society.

After acknowledging the considerations mentioned above, the following elements should be adhered to in the construction of an efficient national statistical system.

First, the statistical demands and priorities of society must be analyzed. It is important to establish priorities in line with the statistical demands based on the nation's development stage, population, and other related factors.

When building a new national statistical system, there are international standards for general statistical needs for a nation. Therefore, each nation can use these standards as benchmarks while adjusting to its own special needs. For reference, many international agencies such as the United Nations and OECD emphasize impartiality of official statistics. In particular, the UN advises its members to equip the statistics listed in <Table 2-2>. Also, the UN adopted the Fundamental Principles of Official Statistics and strongly advises its members to adopt these principles.

Table 2-2 | United Nations Recommended Official Statistics for Member States to Produce

Sector	Kind of Statistics
Demographic and Social Statistics	Vital statistics, demographic statistics, housing statistics, labor statistics, education and vocational training statistics, cultural statistics, household income and expenditures, social security, health, gender, and other social statistics.
Economic Statistics	National Accounts, agricultural statistics, fishery and forestry statistics, industrial statistics, energy statistics, wholesale/retail statistics, international trade statistics, transportation statistics, information and communication statistics, tourism statistics, other services statistics, banking and insurance statistics, financial statistics, balance of payments, price statistics, science, technology, patent statistics, other economic statistics.
Natural Resource and Environmental Statistics	Natural resource and environment statistics, natural resource and environment accounts.

Source: Lee, Jae Hyung (2004).

Second, when building an efficient statistics supply system, a country must consider its current situation. The following factors must be considered: existence of an effective national public authority, the relationship between central government and regional governments, sufficient network of properly trained statistical workforce, availability of statistical resources, existence of strong infrastructural support to maintain informational technology for the dissemination of statistics data.

Chapter 3

Characteristics of the Korean Statistical System

Characteristics of the Korean Statistical System

1. Fundamental Principles of Official Statistics

1.1. Establishment of the Fundamental Principles of Official Statistics

Korea has established the Fundamental Principles of Official Statistics for statistical agencies and its contributors to follow when producing official statistics. There was a need for fundamental principles, as there were social and economic changes and a growing need for statistics. To address this, Statistics Korea created the Principles to increase the reliability of statistics and to increase satisfaction for statistical users. The Principles are comprised of eight basic principles, and each principle offers two to five strategies for improvement. The fundamental principles include ① Impartiality, ② Reliability, ③ Enhancing efficiency, ④ Comparability, ⑤ Protection of collected information, ⑥ Acquisition of necessary infrastructure, ⑦ Participation of Statistical Users, and ⑧ Increased services for statistical users. Each principle is discussed in detail below.

1.2. Contents of the Fundamental Principles of Official Statistics[8]

1.2.1. Introduction

Official statistics are those statistics under the subject of the Statistics Act and are indispensable public assets for monitoring economic and social changes in addition to establishing scientific policies.

8. http://kostat.go.kr/portal/korea/kor_ko/8/index.static.

National statistical agencies producing official statistics must strive to earn the trust of its citizens and to provide customer satisfaction.

Therefore, in order to assure the autonomy of official statistics compiling agencies and its employees and to strengthen their accountability, the Fundamental Principles of Official Statistics are established along the following guidelines.

1.2.2. Fundamental Principles

a. Impartiality

Official statistics are public assets encompassing public values, and therefore must be guaranteed with impartiality. In order to protect impartiality, the statistical agencies must be free of outside influences and able to make independent decisions.

b. Reliability

Official statistics must be compiled in an accurate and honest manner using objective and scientific methods. For this, ① Scientific methods must be used in production of statistics, ② There must be policies and guidelines of procedure in production of statistics and data collection, ③ Evaluation of statistical quality and continuous effort to modify weaknesses, ④ Production of statistics without predicting its results ahead of time.

c. Enhancing Efficiency

Official statistics must be compiled in an efficient manner, with considerations to compiling costs and response burden. In order to enhance efficiency, ① Coordinated planning, application of statistical method, and information technologies must aid in efficient compilation, ② Statistical data under construction must be properly communicated in order to avoid duplicate projects, and ③ There must be proper use of administrative data to minimize response burdens.

d. Comparability

Official statistics must be compiled using concepts, classifications and methodologies that can be compared to other statistics. For this, ① Statistics must be produced using national and international standardized methods, ② When methods or collective protocols change, the results must be completed in the previous methods for consistency, ③ Definitions, concepts, coverage, sampling methods, classification criteria, and statistical production methods must be shared for proper comparison to other statistics, ④ Cooperation with domestic and international organizations must be strengthened for quality improvement and for learning new techniques.

e. Protection of collected information

Undisclosed data of individuals, corporations or organizations must be used only for statistical purposes and be protected. Information from statistical production must not be released to external sources and be kept confidential.

f. Acquisition of necessary infrastructure

Official statistics must be accompanied by qualified personnel, budget, computing equipment and software. For the acquisition of necessary infrastructure, it is necessary to, ① Recruit experienced personnel to each organization, ② Continuously educate in the areas of sample design, data collection and analysis, ③ Allocate sufficient Budget to make changes according to the demands of statistical users.

g. Participation of Statistical Users

Efforts must be made to bring users to actively engage in statistical activities in order to enhance applicability and maximize the public value of official statistics. For this, there must be a ① Close relationship between concerned organizations and experts, and also ② A Satisfaction survey of statistical users and communication among the experts to discuss how improvements can be made to the current system.

h. Increased level of Service

Official statistics must be user-friendly, and easily accessible to utilize. For this, ① All statistical users must be able to equally access the information, ② An Advance Release Calendar must be announced so that the users are aware of the release date, ③ The statistical data must be published in a timely manner to minimize the time lag between the reference date and release date, ④ The statistical results must be shared with the public through the media, published materials, internet, and ⑤ There must be continuous efforts to consider requests made by statistical users.

2. Development Process of the Korean Statistical System

2.1. History of the Korean Statistical System

Korea has a long history of official statistics. Even during the Koryo period (918~1392) there is reported evidence of a statistical organization that was in charge of production of statistics. In the Joseon period (1392~1910) there is a record of a statistical organization that was in charge of producing statistics of population, household, and farmland. In 1910,

Korea was forced into Japanese Occupation. The Japanese Military created a "Japanese Government-General" and the Japanese Government-General collected information about Joseon's land, society, and economy for their colonization. For this, they created an organization that was in charge of statistical administration.

During this time, statistics were not survey statistics but statistics compiled from reports collected from regional administrative organizations. Each department of the Japanese Government-General had the respective regional administrative offices to report the statistical information, and compiled the necessary statistics. Statistics produced during this time included a wide variety of topics such as territory, population, economy, industry, prices, employment, and society. Such statistical systems and organizational characteristics from this era influenced the current Korean Statistical System and its organizational characteristics.

There are two such influences of statistical systems from the Japanese Occupation era. First, Korea chose a Decentralized Statistical System. Second, each of the central government agencies depended on the regional administrative organizations to collect statistical information, and therefore there was no need for a large statistical administrative organization at the time. Statistical work only consisted of collecting and aggregating the reported information and only minimal human resources were placed into statistical jobs.

After Japan's defeat in the Second World War, Korea was governed by the U.S. Military from 1945 to 1948. The U.S. administration followed the systems from the Japanese Occupation era and therefore there were no significant changes from the ways of the Japanese Government-General. Like the formation of the Japanese Government-General, the Central Administration asked for statistical data from the regional organizations and the reported data was compiled into statistics.

Finally in 1948, Korea gained its independence and had a self-governing government. The newly formed government was much more interested in statistics than the Japanese Military or U.S. Military. In order to restore the nation that had been destroyed from long-term occupation, the government needed detailed and more in-depth information about as many areas as possible. After Korea's national foundation in 1948, the central statistical organization (the Bureau of Statistics) was established and was under the authority of the Government Information Agency. The Bureau of Statistics is seen as the predecessor of Statistics Korea, and the establishment of the Bureau of Statistics was an important event in the history of the Korean Statistical System. First, the establishment of the Bureau of Statistics marks the birth of the Korean central statistical organization. This was the first

time that a statistical agency was an independent central government organization. Second, the formation of the Bureau of Statistics signified that basic official statistics were created and managed by a national statistical agency. Third, the establishment of the Bureau of Statistics made management and coordination possible in whole statistical areas such as creation and management of statistical standards and statistical coordination.

The Bureau of Statistics later became part of the Ministry of Home Affairs and then went on to be under the Ministry of Economic Planning Board. In the early stages, the Bureau of Statistics produced statistics by collecting and aggregating the reported information from regional administration offices. However, when the Bureau of Statistics became a stable organization, the level of understanding of statistics grew and field offices were established in the Bureau of Statistics. From this, the Korean Statistical System shifted from producing statistics from administrative data into the current form of the modern statistical system using survey statistics. However, even after the establishment of the Bureau of Statistics, statistics related to specific policies and administrations were produced by the relevant ministries. The main change occurred after the end of the Korean War when statistical needs increased due to the fast changing economy. After the Korean War, the role, size, and organization of the Bureau of Statistics grew significantly.

2.2. Period of Economic Development and Development of Statistics

In 1962, the Korean government began a series of 5-year national plans for economic development. The "5-year development plans" were not just simple goals, but extensive and comprehensive plans. They established detailed administrative goals, then created detailed plans and constructed the necessary resources and policy measures. For the establishment of the "5-year development plans," the government needed extensive information about the general Korean economy, but at the time, availability of statistical information was minimal. The government recognized that strong statistical information is necessary to efficiently carry out the 5-year plans and started to strengthen the national statistical system.

The first governmental goal was to decide on macroeconomic indicators such as GNP (Gross National Product) and using the GNP model, they set detailed macroeconomic goals such as the price index, employment, export and import. For this, they needed a proper macroeconomic model and the statistical data to help construct the model. To serve as

basic information for achieving the goals of the 5-year plans, macroeconomic statistics were established and after, microeconomic statistics were also created to support the macroeconomic statistics.

After this period, statistical demand increased dramatically and this resulted in the growth of the Bureau of Statistics. Under the old system, there was a strong tendency of the regional offices to report exaggerated numbers. This was because the regional offices were afraid of negative remarks from the central administration if the results reported were insufficient for the goals. This phenomenon of exaggerated reports existed almost unanimously in the administrative steps. The government recognized these problems and worked to transition into using surveyed statistics. The Bureau of Statistics established its own field offices to directly carry out the statistical surveys. With the growth of the statistical demand, the field offices grew. The reason why the field offices were placed under the Bureau of Statistics was because the field offices could objectively carry out the procedures without influences from the regional administrative offices. This shift from using administrative data to surveyed statistics represented the establishment of science-based statistics in Korea.

Box 3-1 | Improving Rice Production Statistics and Scientification of Agricultural Policies: Korea's Experiences

Korea experienced continuous food shortages after the end of the Japanese occupation. Rice was the principal food of Koreans, but there was always a shortage of rice production and the government invested relentless efforts to increase production. Rice Production Statistics were considered an important national indicator and up to this point, statistics of rice production were based solely on reported numbers. Therefore, the regional administrative offices would report the rice production numbers to the higher administrative offices and the responsible departments would collect the information and create the national rice production statistics.

Rice production increased consistently, and finally in the mid-1970s, production finally surpassed the demand. Nationwide, Korea was extremely happy with the results and the government finally removed the limitations of producing rice-based foods (especially Mak-gul-lee, Korean traditional rice wine). Koreans enjoyed Mak-gul-lee and celebrated the start of the "Era of Rice." However, over time, unlike what the reported numbers showed, more and more areas started to complain of rice shortages. When this rice shortage occurred, the government started to question the rice production statistics. Since then, the reported statistics changed to surveyed statistics based on sampling in constructing rice production statistics. However at the time, there was limited knowledge of statistics and therefore objections existed against surveyed statistics since some thought that reported statistics was a better method.

Although there were objections, the government pushed forward with the survey statistics method to carry out rice production statistics. As a result, they found that the actual rice production was lower than was reported, and that in the past, rice production numbers had been exaggerated. Based on these results, the Korean government brought changes to the agricultural policy and soon, the rice production numbers soared in reality. Through this experience, the Korean government confirmed the importance of surveyed statistics and since then has invested more efforts to improve agricultural statistics. Due to these efforts, the agricultural statistics department was once a larger statistical organization than Statistics Korea.

Source: Lee, Jae Hyung.

Although the government's development plans continued into the 1980s, the content of the plan was significantly different from the plans before. The "4th 5-year Economic Development Plan (1977~1981)" was an economic development plan, but after 1980, Korea had already reached a much higher economic status and the government wanted a new development plan. The new plan focused on market functions rather than governmental functions, and while the plan before was focused on economic functions, the plan now had larger interests in society, culture, environment, and health. Also, the government recognized the need for strengthening regional administration, and the fact that regional developments need to be considered in conjunction with national developments. From this, the statistical need increased to include a variety of topics. To efficiently respond to these needs, the statistical organizations grew stronger. In 1991, the Bureau of Statistics was revised to Statistics Korea, and its organizations and human resources increased.

2.3. The Economic Crisis and Reform of Statistical System

In 1997, Korea experienced a major economic crisis that started from the Currency Crisis. From this crisis, Korea received help from the IMF (International Monetary Fund), and the IMF requested a thorough restructuring of the Korean economy as compensation. Although Korea experienced an oil crisis and other hardships, that had been growing at an uncontrollable rate over 30 years, this Economic Crisis was unprecedented and shocking. The country faced risk of bankruptcy, the economy slowed, major companies were liquidated, and unemployment rates skyrocketed. This major crisis was safely overcome after extremely painful times and left an unforgettable impact on the Korean economy and on statistical organizations as well.

The Economic Crisis was a painful experience for the Korean government and its citizens, but it served as an important lesson. Korea had been growing at an unstoppable rate until this point and the Crisis was unexpected. But through the Economic Crisis, for the first time, the nation learned the importance of stable national operations. The Crisis also served as a critical turning point for the government to look back on the issues and problems with the national systems. From this pain and suffering, Korea created nation-wide reform plans and as a result, Korea recovered from the Economic Crisis quickly.

Through the Economic Crisis, the government performed reformation of government organizations as well. When looking specifically at statistics, Korea realized the importance of information and invested more efforts to develop official statistics. The IMF had opinions that the Economic Crisis may have been provoked by poor statistical information. Therefore in 2001, an IMF team was created to inspect the status of Korea's official statistics. Such inspection emphasized the importance of statistics and recommended an accurate and trustworthy production of statistics.[9]

In the 2000s, the Korean Statistical System changed dramatically. The biggest change was the strengthened characteristics of the centralized statistical system. Although the Korean Statistical System followed the decentralized statistical system, it had more centralized statistical system characteristics than other countries that follow the decentralized statistical system such as the USA and Japan. At this time, Statistics Korea merged with the statistical office of the Ministry of Agriculture, Forestry and Fisheries, which was at the time just as big as Statistics Korea. Through the introduction of the statistical quality assessment program, strengthening of statistical coordination, and inclusion of the sponsored survey system, Statistics Korea strengthened its leadership and position as the Central Statistical Organization.[10]

Another important aspect of the national statistical system reform of the 2000s is that the government finally recognized official statistics as part of its administrative responsibility. Before, the general consensus was that official statistics were a special area only handled by a few statistical experts. Therefore, when there was a new statistical need, the only solution was to provide more human resources for that specific project. However, KDI (Korea Development Institute), the country's leading research organization, recommended that official statistics needed to be considered an administrative area and that political, institutional, and organizational approaches needed to be taken to increase efficiency of

9. Lee, Jae Hyung (2004), p.5.
10. Lee, Jae Hyung et al. (1997).

the Korean Statistical System. As a result, many statistical reforms occurred after 2000 and a wide variety of policies formed to increase efficiency of the statistical system. These changes are considered to have been extremely helpful in the development of the Korean Statistical System and official statistics.

In 2005, Korea enforced a *"Reform Direction for National Statistical System."* This plan was developed in consideration with the problems with the Korean Statistical System in order to reform the national statistical system. This plan was created by a task force comprised of experts of official statistics, Statistics Korea, and officials from each governmental department. The Korean government then enforced the *"5 year (2006~2010) National Statistical Development Plan"* based on the information given by the task force. The plan had four steps: 1) development and improvement of the national statistical system, 2) improvement of statistical quality 3) improvement of accessibility of statistics and 4) strengthening of statistical infrastructure.

In 2009, Korea enforced the "Official Statistics Development Strategy." This plan introduced several philosophical values necessary for the development of official statistics and selected four core strategies as follows:

1) To develop relevant statistics

2) To enhance the efficiency of work

3) To gain user's trust

4) To make accessibility of statistical information more conveniently to users.

Also, Korea enforced the "1st Development of Official Statistics ('13~'17) Basic Plan" in 2013. The plan focused on a national statistical system that could support the creation of a developed country and had three main parts: 1) Development and enhancement of statistics that could support government administration, 2) Implementation of Government 3.0 in Statistics for efficient sharing and collection among governmental departments, and 3) Strengthening of statistical infrastructure and improvement of core national statistical policies.

3. The Korean Statistical System

3.1. Characteristics of the Statistical Organization[11]

3.1.1. Approved Statistics and Statistical Agencies

In the Korean Statistical System (KSS), Statistics Korea, the central statistical organization, is responsible for statistical coordination and other fundamental statistical production and other agencies are responsible for their specialized administrative tasks and statistics production. Under the definition of the Statistics Act, government produced statistics with national importance are labeled "Approved Statistics," categorized under "Official Statistics" or "National Statistics". Agencies responsible for creating approved statistics are called "Statistical Agencies" and there were 338 of them as of August 2014. There are 932 approved statistics with 764 of them being produced by governmental agencies and 168 of them being produced by civil organizations.

Statistics Korea is responsible for 58 approved statistics, which is just above 5% of the total approved statistics. While this is small in number, most of the work done by Statistics Korea consist of large scale projects including the population census, economic census, and establishment census. The statistical agency with the second most responsibility is the Bank of Korea. The Bank of Korea produces the National Accounts, Input-Output Table and Flow of Funds, and other macroeconomic statistics.

Table 3-1 | Number of Statistical Agencies and Approved Statisics (As of 2014.8)

Category	Number of Agencies	Number of Approved Statistics		
		Total	Designated Statistics	General Statistics
Government	302	764	73	691
Central Government	42	340	56	284
Statistics Kora	1	58	40	18
Others	41	282	16	266
Regional Government	260	424	17	407
Designated Agency	86	168	19	149
Total	388	932	92	840

Source: Statistics Korea.

11. Statistics Korea (2013a) pp.19~26.

3.1.2. Statistical Personnel and Budget

The total budget for statistics including both civilian and government was 313 billion Won in 2014 with the breakdown being 74.8% for government and 25.2% for civilians. Within the central government, Statistics Korea takes the largest fraction with 48.2%. The Ministry of Health & Welfare and Ministry of Employment and Labor also take a relatively large budget.

