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Optimizing Higher Education With Economic Layers

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SUMMARY
In this study, "Model Base Engineering, (MBE) and (2n + 1) Geometric Ratio Technique (GRT)" briefly "MBE-GRT", which are used in the field of engineering, were optimized together with the size of the economic layers and the main fields in universities. These planning aimed toconsider the needs of the real economy. Additionally, the proposed model is realized in 75% in 30 years and 80% in 35 years. Due to the dynamic change in the population growth of countries, it takes between 35-50 years for 100% to be realized. Universities represents; 1.Engineering and basic sciences, 2.Social sciences, 3.Health sciences and 4.Phd, master's and specialization areas. 25% of all undergraduate fields, 18.75% for master's degrees, 4.68% for doctorate, and 1.56% for post-doctoral critical population size were identified. Strategic human resources ratio is 9.37%. Employment rates of qualified university graduates related to horizontal production layers within the macro economywere calculated as follows; A: Engineering layer size (14.06%), B: Social layer size (17.18%), C: Health layer size (20.31%), D: Agriculture layer size (23.31%).The agricultural layer is 23.31% in the macro-economy. Within this layer, human resources from engineering (11.65%), health (5.82%) and social areas (5.82%) should be raised. The agricultural layer uses 75% technical services.The health layer is composed of 38.46% engineering, 30.76% social area and 30.76% health area itself. The overall economic structure is composed of 7.69% engineering, 6.15% social and 6.76% health sector.The social layer consists of 27.27% engineering, 36.36% social and health. There is 63.63% technical area in the health field. It's share in the overall economic structure is 4.68% in engineering, 6.24% in social and 6.24% in the health sector itself. The impact rate within the engineering layer macroeconomics is 47.18% and the multiplier is 7.11.

KEYWORD: *University,Economi, Optimizing, Madel Based Enginering, Geometric Ratio Technique.*

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I. INTRODUCTION

Model base engineering is a design technique used in engineering. Model base engineering (MBE) and (2n + 1) geometric ratio technique (GRT) were briefly combined with "MBE-GRT" [1-2] and a new model was developed. The "MBE-GRT" model has been implemented to optimize the universities in a country [3-5]. When combined model is applied, 70% target is reached in 30 years, 80% target is 35 years and 100% target is between 35-50 years. These is due to the dynamic population of the countries.

Higher education planning should be made with the aim of 2050 for the planned 30-year development of a country as well as development and planning of universities. We suggest that the short-comings in the existing higher education institutions should be eliminated and, if necessary, restructured. The most significant reasons are due to the differences in the national income and the different population numbers. Therefore, we think that the priority and urgent needs of each country are different. The needs are different between countries that develop their own technologies, which are undeveloped or self-sufficient, and those that cannot produce their own technologies.Countries can have power to the extent of their well-trained critical population size. The obvious measure of this depends on the training of doctoral and higher-level human resources [6].

II. MODEL BASE ENGINEERING (2N+ 1) GEOMETRIC RATIO TECHNIQUE (MBE-GRT)

The most important sign of planned development and planned employment in a country is to invest according to population growth. Another important measure is to meet the trained human resources of the real

economy in a planned manner. In another words, your trained human resources, the economy is to employ. The aim of this course is to structure the higher education for associate degree, bachelor's degree, master's degree, doctorate and post-doctorate and to educate the necessary human resources in a planned manner.

In Figure 1, three main areas were selected. These fields are:

1. Health, 2. Engineering and basic sciences, 3. Social areas. This configuration is a vertical configuration. The size of this structure is equal to 75% of the total. For this reason, it is planned that 75% of these graduates will work in production, industry and 25% in other fields. After the undergraduate education, the fourth field is planned. The size of this area corresponds to 25% of the total. These are planned for the human resources that need to be trained in special areas of specialization, master's, doctorate and post-doctorate. 25% or 6.25% of this segment corresponds to the large cross of the critical population size. Critical population size is the most important trained human resource for all countries. This resource is the segment that makes all kinds of planning, implementation and management of the country.

