
Productive Workforce: Portrait, Role and Strategy in Bogor Regency

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Abstract

The aim of this research is to describe the productive workforce based on its portrait, role and strategy in Bogor Regency. Based on portrait, the demographic changes are indicated by the increased productive age population and the decreased unproductive age population, then leading to the decreased dependency ratio. The sizes of productive aged population increase as consequences of the decreased fertility and mortality rates. Moreover, the sizes of productive aged population exceed the sizes of unproductive aged population. Based on role, productive working ages or productive workforce contribute its role to promote economic growth rate and GRDP per capita. The population structure changes contribute positively to promoting economic outputs, so that the dividend can be enjoyed from its demographic changes. Based on strategy, the role of productive workforce can be improved by investing labor supply, human capital, saving, and economic growth.

Keywords: demographic dividend; population age structure; population growth rate; productive workforce.

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1. Introduction

Workforce (*angkatan kerja*) is population being in the working age. Law No. 13/2003 concerning Manpower, article 1(2), stipulates that people available for a job or person available for a job (*tenaga kerja*) is every individual or person who is able to work in order to produce goods and/or services either to fulfill his or her own needs or to fulfill the needs of the society [24]. Categorized as workforce if population has been in the working age. The working age applied in Indonesia is aged 15-64 years. Law No. 13/2003, consideration (b), stipulates that in the implementation of national development, workers have very important role and position as actors of development as well as the goal of development itself [24]. Moreover, Law No. 13/2003, consideration (c), stipulates that in accordance with the role and position of workers, manpower development is required to enhance the quality of workers as well as their role and participation in national development and in improving protection for workers and their families in respect to human dignity and values [24].

The presence of population can basically support the progress of development if the population has good standard of living. The more the amount of population enables the bigger the opportunity to accelerate the development. But if the high population growth is not supported by the qualified competence and skill, this condition will lead to big problem. In accordance with the role and position of workers, manpower development is needed to improve the quality of workers. There is a necessary condition concerned by the government to stipulate a policy for optimizing the productive workforce. The changes of demographic dynamics occur because the changes of population age structure occur where the amount of productive age population is more than the amount of unproductive age population. The more amounts of productive age population mean the more availabilities of productive workforce. This is an advantage for Bogor Regency to optimize its local development by increasing the economic outputs.

Adioetomo (2005) argues that the change of demographic dynamics indicated by the high population growth of working age can affect at least four aspects, namely: (1) gross regional domestic product per capita of a region, (2) the distribution by the working market in order to increase the total output, (3) the increase of the savings of people, and (4) the availability of human resources for economic development process [1]. The change of demographic dynamics can be really enjoyed if Bogor Regency fulfills some prerequisites, namely: (1) The increased working age population is enclosed by the increased quality of human resources of both health, education and skill aspects and the increased soft skill aspect in order to have global competitiveness. (2) The working age population can be distributed by the available working market. (3) The availability of employment can distribute the available working labour [1].

Populations of Bogor Regency are increasingly getting on people aged 15-64 years, meaning that productive workforce increases. The central issue is whether the increased productive workforce can contribute to the increased socio-economic outputs. Bloom, Canning & Sevilla (2002) argue that changes of age structure can significantly affect economic performance [8]. Moreover, Loewe (2007) argues that the increased productive workforce is the greater, the more open the markets of the region concerned, the more it spends on education, the more flexible its labour markets, and the better the financial sector is developed [16]. Based on the background, this research therefore aims to describe the productive workforce based on its portrait, role and

strategy in Bogor Regency, West Java Province, Indonesia.

2. Literature Review

Talking about productive workforce means talking about population composition based on age structure of the middle structure of population pyramid. Age structure of population is divided into three categories, namely 0-14 years, 15-64 years, and ≥ 65 years. Ages of 15-64 years are categorized as productive working ages, meanwhile populations aged 15-64 years are said as productive workforce. Productive working ages or productive workforce are related to their contribution and role to economic growth, mentioned as demographic bonus or dividend. The demographic dividend is the economic growth that may result from changes to a country's age structure [9]. The changes of demographic dynamics occur because the changes of population age structure occur. The sizes of productive aged population (15-64 years) drastically increase as consequences of the decreased fertility and mortality rates. Moreover, the sizes of productive aged population highly exceed the sizes of unproductive aged population (0-14 years and ≥ 65 years) [14, 21, 22, 27].