Table 3-2 | Budget of Major Statistical Organizations: 2014

Category	Budget (Billion Korean Won)	Portion (%)
Government Organizations	234	74.8
- Central Government	208	66.5
Statistics Korea	151	48.2
Ministry of Employment and Labor	11	3.5
Ministry of Health and Welfare	17	5.4
Other	29	9.3
- Regional Governments	25	8.0
Metropolitan Cities and Provinces	17	5.4
Cities and Counties	6	1.9
Metropolitan and Provincial Offices of Education	3	1.0
Private Designated Agencies	79	25.2
Central Bank	5	1.6
Other	74	23.6
Total	313	100.0

Source: Report on 2014 Statistical Personnel and Budget Survey.

The statistical manpower in 2014 including both governmental and civil sector was 4,767 people. The central government has 3,940 with the largest group and regional government has 360, and civil sector has 467. Within the central government, Statistics Korea has 3,321 people; much more than any other department. Statistical manpower outside of Statistics Korea, the Ministry of Health & Welfare, and Ministry of Employment and Labor is only 52 people. Among the civil sector, the Bank of Korea takes the majority with 189 people taking care of National Accounts, Wholesale Price Index, and other statistics.

Table 3-3 | Statistical Personnel of Major Statistical Organizations: 2014

(Unit: person)

Central Government		Regional Government		Private Agencies	
Statistics Korea	3,321	Metropolitan Cities and Provinces	82	Central Bank	189
Ministry of Employment and Labor	542	Cities and Counties	247	Korea Education Development Institute	40
Ministry of Health and Welfare	25	Metropolitan and Provincial Offices of Education	31	Korea Employment Information Service	11
Other	52			Other	227
Total	3,940	Total	360	Total	467

Source: Report on 2014 Statistical Personnel and Budget Survey.

Korea has a high percentage of fieldwork personnel among statistical manpower. Within the central government, 55.7% of the workforce is allocated to fieldwork. This is because of Statistics Korea employs full-time fieldwork officers. The Ministry of Employment and Labor is the Ministry with the second largest statistical organization, and also has a large number of fieldwork personnel.

3.2. Major Statistical Organizations and their Characteristics

3.2.1. Frame of the Korean Statistical System

The National Statistics Committee (NSC) takes on the responsibility of managing and coordinating the official statistics in Korea. The Deputy Prime Minister and Minister of Strategy and Finance is the chair. The National Statistics Committee is seen as the central statistical organization in Korea, as the committee coordinates the overall system.

There are civil and governmental statistical agencies. Civil statistical agencies are frequently semi-governmental agencies established for public purposes. Some examples of statistical agencies, which belong to the central government, are Statistics Korea, the Ministry of Employment and Labor, the Ministry of Health & Welfare, the Ministry of Education, and the Ministry of Land, Infrastructure, and Transport. Each Province and City also has statistical units responsible for producing the statistics yearbook and constructing civil registration statistics, which are needed for policy planning. They also provide support for large surveys conducted by central government departments.

Statistics Korea, as the central statistical organization of KSS, not only conducts large-scale surveys, but also manages statistical coordination, establish statistical standards, and train and supervise other statistical agencies. While some of the larger ministries have a special statistics team, most ministries do not have their own statistical unit.

The regional government performs two tasks in the KSS. One is to support production of statistics by the central government departments. They assist with the surveys along with Statistics Korea and also support the production of administrative data with relevant ministries. The other task is to produce statistics needed in the regional community. Other than the Bank of Korea, other civil statistical agencies perform their unique statistical duties. The Bank of Korea is responsible for National Accounts, and Wholesale Price Index, and other statistics needed in the country.

3.2.2. Major Statistical Organizations

a. National Statistics Committee (NSC)

The NSC deliberates on and decides matters related to the production, dissemination and use of statistics. The Deputy Prime Minister who is also the Minister of Strategy and Finance is the chair. The committee deliberates on the following matters:

- Matters concerning the long-term direction and policy goals for the development of national statistics;
- Matters concerning establishment and change of national statistics development plans;
- Matters concerning the coordination and consolidation of similar and overlapping statistics, and the cooperation between statistics producing agencies;
- Matters concerning quality management, such as statistical quality assessment, improvement of the quality of statistics, etc.;
- Matters concerning the criteria for production, dissemination and use of statistics, such as the standard statistical classification;
- Matters concerning the utilization of administrative data;
- Matters concerning the use of statistical information system of the statistics producing agencies.

The NSC is composed of 30 members including one chairman; currently there are 18 official members and 12 appointed members. Official members are composed of main ministers and heads of main economic institutions. Appointed members are composed of

professionals from statistics, economics, social, and other experts. The NSC contains six subcommittees including the Sub-committee for Statistical Policy, the Sub-committee for Economic Statistics I, the Sub-committee for Economic Statistics II, the Sub-committee for Social Statistics I, the Sub-committee for Social Statistics II, and the Sub-committee for Information Management.

b. Statistics Korea (KOSTAT)

KOSTAT is the central statistical organization and produces basic official statistics. KOSTAT is comprised of a headquarters base and regional offices. The main functions of headquarters are planning, coordination, production of statistics, statistical dissemination, education and research, while each regional office is mainly responsible for survey field work.

The major roles of KOSTAT are as follows:

- Roles as the Central Statistical Organization
  - Policy making and planning regarding the overall national statistical system
  - Establishment of Statistical Standards: Statistical standard Classifications and Standardization of statistical terminology
  - Coordination of Statistical Activities: Approval of statistics and designation of statistical agencies
  - Statistics Quality Management
  - Management of sampling frame and samples: enterprises, establishments, and population.
  - Projects regarding statistical use of administrative data
- Compilation of the Basic Official Statistics
  - Economic Statistics: Census of Establishments, Economic Census, Industrial Structure Statistics, and Business cycle statistics.
  - Social Statistics: Population Census, Demographic survey, Health·Welfare·Employment statistics.
  - Sponsored Survey

■ Dissemination of Statistical Information

• Management of the Korean Statistical Information Service

• Statistical Publications

• Management and Service of Microdata

■ Strengthening Infrastructure of Official Statistics

• Research

• Statistical Training

• International Cooperation

c. Ministry of Employment and Labor

The Ministry of Employment and Labor holds the second largest statistical workforce in the KSS. As of August 2014, the Ministry had 522 employees for statistical tasks. The Labor Market Policy Advisor is responsible for managing the statistical tasks for the Ministry. As of August 2014, there were 17 statistics being produced.

d. Other Central Governments

Central governments other than Statistics Korea and the Ministry of Employment and Labor often hold a small scale statistical team. The Ministry of Health & Welfare has a team of 25 people for statistical work. Some other administrative offices do not have any personnel specialized in statistical assignments. In such ministries, survey and analysis may be done by non-specialized personnel but most often commissioned to other survey companies or research institutions.

e. Regional Governments

Korea has a regional autonomy system and the nation is divided into 17 metropolitan municipalities with 226 primary regional authorities. The municipal government and primary regional government each have a statistics team. The Municipality often has 5 people per government and primary regional government has 1 or 2 people responsible for statistical tasks.

In the past, municipalities did not have special statistical task responsibilities. Regional governments only performed two statistical tasks; to survey support for large national scale surveys and to collect, organize and distribute statistical data. For example, the "Population and Housing Census" or "Mining and Manufacturing survey" require large survey organization and many fieldwork personnel. Regional governments can provide support

with knowledge of the specific region. The second task the regional government performed was to collect, organize, and distribute the statistical data. The regional government was responsible for editing and distributing statistics provided by Statistics Korea to people needing the information in the specific region. These tasks support and assist the central government departments.

Since the mid-1990s, regional governments started to strengthen their statistics production function. Statistics Korea decided that regional government needed to take on a more active role in the production of statistics. With this consideration, the GRDP (Gross Regional Domestic Product) production function was delegated to the regional government starting in the mid-1990s. Regional governments have since been producing the GRDP following the standard manual. Aside from this, regional governments are taking a larger role in statistics, and they are performing the "Census on Establishments" with the help of Statistics Korea.

Since 2000, interest in statistics by the regional government has increased. Demand for understanding regional needs increased and this led to a development of statistics in the regional government.

f. Central Bank

Bank of Korea produces many official statistics, which are not performed by central banks in other nations. In many nations, the central bank is only responsible for statistics for finance and currency. However, the Bank of Korea is responsible for National Accounts, Input-Output Table, Flow of Funds, and Producer Price Index as well as basic statistical responsibilities.

The responsibilities of the Bank of Korea are the result of Korea's unique history. After 1945, only a few organizations had the ability to produce statistical information needed in the country. Since the Bank of Korea had a relatively larger number of well-trained personnel related to economics and finance, the bank became responsible for producing National Accounts statistics. Afterwards, Bank of Korea produced their required statistics internally. The Economic Statistics Bureau is responsible for producing statistics in Bank of Korea.

4. Implications and Assessment of the Korean Statistical System

4.1. Problems

Statistics has been an important foundation for the development of Korea. There was high demand for statistics to establish a Korean development strategy and therefore had to develop or identify new statistics. Accuracy and credibility of statistics were constantly reinforced during this process and constant improvement of utility was also achieved. Furthermore, with the development of the statistical system, there were improvements in organization and human resources. However, there were certain issues that were mentioned about the Korean Statistical System.

First, there was a lack of statistical resources for the efficient production of statistics. As shown above, there were about 4,767 people involved in statistical field as of 2014 and this continues to increase. Internationally, there are countries with a larger number and smaller number and thus difficult to conclude the appropriate number. However, according to the number of statistical workers per million, Korea has a small number of workers. Korea currently has 93.4 statistical workers per million people and this is low even compared to other nations such as France and England.[12]

Table 3-4 | Number of Government Statistical Workforce by Nation

(Unit: person)

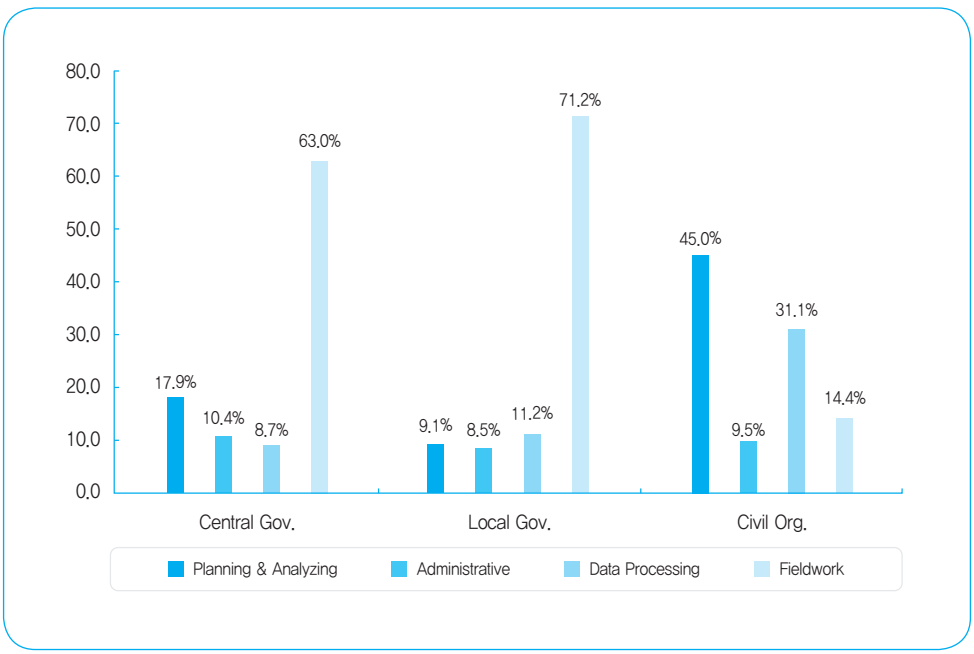
Nation	Statistical System	Government Statistical Workforce	Year
Sweden	Decentralized	1,410	2009
The Netherlands	Centralized	2,140	2009
Canada	Centralized	5,412	2011
Britain	Decentralized	7,000	2009
France	Decentralized	7,455	2010
Japan	Decentralized	5,818	2010

Source: Park et al. (2011).

12. Park et al. (2011).

Second, the role of planning and analyzing is relatively weak in the National Statistical System. Even though the relative number of statistical workers is small in Korea, many of them are concentrated in fieldwork. The statistical workforce in developed nations is concentrated on planning and analysis tasks while fieldwork is often contract-based. This means that the statistical workforce in Korea may be overestimated and the lack of statistical workforce in Korea may be more severe than seen by the numbers. In the case of the French INSEE (Institut National de la Statistique et des Études Économiques), there are separate field offices and civilian research contractors who take care of most of the fieldwork. There are 1,200 fieldworkers that have a direct contract with the INSEE. In Canada, there are 5,412 statistical public officers and around 2,000 fieldwork agents under contract.[13]

Figure 3-1 | Statistics Related Workforce by Role



Source: Park et al. (2011).

13. Park et al. (2011).

Table 3-5 | Statistical Workforce (per million) with Planning and Analysis by Nation

(Unit: person)

Korea	Netherlands	Finland	Denmark	Australia	USA
9	159	125	116	87	51

Third, while Korea is using the decentralized statistical system, it lacks the resources to maintain a fully decentralized system. As seen previously, Statistics Korea only provides 6% of the official statistics and the remaining 94% is produced by other central governmental agencies and local governments. For a decentralized statistical system, there must be sufficient resources for other statistical organizations for all the statistical needs, but there is a severe lack of resources. This deficiency in resources is becoming a large risk element for the Korean Statistical System.

4.2. The Response of Korea

The Korean government has recognized these problems of its National Statistical System early on and made consistent efforts to strengthen it. Three major weaknesses of the Korean Statistical System have been mentioned, but these all root from the lack of resources for statistics. Although this problem was recognized a long time ago, there are multiple obstacles to its solution. There is a realistic limit to strengthen only the statistical sector in the already established government and Korea has been aiming for a small government since the early 1990s. Thus, increasing the size of statistical organizations is difficult.

Within these limitations, the Korean government sought to strengthen the statistical system and improve the quality. Even under the pressure to limit size increase of the workforce, Statistics Korea made full effort to at least increase the size of the workforce for statistical work. Under these efforts, the statistical workforce started to increase slowly starting in 2000.

The most important thing when there is a limit to increasing the workforce is to use the available resources most efficiently. While describing the difference between the centralized and the decentralized statistical system, we mentioned that the centralized statistical system could increase the efficiency of resources through concentrating resources. After the 1990s, Korea brought together many different statistical agencies to focus the limited resources and gain the greatest outcome. Thus Statistics Korea started to absorb many smaller statistical agencies starting with the agricultural statistics agency. As a result, Statistics Korea gained much higher productivity in all fields.

To compensate for the small number of planning and analysis workforce, Statistics Korea focused on supplementing the workforce in its headquarters. While there are many limitations to this due to the organizational system of the government, through small amendments and reorganization, headquarters was able to increase its analytic task unit and utilization of contract field workers and redistribution of the workforce was a large part of this change. Furthermore, regional statistics offices focused on fieldwork, were required to take on the tasks of support for producing regional statistics and statistics dissemination.

Statistics Korea took on a leadership role to strengthen the statistics production system. Since all other administrative departments have their own task responsibility, they may neglect the statistical production and they often lacked an understanding of statistics. In response, Statistics Korea strengthened the "National Statistics Committee" to raise awareness of the importance of statistics and assist statistical work in each department. While the National Statistics Committee was first composed of vice-ministers of each ministry and civilians, the 2005 reform changed the committee to be composed of the Minister of Strategy and Finance as the chairperson, with main ministers and civilian professionals. This allowed for easy communication between different ministries with professional back-up which allowed for immediate action for each issue brought up in the committee.

Moreover, Statistics Korea strengthened the statistical coordination system to allow equal development of statistics under a structured system throughout the country and introduced the statistics quality assessment program to ensure the quality of statistics produced by each statistical agency. The sponsored survey system for statistics production also strengthened to assist any agency needing help producing statistics. Evidence based policy evaluation system was implemented to utilize statistics in enacting, amending, and executing different policies. The use of administrative data in statistical purposes was also strengthened.

These kinds of responses to the weakness of the Korean Statistical System allowed for improvement of the National Statistical System. However, these responses were not perfect and needed further supplements to strengthen the Korean system. There is a consistent effort to improve the Korean Statistical System. Statistics Korea will work alongside other administrative offices to improve efficiency, create beneficial policies and provide necessary information to both the private and public sectors.

4.3. Outcome

Korea adopted the decentralized statistical system; each governmental agency produced the statistical data necessary for their duty. As Korea became more developed, the demand for statistics in the political sector increased and this could not be fulfilled by the traditional methods. As a result, Statistics Korea was founded to take charge of producing the necessary statistical data. As a result, even though Korea still adopted the decentralized statistical system, much of the statistical task was centralized compared to other decentralized statistical systems.

Korea actively utilized statistics in establishment of the national developmental strategy. Much of the strategy was constructed based on statistics and performance was analyzed through statistical data and feedback was reincorporated into future changes. This allowed for an unprecedented development of the Korean economy.

Accuracy and credibility are the most important aspects of statistics to be used for fact finding and assessing the effect of a policy. Accuracy and credibility are only available through professional and technical mastery and independence and neutrality of the statistical agency. The government may wish to manipulate the statistical data to gain support from the public or put themselves in the limelight. Thus political independence of statistical agency is critical.

Luckily, Korean statistical agencies were able to separate themselves from outside forces and gain statistical neutrality. Although there were certain cases where the government wished to manipulate the statistical data to reduce the visible economic hardships of the country, these cases were rare and intermittent and the impact of these attempts was also minimal. Statistics Korea adheres to appropriate statistical procedures and this became the power to separate governmental influence.

Box 3-2 | Administrative Attempts to Affect Statistics: Korea's Experience

In all of Korea's economic development, inflation was the largest issue. For development strategies, expansion of finance and banking continued, and since this growth persisted for a long term, inflation was an unavoidable phenomenon. Moreover when the oil shock of 1973 occurred, prices soared and the government was struck with difficulties. In order to avoid criticism from the citizens, the government attempted to lower the price gap. The government couldn't control the general prices of things, but they tried to suppress the price of the items if they are subject to producing the price index.

Let's take tobacco as an example. For tobacco, which is sold as a monopoly by the government, there was only one brand that is subject to the price index. Therefore, in order to limit the inflation of tobacco prices in general, they sought to introduce a "new and expensive" tobacco product that is not included in price indexing. By doing so, they increased the price of tobacco without influencing the price index. Another example is the price of train tickets. The price of train ticket is determined by default rate plus distance rate, but the only price subject to Consumer Price Index (CPI) was the default rate. Therefore, the government increased the price of distance rate of train tickets while keeping the default rate at the same price so that they could statistically lower the inflation rate.

