

# Prioritizing Korean ICT ODA Project Areas and Project Types for Africa

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## Abstract

This study starts with a recognition that the direction of Korea's Information and Communication Technology (ICT)-related ODA projects in Africa needs to change, as the Covid-19 pandemic, which has been ongoing since January 2020, continues to spread around the world. Korea is one of the world's leading countries in the field of ICT and has been conducting ICT-related ODA projects in Africa for a long time now. Taking advantage of this status, the country needs in the future to re-organize its ICT-related business fields and redistribute resources. Following Analytical Hierarchy Process (AHP) analysis conducted by experts, the healthcare field was selected as the field that should receive the most investment in the future. As regards project type, investment in infrastructure relating to ICT is shown to be important, and the spread of various ICT-related systems is important too.

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## 1 Introduction

Korea has consistently provided aid to 54 African countries. Of these countries, the Korean Government has selected seven (Rwanda, Ethiopia, Ghana, DR Congo, Uganda, Mozambique and Senegal) as key partners to whom it provides more aid. A new aid strategy is planned for 2021–5 that will function as Korea's third CPS application stage. The level of development in African countries is relatively low compared to that of other countries, meaning that aid to these countries needs to be substantial. Korea is already relatively superior to other aid providers in terms of the supply of Information and Communication Technology (ICT). Recently, however, following the global spread of the Covid-19 pandemic from January 2020, many countries in Africa are struggling.

This pandemic is expected to continue into the future, with the end not yet in sight. As a consequence, economic activity for ordinary people will become difficult, and external activities are expected to decrease. This adversely affects the lives of African people, consequently making it difficult for them to achieve sustainable development goals (SDGs). In order for these goals to be realized while improving the living standards of the people of African countries, it is necessary to utilize ICT methods extensively, since ICT enables many economic activities

to be undertaken without face-to-face meetings. As a result, it is expected that ICT will be widely used in the future to improve African people's quality of life.

Even if so, however, ICT assistance needs to be provided in accordance with consideration of the specific situation in African countries (Altameen et al., 2006; Ayanso et al., 2014; Rosenberg & Koehler, 2015). This is because the possibility of success is high if aid can be provided that suits the specific conditions of African people. The critical factor here is the field in which the application of ICT will have a strong ripple effect. The ODA field is broadly divided into six fields: public administration, healthcare, education, agriculture, technology and the environment. It is important to establish in which of these five areas the use of ICT will be advantageous for African countries. In other words, it is important, first of all, to select a business field to which ICT will be applied.

The second important consideration is what type of business should be selected. ICT business fields include: ICT education and training; business development through ICT; dissemination of ICT-related systems; establishment of ICT-related infrastructure; dispatch of ICT-related volunteers; and the issuing of invitations to train African experts in Korea, offering them policy

advice and consultancy relating to ICT.

This study aims to provide the information necessary for Korea to apply ICT to African countries in the future and to formulate aid strategies against this background. The study aims to help the Korean Government decide which of the five ICT business fields should be regarded as important in the future. At the same time, when the importance of each business field is determined, information as to which type of business in that field should be prioritized is also provided. The aim, in other words, is to provide information on policy importance by business sector and policy importance by business type when Korea provides ICT-related aid to African countries.

## 2 Review of prior research and existing aid

Up until now, numerous studies conducted at home and abroad have suggested various strategies for effectively providing aid to African countries. Of these, some have suggested measures for determining the size and form of aid, while others have emphasized the centralization of the donor country and the size of aid. In addition, some studies have used salient international indicators to measure the relative poverty and backwardness of African countries, and have recommend differentiated aid provision on the basis of this backwardness (Schrum & Levin, 2016; Vanderlinde & Dexter, 2012; Churchill, 2006). However, the existence of the Covid-19 pandemic, which started at the beginning of 2020, requires a major change in the type, and method, of aid delivery that has been undertaken to date.