The role of productive workforce is defined or indicated in term of promoting economic output, namely economic growth rate and gross regional domestic product (GRDP) per capita. Productive workforce becomes a key factor for driving the economic growth and changes in living standards, measured notably by growth in GRDP per capita. Bloom, Canning & Sevilla (2003) conclude that population age structure, more than size or growth per se, affects economic development, and that reducing high fertility can create opportunities for economic growth if the right kinds of educational, health, and labor-market policies are in place [9]. Understanding population age structure is important as an entry point to formulate the right policies for improving the productive workforce.

Bloom, Canning & Sevilla (2002) argue that focusing on population size and growth, the debate has largely ignored a critical demographic variable: the age structure of the population (that is, the way the population is distributed across different age groups). Because individual economic behavior varies at different stages of life, changes in age structure can significantly affect national economic performance. Nations with a high proportion of young or old dependents tend to devote a relatively high proportion of resources to these groups, often limiting economic growth. By contrast, nations in which a relatively large share of the population has reached the prime ages for working and saving may enjoy a boost to income growth stemming from the higher share of the population that is working, from the accelerated accumulation of capital, and from reduced spending on dependents. The combined effect of productive workforce and effective policies in other areas can stimulate economic growth [8].

The improved role of productive workforce depends on: (a) whether the government implements the right policies in areas such as education, health, governance, and economy, (b) the level of productivity of young adults which depends on the level of schooling, employment practices in a country, timing, and frequency of childbearing, as well as economic policies that make it easier for young parents to work, and (c) the productivity of older adults which depends on tax incentives, health programs, and pension and retirement policies [15]. The role of productive workforce is improved by four strategies, namely by investing (a) labor supply, (b) human

capital, (c) saving, and (d) economic growth [11, 14, 15, 16, 17, 20]. The productive workforce is operationally defined in Table 1.

Table 1: Dimension, Definition and Indicator of Productive Workforce

Dimension	Definition	Indicator
Portrait of productive workforce	Appearance of productive workforce in population structure	Population size, population growth rate, population age structure, dependency ratio
Role of productive workforce	Role to promote economic growth: economic output	Economic growth rate, gross regional domestic product per capita
Strategy to improve the role of productive workforce	Way to improve the role for promoting economic growth: economic output	Investing labor supply, human capital, saving, economic growth

The dimension, definition and indicator of productive workforce stated in Table 1 can be referred to describe the portrait, role and strategy for improving the role of productive workforce.

3. Research Method

This research was conducted in Bogor Regency, West Java, Indonesia during April-May 2020. Data of this research stem from: (1) Population Administration Information System (*Sistem Informasi Administrasi Kependudukan/SIAK*) of the Local Office of Population and Civil Registration of Bogor Regency (*Dinas Kependudukan dan Pencatatan Sipil/DISDUKCAPIL Kabupaten Bogor*), (2) the Central Agency on Statistics of Bogor Regency (*Badan Pusat Statistik/BPS Kabupaten Bogor*), and (3) library research. Data of this research are qualitatively described. Arikunto (2009) argues that descriptive research only describes “what is” about a variable, symptom and condition [3]. By descriptive research, Nassaji (2015) views as a research method that describes the characteristics of a phenomenon studied. The goal of descriptive research is to describe a phenomenon and its characteristics [19]. Meanwhile Taylor, Bogdan and DeVault (2016) explain qualitative research as one of research procedures that produces descriptive data of a phenomenon studied. Qualitative approach produces in-depth descriptions of a phenomenon studied from a particular individual, group, community, or organization in a particular context which is reviewed from a full, comprehensive, and holistic perspective [23]. Descriptive-qualitative method of this research therefore focuses more on describing a more detailed picture of productive workforce and its characteristics based on portrait, role and strategy.