These experiences illustrate the administrative attempts to affect statistics, and this can teach us two things. First, in the past Korea also had attempts of policymakers to affect statistical results, like the current countries that have national statistical systems that need improvement. Second, although there were these attempts by policymakers, they never went far enough to manipulate statistical numbers. Hence, the neutrality of statistics was preserved. This shows that the independency and neutrality of statistical organizations remained untouched in any situation.

When these problems were noted in constructing CPI, changes occurred in the CPI statistics production scheme to prevent similar issues in the future.

Source: Lee, Jae Hyung (2001).

4.4. Implications for Developing Nations

The development and growth of the Korean Statistical System through obstacles and weaknesses brings a few lessons for a nation wishing to develop its own statistical system.

First, a well-defined blueprint of the national statistical system in the planning stage is critical. The Korean Statistical System is not a product of close planning with a specific goal.

From the start of the statistical system, there were certain needs to be filled and the statistical system was formed to fill these. As a result, the decentralized statistical system was formed. Changes in the government structure were reflected in the system and resulted in the current system with certain improvements. Even through the changes, the decentralized model is still being used. While the Korean system successfully reached its current stage, there are still weaknesses. Furthermore, there is a limit to change once an organization is established. Therefore, it is difficult to drastically modify a pre-existing agency. Considering this, it is important to thoroughly plan and organize a National Statistical System from the start.

Second, there is a large spectrum between the fully decentralized model and fully centralized model of a statistical system. There is no perfect answer. Depending on the social, economic, and political environment a country is in, a country may choose to be in a certain area. However, it is often true that the focus on the official statistics is weak for many of the developing nations and there is weak understanding of statistics by its government agencies. These countries may be able to increase the efficiency of statistical resources through centralizing the available resource to the central statistical organization. There are both strengths and weaknesses to each system. It is important to utilize the strengths and strengthen weaknesses while building the statistical system.

Third, leadership is critical in nations lacking resources. Many developing nations lack statistical resources and each agency lacks the knowledge and skill to produce statistics. In such conditions, agencies may be unable to respond even when the need arises. Since the Central Statistical Agency will have a relatively strong statistical workforce, it is important to lead other agencies to support statistical development. This is an important aspect regardless of the centralized or decentralized model of statistical system.

Fourth, the national consensus for development of the statistical system is important. The leadership of the Central Statistical Agency is important, but it is futile without the support of the government and other administrative agencies. Therefore, it is important to create a common idea of the Central Statistical Agency throughout the governmental organization as well as an organization overarching throughout the government.

Chapter 4

Institutional Framework for Improvement of Official Statistics Quality

1. The Statistical Coordination System
2. Statistical Quality Assessment Program
3. Using Administrative Data for Statistical Purposes
4. The Sponsored Survey System and Technical Support

Institutional Framework for Improvement of Official Statistics Quality

1. The Statistical Coordination System

1.1. Meaning of Statistical Coordination[14]

Statistical Coordination is when various statistical agencies maintain a stable relationship and form an integrated system of statistical production in a consistent manner.

To keep official statistics fulfilling its functions and tasks, there must be organic connections without any contradictions between the statistics, which can be performed by statistical coordination. This is especially necessary in the Decentralized Statistical System, because the basic official statistics are produced by various statistical agencies.

Therefore, official statistics are not just the simple compilation of the administrative records produced by each governmental agencies but should have a function as an integrated system of statistics for the administration of a country. Statistical activities of each governmental agency need to fit for their own administrative purposes and play its role as parts comprising final product that are necessary to build an integrated system of official statistics.

Statistical coordination as a broad sense shall be understood as a concept linked with three sided activities ; ① overall planning for the establishment of a statistical system, ② coordination of individual statistical projects based on the plan, ③ integration of such

14. Lee (2004), pp.119~124.

individual statistics into the overall statistical system under this principle. These days the necessity for such coordination becomes even greater not only for just a single country but also internationally beyond the border.

To satisfy the goal of statistical coordination, we have to enlarge the mutual comparability by clarifying each kind of statistical concept and definition and also strengthen the integration between statistics through standardizing the basis for production and classification. It is also necessary to have 'sharing of understandings' through the coordination among three parties concerned; 1) administrative departments or agencies planning and conducting statistical activities, 2) people participating in the statistical project as respondents for the statistical survey, and 3) users.

This 'broad-sensed statistical coordination' is the function that should aim at actualizing the integrated system of statistics regardless of the type that a specific country has adopted. On the other hand, 'narrow-sensed statistical coordination, if basing the premises on a decentralized statistical system, puts its purposes on the joint management of statistical administration, the coordination of administrative works, the exclusion of contradictions between each statistics and the enhancement of integration.

Its concrete functions can be presented with; ① the management function that prevents overlapping in statistical activities stemming from any decentralized system and balances demands and supplies for statistics through developing new fields which require statistical back up, ② the function that sets up a guideline which enables mutually related statistics to be developed through seeking actual/concrete advancements in statistics, and ③ the function that harmonizes various statistical activities to secure the accuracy of statistics through the improvements of statistical techniques.

In the USA, the OMB (Office of Management and Budget) at the Executive Office of the President plays a role of integration and coordination.

The Office of Statistics Policy in the OMB, takes control of the budget for statistical activities, prevents waste on budget and human resources coming from duplication of statistical collection and processing. This department is in charge of the statistical coordination relating to the methods of statistical surveys/studies. The OMB also sets up long-term plans for the improvement of statistical programs and reviews survey plans, evaluating each department's statistical program and activities.

Japan has a decentralized system and the Statistics Bureau at the Ministry of Internal Affairs & Communications as the central statistical institution carries out the function of actual/overall statistical coordination.

Japan uses, as official means for statistical coordination, an 'Approval System for Statistics,' 'Audit System', and 'Budget Pre-review System'.

The minister for Internal Affairs & Communications, pursuant to the Statistics Law, approves the production of 'designated statistics' and requires pre-reporting for the production plan of 'statistics other than designated ones' and the Statistical Reports Coordination Law also stipulates the approval of statistics production.

The Minister for Internal Affairs & Communications also executes some statistical coordination functions through the budget pre-review mechanism.

The U.K (United Kingdom) also has a decentralized statistical system, and national statistics are produced in more than 30 government departments/agencies and the ONS (Office for National Statistics) is responsible for planning and coordinating the statistical services for the governments.

In the U.K, the GSS (Government Statistics Service) plays the role of integration and coordination. The President of the GSS is also in charge of the ONS, and the GSS board approves the annual statistical survey prior to its production.

In France, the long term (i.e. five year) plan for statistical survey of each ministry is to be submitted compulsorily to the CNIS (Conseil National de l'Information Statistique) for consultation.

For Canada and Germany, because they have adopted the centralized statistical system, statistical coordination is not particularly necessary. In Canada, Statistics Canada, as the central statistics institution, manages most of the official statistics by planning and coordinating official statistics. Therefore, under the law of statistics, they engage in survey, collection, analysis, summary and publication in most of the official statistics, so that additional statistical coordination among departments is not necessary. Germany also adopted a centralized statistical system. The Federal Office of Statistics under the Ministry of Home Affairs is permitted, provided by the federal law of statistics, to produce statistics using administrative reports and it is also regulated that the government agencies should support them.

Statistical coordination is implemented for the purposes of maintaining the quality of official statistics, enhancing the integration of statistics compiled by many different statistics producing institutions and so on.

The Korean Statistical Coordination System is adjusted to the decentralized statistical system by having Statistics Korea performing the role of the central government agency to compile and oversee the statistics from regional governmental organizations and private institutions. Statistical coordination is one of the most important functions of a central statistical organization, and it is accomplished in the procedure as described below.

First, budgeting and organizational management is a necessary function of the central statistical organization. The central statistical organization or government agencies that have a comprehensive adjustment function will coordinate budget and organizational structure, prevent duplicated statistics and distribute statistical functions.

Second, improving consistency between statistics through enactment and execution of unified statistical criteria among statistical taxonomy, research methodology and other statistical elements. Third, the coordination system should maintain a consistent statistical quality. Fourth, the coordination system can compare and analyze the statistical results among the statistical agencies, and create statistics in a consistent manner.

Statistics Korea is following the last three procedures of statistical coordination. This research will introduce the statistical coordination system and statistical criteria.

In 2010, Statistics Korea tentatively examined the budget of each statistical production agency and released its opinion on the adequacy of the budget to the Ministry of Strategy and Finance. In 2011, Statistics Korea closely examined the budget of each statistical production agency and released its opinion on the production of duplicate statistics, a necessity of the production of new statistics, and the use of budget for improving statistics quality to the Ministry of Strategy and Finance.[15]

15. Yi, Insill (2012, Former Commissioner of Statistics Korea).

Table 4-1 | Korean Statistical Coordination System

Official Statistics Approval System	Approval for production of statistics		
	Approval to alter production of statistics		
	Approval to cease production of statistics		
Statistical Standards	Standard classification	Economic sector	Standard Industrial classification, Standard Trade Classification, Classification of Individual Consumption by Purpose, Classification of Content Industry, Classification of Distribution Industry, Classification f Robot Industry
		Social sector	Standard Occupational Classification, Classification of Education, Classification of Human Resource in Science and Technology, IT Classification of Occupation, Classification of Activity for Time-Use Statistics
		Health sector	Standard Classification of Diseases, Standard Health Classification
	Defining Statistical Terminologies		
	Standardization of Methods		

1.2. The Official Statistics Approval System

1.2.1. Overview

Korea employs the Official Statistics Approval System, where the statistical production agency must receive approval from Statistics Korea when constructing new statistics. However, when an agency or organization other than a statistical production agency produces statistics solely based on their own judgment, approval by Statistics Korea is not necessary. If the statistics are designated as approved statistics, the organizations may receive aid and technical support from Statistics Korea. Statistics among Approved Statistics that are deemed to be important are filed as Designated Statistics. For these designated statistics, there are strict requirements for the statistical survey process. Hence, it is mandatory for the respondent to provide certain types of information. Of the approved statistics, "general statistics" are those that are not considered "designated statistics." The Official Statistics Approval System exists not to limit the statistical process but to prevent duplication of information and also to retain statistical quality.

As for the current statistical coordination systems in terms of statistical approval, there are the pre-coordination system and post-coordination system. The pre-coordination system includes approval of statistical production, requests to conduct/cease/make changes to statistical production, request to improve statistical administration, request to submit relevant data, and consult on statistical production. The post-approval system includes submission of statistical results, and providing history of statistical publications.

1.2.2. The Official Statistics Production Approval System

The purpose of the Official Statistics Production Approval System is to gain statistical credibility and to reduce wasted budget, human resources, and infrastructure due to duplicated statistical production. Statistical credibility can rely on whether the statistical production processes were planned efficiently so that each process contributes to a successful result. Therefore, a thorough investigation is needed prior to execution of the planned statistical production. Duplication of statistical production can increase the response burden of citizens, which could lead to response avoidance and duplication causes unnecessary loss of statistical funding. Therefore, the Commissioner of Statistics Korea must thoroughly examine the statistical production plans submitted by statistical agencies following the Statistics Act, and check if it follows prerequisites such as survey items, survey period, and survey methods in order to avoid distorted or poor quality statistics.

The head of the statistical production agency must submit a request form of statistics production at least 30 days prior to the start-date for collecting information to produce statistics. The head of statistical production agency that wishes to produce statistics must receive approval based on the nine following items:

1) Name and Type of Statistics

2) Purpose of statistical production

3) Survey Items

4) Units of Observation

5) Reference Period, Data Collection Period, and Periodicity

6) Method of statistical production

7) Data collection system

8) Statistical classification criteria

9) Forms used to produce statistics or to disseminate statistics

1.2.3. Approval System to Alter and Cease Statistics Production

Making alterations in statistical production must receive permission from approvals or consultations by the Commissioner of Statistics Korea. In order to receive approval to alter the statistical production, the head of the statistical production agency must submit the request to the Commissioner of Statistics Korea at least 20 days before the collection of statistical information. Also, when it is necessary to stop statistical production, approval or consultation by the Commissioner is necessary. This is because the consequences and effects of terminating certain statistical production must be evaluated prior to the stop of production. The balance of official statistics supply must consider the position of both the statistics producers and statistics users.

1.3. Statistical Standards

1.3.1. Significance of Statistical Standards

Statistics is the collection of numerical information separated into certain categories. In order to properly investigate and to accurately distribute statistics, statistical terminologies must be clearly defined. Especially when statistics are constructed among various organizations, each statistics production agency must use standardized terminology and categories of research topics in order to unify the statistics created and to reduce confusion for the users. In that sense, the establishment of a statistical standard is an important part of a central statistical organization.

Statistical standard refers to a system that is created in order to unify collection, classification, processing, and analysis of statistical information. In general, the statistical standard is separated into definitions of statistical terms, categories of statistical classification, and standardization of statistical techniques and each is explained in more detail as follows:

1) Definitions of statistical terms clarify the concept and scope of a survey such as target population, and survey items.

2) Statistical classification refers to classifying the statistics into specific industries or occupations based on certain characteristics and or similarities and differences.

3) Standardization of statistical techniques refers to accurately analyzing and processing the statistical data with proper statistical techniques.

Like most other countries, Statistics Korea follows two types of standardization systems. First is the standard statistical classification system. This separates the statistics into economic, social, or health depending on its characteristics. The second method is standardization of statistical terms. This was introduced in order to clearly regulate and to define the statistical terms in order to reduce confusion in a statistical survey or statistical use. An example is the term "employees" working in a business, and how the employees can be classified based on their status.

1.3.2. Standard Statistical Classifications[16]

The Statistical Standards Team of Statistics Korea defines statistical terminologies and develops statistical classifications. Major activities for the development of standard statistical classifications are as follows:

a. Korean Standard Industrial Classification: KSIC

The KSIC was developed to secure the accuracy and comparability of industry-related data. The KSIC was adopted in the mining and manufacturing areas in 1963 and in the other industry areas in 1964. The KSIC was based on the International Standard Industrial Classification (ISIC) adopted by the UN. The current KSIC was revised in 2007 (9^{th} revision) to reflect recent changes in industries and came into effect in 2008. The KSIC is designed to classify business establishments and other statistical units by the type of economic activity in which they are engaged. The sections and divisions of the KSIC are almost the same as the categories of ISIC Revision 4, but the KSIC is further subdivided into five-digit levels (sub-classes) to meet national requirements.

b. Standard Korean Trade Classification: SKTC

The SKTC is designed to classify all commodities entering external merchandise trade. However, the original version of the SKTC, which was established in 1964, was intended for use in the classification of all commodities entering production and internal merchandise trade rather than external merchandise trade. Although the Sections (one-digit) and the Divisions (two-digit) of the original version of the SKTC were constructed with the classification scheme of the SITC, the version did not use a standard classification for all commodities of international trade due to the reasons mentioned above. In 1967, the original version was revised in order to make it more suitable for classifying commodities entering both internal trade and external trade in accordance with the structure of the SITC.

16. Statistics Korea, "Statistical Classification Portal" (in Korean)
http://kssc.kostat.go.kr/ksscNew_web/index.jsp.

(a) The nature of the merchandise and the materials used in its production;

(b) The processing stage;

(c) Market practices and the uses of the product;

(d) The importance of the commodity in terms of world trade;

(e) The link to production statistics

The classification scheme of the SKTC, which is based on the SITC Revision 4, consists of 10 sections, 67 divisions, 262 groups, 1,023 sub-groups, 2,970 five-digit headings.

c. Industrial Classification for Special Purpose

The KNSO also set out the industrial classification for a special purpose so that it could be used for not only statistical purposes but also administrative purposes based on various administrative needs. It was originally created to help policy-makers analyze and carry out industrial policies by regrouping specific industries of the KSIC.

Table 4-2 | Industrial Classification for Special Purpose

Industrial Classification for Special Purpose	Contents
Energy	The Energy Sector is comprised of companies engaged in exploration & production, refining & marketing and storage & transportation of oil & gas and coal & consumable fuels. It also includes companies that offer oil & gas equipment and services
Tourism	The Tourism Sector is comprised of the construction and management of tourism infrastructure, Sales of souvenir for tourists, Operating cruise boats
Information and Communication Technology	The Information Technology Sector is comprised of companies that offer software and information technology services, manufacturers and distributors of technology hardware & equipment such as communications equipment, cellular phones, computers & peripherals, electronic equipment and related instruments and semiconductors The Telecommunication Services Sector includes companies that provide communications services primarily through fixed-line, cellular or wireless, high bandwidth and/or fiber optic cable networks
Environmental Industry	The Environment Industry is comprised of environment testing, purifying equipment production, recycling and managing waste, recycling materials and recyclable materials

Industrial Classification for Special Purpose	Contents
Content Industry	The Content Industry is comprised of establishments primarily engaged in the creation and dissemination of information and knowledge in the form of newspapers, radio and television
Sports Industry	The Sports Industry is comprised of establishments which manufacture, distribute, lease sporting goods, and run sports facility

Source: Statistics Korea.

d. Korean Standard Classification of Occupation: KSCO

The KSCO was developed to provide a system for classifying and aggregating occupational information obtained by means of the population census and other statistical surveys, as well as from administrative records. The KSCO 2007 replaced the one issued in 2000 and is the 6th revision since the original edition of the KSCO, which was established in 1963. The 6th revision, currently used for statistical and other purposes, reflected the 3rd revision of the International Standard Classification of Occupations (ISCO) and the rapid change in Korean occupational structure by increasing the number of items under the heading "Occupation". The structure of the KSCO 2007 consists of 10 major groups, subdivided into 52 sub-major groups, 149 minor groups, 426 unit groups and 1,206 sub-unit groups.

e. Korean Standard Classification of Diseases and Causes of Death: KCD[17]

The Korean Standard Classification of Diseases and Causes of Death are used to classify diseases and other health problems recorded on many types of health and vital records including death certificates and health records. In addition to enabling the storage and retrieval of diagnostic information for clinical, epidemiological and quality purposes, these records also provide the basis for the compilation of mortality and morbidity statistics.

The KSCD was developed for the compilation of health statistics and international comparison and based on the International Statistical Classification of Diseases.

Currently it is on its 6th version and this was revised in July 2010 and came into effect on January 2011.

17. http://kostat.go.kr/kssc/main/MainAction.do?method=sub&catgrp=ekssc&catid1=ekssc03&catid2=ekssc03a# (in English),
http://kssc.kostat.go.kr/ksscNew_web/index.jsp# (in Korean).

The coding scheme of the KCD consists of 22 chapters, 267 blocks, 2,093 three-character categories and 12,603 four-character subcategories.

1.3.3. Defining Statistical Terminologies

In Korea, statistics are produced and released by various organizations with Statistics Korea as the central statistical organization. Here, the unified definition of statistical terms can be useful and the use of standard definitions prevents duplicated production of statistics, inefficiency in statistical production, and misunderstandings in statistical use. The UNSD (United Nations Statistics Division) has emphasized the importance of using standard definitions and the importance of having a department that handles comparisons and analysis of national and international standards of definitions, concepts, and classification of statistics.

