

The Effect of Demographic and Socio-Economic Factors on Employment Participation of the Elderly Population in the Informal Sector in Makassar City

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Abstract— 1. Based on the results of the study, it shows a number of variables that have an effect or do not have an effect, namely: a. The age variable (X1) has no significant effect on the work participation of the elderly population in the informal sector in Makassar City. b. The income variable of the head of household (X2) has a significant effect on the work participation of the elderly population in the informal sector in Makassar City. c. The non-labor income variable of the household head (X3) has a significant effect on the work participation of the elderly population in the informal sector in Makassar City. 2. Based on the results of the study showed a number of variables that have differences or no differences, namely: a. From the results of data analysis and research discussion, it is shown that there is a difference between elderly workers with <SD and>SMP education on the work participation of the elderly population in the informal sector in Makassar City. b. The results of data analysis and research discussion show that there are differences between elderly workers with single parent family status and other statuses on the work participation of the elderly population in the informal sector in Makassar City. c. From the results of data analysis and discussion of research, it shows that there is a difference between the elderly workers who are sick and not sick on the work participation of the elderly population in the informal sector in Makassar City. d. From the results of data analysis and research discussion, it shows that there is a difference between elderly workers with more than 3 family dependents and 1-3 family dependents on the work participation of the elderly population in the informal sector in Makassar City.

Keywords— Age, household head income, non labor income, education, family status, health, number of dependents, elderly work participation.

I. INTRODUCTION

The current picture of population aging has become an issue that needs serious attention both in developed and developing countries. Indonesia is now starting to enter the characteristics of an aging population, which is characterized by the growth rate of the young population being slower than the growth of the elderly population. The slow growth of the young population is caused by a decrease in the birth rate, while the accelerated growth of the elderly population is due to an increase in life expectancy.

The shift in the age distribution of the population has an impact on the decline in the young dependency ratio and creates an ideal situation that results in the potential for a demographic bonus. The available opportunities related to this demographic bonus are in the form of the availability of conditions or sizes that are ideal in the comparison between the number of productive and non-productive population. At

that time the dependency rate was the lowest, for the age of the population, which usually lies below 50 percent. That is, the ratio between the working age population compared to the non-working age population is about two times. This is because in the course of the demographic transition, the ever-increasing life expectancy will affect the number of elderly people so that the dependency ratio will increase. So to provide ideal conditions for increasing productivity, the government of a country must make the best use of it if it wants to improve the welfare of its population.

Increasing population growth, especially in developing countries. Indonesia is a country with an old population structure due to the percentage of the elderly population that has reached more than seven percent of the total population so that it requires improving the quality of the population and the socio-economic conditions of the community. The structure of the elderly population is one indicator of the success of achieving human development nationally and is also a challenge in development. Makassar as the capital of South Sulawesi Province is the center of various activities that support development in South Sulawesi Province, which indirectly makes this city the city with the highest population density compared to other areas in South Sulawesi.

The population of Makassar City based on population projections in 2019 is 1,526,677 people. Compared to the population projection in 2018, the population of Makassar City experienced a growth of 1.23 percent. Meanwhile, the size of the sex ratio in 2019 was 98.09 for the male population to the female population. High population growth if it is not balanced with an increase in economic capacity, it will reduce the welfare of the population in an area.

Based on data from the Central Statistics Agency for 2020, it shows that in Makassar City the elderly population still continues to increase significantly. We can see that the 60-64 age group is still relatively high every year, namely in 2020 as many as 39,749 people and the age group of 75 and over as many as 16,052 people. The interesting thing to discuss with the increase in the elderly population is the view that the elderly depend on the part of the productive age population or commonly called the dependency ratio, where the dependency ratio is a comparison between the productive age population and the non-productive age population, including the elderly. This means that an increase in the number of elderly people can provide new challenges for the country's development, one of which is from an economic perspective. productive, (2)

increased government spending on public service facilities. This means that every increase in the proportion of the elderly population, the greater the dependency burden on the productive age population. In addition, the problems of the elderly are not only limited to productivity but also involve other things such as education and health. In Indonesia, most of the workforce works as full-time workers (minimum working hours of 35 hours per week), which is 63.85 percent in August 2020. Meanwhile, 36.15 percent are non-full workers (working hours of less than 35 hours per week). Non-full workers are grouped into two categories, namely underemployed and part-time workers, with 10.19 percent and 25.96 percent respectively. Temporary workers experienced a fairly high increase, which was 7.19 percent in August 2020 compared to August 2019. Labor is defined as all residents who have reached a certain working age limit. The working age in question differs from one country to another. In Indonesia itself, the minimum working age limit is currently 15 years, while there is no maximum age limit. Simanjuntak, (2001). Based on the results of the National Labor Force Survey (SAKERNAS) in 2009. It was found that 47.44 percent of the elderly in Indonesia are still working, 0.41 percent are looking for work, 27.88 percent are taking care of the household, and 24.27 percent of other activities. The high percentage of the elderly working shows that the elderly are still able to work productively to finance their household life, but on the other hand it can indicate that the level of welfare of the elderly is still low so that the elderly still choose to work.