4. Result and Discussion

This research presents its results and discusses them based on three dimensions of productive workforce, namely describing the portrait, role and strategy to improve the role of productive workforce in Bogor Regency, West

Java Province, Indonesia.

4.1 Portrait of Productive Workforce

Productive workforce in population structure of Bogor Regency in 2019 is indicated by (a) population size/amount, (b) population growth rate, (c) population age structure, and (d) dependency ratio.

Firstly, population size. The changes of demographic dynamics occur because the changes of population age structure occur. The sizes of productive aged population (15-64 years) in Bogor Regency increase as consequences of the decreased fertility and mortality rates. Moreover, the sizes of productive aged population highly exceed the sizes of unproductive aged population (0-14 years and ≥ 65 years). The population structure of Bogor Regency can be composed by age group and sex shown in Table 2 [12].

Table 2: Population Amount by Age Group and Sex of Bogor Regency, 2019

Age Group	Male		Female		Total	
	Amount	%	Amount	%	Amount	%
00 – 04	192,991	7.98	179,416	7.81	372,407	7.90
05 – 09	212,065	8.77	200,199	8.72	412,264	8.74
10 – 14	158,400	6.55	149,448	6.51	307,848	6.53
15 – 19	152,764	6.31	150,824	6.57	303,588	6.44
20 – 24	235,092	9.72	219,555	9.56	454,647	9.64
25 – 29	228,731	9.45	215,643	9.39	444,374	9.42
30 – 34	216,986	8.97	205,360	8.94	422,346	8.96
35 – 39	217,463	8.99	211,951	9.23	429,414	9.11
40 – 44	194,016	8.02	196,083	8.54	390,099	8.27
45 – 49	176,356	7.29	168,420	7.33	344,776	7.31
50 – 54	142,391	5.88	135,426	5.90	277,817	5.89
55 – 59	108,132	4.47	100,725	4.38	208,857	4.43
60 – 64	76,383	3.16	68,497	2.98	144,880	3.07
65 – 69	52,307	2.16	43,395	1.89	95,702	2.03
70 – 74	26,141	1.08	25,645	1.12	51,786	1.10
≥ 75	29,123	1.20	25,996	1.13	55,119	1.16
Bogor Regency	2,419,341	100	2,296,583	100	4,715,924	100

As indicated in Table 2, the population of Bogor Regency in 2019 amounts 4,715,924 people. Based on sex, the amount of 2,419,341 male populations (51.30%) is more than the amount of 2,296,583 female populations (48.70%). Meanwhile based on age group, the population amount of Bogor Regency in 2019 is presented more in

the 15-64 years aged population (3,420,798 people or 72.54%) than in the 0-14 years aged population (1,092,519 people or 23.17%) and the ≥ 65 years aged population (202,607 people or 4.29%).

Secondly, population growth rate. Population growth rate is a percentage that indicates population growth in one year [5]. Population of Bogor Regency in 2018 amounts 4,585,812 people and in 2019 grows to be 4,715,924 people (increase 130,112 people/2.76%) [12]. Population growth rate of Bogor Regency in 2019 is 0.0284 (2.84%). Rapid population growth and large population size can promote economic prosperity by furnishing abundant human and intellectual capital and increasing market size [8]. *Thirdly, population age structure.* The population structure of Bogor Regency in 2019 by age group and sex as shown in Table 2 composes the population age structure that is usually called population pyramid or age-sex pyramid (Figure 1). Based on population pyramid, the population composition of Bogor Regency in 2019 is fat on the middle structure. If compared among age groups, the amounts/sizes of 15-64 years age groups are more than the amounts/sizes of 0-14 years and ≥ 65 years age groups. It means that productive age populations, or productive working ages that are usually said as productive workforce, are more than unproductive age populations.