Statistics Korea released the "Book of Statistical Terms" in 1994, which is a compilation of statistical terms and its definitions used in various statistical data. The book includes approximately 3,500 terms used in 350 classes of statistics by 90 statistical agencies.

In 2006, an advanced version of the previous book was released and called "Using Statistical Terms." In this version, there were 6,300 statistical terms used in 500 classes of statistics by central administration agencies and statistical agencies were introduced, so that statistical users could clearly understand and use the statistics. Statistics Korea published "Understanding Statistical terms and indicators" in 2012, and it explained the statistical terms, concepts as well as indicators often discussed by the media. It discussed 74 terms in 8 classes of statistics such as basic statistical knowledge, industrial statistics, and price statistics so that citizens may better understand and recognize statistics.

Statistics Korea currently operates a website called the "Statistical terms search engine" (http://meta.narastat.kr) where statistical users can easily search and view statistical terminologies. The website includes approximately 11,000 statistical terms and definitions.

1.4. Evaluation of the Korean Statistical Coordination System and Implications for Developing Nations

Official statistics are constructed by governmental agencies and this makes it difficult for the central statistical agency to coordinate the statistics. This is because it is difficult to exclude authority issues, budget issues, differences in work settings, and conflicting administrative goals that occur between the central statistical organization and various administrative offices.

In Korea, conflicts between governmental agencies have been rare. This is due to the prominence of Statistics Korea as the main statistical agency and because of the statistical dependency of other governmental agencies. Also, standard classifications created by Statistics Korea have been generally accepted in situations where statistics were necessary for administrative use. Therefore, conflicts regarding statistical coordination have been rare in Korea.

However, problems have occurred where the statistical standards didn't efficiently follow the social changes. Statistics Korea has been actively proposing and constructing new statistical standards to deal with these changes, and have retained a cooperative relationship with various governmental departments. For example, when new societal or economic phenomenon difficult to classify into existing standards occurred, the administrative offices requested Statistics Korea to create standard classification systems that could accommodate for the new phenomenon. Therefore, in the past 10 years, the number of standard classification systems have increased significantly. The standard classifications are widely used in various administrative areas.

When the Decentralized Statistical System is chosen, the Statistical Coordination System must be strengthened for quality control and efficiency of the statistics. It is necessary for the central statistical organization to retain statistical quality and statistical reliability. In order to properly compare and analyze the statistics, a standardized classification must be actively used. A standard classification system should be a requirement in official statistics, and it is desirable to recommend the system to be used in other statistics as well.

2. Statistical Quality Assessment Program[18]

2.1. Introduction of the Statistical Quality Assessment Program

2.1.1. Necessity for Improving Statistical Quality[19]

The most important role of statistics is to provide numerical information that society needs in a accurate, reliable and timely manner. Although there are several criteria to evaluate the quality of official statistics and we can access this in regards to relevance, accuracy, credibility, timeliness, accessibility, comparability and efficiency. Statistics Korea defines statistics quality in six dimensions such as relevance, accuracy, timeliness, comparability, coherence and accessibility/clarity.

18. Statistics Korea (2011), Statistics Korea (2013a).
19. Lee, Jae Hyung (2004) pp.58~78.

The Fundamental Principles of Official Statistics is an internationally recognized statistical quality evaluation standard, that is recommended by the UN Statistics Committee The principles consist of impartiality, application of scientific principles, provision of statistics that correspond to the demand of users, provision of statistics error, reduction of response burden, protection of privacy and confidentiality, provision of law for the basis of statistics compilation, consistency, application of international standards and international cooperation.

EUROSTAT defines seven principles such as relevance, accuracy, timeliness, accessibility/clarity, comparability, coherence and completeness.

The OECD developed a statistical quality framework and recommended to apply this framework to evaluate all statistics. This framework consists of relevance, accuracy, credibility, timeliness, punctuality, accessibility, interpretability, and coherence.

The Economic Crisis affected many countries including Korea in the mid-1990s and the conclusion was that the crisis was in part caused by poor statistics, and as a result, the Statistical Quality Assessment Program was created. The assessment criteria are listed as follows:[20]

1) Prerequisites of quality: Legal and institutional environment and Resources

2) Assurances of Integrity: Professionalism, transparency and ethical standards

3) Methodological soundness: Concepts and definitions

4) Accuracy and reliability: Source data, statistical techniques and assessment

5) Serviceability: periodicity and timeliness, consistency, revision policy and practice

6) Accessibility: Data accessibility, metadata accessibility and assistance to users

Statistics Korea concluded that there were many necessary improvements in terms of national statistical quality. Under a Decentralized Statistical System, the majority of statistical resources are concentrated in the Central Statistical Organization while other statistical agencies suffer from insufficient budget, and human resources that can result in poor statistical quality. With these issues in mind, the Statistical Quality Assessment Program was introduced.

20. IMF (1996).

2.1.2. Introduction of Statistical Quality Assessment

In order to assess statistical quality, the current statistical production conditions must be objectively and systematically evaluated. It is important for the person in charge of the statistical production clearly understands and correctly applies the elements that may affect the statistical quality. In addition, it is important to consistently improve the statistical quality based on the changing production environment. The Statistical Quality Assessment is executed in order to understand the accuracy, accessibility, comparability, and usability of statistical data.

In order to improve the quality of official statistics, Korea has promoted a statistical quality assessment program since the early 2000s. To promote the statistical quality assessment, several preparations regarding development of quality assessment theories, quality assessment procedures, and policies to support the quality assessment were necessary. Statistics Korea concluded these preparations over a 5-year period and officially started creating the Statistical Quality Assessment program in 2006. Statistics Korea established a 5-year Regular Statistical Quality Assessment plan (2006~2010), and completed the statistical quality assessment for 585 types of official statistics. With this, a second 5-year Regular Statistical Quality Assessment plan was established (2011~2015) and more detailed diagnostics were created with the key statistics in mind.

The Korean Statistical Quality Assessment includes the Regular Statistical Quality Assessment that holistically assesses statistical production procedures, the Occasional Statistical Quality Assessment that assesses statistics that have been understood to have statistical quality issues and the Self-Statistical Quality Assessment that is performed by statistics production agencies to assess jurisdiction statistics every year. For Regular and Occasional Statistical Quality Assessments, an assessment team is created based on the characteristics of the corresponding statistics. For the Self-Statistical Quality Assessment, a statistical policy control system by Statistics Korea is provided for self-assessment by the statistical agency. For improvement projects derived from these quality assessments, the improvement plans are created by the statistical agency and Statistics Korea provides an assessment and analysis of the quality status in order to increase efficiency of the assessment program. When the improvement of statistical quality is hindered due to a poor statistical production infrastructure or when the project is high in urgency or importance, statistical quality improvement consulting is provided by Statistics Korea.

Table 4-3 | Korean Statistical Quality Assessment Program

Type	Responsible Agency
Regular	By external experts
Occasional	By external experts and Statistics Korea staff
Self	By survey managers

Source: Statistics Korea.

2.2. Criteria for Quality of Statistics[21]

The Statistical Quality Assessment uses the assessment criteria of relevance, accuracy, timeliness/punctuality, comparability, coherence, and accessibility/clarity. Each criterion is explained in more detail as follows:

■ Relevance

"Relevance" focuses on the viewpoint of users. This refers to how much statistical data meet the demands of users in terms of comprehensive scope, concept, and contents. In short, relevance is associated with the concept that statistics are produced and provided to relevant statistics users. In the process of producing statistics, it is necessary to set a clear goal, figure out the needs of users by forming an expert advisory panel and conducting a user satisfaction survey, and reflecting them. This is a way of enhancing the relevance of statistics.

■ Accuracy

"Accuracy" refers to how closely the features or size of a population are measured. Most statistics estimate unknown true value. Accuracy is the concept that shows how close the unknown true value and estimated value is. Therefore, the lower the error between true value and estimated value is, the more accurate the statistics are. In the case of survey statistics, errors occur from a comprehensive scope, sample drawing, survey response and non-response, and statistics production process. In the case of processed statistics like National Accounts, an error may take place due to the inaccuracy of the sample survey or census and mismatch among comprehensive scope, survey timing, and assessment method. Accuracy can be measured by examining the size of sampling or non-sampling error, and the difference between the estimated and final value.

21. Statistics Korea (2011).

■ Timeliness/Punctuality

"Timeliness" is the concept, which is associated with the reflection degree of statistics that shows the difference between data production time and data dissemination time.

"Punctuality" is the concept, which shows whether statistics are disseminated on schedule. If the time lag between production and dissemination time is short, timeliness is high. Some key statistics' dissemination schedules are announced in advance to let statistics users know of the one earlier. If this preliminary dissemination schedule is met, punctuality is high.

■ Comparability

"Comparability" refers to whether statistical data, which is aggregated based on the same concept, classification, measurement tool, measurement process and basic data, can be compared with one another even though the statistical data was prepared in a different time or space. Regarding particular statistics, comparability is used to check whether they are compared with the statistical data of other countries or cities, or other years. In order to increase international comparability, it is necessary to apply international standards, international classifications and assessment methods. Also, if the cycle of producing statistics is irregular or long, time comparability could be low because concepts, survey items and methods may be different from the past. In this case, special attention is required.

■ Coherence

"Coherence" refers to how similar statistical data is regarding similar economic and social issues. The data produced is based on different basic data or production methods. For example, it is possible that preliminary and final data, annual and quarterly (monthly) data, statistics surveys and National Accounts may be produced based on different data resources and production methods. But, if this data show similar results, coherence is high.

■ Accessibility/Clarity

"Accessibility" means how easy users are able to access statistical data. "Clarity" means the quality of information about how statistics were produced. There are various ways that make it possible for users to easily access statistical data. One method is providing various statistical data by creating the database of statistical data, posting periodicals and news releases on the homepage, and delivering prompt reports via SMS. The other method is adding a search function to the website to ensure that users can easily search for statistical data. To help users understand the data, providing meta-data is the surest way to increase clarity of statistics. The meta-data include the process of producing statistics, the way of making better use of data and microdata, and the advice on using statistics.

2.3. Regular Statistical Quality Assessment[22]

2.3.1. Target and Procedures of Regular Quality Assessment

In Korea, the Statistical Quality Assessment is executed every five years to analyze the statistical quality of official statistics. This is referred to as regular statistical quality assessment, and the selection criteria are as follows:

1) Usability of statistics as basic informational material for national policy establishment

2) Statistics that are constructed as basic information for analysis and establishment of new policies

3) Statistics designated for use in mandatory provisions of law

4) Excludes statistics created for specific regional use

5) International Comparability

6) Statistics submitted for comparisons of statistical indicators with other nations. However, this is specified to statistics that are periodically reported, and not those that are reported for single use. It also excludes statistics used as reference information.

7) Importance of population statistics

8) Census data with high usability by other statistics. However, it excludes certain industrial or regional data or statistics that are difficult to distribute due to the protection of personal information or specific circumstances

The Regular Statistical Quality Assessment selects assessment targets each year based on these criteria and creates an assessment team comprised of experts in the specific area. The outsourced assessment team usually assesses five official statistics. Statistics Korea operates an inner assessment task force team, and its main role is to guide and supervise the statistical assessments. The assessment team is comprised of outside experts and executes the assessment in the form of commissioned research.

The result of a quality assessment is reported to the National Statistics Committee and the results are announced to the corresponding production agency. If improvements are needed, the production agency will follow a specified improvement plan.

22. Statistics Korea (2013a) pp.100~129.

2.3.2. Contents of Quality Assessment

The Quality Assessment team executes the assessment following the "Manual of Official Statistics Quality Control," in five areas. Each of the five areas are described in more detail as follows:

a. What is the Basis for Quality Management?

The statistics production environment may affect statistics quality. For example, leadership and human resources management are essential elements in producing statistics. If leadership in organizations is weak and human resources are insufficient, the quality of statistics produced by these organizations will be low. Therefore, it is necessary to assess the basis for quality management by figuring out the interests of the head of the organization, the strategy and policy, human resources management and budget, and the statistics production environment. If the head of organizations have a strong will to fulfill quality management, it will be the locomotive for carrying out the statistics quality assessment. Therefore, if the head of the organization outlines a vision, a related strategy, policy, plan, goal, and concrete goal should be created. To do so, it is necessary to form an organization and then manage human resources. The basis for quality management is executed according to the following four steps. The first step is set a detailed plan for assessing quality management, the second is ask the person who is in charge of statistics to create a present condition report for the basis for quality management, the third is to confirm the survey data again through interviews, and the last is assess the statistics production environment after analyzing interview results. The most important step is to create a present condition report for the basis for quality management. Why? Unless any feedback is given from the person who is in charge of producing statistics, it will be difficult to figure out the statistics production environment.

b. Are Users Satisfied with Statistics?
(User satisfaction and the reflection degree of user demands)

Statistics users want to gather enough information from the statistics they use. High quality statistics contain much information users need. Therefore, it is necessary to investigate how much users are satisfied with the statistics, and use them when quality management is done. The statistics production agency needs to make a list of professional and amateur statistics users, and regularly check whether users are satisfied with the statistics.

This area assesses the satisfaction level of statistics users, and reflection degree of user demands. To meet this end, focus group interviews need to be conducted, which target statistics experts and general statistics users. Also, the overall satisfaction survey should be carried out, targeting the statistics users.

c. Are Statistics Produced According to the Appropriate Procedures? (Detailed process of producing statistics)

The process of assessing the detailed process of producing statistics requires a checklist to ensure that the assessment is properly undertaken, which is needed to fulfill the aim of producing statistics. The checklist is an assessment tool that consists of five-point scale questions. These questions are indicators that affect the quality of statistics during the process of statistics production. According to the statistics production process, the checklist is classified into three varieties: survey statistics, administrative statistics, and processed statistics. The Statistics assessment consists of internal and external assessments. The person who is responsible for producing statistics carries out the former, and outside experts do the latter. Researchers also conduct statistics assessments. Outside experts assessing statistics undertake the external assessment again based on internal assessment results and relevant data. When the external assessment is complete, assessment examiners have to submit a quality improvement report, which explains what should be done to improve the procedures of producing statistics.

Sample experts, who are designated as advisors, have to thoroughly assess the sample design of survey statistics, and then submit a result report to assessment researchers. The assessment researchers send the report to the quality management division after reviewing it. The quality assessment team sorts out the checklist created by the person in charge of the statistics, outside assessment examiners and assessment researchers, and the assessment results of the sample design, produce a report and then return it to the person who is in charge of the statistics to ensure that he or she uses the report as basic data for improving the quality of statistics.

d. Accuracy

The accuracy of statistical data depends on the reliability of collected data. The reliability of the data hinges on the efficiency of the data collecting system. The process of checking whether data is properly collected or if there are procedural errors or not, is a key to determining the quality of statistics. For survey statistics and administrative statistics, it is important to systematically check whether errors were made in the process of collecting the data. For processed statistics, it is important to check the possibility of any data errors which may occur in the process of choosing data and dealing with them. These methods are designed to enhance the quality of statistics in the process of collecting data.

In the case of survey statistics, data is collected on the ground. Therefore, the accuracy assessment of collected data can be called "the accuracy check of the on-the-ground survey". The goal of this assessment is analyze types and causes of non-sampling errors and then improve the quality of the survey. For survey statistics, surveyors collect data on the ground. They receive questionnaires back from respondents through interviews, phone calls, the Internet, and e-mail. Then, they examine the contents of the questionnaires and enter the data. Survey errors may occur, depending on the skills, diligence and attitudes of the surveyors. Also, survey errors can be found in the way surveyors gather data. In order to figure out the causes of these errors, interviews may need to be conducted with the survey organizer, the supervisor, surveyors, or even survey respondents. By doing this, the on-the-ground survey can be checked directly. Visitation targets should be limited to about 10 individuals. In this case, it is necessary to talk about them about the quality management division. In particular, if a lower organization or outsourcing company conducts a survey, the accuracy of an on-the-spot survey may be highly affected, depending on how involved the statistics production agency is with the survey. Therefore, it is necessary to check whether the agency has questionnaires and micro-data management guidelines, which indicates how much the agency is involved in the survey management and participation. When it comes to an on-the-ground survey, the system to spot various errors and address them needs to be created. To do so, it is necessary to offer good ideas that can improve the system.

e. Reliability of Statistical Data Services

Let's say that no errors were found in the process of producing statistics. But, if errors are found in the process of publishing statistics, they are incorrect. In this case, there is no point in assessing the quality of statistics. This is why it is very important to assess the reliability of statistical data services. In Korea, a lot of statistical data is produced every year in the form of statistical periodicals, survey reports, various white papers and a statistical database. However, this data needs to be checked before and after it has been produced. There are two reasons why the reliability of statistical data services is assessed after it has been produced. The first reason is prevent any errors by examining both frequent error types and causes of error. The second is check whether basic information is included in statistical periodicals. These efforts are designed to enhance the quality of statistical services.

The work of assessing the reliability of statistical data services includes setting a detailed assessment plan, checking any errors of statistical periodicals and database, increasing user convenience, checking inspection content and aggregating it, and returning them to the person who is in charge of statistics that are the subject of assessment.

2.3.3. Inspection of Implementation of Improvement Projects

When the Statistical Quality Assessment is completed, it is important to execute the improvement projects derived from the quality assessment. For quality control of official statistics, Statistics Korea reports these improvement projects to the corresponding statistical production agency to create an implementation procedure. Unless otherwise noted, it is required for the statistical production agency to comply with these improvement projects. When the quality assessment process is completed, the improvement projects are categorized by characteristics, and each project is executed. The corresponding statistical agencies must report the improvement project implementation plan to Statistics Korea by the end of January of that year. Statistics Korea then inspects the implementation status of these improvement projects according to the reported implementation plan.

2.4. Occasional and Self-Statistical Quality Assessment[23]

2.4.1. Occasional Statistical Quality Assessment

The Occasional Statistical Quality Assessment is executed when the Self-Statistical Quality Assessment is not followed or when there are specific reasons to believe that the statistical quality is poor. Statistics Korea has implemented a policy that periodically monitors the status of official statistics. Periodic monitoring is managed by the Occasional Statistical Quality Assessment team and the team assesses the status of the statistics in discussion and its relations to other statistics that have similar characteristics. Based on these results, multiple departments within Statistics Korea will discuss and decide on the implementation of the Occasional Statistical Quality Assessment.

When the necessity of the Occasional Statistical Quality Assessment is decided, the Commissioner of Statistics Korea needs to establish and report the occasional statistical quality assessment plan to the corresponding statistical production agency. The plan will need to include target, reason, time and method, and other necessary information for the assessment.