In other words, things that hitherto have been done in a face-to-face social context will need to be undertaken in non-face-to-face ways. Even if a vaccine against Covid-19 is administered and a cure is forthcoming, it is still expected that the virus will continue to disrupt people's lives by causing a new mutant epidemic. Consequently, we can expect that provision of services using the ICT method will be expanded in the future. Korea is an advanced, world-class country as regards the ICT sector, and has to date provided African countries with a large amount of aid in this sector. Nevertheless, owing to the Covid-19 pandemic scant research has yet been undertaken exploring which aid fields should be used for ICT, or in what form of business ICT aid should be provided. In this connection (Banerjee, 2014; Avgerou, 2003; Kanwal et al., 2014; Denscombe, 2010), it is extremely important to select the appropriate field of assistance to be provided to African countries through ICT, and the type of business that will operate in the future. It is hoped that this study will play a leading role in this field.

Table 1 shows the amount of aid provided to African countries by Korea and OECD Development Assistance Committee (DAC) member countries. The unit represented is one million ['US?'] dollars. As Table 1 shows, the amount of aid provided by all OECD DAC members in 2018 was around \$30.4 billion, and the amount provided over the past decade around \$293.5 billion. Korea provided around \$500 million in 2018, the total amount of aid it has provided over the past ten years being around \$3 billion. Korea accounts for around 1% of the total aid provided by the OECD DAC.

Table 1 ICT ODA budget for Africa by year

| Donor       | 2009     | 2010     | 2011     | 2012     | 2013     | 2014     | 2015     | 2016     | 2017     | 2018     | Total     |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| OECD DAC    | 28192.37 | 29140.29 | 32523.06 | 30271.15 | 30054.85 | 29050.13 | 26877.31 | 27213.43 | 29776.38 | 30423.84 | 293522.81 |
| Korea       | 95.01    | 139.88   | 178.36   | 261.01   | 271.72   | 332.72   | 358.76   | 415.64   | 408.01   | 504.44   | 2965.55   |
| Korea ratio | 0.34%    | 0.48%    | 0.55%    | 0.86%    | 0.90%    | 1.15%    | 1.33%    | 1.53%    | 1.37%    | 1.66%    | 1.01%     |

On the other hand, Table 2 below shows the amount of ICT-related aid among aid provided by Korea to African countries.

Table 2 Korean ODA budget for Africa by sector

| 구분                    | Korean budget for 5 years | Ratio  |
|-----------------------|---------------------------|--------|
| Public Administration | \$ 40,973,022             | 43.32% |
| Education             | \$ 22,750,822             | 24.06% |
| Technology            | \$ 22,449,880             | 23.74% |
| Emergency relief      | \$ 258,859                | 0.27%  |
| Agriculture           | \$ 2,759,167              | 2.92%  |
| Healthcare            | \$ 5,387,077              | 5.69%  |
| Total                 | \$ 94,578,827             | 100    |

As Table 2 shows, in terms of ratio of aid provided, the public administration sector scores highest at 43.32%, and the emergency relief sector lowest at 0.27%.

unit of aid by type of ICT business. The ICT training business type scores highest at 19.75%, and the ICT volunteers business type lowest at 5.95%.

By contrast, Table 3 presents data on the amount of aid by type of project

| Type                    | Amount        | Ratio  |
|-------------------------|---------------|--------|
| ICT training            | \$ 18,680,940 | 19.75% |
| ICT-related business    | \$ 7,980,579  | 8.44%  |
| ICT system provision    | \$ 11,732,154 | 12.40% |
| ICT infra establishment | \$ 16,221,200 | 17.15% |
| ICT volunteers          | \$ 5,631,877  | 5.95%  |
| ICT invitation          | \$ 18,013,020 | 19.05  |
| ICT consulting          | \$ 16,319,057 | 17.26  |
| Total                   | \$ 94,578,827 | 100    |

When looking at the aid that has been given to African countries in the last ten years by business type, we see that education and training in the ICT field scores highest at 19.75%, and business development using ICT lowest at 8.44%. The focus of this study is on discovering which ICT business fields and business types will be the most important ones for African countries experiencing Covid-19 in the future. Such a process can play an important role in enhancing the effectiveness of ODA projects, by providing information on the importance of

each business field and priorities for each business type necessary for Korea to provide ICT-related aid to African countries in the future.

### 3 Survey design

#### 3.1 Research method

In general, solving decision-making problems involves choosing the best alternative in the face of contradicting criteria, incomplete information and limited resources. The Analytical Hierarchy Process (AHP) deals with the problem of prioritizing among multiple alternatives evaluate

d against these multiple criteria, possessing as it does the characteristic of multi-attribute decision making in the existing decision-making theory system. In this study, the AHP method will be used since the intention is to understand the priorities in each ICT-related business field and business type.