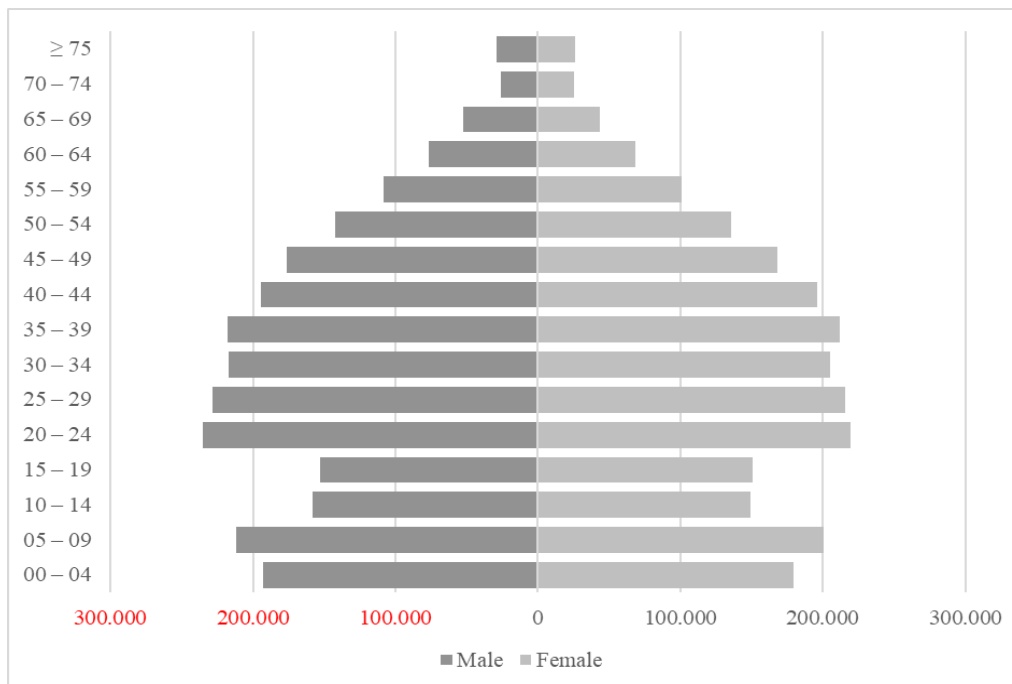


Figure 1: Population Pyramid of Bogor Regency by Age Group and Sex, 2019

The proportion of population classified as workforce is those who are active in economic activities. The involvement of population in economic activities is measured by the portion of population that enters the labor market that is working (working-workforce/WWF) or looking for work (not working-workforce/NWWF). The workforce participation rate/WPR (*Angka Partisipasi Angkatan Kerja/APAK*) is used to measure the number of the workforce for every 100 working age population, in the context of describing the contribution of working age population (15-64 years) in the workforce/WF to the total population/TP. The workforce participation rate of Bogor Regency in 2019 is shown in Table 3.

Table 3: Workforce Participation Rate of Bogor Regency, 2019

No.	Age Group	NWWF	WWF	WF	NWF	TP	WPR
1	Population aged 0-14 years	0	0	0	1,092,519	1,092,519	0
2	Population aged 15-64 years	1,898,337	1,522,461	3,420,798	0	3,420,798	-
3	Population aged ≥ 65 years	0	0	0	202,607	202,607	0
Bogor Regency		1,898,337	1,522,461	3,420,798	1,295,126	4,715,924	72.54

As indicated in Table 3, the workforce/WF of Bogor Regency in 2019 is more than not-workforce/NWF. The 15-64 years age populations reach 3,420,798 people. It means that the total workforce is 3,420,798 people, where 1,522,461 people work in various economic sectors (working-workforce/WWF), while 1,898,337 people are still unemployed (not working-workforce/NWWF). The workforce of Bogor Regency is dominated by the elementary school graduates, reaching 1,344,040 people (37.86%) [12]. The workforce participation rate/WPR of Bogor Regency in 2019 is 72.54%. It indicates that the contribution of working age population in the workforce is 72.54% to the total population. *Fourthly, dependency ratio.* The dependency ratio compares the number of non-working/dependent/ unproductive age population (0-14 years and ≥ 65 years) to the total working/economically productive age population (15-64 years). The demographic indicator gives insight into the number of non-working age population, compared with the number of working age population. It is also used to understand the relative economic burden of the workforce [18, 25, 26], namely to measure the burden caused by non-working people on working-age population. The higher the dependency ratio means the greater the burden [2]. Population dependency ratio/DR of Bogor Regency in 2019, both male, female, and total, is indicated in Table 4 [12].