According to the severity of the problems of the statistics, the Occasional Statistical Quality Assessment is executed according to ① Internal Assessment by Statistics Korea, ② outside expert assessment, and ③ Co-assessment by Statistics Korea and outside experts. The Occasional Statistical Quality follows the procedure as shown below:

23. Statistics Korea (2013a) pp.106~129.

1) Understanding the underlying problems of the target statistics (Statistics Korea occasional quality assessment team)

2) Selection of an assessment method fit for the underlying problems (outside expert assessment, Statistics Korea's member assessment, co-assessment by Statistics Korea and outside experts)

3) Notification of execution of the Occasional Statistical Quality Assessment to the corresponding production agency

4) Visiting and assessing the production agency and its related agencies

5) Finalizing assessment results and creating a final report

6) Recommending possible improvements

7) Inspection of implementation of recommendations

The Procedure and Content of Occasional quality assessment is similar to the Regular Statistical Quality Assessment. When problems are discovered, detailed diagnostics are followed. Also, by receiving original data from the production agency, more detailed and applicable assessment can be applied. Specific improvement plans and assignments can be structured for the problems discovered from the quality assessment and direct quality improvement plans can be employed based on the implementation plans submitted by the production agency.

2.4.2. Self-Statistical Quality Assessment

As the importance of quality control of official statistics became more important, all approved statistics need an examination of quality. Therefore, each statistical agency must examine the quality of statistics they are producing and this is called the Self-Examination of Quality of Statistics. Self-examination of quality of statistics is executed to raise awareness of the quality of official statistics and strengthen the ability of the statistical authority. Through the examination, the agency can self-examine the quality of the statistics and understand the areas that need improvement. The agency may skip the self-examination for the year if there is a regular quality examination or occasional quality examination in that year. The heads of statistics collecting agencies shall submit the result of self-examination of the quality of statistics to the Commissioner of the Statistics Korea by December 31 of the year in which it was conducted (Article 11 of the Statistics Act).

All national approved statistics must conduct a self-examination of quality of statistics under the Statistics Act except for a few special exceptions. The statistical personnel in the statistical agency operate the self-examination through the Statistics Policy Management System following the following procedure. The statistical personnel must input the self-examination plan by March 31 into the system and report to the Head of the Statistics Korea. After the report is fully completed, the progress chart and results, quality score, quality report can be printed. This report must be delivered to the Commissioner of Statistics Korea by December 31 of that year.

The Self-examination step-by-step examination chart contains quality indicators in a question format and contains procedural quality indicators. The Self-examination has ① Statistics Planning, ② Statistics structuring, ③ Gathering information, ④ Data input and processing, ⑤ Data analysis and quality measurements, ⑥ Documentation and data provision, and ⑦ Post-management steps. Each quality indicator contains five different quality category (relevance, accuracy, punctuality, comparability, and consistency) used for quality measures. Each question is determined on a five-point scale.

The Statistics Korea Department of quality control analyzes the self-examination reports from statistical agencies and reports the results to the Commissioner of Statistics Korea. The department also registers the responses to the improvement projects to the system so the agencies can use the opinions for future policy changes.

2.5. Consulting for Improvement of Quality of Statistics[24]

Statistics Korea runs the quality examination using both internal and external task forces and return the feedback to the statistical agency for improvements. Each statistical agency runs improvement plans yearly following its own plans and Statistics Korea operates examinations bi-annually to manage plan progress. Many improvements were completed through the statistical agencies own authority but there were cases where improvements were delayed from lack of professional expertise.

Statistics Korea consults to actively assist improving the statistical agencies. Statistics Korea also consults for agencies with areas that are not improving even after many attempts for improvement. Under the Statistics Act, the "Commissioner of Statistics Korea can fund the education, development, quality control of a statistical agency within a budget limit if the agency is in need (Statistics Act Article 13)." Consulting occurs under this act.

24. Statistics Korea (2013a) pp.106~129.

Consulting often runs for area with budgetary constraint or lack professional expertise. The consulting subject is determined based on a demand survey with the environment of the agency, budget, and expertise all in consideration. Consulting is given priority for national statistics with higher importance. Consulting is planned based on the need of the agency including improvement plans from self-examination.

Consulting uses internal and external expertise depending on the subject of the consultation. Therefore a professional with a specialized and capable expertise in the subject of assistance is important. The researcher for the consultant needs to collect sufficient opinions from both the statistical agency and Statistics Korea along with other areas to find substantive assistance. The researcher also needs to provide a detailed plan of improvements that can be applied directly to the agency for change.

3. Using Administrative Data for Statistical Purposes

3.1. Increasing Efficiency of Statistics Production and Use of Administrative Data

3.1.1. Need for Using Administrative Data[25]

The survey environment is deteriorating and statistical resources are limited, causing problems in preparing statistics. However, demand for statistics in society is increasing, leading to worries that demand will eventually exceed the supply. In such conditions, using administrative data can significantly increase the efficiency of statistical administration. Producing statistics from public administrative data, replacing or supplementing existing survey item can reduce the respondents' burden and reduce survey costs and increase production efficiency.

Survey costs have significantly increased each year in Korea. Population census costs were 83.4 billion in 2000, 129 billion in 2005, 180.8 billion in 2010; an increase of over two folds in the past 10 years. The use of administrative data is planned for the 2015 census, which is estimated to reduce about 135.6 billion Won which will be an approximate 50% reduction.

Government organizations naturally accumulate a lot of data from its original administrative jobs. For example, tax administration accumulates information about all businesses and the Resident Registration System gathers information about the population. This information is not deliberately collected but naturally compiled as the administration

25. Lee, Jae Hyung (2004) pp.120~124.

performs its task. Administrative data contains extensive information of business activity and people's living and therefore can be used as basic information for finding new statistics or supplementing existing statistics.

Since the survey environment is becoming harsher and national statistical agencies have limited resources, the use of administrative data in statistics production not only improves efficiency but also assists in creating credible and accurate statistics. The Fundamental Principle of Official Statistics established by the UN in 1994 also suggested the use of administrative data for statistical purposes to reduce costs for statistics production and the burden of survey responders.

There are obstacles in using administrative data for statistical purposes. Government agencies are often legally prohibited from using administrative data they collected outside of the political purposes the information was gathered for. These rules are established to protect businesses and individuals from abuse from misuse of their information. However, statistics are neutral and have protection for privacy through many legal measures. While use of administrative data for statistical use should be closely monitored, its use should be expanded. In other words, exposure of data collected for statistical purpose to other agencies can be problematic, but exposure of data from these agencies to statistical agencies will not be a problem and should be encouraged.

3.1.2. International Trends

Developed nations actively use administrative data as basic information for statistics. The United States uses national tax data for statistics. France concentrates most administrative data to INSEE. The OECD nations and most other nations combine administrative data and surveys to produce statistics and have systemic support for the use of administrative data.

Statistics Netherlands revised the Statistics Act in 1996 to include the article allowing use of administrative data for statistical purposes.[26] In the US, administrative data is often used as supplementary data. Austria, Swiss, Belgium, and Luxemburg added an article

26. Law of 18 April 1996 establishing the Central Bureau of Statistics and the Central Commission for Statistics.

    Article 9

    1. The CBS is authorised to use, for statistical purposes, data from the records of State institutions and agencies. The CBS shall exercise this authority in accordance with Our Minister under whose responsibility the records in question fall.
    2. The CBS shall be entitled to include the social security and fiscal number, as referred to in Section 47b (3) of the Law on State Tax, in personal data files and use it for statistical purposes. The CBS shall be entitled to use this social security and fiscal number in contacts with persons and official bodies to the extent that they themselves are authorised to use the number in a personal data file.

allowing the use of administrative data for statistical purposes in the Privacy Protection Act. This law prohibits the release of private information but allows for use of data under certain circumstances to other agencies.

Tax and public health data are used as statistical resources in many countries. Sweden has used tax information in Structural Business Statistics since 1990 by combining taxation reports with three other sample surveys. New Zealand created the Long Term Industry Database model by combining administrative data and survey data. The US uses taxation information not only as a sampling frame, but uses the Industry information contained within. Northern European countries heavily rely on administrative data for statistics production. The Population Census is being replaced by administrative data from surveys.[27]

3.2. Statistical Use of Administrative Data in Korea[28]

3.2.1. Institutional Foundation

Use of administrative data outside of its original purpose has a chance of abuse that may result in a disadvantage to an individual or business. Therefore, Korean laws strictly prohibit the use of information outside of its primary purpose for which it was collected. However, there are movements to allow use of this data for statistical purposes.

The Statistics Act contains a regulation for offering administrative data for statistical purposes. According to the regulation, the statistical agency can request administrative data from other public administrations for statistical purposes and the requested agency must adhere to the request unless there is a reason to protect national security, private or business information. However the administration providing the data may limit the data or request special protection of information to protect individual, corporations or groups.

Here are some important cases. In the Framework Act on National Taxes, taxation information is fundamentally prohibited for use outside of taxation. However, there is an article (article 81) that allows Statistics Korea to request taxation data for official statistics purposes. National Tax Services can request information security measures to protect the taxation information and Statistics Korea must abide. Furthermore, Korean citizens must register for residency. Resident registration contains a birth date, residential area, and other basic information. The Resident Registration Act stipulates that anyone wishing to use Resident Registration Data must receive approval from the Ministry of Security and Public Administration. Statistics

27. Statistics Korea (2008).

28. Statistics Korea (2013a) pp.283~301.

Korea acquires Resident Registration information under this regulation and uses it for the production of vital statistics.for the production of vital statistics.

As of May 2013, Statistics Korea acquired 128 types of administrative data from different administrative agencies and uses them in production of 36 kinds of official statistics. Housing Ownership Statistics, Corporate Business Statistics, Return Home Statistics, Small Enterprise Statistics are new evidence based on administrative data. Economic Census, Mining and Manufacturing Survey, Agriculture and Fishery Corporation Survey, Wholesale and Retail Trade Survey, Professional, Scientific and Technical Service Industry Survey, Establishment Census use parts of certain administrative data in its production. Administrative data used for statistics are Resident Registration Data, Regional Tax Payment data, Immigration Data, Military Records, Health Insurance Data, Business License Data, Building Register Data.

Box 4-1 | The Use of Tax Data for Statistical Purpose: Korea's Experience

The National Tax Service accumulates various administrative data such as financial statements of businesses in the process of collecting taxes. These can be used as useful statistical data. Statistics Korea has been trying to use tax data for statistical purposes for a long time, but cooperation with the National Tax Service was not established. Since the tax data contains confidential information of the company, tax related laws controlled leakage of the data. Provision of tax data to other agencies may result in tax data leakage, which is a serious problem. For this reason, the National Tax Service has kept a conservative perspective on provision of tax data even for statistical purposes. In 2007, by the amendment of statistics act, Statistics Korea could ask for the provision of administrative data to the concerned agencies. Statistics Korea asked for provision of tax data to the National Tax Service with support from the National Assembly. However, the National Tax Service refused the request based on the principle of keeping the secrecy of tax data.

Meanwhile the societal awareness on the use of administrative data for statistical purpose arose in 2009 when the provision of the tax data for statistical purpose was included in the Basic National Tax Law. Thus, the legal framework for the use of tax data for statistical purposes was established and Statistics Korea was able to ask for the provision of the tax data. While Statistics Korea and the National Tax Service agreed on the basic principle of the provision of data, the two offices faced difficulty in coming to an agreement with the amount and level of detail of the data provision even after multiple meetings. The concern on the data security in the provision of data was due to the conservative perspective. As a response, Statistics Korea developed landmark devices

for data security. This allowed the National Tax Service to provide tax data without concern. Statistics Korea prepared a secure location to keep and manage tax data provided by the National Tax Service. Access to this office is strictly controlled even to the staff of Statistics Korea. The Computer system at this location is separated from Statistics Korea's data system. For a Statistics Korea staff to use the tax data, one must access it through a remote analysis system that contains strictly controlled functions. The remote analysis system only allows data processing. Carrying out the processed results must be done through a separate permit.

Source: Statistics Korea Alumni Interview.

3.2.2. Procedure and Method of Use

Statistics Korea determines the data that will be useful in statistical purposes from all administrative data collected by government agencies. Statistics Korea consults with the related administration to acquire the selected data. The use of data, realm of necessary information, security measures, and other related issues are discussed during this consultation.

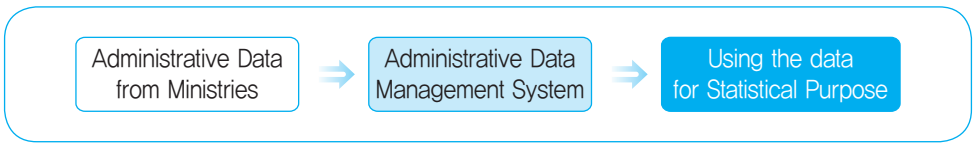
After the above procedure, the administration provides Statistics Korea the necessary data. Statistics Korea constructs a Database from this information for efficient use. Meanwhile, the data cleaning process starts. Through this process, Statistics Korea reorganizes the provided data into different statistical data organization systems. For example, information regarding business is tagged according to the KSIC business categorization number, and district classification number. After the database is constructed through these processes, Statistics Korea runs a quality check through linked surveys and other methods to prove that the information is useable for statistics. Once the data is cleared, data is used widely to produce new statistics, and replace current data.

3.2.3. Future Plans

Korea is looking for ways to develop and strengthen the use of administrative data in statistics. There are plans to standardize the registration format of administrative data in government agencies to increase the efficiency of administrative data for statistical use and make the data available. "Public Data Standardization Project" is being carried out for this purpose. This is a project operating within the whole government. Statistics Korea is responsible for the data terminology, categorization code, address, identification and other standardization process.

Statistics Korea is also developing a standard manual defining the specific procedure to expedite and promote systemic support for using administrative data for statistical purposes. Korea is also working on the "Law on usage of administrative data for statistical purpose" as a systemic support for expanding the use of administrative data.

Figure 4-1 | Public Data Standardization Program



Source: Ministry of Security and Public Administration.

Box 4-2 | Promoting Register Based Population Census: Korea's Experience

Korea runs the Population and Housing Census every five years through direct survey. However, the worsening survey environment and increase in costs raised the need for a new investigation method. The survey personnel visited individual houses and drew up the survey paper through individual interviews while running online surveys. The cost increased about 50% each 5 years and many refused to respond. While some refusal was for privacy reasons, many were due to the survey personnel inability to contact the family due to both members of the family working, one person household, and old age. This situation is predicted to get worse in the future.

Using administrative data for this census is being reviewed to reduce cost and prevent omission. Luckily, the Resident Registration contains basic information for citizens and is readily available through the administration. The building registration system also contains much of the housing information necessary. The conditions for using administrative data in Population and Housing Census seemed favorable and discussion for its use in the census have been ongoing since the mid-2000s. The trend for register-based census started in the late 1990s in many developed nations.

However, omission for information has been mentioned as a potential problem for Korea if Korea decides to use the register-based census. First, the pre-existing census report contains a lot of information that cannot be acquired through the register-based census and second, there are many people with a registration address in one location and actual residency in another, causing an incomplete and unbalanced census. Therefore, censuses are replaced by administrative data and details about the population and housing are filled with current sample survey methods.

There are conditions to use the registration census. First, there needs to be a national scale administrative data for individual person, household and housing to comprehend the information about the population and housing. Such data needs to contain all citizens and buildings. Second, the link must exist if two or more data are used simultaneously, and there needs to be identification for this linkage. Luckily, Korea uses a personal identification number in the form of a Resident Registration number, overcoming this difficulty relatively easily. Third, the administrative data needs to be converted to statistical data. The data needs to be able to be reformatted into a form useful for statistics. Fourth, a national consensus is required for use of the register-based census and there needs to be institutional support for privacy protection. Korea has been working on these for the past 10 years and now planning on using the register-based census in 2015.[29]

Source: Statistics Korea.

Table 4-4 | Register Based Census in Major Nations

Type	Country (year of introduction)
Register based Census	Denmark (1981), Finland (1990), Netherlands (2011), Belgium (2011), Austria (2011), Norway (2011), Sweden (2011)
Administrative Data + Sample Survey	Singapore (2000), Israel (2008), Swiss (2010), Germany (2011), Italy (2011), Spain (2011)

Source: Statistics Korea (2013a) p.291.

Box 4-3 | Use of Administrative Data in Establishment Census: Korea's Experience

The Establishment Census are designated statistics run by Statistics Korea each year to gather information about all establishments. The largest goal for these statistics is to provide the survey population for various surveys on establishments. The Establishment Census is for all industries other than ① Privately run agricultural and fishery industry, ② Industry related to national security or domestic service, ③ International Organization and Foreign agency, and ④ Temporary vendors without fixed installation such as street stands.

29. Statistics Korea (2013a) pp.290~292.

The survey unit includes all establishments producing, selling, providing services, and other businesses operating in a certain location. This includes factories, stores, workshops, mines, farms, branch offices, business offices, headquarters, and contact offices. The Establishment Census started in 1993. Survey items include industry name, representative name, location, organization structure, and other characteristics of the establishment.

The Establishment Census targets over 3.3 million establishments. This creates a lot of strain on manpower and budget. To increase efficiency, Statistics Korea sought methods of using administrative data in the Establishment Census.

After an investigation, Statistics Korea concluded that 12 out of 13 items for the survey could be replaced with administrative data. Close investigations showed that some items showed higher conformity compared to some others. Furthermore, there were many establishments not visible from administrative data. Through these investigations, Statistics Korea decided to run surveys for items with low conformity or no administrative data and replace replaceable items. Statistics Korea is planning on constantly investigating the possibility of replacing surveys with available administrative data.

Source: Statistics Korea.

4. The Sponsored Survey System and Technical Support[30]

4.1. Significance of the System

There are many cases where the supply of statistics cannot meet the demand for statistics with the rapid change of the socio-economic environment of contemporary society. Even though Korea has a decentralized statistical system, aside from a select few ministries, many agencies lack statistical resources. These agencies, even when the need for statistics rises, have a low understanding of statistics and therefore cannot facilitate a survey properly, thus resulting in low-quality statistics.

The fieldworkers of the central government are concentrated in Statistics Korea, the Ministry of Employment & Labor, the Ministry of Health & Welfare, and the Ministry of Education. Other agencies often do not have or have very weak field offices. In such agencies, the statistical survey is commissioned to an affiliated organization that often does not have capable statistical manpower and therefore commissioned again to a private

30. Statistics Korea (2013a) pp.254~259.

contractor. This chain makes quality control of statistics very difficult, allowing many possible sources of error.

To overcome these problems, Korea implemented the Sponsored Survey and Technical Support System. There are a few forms of the system.

First is survey sponsorship where Statistics Korea operates the statistics survey that is needed by the agency requesting the support. In actual operations, Statistics Korea not only manages the survey but also consults the client agency in the statistics analysis process. This sponsorship system started in 2008. The "Sponsored Survey Team" in Statistics Korea is in charge of this program.