### 3.2 The hierarchy of decision making

Figure 1 shows the hierarchy of decision criteria for ICT ODA. The top level refers to the business field relating to ICT ODA. The business areas are: public administration, education, health, agriculture, technology, and emergency.

health, agriculture, technology and emergency. There are seven business types within each business area, which provide training relating to ICT; foster business using ICT; supply ICT systems; install ICT-related infrastructure; and train ICT-related volunteers in Africa. There are business types that are dispatched to countries to provide assistance there, business types that invite African experts and ICT practitioners to Korea to train them, and business types that provide ICT-related consultancy to African practitioners. It is important to set priorities for each of these business types.

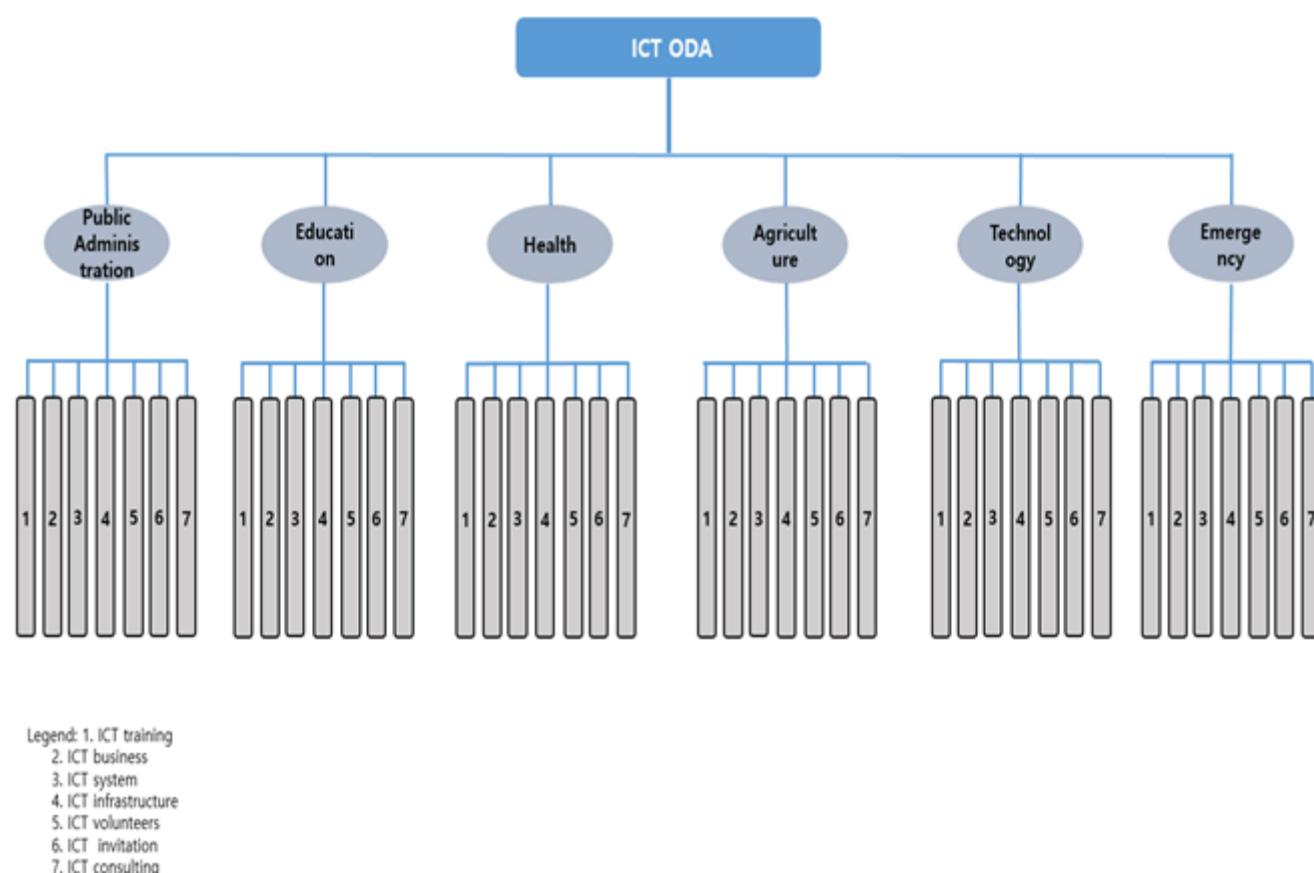


Figure 1 Hierarchy of decision-making criteria

### 3.3 Experts to be surveyed

There are a total of five experts who will respond directly to the AHP questionnaire. These are experts who have directly participated in Korea's ICT ODA projects in Africa or have evaluated these projects directly. In answering the AHP questionnaire, they will be able to analyse the importance of alternatives for decision-making. The AHP questionnaire survey was conducted between 10 and 20 January 2021.

## 4 Analysis and implications

### 4.1 Importance by business field

As Figure 2 shows, by business field, the most important field in terms of the future is health, showing a weight of 0.284. Following this, the agricultural field has a value of 0.197, and public administration a value of 0.184. The technical and environmental fields appear to have the lowest value, at 0.045.



Figure 2 Priorities by business field

As Table 3 indicates, the health sector is emerging as the field whose weight needs to be increased in the future. This means that it is necessary to move away from the public administration field, the field that Korea has invested in most heavily to date, and the sector in which, over the last ten years, it has provided the most ICT-related aid to African countries.