Table 4: Population Dependency Ratio of Bogor Regency, 2019

No.	Population Age Structure	Male		Female		Total	
		Amount	DR	Amount	DR	Amount	DR
1	Population aged 0-14 years	563,456	32	529,063	32	1,092,519	32
2	Population aged 15-64 years	1,748,314	-	1,672,484	-	3,420,798	-
3	Population aged ≥ 65 years	107,571	6	95,036	6	202,607	6
Bogor Regency		2,419,341	38	2,296,583	37	4,715,924	38

As indicated in Table 4, unproductive age populations of Bogor Regency in 2019 reach 1,295,126 people and makes dependency ratio 38, meaning that in 100 productive age people there are 38 people of unproductive age. This value shows that in Bogor Regency one person of unproductive age is covered by at least 3 people of productive age. Based on sex, male dependency ratio of Bogor Regency in 2019 is 38, meaning that every 100 productive male populations carry on 38 unproductive age populations. Meanwhile female dependency ratio of Bogor Regency in 2019 is 37, meaning that every 100 productive female populations carry on 37 unproductive

age populations. The less the amount of unproductive age populations carried on productive age populations can affect the more the economic growth. The economic growth ideally occurs when dependency ratio presents under 50. Bogor Regency in 2019 has dependency ratio 38, being under 50. This condition can be performed as a good opportunity to increase the productivity of Bogor Regency. Moreover, it can be a source of economic growth by using the productive age populations that are able to produce their incomes for fulfilling their consumptions and increasing their savings that are mobilized as investments.

4.2 *Role of Productive Workforce*

Productive workforce can contribute positively to economic output. The role of productive workforce of Bogor Regency in 2019, namely role to promote economic growth: economic outputs, includes (a) economic growth rate and (b) gross regional domestic product/GRDP per capita. *Firstly, economic growth rate.* Economic growth is one of macro indicators to see the real performance of the economy in a region. Economic growth can be seen as an increase in the number of goods and services produced by all industries of economic activities in a region during a period of one year. The economic growth rate measures the change of gross regional domestic product (GRDP) at the regional level for the year compared to the previous year [4, 6, 10]. The economic growth rate of Bogor Regency in 2019 is 5.90%, although being under 6.19% of growth in 2018, and still notes more growth compared to provincial growth (West Java Province) 5.14% and national growth (Indonesia) 5.02% in the same year [20]. *Secondly, gross regional domestic product/GRDP per capita.* One indicator of the level of prosperity of population in a region can be seen from the value of GRDP per capita, which is the quotient between added value generated by all economic activities by population. Therefore, the size of population can affect the value of GRDP per capita, while the size of value of GRDP is highly dependent on natural resources and factors of production that are in the region. GRDP per capita at current prices shows the value of GRDP per head or per one resident in one year [6, 13]. GRDP per capita at current prices of Bogor Regency in 2019 reaches 40.31 million rupiahs that grow 6.27% compared to 2018 (37.93 million rupiahs). Meanwhile GRDP per capita at constant prices in 2019 reaches 26.31 million rupiahs (increasing 3.71%) compared to 2018 (25.37 million rupiahs) [5, 20]. Whereas the averages of per capita consumption at current prices of Bogor Regency in 2019 reach 27.17 million rupiahs (higher if compared with 25.71 million rupiahs in 2018) and at constant prices of Bogor Regency in 2019 reach 17.76 million rupiahs (higher if compared to 17.20 million rupiahs in 2018) [7]. The increased average of per capita consumption at both current prices and constant prices indicates the increased average consumption of population and tends to be in accordance with the increased size of population. The surplus value between GRDP per capita and average of per capita consumption can be made as savings.