Second is the sponsorship operated by the Regional Statistics Offices. Regional statistics offices originally only dealt with the fieldwork of Statistics Korea but are now being strengthened in statistics production and dissemination. Therefore, the regional statistics offices are now often in charge of the Sponsored Survey for regional government and other administrative offices.

Third is the support for regional statistics. Regional governments are responsible to assist certain large-scale statistical surveys done by Statistics Korea such as the population census. Therefore, the regional government and Statistics Korea are in a symbiotic relationship. Like many central administrative agencies, regional governments often lack the manpower for a statistical survey. With this in consideration, Statistics Korea aids regional governments for statistical surveys.

4.2. The Sponsored Survey System

4.2.1. Organizational Restructure

Statistics Korea made a sponsored survey system as a part of the "Mid-term (2006~2010) Reform Plan for the National Statistical System" and "The Innovation Plan for Official Statistics of Advanced Social Statistics". A team exclusively responsible for the sponsored survey was created in 2007 as part of Statistics Korea. Statistics Korea initially planned the details of the Sponsored Survey and divided the tasks into planning, managing, and supporting sectors. In 2009, the "Sponsored Survey Development Plan" was established to increase high-quality statistics production through expansion of demand for sponsored surveys.

Statistics Korea strengthened its internal ability to increase survey quality and develop high-quality statistics. The department employed statistics specialized personnel to extend

the sponsored survey function and established a "sponsored survey research society" to increase employee competence. Furthermore, personnel were dispatched to the five regional statistics offices to strengthen the sponsored survey function. Moreover, the Sponsored Survey Advisory Board was formed to council for survey planning, questionnaire design, sample designing, and data processing. The self-quality assessment program was introduced to apply official statistics quality standards for all the sponsored survey processes.

4.2.2. Implementation of the Sponsored Survey System

Statistics that qualify for sponsored surveys are approved statistics or statistics for the purpose of being approved statistics and are limited to national surveys based on interviews. Pilot surveys and main surveys are conducted. A Main survey refers to performing statistical survey to the subject following the statistical production procedure and pilot survey with a smaller number is carried out before the main survey to check the possible problems that may arise from the main survey: target population and scope, survey items, population and sample design, survey method, and data processing. Records indicate that sponsored surveys were most often used for surveys being newly developed or surveys that had consistent problems and needed improvement.

The cost for sponsored survey is borne by the organization that requests the sponsored survey. However, there are cases where a sponsored survey is necessary but the agency does not have the budget. In this situation, Statistics Korea provides consulting and technical support for the survey.

The contract for a sponsored survey is done under the National Contract Law. The system consists of four steps: pre-preparation, preparation, survey, and data analysis steps.

In the pre-preparation step, "Sponsored Survey Support Committee (chair: Vice Commissioner of Statistics Korea)" decides whether the sponsored survey will be done by Statistics Korea considering if the budget and other preparation factors are adequate for the survey. If the application passes the committee, the contract is signed and preparation for the survey begins.

In the preparation step, the sponsored survey is planned and examined to arrange the necessary system and articles for the survey. Statistics Korea homepage (http://www.kostat.go.kr/policy/scm/index.action), requesting agency homepage, and other media is used to advertise the survey to gain the best outcome from the survey.

During the survey step, interviewers are employed and educated. The interviewers then reference the survey map, and survey list to seek survey recipients and ask for their cooperation. Once the survey starts, personnel will visit and conduct an interview survey. Once the survey is finished, the information is plugged into the database after errors and missing information is edited. The processed questionnaires are organized and shipped to Statistics Korea from the regional statistics office.

In the analysis step, the plugged data is received by Statistics Korea and then analyzed to understand the survey results. The analysis is then sent to the requesting agency and then released by the requesting agency and used for purposes of policy data.

Table 4-5 | Steps of the Sponsored Survey

Step	Responsible Agency
Consult on Sponsored Survey and Contract	Requesting Organization and Statistics Korea
Planning (Survey Items, Questionnaire Design etc.)	Requesting Organization and Statistics Korea
Design of Sample (Sample Selection, Calculation of Weights)	Statistics Korea
Statistics Approval	Requesting Organization and Statistics Korea
Interview (Interviewer Training, Conduct Interview)	Regional Office of Statistics Korea
Data Processing	Statistics Korea
Analysis and Release	Requesting Organization

Source: http://www.kostat.go.kr/policy/scm/index.action.

4.2.3. Records of the Sponsored Survey

There have been five to six cases of sponsored surveys each year since it was first implemented in 2008. Related budget constantly increased from around 730 million Won in 2008 to 2.5 billion Won in 2012.

Table 4-6 | Records of the Sponsored Survey

(Unit: million Won)

Year	Records	Budget
2008	Three including Population Panel Survey, Household Credit Survey	726
2009	Three including Social Welfare Service Industry Survey	937
2010	Five including Industrial Accident Survey, National Leisure Activity Survey	1,768
2011	Six including National Crime Victim Survey, Special Education Survey, Sports Industry Survey	2,241
2012	Five including Copyright Industry Survey, International Adult Capabilty Survey	2,527
Total	22	8,199

Source: Statistics Korea Manual 2013 (Statistics Korea, 2013, in Korean).

4.3. Technical Support for Regional Statistics

4.3.1. Need

Regional statistics are one of the most basic information necessary for objective assessments of regional policy in the planning process and after its execution. Importance of the regional government in Korea is expanding with vitalization of the regional economy, emphasis on regional characteristics, and self-dissemination of regional administrative information. However, the basic statistical information is severely lacking.

Regional statistics refer to approved statistics produced within the limits of an administrative district. National level statistics can qualify as regional statistics if it is compiled on a regional level. There are three types of regional statistics.

First, national level statistics are subdivided into regional units. Korea often subdivides national level statistics for both large censuses and sample surveys if possible. This is similar for many other nations.

Second, the regional government follows statistical standards set by Statistics Korea. Gross Regional Domestic Product (GRDP) or Regional Establishment Survey fit in this category. Such regional statistics are produced and managed by Statistics Korea.

Third, the regional government operates a necessary survey for its own administrative purpose. This applies to a district depending on the need of the regional government and the regional government takes on full responsibility of the operation.

Table 4-7 | Type of Regional Statistics by Responsible Organization

Organization	Type of Statistics	Contents
Statistics Korea	Sub categorization of National level Statistics	Compiled by sub categorizing national level statistics Ex) Population and Housing Census, Economic Census
Regional Governments	Basic Regional Statistics	Sub categorize Statistics Korea produced statistics by region Ex) Regional Employment Survey, Industrial Activity Trends by Region
	Specialized Regional Statistics	Regional governments produce statistics of their concern Ex) Tourism Survey, Regional Social Survey

Source: Statistics Korea.

While the regional government has no affiliation in the first case, they form a partnership in the survey process for the second and third cases of regional statistics. Therefore, the capability of the regional government is important in these two cases since their ability affects the quality of the statistics. Chapter three illustrated the lack of resources in many regional governments, which makes production of high-quality statistics difficult. Therefore, Statistics Korea provides technical support to assist regional government in preparing regional statistics.

4.3.2. Technical Support and Procedure

The role of Statistics Korea and regional government is clearly divided in preparing regional statistics.

Regional governments must secure the necessary infrastructure for the survey such as manpower, budget, and a statistician. Furthermore, they need to develop a regional statistics that fits the regional characteristics and its demands. Furthermore, there needs to be an information system that allows proper dissemination of regional information.

Statistics Korea enlarges regional statistics through subdividing the national statistics. Statistics Korea divides the statistics into the smallest subdivision possible that is required by the statistical demand. Furthermore, if the regional government wants to produce special statistics for a region, Statistics Korea supports in planning, questionnaire design, sampling design, development of data entry system and other technical support.

Technical support for regional statistics development is limited to subdividing national statistics and region specified statistics production. Statistics Korea draws out the plan for needs of technical support for the year and selects the surveys for technical support. If the survey is selected for the year's technical support, the regional government supplies the manpower and budget and Statistics Korea provides technical skills. <Table 4-8> shows the role of each organization.

Table 4-8 | Role of Responsible Organization in Technical Support

Organization	Role
Headquarter (Statistics Korea)	Overall Management and Development - Planning of regional statistics - Prepare and distribute manual
Regional Statistics Offices	Technical Support - Survey Design Support - Interviewer Training, Fieldwork support - Sampling Design, Analysis of the results
Regional Governments	Prepare the budget and personnel, development of statistics - Development of new statistics and prepare the budget - Recruit professionals - Development and management of regional statistics and utilize the results
Outsourcing	Analysis, Sample Design, Data entry and Analysis Program

Source: Statistics Korea.

4.3.3. Record

During 2005~2013, there were 134 cases of technical support. The number of technical support in 2006 and 2007 was high with 22 and 39 cases respectively, but has been decreasing significantly in recent years.

Chapter 5

Institutional Framework for Expansion of the Utility of Official Statistics

Institutional Framework for Expansion of the Utility of Official Statistics

1. Outline of the Framework

Official statistics gains its meaning from its use in private, business, policy and academic sectors of society. Therefore, statistics gains its value only when it is widely used in society. The productivity of any commodity or service can be shown as [(production=demand)/ input]. Statistics as a commodity has a set production cost regardless of its demand. As a result, the productivity of statistics increases with an increase in demand. Therefore, increasing the demand for statistics not only increases the scientific reasoning in the decision-making process but also increases the productivity of statistics administration of the nation. Therefore, utilizing statistics is just as important as producing statistics.

Korea has made significant efforts in increasing the use of statistics. In the past, statistics were only disseminated through print to a limited number of people. Even though the authorities wished to share the information with a larger audience, there was a physical limitation to print as a medium. However, with the development of information and communication technology, through diversification of technology, the authorities were able to spread the information more easily. Furthermore, with the increase in public interest in the policy-making and governing process, demand for detailed statistical information increased.

In this chapter, we will discuss the following among the efforts by the Korean government to disseminate and utilize official statistics: 1) the Statistics Dissemination System, 2) the Evidence Based Policy Evaluation System, and 3) the Advance Release Calendar.

KOSIS (Korean Statistical Information Service) is a web portal statistics dissemination system that allows easy and efficient access to statistics. Anyone wishing to use official statistics can access KOSIS regardless of the preparation agency and connect to the desired statistics. The portal consists of a well-established search function to support users. Furthermore, the advanced edit function allows users to customize the website to their needs. Furthermore, with the increase in demand for microdata in academia, Statistics Korea has established the MDSS (Micro Data Service System) to provide microdata. Aside from these, there are SGIS (Statistical Geographic Information Service), e-national indicators, and e-regional indicators services from Statistics Korea.

Statistics could be important information for governmental policy. Statistics can be used in scientific support for understanding realistic needs of the public. Furthermore, it can be used for analyzing the efficacy of a current policy. In this manner, the use of statistics directly links to a well performing policy. As a result, the Korean government implemented the Evidence Based Policy Evaluation System to increase the use of statistics in the policy-making process. The system's basic principle is to link statistics with policy.

Korea is currently using an Advance Release Calendar. The government is responsible for announcing statistics that may influence policy, business, or private life on a pre-noticed date, which is determined in the beginning of the year. This has two significant reasons, as follows. First, the government, business, and public gain the same information at the same time and this eliminates the possibility of discrimination. Second, by limiting political influence or administrative interference, the statistics (and statistical offices) are neutral.

2. The Statistics Dissemination System

2.1. Overall Structure of the Statistics Dissemination System

Statistics dissemination in Korea is divided into traditional media such as print and modern media based on electronic communication technologies. Electronic based technologies are divided into offline dissemination methods such as e-books and CDs and online dissemination through websites from the KOSIS and SGIS. Currently the KOSIS portal is the most significant method of statistics dissemination system in Korea.

Table 5-1 | Korean Statistical Dissemination System

Prints		Statistical Books, Statistical Prints by Subject	Types and Number of Copies are Currently Decreasing
Electronic Media	Internet-based	KOSIS	Cumulative National Statistical System that provides information on official statistics
		MDSS	Microdata dissemination service on the basis of a certain condition and cost
		SGIS	Integrated service of geospatial and statistical information which displays statistics on a census map
		e-national Indicator System National Key Indicator System	Major Indicators of Korea
		Korean Quality of Life	Indicators related to the Korean Quality of Life
		Green Growth Indicators	Indicators regarding Environment and Green Industry
		Statistical Portal of each Agency	The Statistical System that provides information on each Statistical Agency
	Other	Electronic Books, CD Rom	Provides information in various electronic forms

Source: Statistics Korea.

This section will introduce KOSIS and MDSS as the most significant media for statistics dissemination in Korea.

2.2. The National Statistics Portal

2.2.1. Summary of KOSIS

The Korean Statistical Information Service (KOSIS) is a cumulative system that provides statistical information to all statistical consumers. This system creates a database from approved statistics created by different agencies and provides a one-point access for all information. Simultaneously, KOSIS holds metadata for easier understanding of data presented in the database.

Official Statistics increases its value with more use. Statistics Korea has made multiple efforts to increase the approachability of statistics for a long time. Korea began constructing

the stratified statistical database in 1976 for a more efficient use of statistics. In the 1980s, the Korean Statistical Information System was introduced and provided internal use of the statistical database for Statistics Korea and by 1991, this database increased to allow access from all national administrative offices through electronic media.

Along with the internal effort, there were plans to create a statistical database for public users. This effort manifested itself as STAT-Korea and opened to the public in 1999. From 1999, the government ran two database systems simultaneously; STAT-Korea for public use and KOSIS for internal use. In 2006, these two databases were combined to a single database with the development of a web portal service. By 2007, the current KOSIS opened for all users non-discriminately. Since then, KOSIS is constantly being modified to increase available data and provide easier access for users.

2.2.2. Function and Content of KOSIS

KOSIS provides information openly and free of charge. Therefore, anyone needing statistical information can connect to KOSIS and acquire data freely. Information provided by KOSIS is largely divided into 1) Domestic Statistics, 2) Regional Statistics, and 3) International and North Korean Statistics. Domestic statistics are further categorized by subject, agency, or ceased statistics. Regional statistics are organized by subjects and agencies. International and North Korean statistics are free for use except for certain copyrighted materials.

KOSIS includes domestic, international, and North Korean statistics. As of September 2014, KOSIS contained over 670 types of social, economic, and environmental statistics contributed and approved by over 190 statistical agencies in Korea. Furthermore, the portal provides current information related to international banking and economy such as the IMF, World Bank, and OECD. KOSIS has an easy and convenient search function with various contents and metadata to assist understanding of statistics. Moreover, KOSIS provides options to customize the statistics to the users needs and download the results in many different electronic formats.

Any KOSIS user may freely use, reuse, and redistribute the information available including commercial and noncommercial purposes. However, users are not allowed to sell the statistical information available on KOSIS without further modification. Downloading the data available on KOSIS and creating a combined database for paid users is also considered a commercial use and this form of use is allowed. However, using or redistributing arbitrarily modified statistical data from KOSIS may result in a criminal penalty.

Table 5-2 | KOSIS Guide

Subject		Content
Get Statistics	Domestic statistics	By subject, By Agency, Ceased Statistics
	Regional statistics	Regional Statistics (by subject, by agency)
	International·North Korean statistics	International Statistics, North Korean Statistics
	Custom-built statistics	By object, By issue, visualized content (major indicators, Homo statistics, men and women, population projection school, Business Cycle clock, G20 Statistics, Regional Economy, My household price
	Online publications	By subject, by name
	Guide of Service	Introduction of KOSIS, the status of official statistics, international statistical agencies, service policy, FAQ, Q&A, opinion of website improvement
News		Notice, Press Releases, Recent Publications
Additional Service		Statistics Webtoons, mobile web, Viewer download
My Page		My statistics, Member information modification
Membership Information		Log in, Membership, Identify ID/password
Related Sites		Metadata, Statistics Korea, SGIS, MDSS, e-national indicators, North Korean statistics, Green Growth Indicators, Statistical agencies
Search		Search and inquiry

Source: Statistics Korea Manual 2013.

KOSIS has been constantly updated since it first opened. The available information has increased and user convenience has advanced. In addition, many programs were developed for user accessibility. For example, "Homo Statistics (Self Portrait through Statistics)" allows for the statistical user to see their social and economic position and "My Family Price Index Experience" allows the user to understand the price index through their household expenditures.

All information in KOSIS can be freely searched and edited in the portal. For instance, the user may extract the statistical category or items freely and print or download in a desired electronic format including texts or spreadsheets. KOSIS may also display the data in graph or chart form.

2.2.3. Assessment and Development Plans

KOSIS, in comparison with other such web portals available worldwide, is known to be well constructed in the quantity and quality of information. Even people unfamiliar with use of a computer or the Internet can access the website without much difficulty and obtain the necessary information.

Statistics Korea aims to develop KOSIS even further to make it a central hub for all official statistics. Most official statistics are already included in the database and Statistics Korea is in the process of collecting regional data for the portal. Furthermore, future advancement of technology will bring easier and simpler access for users.

2.3. Expanding the Use of Microdata

2.3.1. Significance of Using Microdata

Statistics are produced to understand a certain natural or social phenomenon. Data about individuals, businesses, or phenomenon are combined and aggregated into an overarching figure according to a certain system. For example, the population census collects information of age, sex, region of all individuals residing in a certain area. This aggregated data is called macrodata. Surveys are usually conducted for this macrodata.

Macrodata provide important information outlining the foundation of a social or natural phenomenon. However, since macrodata is aggregated data, there is a limit to understanding the individual components that form the macrodata. For instance, it is possible to understand the income inequality by dividing the income of a population into different classes. However, it is possible to get a more detailed picture of income inequality through understanding individual incomes and comparing and contrasting each case. The data may even reveal the reason for income inequality when connected to age, sex, and job characteristics of each individual. As such, statistics will have greater use when individual components of the macrodata are available for analytic purposes.

Individual information collected during statistical investigation is called raw data. Raw data used for statistics formation after error modification is called microdata. Thus, microdata is individual information processed to remove errors. Since the use of microdata can have infinite different possible uses, many countries are expanding the use of microdata since the 1990s.

While microdata have many possibilities, it also holds many possible drawbacks. For continuity of survey and prevention of disadvantages to the surveyed person, privacy protection is critical in statistical investigation. Microdata indicates personal information therefore, may result in exposure of the individual. Therefore, many developed countries are searching for methods to protect personal identity while expanding the use of microdata.

Korea started its study into microdata in the 1970s. For example, microdata from the "Household Income and Expenditure Survey" were used through Gini Coefficient to understand the income inequality and microdata from the "Mining and Manufacturing Survey" were used to understand and calculate the market structure index. As seen from these cases, the use of microdata provided an understanding of social and economic phenomenon that was not available previously. Since the 1970s, the use and demand for microdata increased consistently.

Since the 1990s, the demand for profound understanding increased as the socio-economic structure became more complex This change naturally led to a higher demand for the use of microdata and Statistics Korea started to provide statistical microdata since 1993 to users in electronic forms. While microdata was utilized before 1993, 1993 marks the launch of the official channel to obtain microdata.