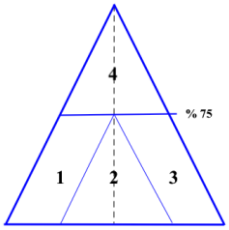

Figure 1. Basic vertical structure in the university. 1.Health field: (Medicine, Pharmacy, Dentistry, Veterinary, Nursing and health officer, Other fields). 2. Engineering and Basic sciences: (Electrical-electronics, Computer, Machinery, Chemistry, building (Construction, Architecture, Geology, Map), Mining, Basic sciences). 3. Social areas: (Economics, Business, Finance, Finance and Banking, Law, Education and Sciences, Theology, Literature, History, Language, Art). 4. It represents doctoral, postgraduate and specialist fields. The size of all areas was determined as 25%.

The other type of construction is the parallel horizontal structure as seen in Figure 2. This horizontal structure is the sectorial distribution within macroeconomics.

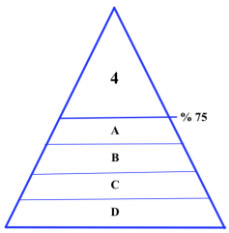

Figure 2. Sectorial horizontal layer structure in macroeconomics. A: Engineering layer and size (14.06%), B: Social layer and size (17.18%), C: Health layer and size (20.31%) and D: Agricultural layer and size (23.31%).

The structure of this layer: The agricultural layer represents the production, industry and service of all agricultural products. These include the production of agricultural products, converting them into industrial products, transporting them to the market, sales institutions and organizations, in short, all agricultural sectors providing services. Therefore, it is the largest layer. In short, agriculture has to be alive everywhere.

Figure 3 shows the whole layers. In this section, restructuring has been given especially for post graduate and post graduate programs. It represents engineering, social, health, doctorate and post-doctoral specialties as the main fields in the training of qualified human resources.

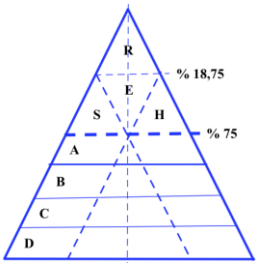

Fig.3. Horizontal and vertical layer structure. For post-graduate and post-graduate studies, E: engineering, S: Social, H: Health, R: Post-doctoral represent critical areas of expertise and critical population size.

The horizontal layers in the economy human resources who graduated from universities, represents an economic sector to be employed in the layers of the macro-economy. The vertical layers represent the human resources that need to be raised in universities to train qualified human resources for the needs of the horizontal layers. Thus, according to the needs of the real economy, it is recommended to train human resources of universities. In this case, both financial resources and university graduate human resources are optimized. As a result, all resources are considered holistic.

We propose the restructuring of the state for planned development, and the joint investment of universities and other economic industrialization. For the implementation of the study, we propose a 35-year target and planned development and training of human resources.

III. ANALYSIS OF LAYERS

3.1. AGRICULTURAL LAYER (D, SIZE: 23.31%)

Within the agricultural layer, all kinds of products obtained from nature include semi-finished products or raw materials. Therefore, it is the layer that provides the basic conditions necessary for the survival of all kinds of living things. In this context, if there is no agriculture, it means no living life. The absence of other layers does not directly affect the survival of living things. Even if there are no other three layers, the living life continues under natural conditions. But if there is no agricultural layer, the others do not matter at all.

The total size of the agricultural layer is 23.31%. It is the biggest economic size directly or indirectly affected by macroeconomics. For this reason, it directly affects every sector and procures services from every sector.