#### 4.2 Importance by business type

Figures 3 and 4 show the weights by project sector and weight score by project type in the fields of public administration, education, health, agriculture, technology and emergency relief.

At the top of Figure 3, there are two values in parentheses following 'PA' (public administration). The value of L is 0.184, and the value of G is also 0.184. L stands for 'local': it means that the weight of the public administration field is 0.184 among the six business fields, including the public administration field. Therefore, when the L (local) values of all six business areas are added together, the value becomes 1. Looking at the weight value for each business sector, we see that the public administra-

tion sector is 0.184, education 0.123, health 0.284, agriculture 0.194, technology 0.045 and emergency relief 0.167. In other words, of the six business areas, the health sector has the highest weight value at 0.284.

On the other hand, the G (global) value in parentheses next to each criterion means the value obtained by considering all seven business types within the six business areas. Since there are seven business types in each of the six business areas, the number for all indicator values is 42. The sum of these 42 indicator values becomes 1, which means the proportion of the total 42 indicator values. Take, for example, PA-training (L: 0.093; G:0.017). When the value of L is 0.093, this denotes the proportion of the PA-training business type out of a value of 1, because the sum of the values of the seven business types in PA is 1. The business type that has the largest proportion in the PA business field is PA-infrastructure, at 0.257. Meanwhile, G: 0.017 of PA-training means that the proportion occupied among the 42 index values including PA-training is 0.017.