2.3.2. The Foundation of the MDSS (Micro Data Service System)

Demand for microdata dramatically increased as soon as the channel for microdata service was founded. However, there were many obstacles to use microdata. First, there needed to be close inspection of microdata before service and management was required after the microdata was distributed. Since demand for microdata increased, the administrative need for management also increased. This became a load for Statistics Korea to bear.

Processing microdata with a limited workforce led to inefficient response each demand, causing a drag in response speed. It was inconvenient for the users to request each microdata separately every time the information was necessary. Statistics Korea started to search for a possible method to provide microdata and started developing a system for a microdata service.

The most efficient way of securing accessibility and ease while alleviating administrative burden is to standardize the microdata provision process. With this goal in mind, Statistics Korea sought two approaches. First is to standardize the information contained in microdata and organizing all information under this standard. Rather than processing the data after the

data is requested, the data is processed through data cleaning when it is first archived, then distributed immediately when it is requested. Second is the simplification and standardization of provision method, creating a simple standard procedure of requesting microdata.

The microdata provision method is divided into commissioned data processing and the MDSS system. The commissioned data processing means that Statistics Korea or a commissioned company reorganizes the data as requested by the user and provides the processed data. The MDSS system allows the user to connect to the MDSS database and obtain information directly. The MDSS is a web based system created to provide pre-organized microdata according to the user's customized needs.

2.3.3. The Micro Data Access Center (MDAC) and Remote Access Service (RAS)

The MDSS improved microdata provision efficiency through the standardization of the provision method and information content. The limitation of the MDSS is the inability to respond to unforeseen microdata demands that request unprepared microdata. For example the MDSS deletes individual IDs for privacy protection. However, certain investigations require these individual IDs. For statistical research that require individual IDs in its processing procedure but do not reveal IDs in the final results, although the research upholds the privacy protection, the MDSS cannot respond to this request. The MDAC (Micro Data Access Center) and RAS (Remote Access Service) were developed to respond to these types of special requests.

MDAC is a data processing center for microdata outside of handling limitations of the MDSS. The MDAC consists of secure computers connected to the Statistics Korea database. For highly classified microdata, these computers can be used to request microdata that will become available after approval from Statistics Korea. This protocol was established to accommodate research that required personal information yet follow the privacy protection protocol of the Statistics Act. There are five MDAC available nationwide.

The RAS is a system established to remove the temporal and spatial limitations for MDAC. The RAS allows users to remotely access the secure Statistics Korea computer and use the programs such as SAS, SPSS, and STATA to analyze microdata. For protection of microdata, this information cannot be captured or downloaded. The remote access system allows users to access the same data that can be accessed through MDAC without going to the MDAC.

2.3.4. The Cost of Using Microdata

Microdata is only required by a small sector of society used for purposes of in-depth study of a social and economic phenomenon. Therefore, by the benefit principle, the users of microdata pay the additional administrative cost of microdata. There is an expense compensation for part of this cost, and the expense of using microdata in Korea is smaller compared to other nations.

3. Evidence Based Policy Evaluation[31]

3.1. What is the Evidence Based Policy Evaluation?

Understanding the current status is the most important part of establishing or amending laws. For example, when policies are created to help the low-income class, specific information about the population, level of income, and quality of life are needed. Statistics can provide the quantified information and therefore statistics related to policies can assist the scientification of policy development, increase efficiency of the policy application, and provide analysis of the effects of the policies so that further improvements can be made. Therefore, the Evidence Based Policy Evaluation was created to build a better link between policy and statistics.

In the era of information and knowledge, the general consensus is that there needs to be enough statistical information to support governmental, corporate, and household decisions. As a result, there is an increasing demand of statistics in various areas. In Korea, the government has recognized that in order to strengthen the creation and adoption of key policies, there also needs to be increased efforts to produce and improve the statistics. Therefore, the government prepared plans to strengthen the link between statistics and policies, with Statistics Korea as the main statistical organization. From this idea, the "Statistical Policy Life-Cycle Assessment" was introduced. This plan follows the trend of the development of policies based on the statistical information as follows: development of policy → execution of policy → evaluation of policy → modification and improvement of policy.

Evidence Based Policy Evaluation was established as the specific measure to this political will. Evidence Based Policy Evaluation has been established to support offices or departments where new statistics are in need upon the establishment or amendment of laws.

31. Statistics Korea (2013a) pp.89~99, Statistics Korea (2013b).

The primary responsibility for obtaining required statistics lies on each department, and Statistics Korea supports the process through policy evaluation.

According to the procedure, Statistics Korea examines whether the indicators that a department needs to execute and evaluate newly established or amended laws are fully prepared, and if the improvement plans that each department have designed for its statistics are suitable. Statistics Korea also provides recommendations on necessary statistics to help the corresponding department's work with Statistics Korea to improve and develop their statistics.

The Evidence Based Policy Evaluation is being executed in all central administrative agencies, except for cases where it is inapplicable or unsuitable. As of September 2013, the Evidence Based Policy Evaluation was applied in 43 central administrative agencies and there were 1,624 legislations that are under evaluation.

3.2. Evaluation System and Procedures

3.2.1. Evaluation System

As a primary process, the central administrative offices that establish or amend decrees are obligated to request a pre-evaluation or an evaluation from Statistics Korea. Statistics Korea conducts evaluations upon request, and reports the result to each of the departments.

The pre-evaluation is performed to verify if statistics are required to maximize the effectiveness of the system management, while the evaluation is performed to examine how well the necessary indicators have been prepared, whether they are acceptable or not, and to investigate if their improvement plans are appropriate.

Pre-evaluation is a process to verify the necessity of statistics for a new policy that is being established/amended by the Government. This process reduces the burden from the evaluation conducted by each of the corresponding departments.

The Pre-evaluation process for a decree established/amended by the Government can be omitted if the necessity of statistics is confirmed in a decree by the central administrative offices and can proceed to request an Evaluation.

Upon the result of the Pre-evaluation, an Evaluation is recommended if statistics are necessary, otherwise the process is finalized. Pre-evaluation results are classified in one of the five categories below:

1) Not appropriate for Evaluation

- The policies implemented based on corresponding decrees are not appropriate for evaluation.

2) Remission of Evaluation

- Evidence based evaluation is appropriate and necessary for the policy, but the newly changed sections in the policy following amendment/establishment are not appropriate for evidence-based policy evaluation.

3) Evaluation during the Drafting Process

- When the legislation process needs to be prompt or a policy is required to be specified, the evaluation is recommended to be conducted during the drafting process.

4) Statistical Indicators Use Recommended

- When necessary statistics are properly prepared or have a high probability of being prepared by relevant decrees, the policies implemented based on corresponding decrees are appropriate for evaluation.

5) Appropriate for Evaluation

- Where evidence-based policy evaluation is necessary with a changed policy through the decrees established/amended by the government.

The main evaluation verifies how well necessary indicators have been prepared along with the outcome of acceptability and how appropriate the improvement plans are. This is the core process of evidence based policy evaluation.

The evaluation result is classified in one of the four categories listed below:

1) Not Appropriate for Evaluation

- The policies implemented based on corresponding decrees are not appropriate for evaluation.

2) Statistical indicators Use Recommended

- When necessary statistics are properly prepared or have a high probability of being prepared by relevant decrees.

3) Statistical Development/Improvements

- "Statistical Development/Improvements" are given when there is agreement between Statistics Korea and the corresponding department on statistical development/improvements.
- The department submits specific improvement plans to Statistics Korea, and Statistics Korea includes its own plans as one of its medium-range development/improvement project for official statistics.

4) Disagreement on Development/Improvements

- If necessary statistics are missing or short, a recommendation for development and improvement of relevant statistics are made, especially in cases if disagreements exist between the concerned department and Statistics Korea.

3.2.2. Evaluation Procedure

The central administrative offices in charge of amendments are obligated to fill out an application form for the pre-evaluation and need to send a request to Statistics Korea, when seeking analysis of amended/newly developed sections with corresponding departments. The application forms must be processed by the staff of the offices of each of the corresponding departments. When making a request, the application form must be pre-approved by the Chief Statistical Officer of each department.

The central administrative offices can bring up objections and in these cases, Statistics Korea conducts a re-evaluation and announces the result to the offices within seven days for the pre-evaluation and within 20 days for evaluation.

Table 5-3 | Flow Chart for Evauation Procedure

Procedure	Contents
Request for Pre-evaluation	○ Submit request form for pre-evaluation while consulting with related organizations
Implementation and Report	○ Within 10 days after submission of the request form
Appeal for Re-evaluation	○ Appeal should be submitted within seven days after receipt of evaluation result ○ Re-evaluation should be conducted within seven days after receipt of appeal
Request for Evaluation	○ Required materials: request form, plans for statistical development or improvement
Implementation and Report	○ Process should be completed by the time of advanced notice of legislation - Notify interim results by the end of pre-announcement ○ Complementary process through cooperation with Statistics Korea
Appeal for Re-evaluation	○ Application: within seven days upon result notification ○ If mutual agreement is not made, the agenda is transferred to National Committee on statistics
Implementation of the Result	○ If the result is categorized of "Improvement recommended," submit the relevant decree with comments by the Commissioner of Statistics Korea to the Cabinet conference ○ Submit 'implementation plan' on the sections that required improvements

3.3. Performance Results of the Evidence Based Policy Evaluation[32]

3.3.1. Evaluation Results

The Evidence Based Policy Evaluation was enacted in 2008 and there has been continuous effort for a smooth execution of the policy. Also, a consulting team comprised of experts was created in order to increase the objectivity and professionalism of the Evidence Based Policy Evaluation. From this team, instructions for development operations, evaluation criteria, and the operating manual were created.

Also for management and protection of the information, an Evidence Based Policy Evaluation website (http://www.kostat.go.kr/policy/psd/index.action) was created. Here,

32. Statistics Korea (2013c).

evaluation procedures, the history of evaluation requests, and other content related to the evaluation can be found. In addition, workshops on the topics of legislation, specific standards, and main cases of evaluation requests have been created for the empowerment of the employees responsible for the evaluation.

Between the years 2008~2013, the number of Evidence Based Policy Evaluation requests was 5,051 and of these, there were 1,980 (39.2%) evaluations. Also the evaluations requiring recommendations for the use of statistical indicators were 1,730 (34.3%) and statistical development/improvement were 250 (4.9%).

Table 5-4 | Number of Evidence Based Policy Evaluation Requests

Year	Number of Evaluations				
	Total	Pre-evaluation	Evaluation		
			Sum	Improvement Recommended	Statistical Indicators Use Recommended
2008	1,116	729	387	67	320
2009	813	400	413	44	369
2010	679	314	365	30	335
2011	937	583	354	43	311
2012	825	571	254	36	218
2013	681	474	207	30	177
Total	5,051	3,071	1,980	250	1,730

Source: Statistics Korea.

Box 5-1 | The Evidence Based Policy Evaluation: Korea's Experience

In order to examine how the Evidence Based Policy Evaluation is enforced in actual policy processes, some notable cases are presented here.

Due to the rapid changes in the Korea's social environment, there have been an increasing need for social welfare. However, work conditions of social workers were reported to be very poor and improvements were needed. To address this, the government planned on revising a policy known as the "legislation to improve treatment and social status of the social workers" in order to improve the situation. In order to employ this new legislation, more information about social welfare and social workers was necessary. When the Evidence Based Policy Evaluation was complete, the results showed of the need for statistics on the "Survey of treatment and payment status of social workers." These statistics included a survey of social welfare facilities on maintenance standards, remuneration, job requirements, and working conditions.

Another example is the case of the Pharmaceutical Affairs Law. In order to protect the health of its citizens, Korea's legislations stated that medications could only be purchased at pharmacies. Therefore, there were many inconveniences when people wished to purchase medications during the weekend or after hours. Therefore, for the convenience of the citizens, the government passed the Pharmaceutical Affairs Law that would allow people to purchase medications with minimum potential harm at locations other than pharmacies. Based on the Evidence Based Policy Evaluation results, it was concluded that a development of statistics on the "Current status of medications sold outside pharmacies" was in need. In these statistics, the number of salespeople selling emergency medications, inventory of medications, and supply details were surveyed.

In 2013, the Korean government designated several key projects as "national issues." For the efficient promotion of the "national issues," Statistics Korea suggested several statistical development plans. Several examples where the Evidence Based Policy Evaluation was used for these "national issues" are presented below.

The Safety Administration wished to establish a "Provision and Activation of public data Act" in order to better utilize various data owned and managed by the Government. Statistics Korea responded to the situation by suggesting statistical development in the "Survey of Status of Public Data Use." They further added that these statistics needed to survey the usage of public data, technology and human resource status of public data, and problems with using public data.

Recently unequal agreements between franchise and franchiser in entrepreneurship have become a new issue in Korean society. Therefore the Korea Fair Trade Commission wished to create a "Fair Franchise Business transactions Act." The Evidence Based Policy Evaluation on this topic concluded that statistics were needed to be commissioned

for the "status of participating franchise businesses." The statistics would need to include a survey for the number of franchises and franchisers in various business areas, number of businesspeople, and main issues among the franchisers.

In order to increase safety of the citizens, the Safety Administration wanted to revise the "Disaster and Safety Management Law." The Evidence Based Policy Evaluation results showed the need for the "Safety Index." They also added that the Safety Index would require information about the status of disasters, causes of disasters, how to alleviate the disasters, safety awareness level of the people, and how to improve safety levels.

Source: Statistics Korea.

4. Advance Release Calendar

4.1. Significance of the Advance Release Calendar

Statistics must be accurate and credible. Accuracy relates to how well the statistics can represent the observed phenomenon or subject and credibility relates to how much the user trusts the statistical results. Efficacy of statistics will drop regardless of how well the statistics are produced if the user is unable to believe the survey results. Accuracy is needed to create credibility but accuracy is not a sufficient condition to create credibility. In other words, for statistics to be credible they must be accurate and the users need to be able to trust the results.

To gain credibility of statistics, neutrality of the statistical agency and independence of statistics is crucial. If the agency is influenced by a political agenda or the interest of a specific organization, the neutrality of the statistical agency will be muddled and credibility of statistics will fall. Another aspect of credibility of statistics is creating asymmetry of information. Asymmetry of information refers to the discrimination between an organization's inability to acquire or hold information in different quantity and quality with different timeframes. Asymmetry of information heavily influences the decision-making process of organizations. An organization can easily hold an unfair advantage if national statistics are distributed unequally.

For example, people may buy stock with information about the rising economy and gain profit. People without the same information may sell their stock and lose the opportunity for profit. In such case, the stock market becomes an unfair market and the players are measured not by their skill but by their accessibility to information.

The Advance Release Calendar is a system implemented to reduce asymmetry of information and create neutrality in market and social movements in statistics. The system rules that all statistics that can influence the decision-making process needs to be ① announced on a pre-determined date, ② to all government and private sectors simultaneously. In other words, it is a system that provides information to everyone at the same time.

The Advance Release Calendar is becoming a global standard to insure independence, neutrality, and credibility of statistics announcements. In 1997, the IMF enacted the GDDS (General Data Dissemination Standards), and SSDS (Special Data Dissemination Standards) to advise all nations to abide by the statistical announcement rule.

The United States announces 38 statistics release dates at the end of each calendar year by different agencies and the information is released at 8:30 AM on the date through the website. The policy authority is prohibited to comment on the data for one hour after the announcement. There was a case of information abuse by a Statistical Authority on GNP statistics in early 1980s where the authority used the information for unfair stock profit. The US has strengthened its code of ethics for public workers and reorganized the statistical system.

Box 5-2 | Background of the Introduction of the Advance Release Calendar: Korea's Experience

In the past, economic statistics were passed on to the related agency one to three days prior to the announced release date. This was to give time for the agency to construct a response policy. The government could create an adequate response before the market responded and therefore reduce rapid fluctuation of the market. However, there were many side effects to delivering statistics before announcements.

There were cases of leakage of information both intentionally and unintentionally that influenced the market. For example, in April, 2001, the bond interest rate rapidly increased in the bond market. The reason for this was because there was an information leak about the February Industry Activity Trend that was going to be released in two days. This caused the dealers to sell the bonds. There were also cases where dealers acquired information that the consumer price index inflation rate would be higher than expected and bond dealers started to sell, leading to increase in bond interest rates. An investigation revealed that dealers were able to acquire information at least a day before the release date. Later an investigation revealed that an authority accidentally revealed the information during an interview with the foreign press.

Such incidents lead to lowering of credibility of the agency. As a result, Statistics Korea started to review Statistics delivery without time difference for all subjects. Along with the Advance Release Calendar, this system will protect the neutrality, independence, and credibility of statistics. While the Advance Release Calendar was relatively easy to implement, the pre-delivery was a tradition that was difficult to overcome.

In February 2004, the Presidential Office decided to not have an early report of Statistics. Therefore, early delivery of statistics in other agencies also stopped. Since then, delivery of statistics for all sectors of government and private is on the same day without any time difference.

Since February of 2004, Statistics Korea has been strictly abiding by the Advance Release Calendar. Since then, five monthly economic statistic release methods were changed. First, all pre-delivery of statistics are prohibited and all statistical users can approach the data equally. Second, statistics are released at 7:30 AM on the announcement date through the website and press release, which are published simultaneously. Third, a press conference is held at 11:00 AM.

Source: Statistics Korea.

4.2. Management of the System and Results

The Advance Release Calendar has been strictly adhered to since February, 2004 without exception and will continue to be upheld in the future. This solved the confusion caused by asymmetry of information in the market and erected the independence of statistics. This system allowed for independence and neutrality of Statistics and increased the credibility of statistics in Korea. This principle will continue in Korea.

The Advance Release Calendar has expanded its subjects since its enactment. It only included the five large economic statistics (current trends of industrial activities, current trends of prices, current trends of employment, current trends of service activities, Consumer Survey Index) at first. Currently, as of September, 2014, there are over 40 categories of statistics managed by the Advance Release Calendar. Bank of Korea, along with Statistics Korea, uses the Advance Release Calendar for GDP statistics, and Producer Price Index Statistics.

Table 5-5 | Subjects of the Advance Release Calendar

Period	Subjects
Month	Consumer Price Survey, Economically Active Population Survey, Monthly Survey of Mining and Manufacturing, Composite Economic Indexes, Monthly Service Industry Survey, Vital Statistics and three others
Quarter	Livestock Statistics Survey, Household Income and Expenditure Survey, E-Commerce Survey
Semi Annual	Regional Area Labor Force Survey, Survey on the Status of Fish Culture, Fishery Production Survey
Year	Food Grain Consumption Survey, Agricultural Area Survey, Private Education Expenditures Survey, Internal Migration Statistics, Census on Establishments, Mining and Manufacturing Survey, Survey of Business Activities, Business Demography Statistics, Wholesale and Retail Trade Survey, Service Industry Survey

Source: Statistics Korea, http://kostat.go.kr/portal/korea/kor_nw/5/3/index.action.