4.3 *Need for Effective Strategy*

The role of productive workforce of Bogor Regency in 2019 can be improved by four strategies, namely by investing labor supply, human capital, saving, and economic growth. *Firstly, investing labor supply.* The economy is able to take in and productively employ more workers. Through the swelling of the labour force, as more people reach working age. The rise in women's workforce naturally accompanies a decline in fertility and can be a new source of growth. Therefore, the economic policies are prioritized to create jobs and decent work

opportunities for productive workforce (15-64 years age population) [8, 11, 15, 17]. Strategies to invest labor supply are conducted by (a) increasing the provision of employment, (b) increasing women's participation in labor market, (c) applying the job fair, and (d) establishing the business incubation and facilitating the establishment of new businesses [20]. *Secondly, investing human capital.* Decreases in fertility rates result in healthier women and fewer economic pressures at home. Decreases in fertility rates result in healthier women and fewer economic pressures at home. This also allows parents to invest more resources per child, leading to better health and educational outcomes [15, 17]. Transforming a youthful population (0-14 years age population) into a productive workforce (15-64 years age population) requires investment in education at all levels. The access to quality education must be invested at all levels that prepare young people to fully participate in the formal labor market [8]. Strategies to invest human capital are conducted by (a) improving the competence, quality and productivity of workers and apprenticeship for work seekers, (b) improving the competitiveness of workers, and (c) strengthening the capacity of resources and technology [20]. *Thirdly, investing saving.* During the demographic period, personal savings grow and can be used to stimulate the economy. The saving rate increases, as the working ages (15-64 years age populations) also happen to be the prime period for saving. An additional boost to savings that occurs as the incentive to save for longer periods of retirement increases with greater longevity. As the number of dependents/unproductive age populations (0-14 years and ≥ 65 years age populations) decreases, individuals can save more [11, 15, 16, 17]. Therefore, there are savings invested productively. Strategies to invest saving are conducted by (a) increasing the participation of workers in labor market, (b) improving the empowerment of community, and (c) improving the competitiveness of micro and small scale economies in the real sectors [20]. *Fourthly, investing economic growth.* The increase of GRDP per capita is due to the decreasing dependency ratio. The increasing GRDP per capita and the decreasing dependency ratio bring about the increasing domestic demand. The increased fiscal space created by the demographic dividend to divert resources from spending on young and old people (0-14 years and ≥ 65 years) to investing in physical and human infrastructure [11, 15, 16, 17]. Solutions to increase PDRB per capita carry out strategies to invest economic growth, namely (a) developing the leading sector-based economy of community in disadvantaged region, (b) developing the economic growth center in disadvantaged region, (c) developing the technology-based businesses, (d) providing data of investment opportunities and ease of doing business, and (e) improving the competitiveness of micro and small scale economies in the real sectors [20].

5. Conclusion

This research concludes three findings. *Firstly*, based on portrait, the changes of demographic dynamics in Bogor Regency occur because the changes of population age structure occur. The demographic changes in Bogor Regency are indicated by the increased productive age population and the decreased unproductive age population, then leading to the decreased dependency ratio. Ages of 15-64 years are categorized as productive working ages, meanwhile populations aged 15-64 years are said as productive workforce. The sizes of productive aged population (15-64 years) in Bogor Regency drastically increase as consequences of the decreased fertility and mortality rates. Moreover, the sizes of productive aged population highly exceed the sizes of unproductive aged population (0-14 years and ≥ 65 years). *Secondly*, based on role, productive working ages or productive workforce contribute its role to promote the economic outputs, namely economic growth rate and gross regional domestic product (GRDP) per capita. The population structure changes contribute positively to

promoting the economic outputs, so that Bogor Regency has enjoyed a bonus or dividend from its demographic changes. *Thirdly*, based on strategy, the role of productive workforce can be improved by four strategies, namely by investing labor supply, human capital, saving, and economic growth.

6. Recommendation

This research recommends to analyze the productive workforce based on time series data in order to enrich the result and discussion. Moreover, this research uses descriptive-qualitative method so that the next research will quantitatively analyze the effect of variables in productive workforce. It will analyze the effect of productive workforce by population size, population growth rate, population age structure and dependency ratio on the contribution of economic output by economic growth rate and GRDP per capita.

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