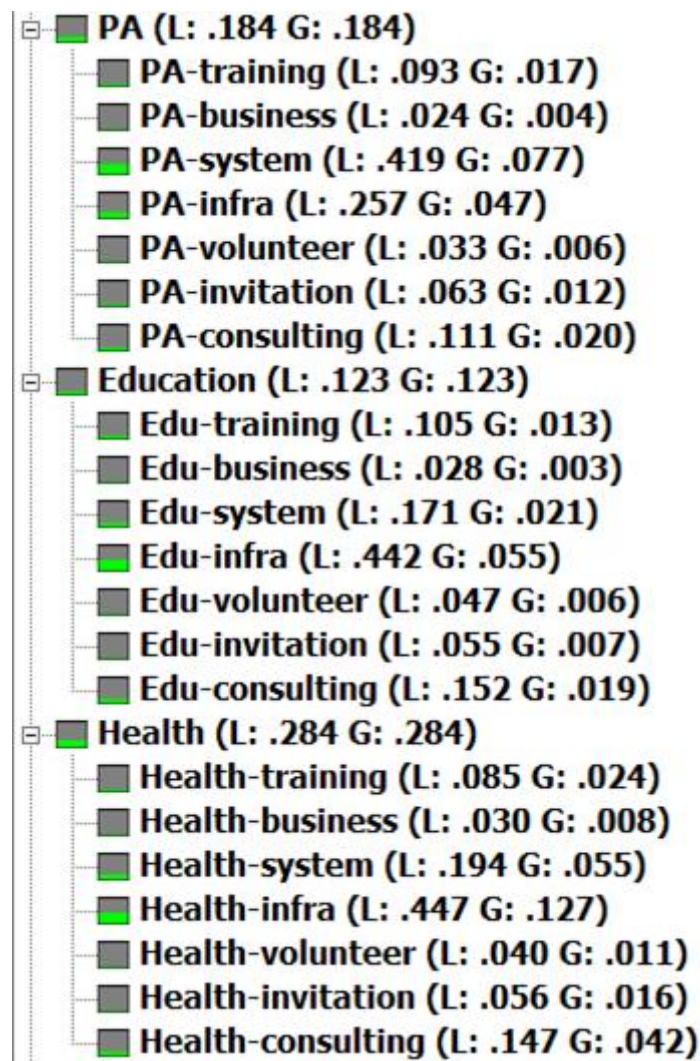


Figure 3 Importance of public administration, education and health

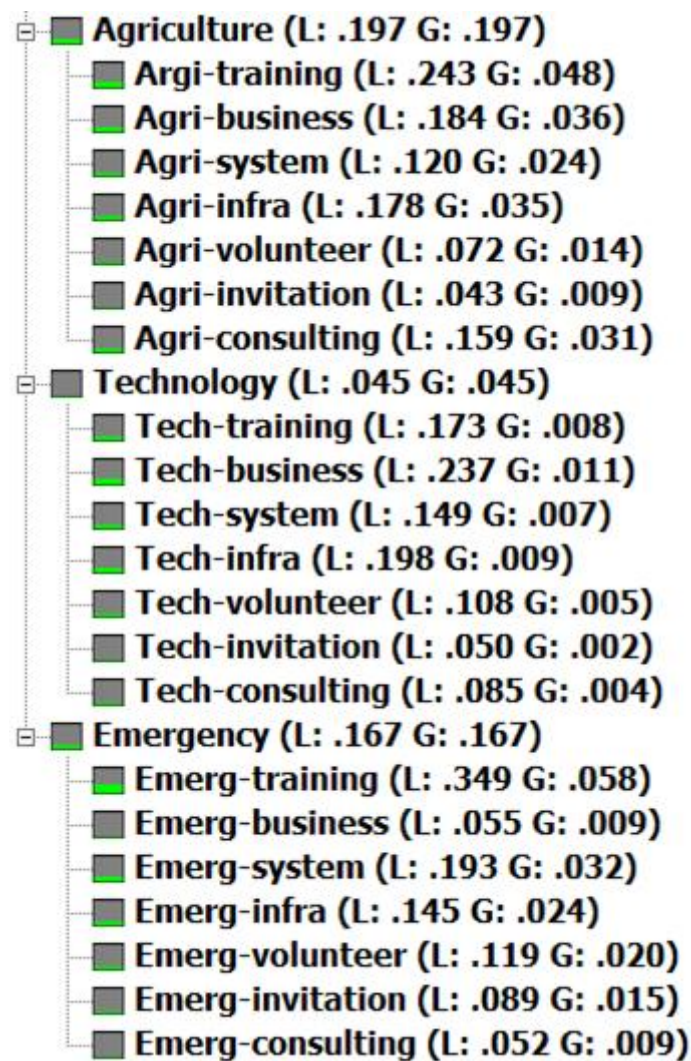


Figure 4 Importance of agriculture, technology and emergency relief

The weights of the 42 indicators can be calculated by simultaneously considering the weights for each business field in the first tier and the weights for each business type occupied with

in each business field. The values generated through this process are shown in Figures 4 and 5.