50% of the agricultural layer provided services directly from the engineering fields. In other words, 50% of the agricultural layer is directly connected to the engineering layer. Engineering impact and contribution in agriculture is 50%. Nowadays, the agricultural sector, which is mechanized or mechanized, is called as modern agricultural applications that has been made highly efficient and uses the engineering applications intensively. The other 25% consists of health and social areas. In other words, 75% of agriculture consists of technology and the other 25% consists of social areas. Within this system, the main areas of engineering are; energy, machinery, electricity, electronics, computers, chemistry, bio-technology, food, veterinary, pharmaceutical, mining, agriculture, water and so on.

The agricultural layer is generally the largest employment area among the undeveloped countries. In particular, it is seen as a source of employment for countries whose national income is below $ 5,000. It translates national income into countries that are in the absence of assets in transition countries over $ 10,000. Another important problem is the lack of agricultural land, especially in oil-rich Gulf countries, or the lack of land suitable for agriculture. In some African countries, although there is enough land suitable for agriculture, famine is either suffering, or in some countries, grave conditions from starvation to death are observed. The most important work to be done in this field is regional co-production, joint education and joint education. In addition, all the necessary infrastructure problems should be met by other rich countries. Financial support should also be provided for the training of all kinds of human resources and transfer of technology until this situation becomes temporary and not permanent. In countries with poor financial status, either grant grants or very long-term credits may be granted. The only condition is that the human resources are raised in the relevant areas of priority and then applied.

It will contribute primarily to agriculture, mechanization in agriculture: agricultural machinery engineering, pharmaceuticals: for chemical and organic control: especially plant engineering, for seed: bio-technology engineering, for soil: agricultural soil, geological engineering, irrigation and use of water resources For the storage of water: civil and water engineering, for power generation and transmission: electrical engineering, and for the control systems used in engineering: electronic and computer engineering is needed. 50% of real agriculture consists of engineering services. While only plant seed is sown, harvested or harvested in the field, it uses every field of agricultural engineering in other fields. In this context, the rate of engineering

higher education in the structure of higher education, in the development of human resources is more than 40% in today's developed countries.

The other 50% of the agricultural layer is related to 25% health and 25% social area. Among these, 25% of health is the second most important sector for agriculture. Finally, they are third degree social areas. This area shows more impact after healthy agriculture production. The other two areas are human resources which are important for production in agriculture. These include veterinarians, food engineers, pharmaceuticals, pharmaceuticals, etc.

The other segment is the social area of agriculture. The size of this area is 25%. In other words, it is the department where the human resources that will contribute to the production, marketing, preservation of agriculture and making it a commercial and economic enterprise are grown. This section is important for sustainable agriculture. While other engineering and health fields are related to the production of agriculture, this segment is related to the management of agriculture and its economic sustainability. It serves all kinds of social structures and also contributes to the formation of social strata. As employment, it contributes to preventing unemployment seriously. In addition, it contributes to the formation of large and small family businesses.

The agricultural sector occupies the 23.31% of the total macroeconomics. Human resources are expected to be the same size. For this reason, while human resources are raised in universities, 11.65% engineering, 5.82% health and 5.82% social resources for this layer should be raised from higher education. These should be seen as trained human resources for the country. Although the agricultural sector appears to be pure agriculture, the impact of engineering in agriculture or engineering services is more than 50%. The total of technical areas in agriculture is over 75%. Although the agricultural sector seems to be a simple technology sector, it is the production using 75% technical services for production. Therefore, today's agriculture is a technology-dependent sector.

3.2. HEALTH LAYER AND ITS 20.31% SIZE

The health layer represents the economic layer established to meet every folk health care in a country. Within this layer the health layer is related to thesectors which include the solution of problems related to health, medicine, food, agriculture, animal husbandry and environmental problems of public and private sectors. The production, inspection, distribution and food safety of all kinds of food are included in this scope. It also covers the treatment of diseases of all kinds of plants and organisms, pharmaceutical production and other health engineering. Therefore, it includes a wide scope in society. It is important at every stage of life and is not only human. It includes all kinds of institutions and organizations related to health. Although it may seem like the service sector on the basis of this layer, it is a very important service application of the technical sector. 38.46% of this sector consists of engineering services, 30.76% consists of social services and the other 30.76% consists of health sector. 69.23% of the health sector consists of services or technical services and support received from other sectors outside the health sector. Its share in the overall economic structure is 7.69% in engineering, 6.15% in social and 6.76% in health sector itself. In total, 13.84% is the economic layer composed of layers outside the health sector.