Chapter 6

Conclusion

1. Summary
2. Characteristics and Implication of Korean Statistical System as a Model for Developing Countries
3. Utility of this Research

Conclusion

1. Summary

Statistics played an important role in Korea's rapid development. Due to the quantitative information given by statistics, policy development and scientific evaluation were possible. Although statistics had many advantages, the Korean statistical system started with many problems. One of the largest issues was that there were not enough statistical resources to carry out the necessary statistical functions. Korea uses a decentralized statistical system, and the Korean statistical system's development stage is comprised of improving the problems of using a decentralized statistical system and finding solutions for a shortage of statistical resources.

Statistics have the role of soft infrastructure in national operations. Therefore statistics serve as a vital source for national organizations, corporate, and individuals that are looking for rationality and efficiency.

It is appropriate for the government to produce official statistics since official statistics are for the public good, necessary for the authorites to collect data and characteristics in the process of production.

The national statistical system can be divided into the centralized statistical system and decentralized statistical system, which Korea uses. However, in comparison with other nations that utilize the decentralized statistical system, Korea's system shows relatively strong characteristics of a centralized statistical system. Both centralized and decentralized statistical systems have their own strengths and weaknesses. But in Korea's development process, the disadvantages of having a decentralized statistical system were minimized

and the advantages were emphasized. Selection of the decentralized statistical system was not intentional. It was historically chosen by coincidence and it persisted during the development stage partly for consistency. However, Korea did not passively follow the system. There were continuous efforts to improve various problems and as a result, the current Korean statistical system was constructed.

In 1997, Korea experienced a severe economic crisis caused by the financial crisis. The economic crisis proved the importance and the need for statistics as fundamental knowledge and since the crisis, many efforts have been invested in order to reform and improve the Korean statistical system. The results of these efforts include incorporating more characteristics of the centralized statistical system, merging statistical agencies, introducing the statistics quality assessment system, strengthening statistical coordination, and introducing the sponsored survey system.

After 2000, the Korean government established and promoted a comprehensive development plan to improve the level of official statistics and the status of Statistics Korea as the central statistical organization increased.

The organization that oversees Korean official statistics is the National Statistics Committee (NSC). Statistics Korea produces the basic statistics as the most important central statistical organization. Other central governmental departments produce statistics in accordance with their needs and local governments support and assist the work of Statistics Korea while strengthening their own statistical functions. Also Korea's central bank, The Bank of Korea, produces necessary macroeconomic statistics and financial statistics with its focus on National Accounts. Korea has actively used statistics in formulating and implementing national development strategies. Policies were established, developed and executed based on the proper statistics and its effectiveness were evaluated using statistics as well so that it may positively influence future outcomes. As a result, Korea was able to accomplish its incredible speed of national development unseen before in history.

For accurate fact-finding and for high effectiveness, accuracy and reliability of statistics are crucial. Statistical accuracy and reliability becomes possible when expertise and technical excellence of a statistical agency is achieved and when independence and neutrality of the statistical agency is assured. Policy implementation agencies have a tendency to want to show their accomplishments and to earn the support of the citizens. But when the statistical agency is liberated from other governmental agencies, the statistical agency can retain its neutrality.

Fortunately, in Korea, the statistical agencies were able to maintain independence from external influences and protect their neutrality. However, that doesn't mean that the government did not try to interfere with the statistical information. During the economic crisis, the government was concerned with the fact that statistical analysis of the economic crisis would bring negative political rating from the citizens. But this interference was very limited and partial, and did not impact the statistics overall.

Statistics Korea has always produced statistics based on consistent statistical guidelines and this enabled their freedom from political influence.

Korean statistics supported in national development as a neutral source. However, the Korean statistical system also has its issues, including a shortage of statistical resources, field work oriented compilation, vulnerability of planning and analysis functions, and weakness of statistical organizations other than central statistical agencies. Korea has continuously searched for solutions in order to improve these problems. Although there are limitations, a continuous increase of human resource and statistical organizations, centralization of statistical function, and enhancement of statistical coordination are some of the solutions.

The characteristics and development story of the Korean statistical system can serve as an important resource for current developing countries that wish to create or improve their own statistical system. Through Korea's own experiences we learn that ① In constructing a national statistical system, the early stages of system design is very important, ② For each country, it is crucial to construct a statistical system that is in accordance with its political, administrative, social, and economic environment, ③ In nations where there is a shortage of statistical resource, leadership plays an important role, ④ For statistical development, there needs to be a national consensus.

This research introduces various statistical devices of the Korean statistical system, which includes: ① Policies that exist to improve the quality of official statistics and ② Policies that exist to increase the usability of statistics.

For the policies that exist to improve the quality of official statistics, there are ① Statistical coordination system, ② the Statistics quality assessment program, ③ Use of administrative data to produce statistics, and ④ the Sponsored survey system.

For the policies that exist to increase the usability of official statistics, there are ① the Statistics dissemination system, ② The evidence based policy evaluation system, ③ Pre-announcement of the Advance Release Calendar.

Statistical coordination refers to function that enables various statistical organizations to maintain a good relationship with one another and enables them to systematically create a mutually consistent production of statistics. The Statistics approval system and statistical standards are the most important of the Korean statistical coordination system. The Statistics approval system is the policy that states that statistical agencies must receive approval from Statistics Korea if and when it wants to produce new statistics. Of the approved statistics, the ones deemed most important for the government are separated as "designated statistics" and for designated statistics, the respondents should comply with the request. The statistics approval system exists not to limit the statistical activities but to prevent duplication and to maintain the statistical quality.

Statistics must be surveyed according to the needs and in order for the statistical information to be accurately relayed to the public, terms used in statistics must have clear definitions. Statistical criteria is a system set up to aid in the standardized collection, classifying, processing, and analysis of statistical data and is divided into defining of statistical terms, establishment of statistical standards and standardization of statistical methods. Statistics Korea is currently working on two types of standardizations in relation to the statistical criteria. One is the standard classification system and the other is standardization of statistical terms. Korea is constructing a statistical standard classification system for all areas such as economic, social, and health. They also standardized approximately 6,300 statistical terms.

The most important role of statistics is to accurately provide the quantitative information needed by society in a timely manner. For this, statistics need to have the qualities of relevance, accuracy, reliability, timeliness, accessibility/clarity, comparability and efficiency of statistical production. The Korean statistics quality assessment program has the means to evaluate if the official statistics have the qualities listed above and to correct the insufficient areas.

The Statistics quality assessments are divided into regular, occasional, and self-quality assessments. The regular quality assessment is a yearly assessment of a target by outside professionals. The occasional statistics quality assessment is done when there is no self-assessment or if there is possibility of quality loss. Depending on the severity of the situation, the assessments are: 1) the Statistics Korea internal assessment, 2) assessment from outside professionals, and 3) a joint assessment from outside professionals and Statistics Korea done for occasional statistics quality assessments. The self-statistics quality assessment is done by each statistical agency to determine the quality of its own statistical data. This is done to strengthen each agency's ability to create a statistical product. If there are issues

found through these quality assessment, Statistics Korea advises for improvement and provides consulting if necessary.

Korea is working to increase the efficiency in the statistics producing process through use of administrative data and this is also a global trend. "Statistical use of administrative data is actively promoted in that it increases the usability of government-retained information and the efficiency of statistical administration." Korea is trying to expand the use of administrative data in the statistical field by defining the related policies in the Statistics Act and allows the use of administrative data owned by the government to be used for statistical purposes. Therefore, Statistics Korea is expanding the use of administrative data starting with the Population Census and Economic Census.

While Korea is using the decentralized statistical system, many statistical agencies are unable to create quality statistics and this may result in lowering the overall quality of statistics. To overcome this situation, Statistics Korea introduced a sponsored survey system and technical support. By request, agencies can request assistance in statistics production or statistical survey and this can be executed by Statistics Korea headquarters or regional statistics offices may also do this. The cost of sponsored survey is paid for by the requesting agency. When there are budget constraints, Statistics Korea may offer a consulting or technical support throughout the process.

National statistics gains its meaning from its uses in politics, businesses, academia, and private lives. Therefore, the frequent use of statistics as a source of information is the best way of increasing the utility of statistics. Therefore, finding the right application of statistical products are just as important as the production of statistics. Korea has made many efforts to increase the efficacy of statistical products. Moreover, there is structural support to increase the use of statistics.

Statistics dissemination in Korea occurs through both traditional media such as print to modern formats such as electronic publications and the Internet. The KOSIS portal through the Internet is the largest dissemination system currently available along with the E-national indicator system, SGIS, national key indicator and others.

KOSIS is the Internet base for Statistics Korea and contains the accumulated data of official statistics in Korea. The portal provides most of the needs for statistical consumers in Korea. The system creates a database from the statistics published by all statistical agencies in Korea and provides one-point access of data for the statistical consumers. KOSIS is free and open to everyone. Statistics available in KOSIS include: 1) domestic statistics, 2) regional statistics, and 3) international and North Korean statistics. As of September

2014, KOSIS had over 670 different types of nationally approved statistics. KOSIS has a well-defined search algorithm, which makes it easy for the general public to use along with different explanations and assistance content.

To increase the utility of statistics in Korea, Statistics Korea is also expanding the distribution of microdata. The MDSS system was developed to standardize the microdata provision process and through the MDSS, people can easily access microdata through a simple procedure. However, the MDSS limits the distribution of confidential information of the respondents. MDAC can be used for certain information limited from access through the MDSS and also have the option of remote access through the RAS system. MDAC is a data-handling center for data unavailable through MDSS. The RAS is a remote access system created to ease the time and space limitations of the MDAC. The user of the RAS can use a computer to connect to a secure Statistics Korea server and analyze the information available through several statistical packages.

Korea adopted the evidence based policy evaluation system to utilize statistics in enacting, executing, and assessing different political agendas. The evidence based policy evaluation system requires governmental agencies to obtain required statistics in case there is a change of policy or agenda and Statistics Korea oversees the validity of these changes. This system is under the Statistics Act. The evidence based policy evaluation system keeps the general structure of the decentralized statistical system but allows Statistics Korea the power to modulate and improve the necessary statistical indicators to assist the governmental agencies through consulting and technical support.

Statistics based policy evaluation applies to all central administrative agencies and applies to all enactments and amendments including the Presidential Decree. The primary goal of the assessment is to evaluate the need for statistics in the execution and assessment of the new policy and supplement necessary statistics if needed. There are two steps to this assessment, which include preliminary evaluation and main evaluation. Preliminary evaluation judges the necessity for the evidence based policy evaluation and the main evaluation seeks for the necessary statistical information needed for the policy. In the six years since the enactment of the evidence based policy evaluation, 1,730 cases of enactments and amendments were requested to use statistical indicators, and 250 cases requested to improve or develop a statistical indicator.

Pre-announcement of Advance Release Calendar requires an announcement of statistics that can influence public opinion: 1) in a pre-announced date, and 2) to both government and public sector simultaneously. To gain the credibility of statistics, a non-partisanship

approach by the statistical agency is critical. Statistics must have political independence and neutrality. Furthermore, statistics cannot have an asymmetry of information. The pre-announcement of the Advance Release Calendar was enacted to protect the neutrality of statistics and guarantee impartiality of statistics in economic and political purposes. The subject of the Pre-announcement of Advance Release Calendar has expanded since the law was first enacted, as the law targeted the five most important official statistics heavily related to the market (industry activity trend, price index trend, employment trend, service industry activity trend, and consumer index) at first. As of September 2014, the law covers over 60 official statistics.

2. Characteristics and Implication of Korean Statistical System as a Model for Developing Countries

Statistics have contributed greatly in the development of Korea. While the Korean statistical system is not void of errors, Statistics Korea is consistently making efforts to improve and strengthen the existing weaknesses.

Korean National Statistical System has many advantages and disadvantages when compared with statistical systems of other developed countries.

The largest weakness of Korean National Statistical System is that statistical infrastructureinvestments of human and material resource needed for statistical production and dissemination- is insufficient.

In other developed countries such as United States, Japan, and Europe, sufficient human and material resources investments are made to produce accurate and reliable statistics that are needed by the society.

However, the scale of investment of the statistical resources is smaller in Korea in comparison to that of other developed countries.

There are multiple pinpointed problems found in Korean National Statistical System, and majority of these issues are due to insufficient investment of human and material resources.

It is evident that increased statistical investment made by the government is necessary but there are many practical difficulties for the changes to occur in a short period of time. Despite the difficulties, Korea plans to increase the statistical investments to the best of its abilities.

Problem-solving ability when facing new challenges is one of the strengths of Korean National Statistical System.

Although there were many hardships in the growth process of Korean national statistics due to the lack of statistical resource investments, Korea has always poured many efforts for the development of its statistical system through various methods.

Many new policies were developed in order to practice the policies in reality such as policies created to improve the statistical quality such as Statistical Quality Assessment Program, policies to strengthen the relationship between statistics and government and for Scientification of Policies such as Evidence-Based Policy Evaluation System, and policies to increase statistical dissemination.

In particular, the statistics dissemination system has been evaluated as the best among those of the developed countries.

With the national statistics portal as its center, the statistics-providing systems of governmental agencies and private statistical agencies are efficiently interrelated, and each system is equipped with various functions such as statistical search, processing, and download abilities. The Korean statistical provision system is equipped with Statistical Geographic Information Service(SGIS), micro data service and thematic statistical provisions for diverse class and groups of statistical users and such efficiency, effectiveness, and diversity of the system is known to be an leading example in the world.

The largest merit and strength of the Korean Statistical Provision system is that the comments and opinions of the statistical users are directly sent as a feedback to the statistical agencies and those comments are directly received for further improvements of the system.

The greatest strength of Korean statistical system is the active pursuit for change and improvement by Statistics Korea. Since statistics is a specialized field, statistical agencies are often passive towards change. Furthermore, even the government, which is the primary consumer of statistics, frequently has a limited understanding of statistics. Therefore, the statistical agencies are often obtuse in feeling the need for change. However, Statistics Korea acknowledged these problems and responded dynamically to become an active participant in improving the Korean statistical system. When a problem of the system is found, Statistics Korea immediately seeks for an improvement. This dynamic nature is the greatest strength of the Korean statistical system.

Leadership of Statistics Korea is the foremost factor allowing the dynamic nature of Korea's statistical system. Statistics Korea constantly looks for the necessary change of

statistical needs in the country even when there is no specific demand made by the statistical consumers. It predicts the future needs of the statistical consumers in Korea and reevaluates the position of the agency. As seen from the cases of statistics quality assessment program, the evidence based policy evaluation system, and sponsored survey system, Statistics Korea' effort improved the utility and efficacy of statistics in other sectors of the government.

These improvements were all made possible through an active communication network created by Statistics Korea with government and external professionals. Statistical agencies are often enclosed in the statistical community. However, Statistics Korea reached out not only to statistical professionals and consumers, but also professionals of administration, organization, and structure, to gather information in creating an efficient and effective organization.

Many systemic elements introduced in this report are not limited to the Korean statistical system. The Korean statistical community has studied many statistical systems from different countries before shaping the current Korean statistical system and still is constantly looking for possible improvements from examples in other nations. However, rather than directly importing the statistical system from another country, Korea has adopted the system to fit the needs of Korean society and consumers. Therefore, the Korean statistical system is not a mix of multiple different systems, but a system reshaped and remolded to fit Korean standards.

Each country has its unique political, social, and cultural environment with its own speed of development. Therefore, one perfect system cannot exist to fit all nations. The most important aspect will be the desire to build and sustain a statistical system that will fit the characteristics of a nation. The founding and development of Korean statistical system is a good example for other nations wishing to build their own statistical system.

It is true that the investment of statistical resources is insufficient in many developing countries.

This may be because the consequences of statistical resource investment are less evident than consequences caused by other factors. However, it is important to realize that in the long-term, statistical investments contribute to governmental development by contributing to the building of national informational infrastructure.

For those developing countries that suffer from insufficient statistical resource investments, it is crucial that they do not use the insufficient investments as an excuse to neglect efforts to improve the statistical system. There are still plenty other opportunities

and ways to improve the statistical system despite the insufficient statistical resources, and in this sense, the Korean efforts to improve its national statistical system may be used as an excellent example. Even under many constraints such as lack of statistical resources and statistical investments, it is important to provide continuous efforts to improve the statistical system. As long as the continuous effort pertains, the chance to improve will always exist.

The individual components of the Korean statistical system introduced in this report will be a useful blueprint for other nations building a new statistical system. While some elements will need modification before implementation, others may be used without change.

A nation's statistical system produces and distributes the necessary statistical information. An efficient and reliable system is vital in producing quality statistics and resourcefully distributing the products to consumers. This is the same as a business needing an efficient system to produce and distribute its products. However, a national statistical system is often distanced from the market feedback system a business is exposed to. Therefore, the statistical agency and the government need to make an active effort in building a more efficient system.

3. Utility of this Research

The foundation of an effective national statistical system improves the quality and expands the utility of statistics. However, there are only few cases of research in the overall national statistical system worldwide. This is most likely because many developed nations no longer have a need for understanding the whole system as they have already founded a stable national statistical system that can respond to changes by incremental modifications. In Korea, research in the national statistical system started in the mid-1990s with the government's firm acknowledgement of the importance of statistics.

The characteristics and development of the Korean statistical system became an issue of interest in Korea. Not only the national statistical agencies but also academic and policy makers alike started to look at the improvement and growth of the national statistical system. Thus, a lot of research was conducted on the national statistical system not just in academia but in political arenas as well. Therefore, the government started to focus on the statistical system when creating its own agenda. However, despite this active study, this research is not well known in other nations.

This research introduces the basics of the Korean statistical system from the current state, characteristics, development and policies. These can be used in multiple ways.

First, this research can be used in the Knowledge Sharing Program (KSP) as a database for consulting other developing nations. This research is the basic textbook for the Korean statistical system and therefore can provide valuable data for those wishing to participate in the KSP.

Second, this research can be used in many ODA (Official Development Assistance) cases including the KSP. Most of the consulting cases from developing nations relate to a political agenda rather than a single issue. In such cases, a statistical system is a must rather than an option. Therefore, this research will assist in the international cooperation projects in the fields of official statistics.

Third, this research contains the overarching information about the Korean statistical system. Therefore, the research can be used to understand the general scheme by foreign nations, international agencies, and academics as a resource. Furthermore, since this research describes the Korean statistical system as a part of Korea's socio-political ecosystem, it will assist in the reader's understanding of the Korean system. Therefore, organizations such as the UN and OECD may use this to introduce the statistical system of Korea to other nations.

Fourth, this research can be used to educate policy makers, researchers, and students about the Korean statistical system. While many people use official statistics, only a few understand the statistical system. This research can illustrate the outline of the Korean statistical system for a deeper understanding of the official statistics and the statistical system.

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