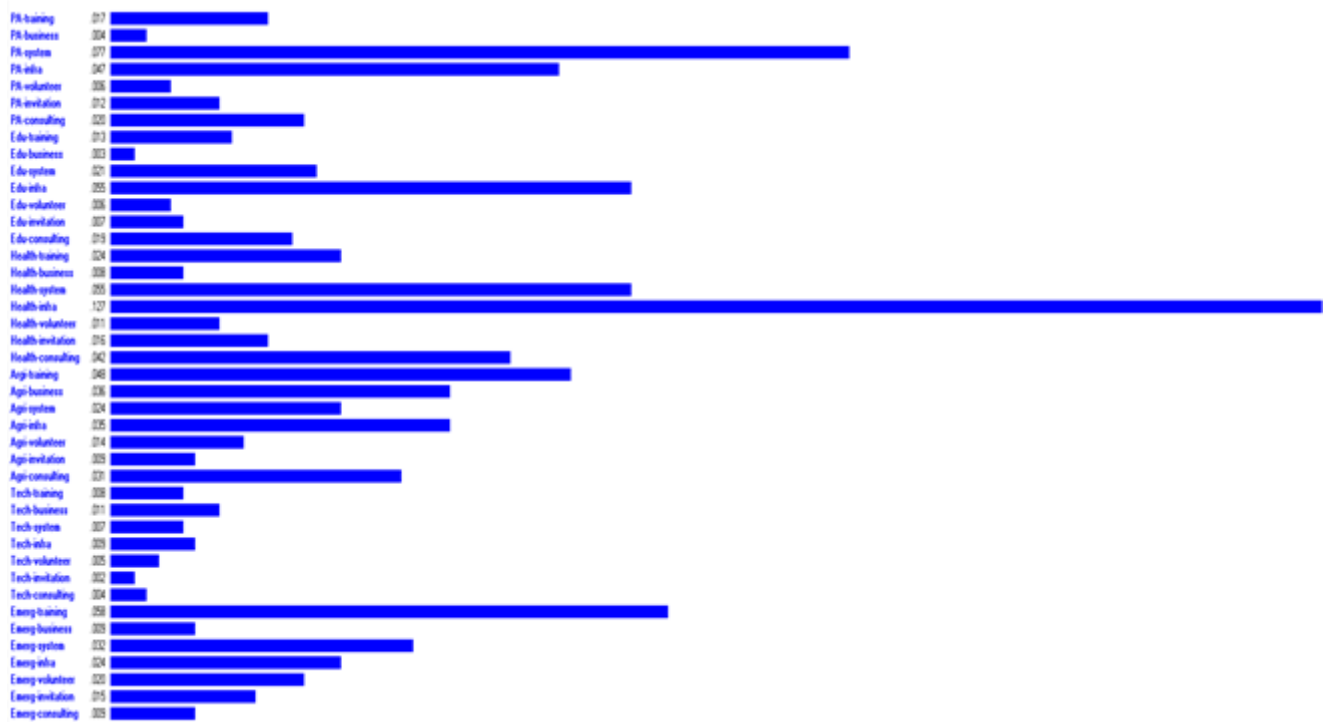


Figure 5 Weights by 42 criteria (no order)

Figure 6 shows the ranking of the weight values for each of the 42 criteria. It can be seen that the health-infra index has the highest weight

value, at 0.127, and the technology-invitation has the lowest value, at 0.02.