3.3. SOCIAL LAYER AND ITS 17.18% SIZE

The social layer represents the layer of social occupations of the society as well as the layer formed by the occupational groups. The other important aspect of this layer covers all the social areas of the universities. Therefore, it also represents the structure of universities. The size of this layer is only technically calculated. This layer consists of 27.27% engineering, 36.36% social and health. If it is included in the general health and technical field outside of itself, there is 63.63% technical field. In other words, if we consider the health sector as service sectors, engineering is 36.36% and the other areas are Social areas as 72.72%. Therefore, it would be more accurate to evaluate it as the sector with the least technical field. However, it is developing and growing with the contribution of technical fields in the social field. The overall economic structure is composed of 4.68% engineering, 6.24% social and 6.24% health sector. In total, 12.29% is an economic layer consisting of health and social layers.

3.4. ENGINEERING LAYER AND ITS 14.06% SIZE

This layer is the top layer of the horizontal layers. It affects all other layers with a size of 14.06% and a multiplier force of 7.11. These layer provides all kinds of engineering services to itself and all other layers. This layer meets all kinds of technical services provided to the people of the states and all kinds of simple or complex industrial products that people buy. Therefore, it has a locomotive effect for all developed and developing countries.

The size of this layer was determined as 14.06% in macroeconomics. In other words, although the size of human resources corresponds to 14.06%, the impact rate in macroeconomics is 47.18% and the multiplier is 7.11. This means that 47 out of a hundred graduates from the university should be trained in a direct relation to engineering, basic sciences and production. In other words, at least 47% of the students to be admitted to the university should be human resources to work in engineering and basic sciences. Engineering services are often used under different names in other agricultural, health and social areas. These services are sometimes the unseen aspects of procurement or provision of goods. Therefore, it has a multiplier effect on the development, prosperity and prosperity of the society.

IV. MULTI-FUNCTIONAL COMBINATION-LAYERS

In Figure 4, the human resources structure of the countries that have completed the industrialization process is seen. As seen here, the industrialized countries have solved most of the problems in the field of simple mechanization, pesticides and health in agriculture. The problems after this stage are more complex and require more knowledge than previous ones. The solution of these problems is more difficult than before. The need for human resources requires human resources that require more knowledge and accumulation than previous ones. It is the studies for finding new techniques and technology. Therefore, more well-trained specialists are needed in the structuring. Such qualified human resources are more difficult and time-consuming than before.

Despite the decrease in human resources working in production, production increases. High technology and automation system is used in production. 50% of other human resources are needed for more qualified human resources. Of this, 50% is qualified human resources working in medium-level production, and the other 50% is non-production R & D and other senior level planners and managers. The higher the level of knowledge and technology, the more qualified human resources are increasing by 50%. The other 50% does not change.

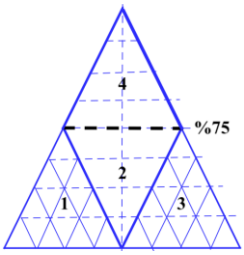

Fig.4. Structuring the human resources of the countries that have completed the basic industrialization process.

Figure 5 shows the common human resources of all layers. This core common area human resources are the most important human resource for 75% of production. The size of this segment is 25% of the total size. Proportional values include 50% of the 25% segment and 16.16% of the 75% production area. Both layers represent the critical population size. In other words, it is actually 16 qualified people who run a business that employs 100 people. In the other 84 employees, there is no need for compulsory qualification or automation means that it will produce the same production with 16 employees.