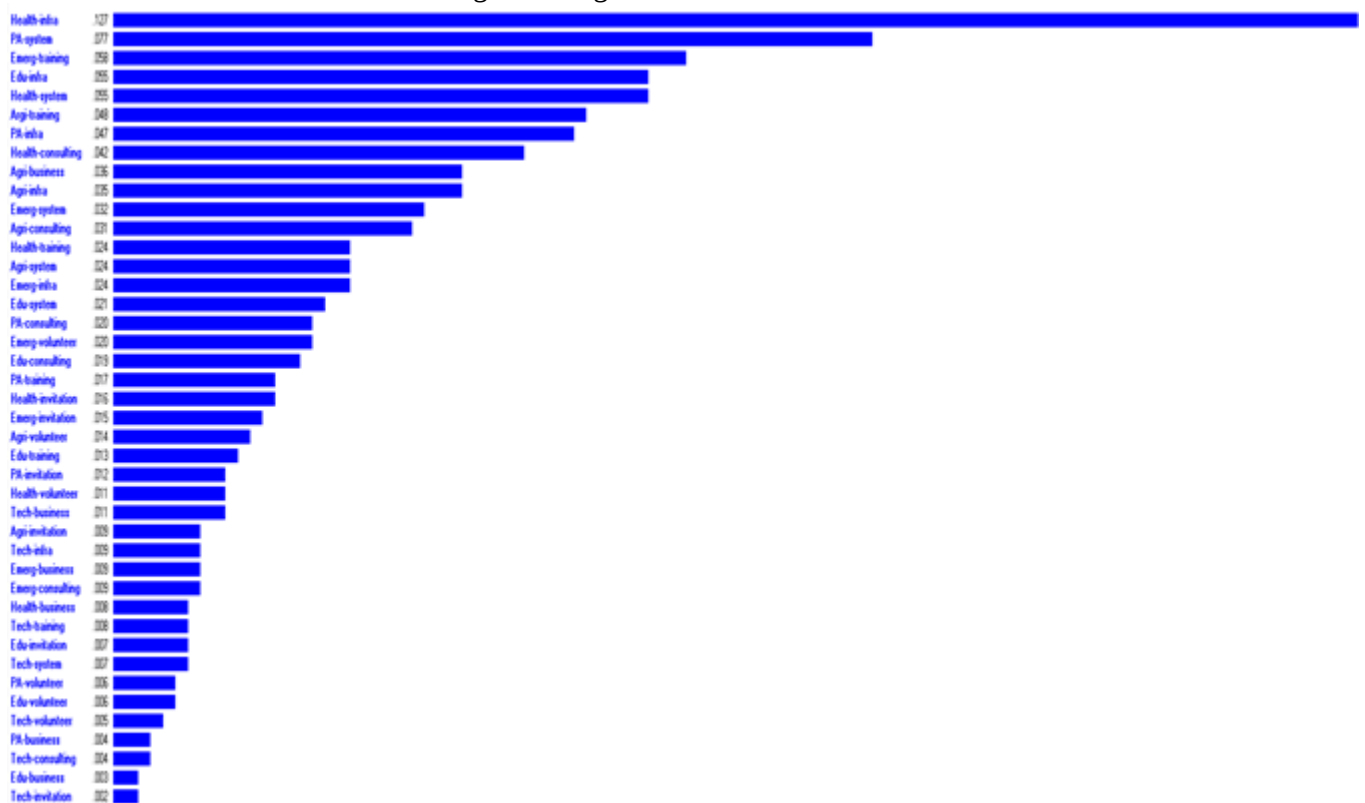


Figure 6 Weights by 42 criteria (in order)

The analysis results shown in Figure 6 are summarized below. First, ICT ODA experts recommend that when carrying out ICT ODA in Africa in the future, the greatest resources should be invested in the health sector by business sector, and after that, resources should be allocated to the fields of agriculture, public administration, emergency relief, education and technology. The suggestion that strong investment should be made in the field of healthcare stems from the fact that numbers of hospital patients are increasing due to the Corona pandemic, and so face-to-face contact becomes difficult.

The second suggestion is that the greatest attention should be paid to infrastructure investment in the healthcare field when the weights for the business field and the business type are considered at the same time. Moving on from the importance of the health sector, it can be said that it shows that infrastructure investment in the health sector is particularly important. This calls for a re-organization of the way in which Korea has been providing aid to Africa. At the same time, there is a need in the future for policymakers to reflect the results of AHP analysis conducted by experts in the ODA policy process.

## 5 Conclusion

The Covid-19 pandemic, which has been spreading round the world since January 2020, is having a significant impact on African countries. Compared to those of other continents, Africa has poor medical facilities and relatively low income levels. Given these circumstances, the Covid-19 pandemic is seen as having a number of negative impacts across Africa. Many experts predict that ICT can serve as an alternative solution to the difficulties that African countries will face. As a powerhouse nation in the field of ICT, Korea possesses many advanced technologies. If advantage can be taken of these and aid is provided to African countries on this basis, African countries themselves can make a big contribution to overcoming their own difficulties.

What is important in this respect is how to achieve maximum effect with limited resources. In order to address this, it is necessary to obtain comprehensive information regarding which business sectors will be invested in extensive resources, and which business types it will be particularly important to choose from. This study was conducted for the purpose of establishing precisely this. It shows that healthcare is the business field in which the strongest ODA investment should be made, and that

health infrastructure should be considered the next-most-important field. In addition, this study has provided information concerning the importance of each business field and each business type at the same time, thus providing meaningful policy information for ODA policy managers in Korea.

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