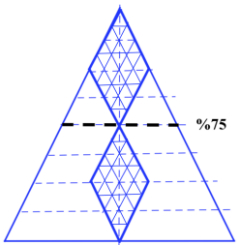

Fig.5. Large core human resources formed in the upper and lower layers.

Figure 6 shows the core human resources. The shrinkage of the economy means the protection of trained human resources. It is a human resource that must be protected under all conditions. Human resources in the non-production area should be preserved as 9.387% of the total and 4.687% of the human resources in production. This is a strategic human resource.

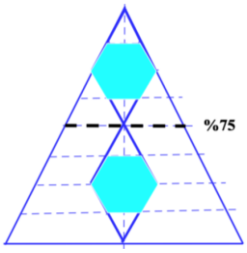

Figure 6. Strategic core human resources formed in the upper and lower layers.

Figure 7 represents the human resources of countries. The total size of this layer is 37.5%. Countries represent the majority of the critical core human resources that must be protected in all circumstances. In other words, there are no well-trained human resources in this section. But 50% is above average. The other 50% are qualified human resources that are prone to growing in a short time. It represents the human resource that can be brought to the desired field of expertise with a short training.

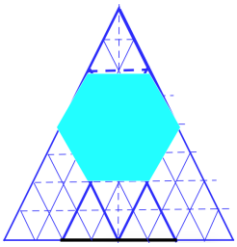

Fig.7. Medium core human resource that countries should protect under all conditions**.**

V. CONCLUSION AND EVALUATION

The geographies, nationalities, income distributions, populations and development of the countries in the world are very different. Therefore, there is no magic standard model for the development of countries. However, it is not wrong to consider that the only way these countries will use in general terms is to train qualified human resources according to needs and planned development as a common way. Countries should educate human resources considering their own priorities.

The agricultural layer is 23.31% of the total macroeconomics. Within this layer, 11.65% engineering, 5.82% health and 5.82% human resources from the social area should be raised. Although the agricultural sector seems to be a simple technology sector, it uses 75% technical services for production.

The health layer represents the economic layer established to meet all kinds of health services in a country. 38.46% of this sector consists of engineering, 30.76% of social services and 30.76% of health sector. 69.23% of the health sector is composed of services, technical services and support received from other sectors outside the health sector. Its share in the overall economic structure is 7.69% in engineering, 6.15% in social and 6.76% in health sector itself. 13.84% of employment is composed of layers outside the health sector.

The social layer consists of 27.27% engineering, 36.36% social and health. There is 63.63% technical area in the health field. Or if we consider the health sector as a service sector, engineering is 36.36% and the other areas are 72.72%. Its share in the overall economic structure is 4.68% in engineering, 6.24% in social and 6.24% in the health sector itself. 12.29% of employees is the economic layer composed of health and social strata

Although the size of the engineering layer corresponds to 14.06% in the macroeconomics, the impact rate in the macroeconomics is 47.18% and the multiplier is 7.11. This means that 47 out of a hundred graduates from the university should be trained in direct relation to engineering or production. In other words, at least 47% of the students to be admitted to the university should have human resources to work in engineering and basic sciences. Engineering services often work under different names in other agricultural, health and social areas.

Under all circumstances, 9.37% human resources should be protected. This human resource is a strategic force for countries. A qualified person is the most important force. It is the main source of all kinds of developments.

This model has been optimized by using “Model Base Engineering (MBE) (2n + 1) Geometric Ratio Technique (GRT)” MBE-GRT”, which is used in the field of engineering, along with the size of the economic layers. In other words, it is the planning of the universities which are made considering the needs of the real economy. 75% of the proposed model is realized in 30 years and 80% in 35 years. The model is between 35-50 years to reach the 100% target due to the dynamic change in the population growth of countries. It is flexible

structure that allows the countries implementing the model to plan changes, plan changes and new needs during their planned development.

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