The economic life of the elderly population is related to the general economic situation, namely work opportunities, benefit systems, and family assistance. Andini, (2013). In today's life, social security programs for the elderly population such as pensions, benefits, insurance, nursing homes, and others. The social security program is a basic need of the elderly population considering the condition of the elderly in general has experienced a decline in productivity, decreased mobility, health and decreased intelligence. However, in Indonesia, old-age insurance, such as pensions, is still limited to those who work in the formal sector, not the informal sector. Therefore, the government needs to pay attention to the elderly population who do not have old-age insurance considering that the number of elderly people who still work in the informal sector is more than the elderly from the formal sector. The phenomenon of the increasing number of elderly people in Makassar City from year to year is increasing and there are still many elderly people who participate in the informal sector.

This changes the paradigm of the elderly population who are seen as people who are no longer productive, sickly and burdened in development. However, the working elderly population certainly cannot be equated with the young population because their physical, mental and social conditions have decreased a lot. It is suspected that there are many factors that can influence the elderly population to participate in productive activities, according to Fitri (2012) that the main factor affecting the elderly population continues to work because the majority of the elderly population is in a low economic family condition which causes the elderly to

continue to play a role in fulfilling their lives. Meanwhile, according to Affandi, (2009) not a few elderly people who still support the family of their children who live with them, because they live in a poor family and are generally supported by their health condition, which allows the elderly to continue working. In this regard, the elderly who are still supporting their children's families are because their status is still the head of the family in the household.

The responsibility of the head of the household, which is very large from a psychological and economic perspective, is still mostly carried out by the elderly population who should enjoy old age without the burden of the family. Ministry of Health, (2016). There are many factors that make or decide the elderly population is still working. According to Nursalam, (2003). Work is a necessity that must be done especially to support life and family life. Work is not a source of pleasure, but a way of earning a living, repetitive and challenging. And because of the factors in terms of the capabilities offered so as to make the elderly population still asked to work and survive with their jobs. Some elderly who prefer to do activities where the activity is basically outside of the duties of an elderly person who in particular stays at home enjoying their old age and being in the midst of the family. Affandi (2009). It is suspected that there are several reasons why the elderly prefer to keep working, including; there is a possibility that the elderly still feel physically and mentally strong so that there is no reason for them to leave their jobs, there is a possibility that the elderly enter the world of work due to economic pressure, and there is a possibility that the elderly are still working not based on economic motives but by actualization motives self or emotion.

The presence of the informal sector is considered as one of the economic sectors that emerged as a result of the situation of high labor growth. This sector has been proven to make a major contribution to national development, especially in improving people's living standards. Those who enter small-scale businesses initially aim to find employment opportunities and create income. Son, (2015). In simple terms, the informal worker component consists of residents working with self-employed, business or assisted status, non-permanent/unpaid laborers, casual workers in agriculture, non-agricultural workers, and family/unpaid workers.

The increasing number of elderly people who work in the informal sector is a problem that needs to be studied more deeply. Therefore, it is necessary to analyze the condition of demographic and socio-economic factors on the work participation of the elderly population in the informal sector in Makassar City. Thus, there are several factors that are thought to influence the tendency of the elderly population to participate in work, namely age, income of elderly household heads, non labor income of elderly household heads, elderly education, elderly family status, elderly health, and number of dependents of elderly families.

II. LITERATURE REVIEW

a. *Employment Concept*

Based on Law No. 13 of 2003 concerning Manpower, the concept of manpower is anyone who is able to carry out work

both inside and outside the employment relationship in order to produce goods and services to meet their needs. Meanwhile, according to Mulyadi, (2014) the definition of labor as a population of working age (aged 15-64 years) or the total population in a country who can produce goods and services if there is a demand for their labor, and if they want to participate in these activities. . Every worker has the same opportunity to get a job without discrimination. Furthermore, the workforce can be classified into three groups namely; (1) Educated workers are workers who have expertise in certain or special fields obtained from the field of education. For example: lecturers, doctors, teachers, lawyers, accountants and so on; (2) Trained workers are workers who have expertise in certain or special fields obtained from experience and training. For example: driver, tailor, mechanic and so on; (3) Uneducated and untrained workers, namely workers who rely on labor, do not require prior education or training. For example: coolies, housemaids.

Statistics (2015) defines manpower as the entire population of working age (15 years and over) who have the potential to produce goods and services. The Central Bureau of Statistics divides the workforce (employed), namely: (1) Fully employed, are workers who have a number of working hours > 35 hours a week with certain work results in accordance with the job description; (2) Unemployed or underemployed workers are workers with working hours < 35 hours a week; and (3) Workers who have not worked or are temporarily not working (unemployed), are workers with working hours $0 > 1$ hour a week. Employment issues continue to receive attention from various parties such as the government, educational institutions, communities and families. The government sees manpower issues as one of the central points of national development, because manpower is essentially a development force that contributes a lot to the success of nation building. Where manpower development aims to empower and utilize the workforce optimally, create equal employment opportunities and provide manpower in accordance with national development, provide protection for workers in realizing their welfare and improve the welfare of workers and their families.

b. Informal Sector

The concept of the informal sector was first put forward by "Hart" in an article published in 1972. It was Hart's concept that was later developed and defined by the International Labor Organization (ILO). The results of this study stated that those involved in the informal sector are generally poor, mostly in the main productive age, with low education, wages received below the minimum wage and low working capital, and this sector provides opportunities for vertical mobility. Statistics (2016) defines the informal sector as a small-scale business unit that produces and distributes goods and services with the main objective of creating employment and income opportunities for themselves, even though they face constraints both in capital and physical resources. According to Mulyadi, (2008) the informal sector is defined as business units that receive no or very little formal economic protection from the government. In general, the informal sector is

characterized by a number of distinctive characteristics, such as the production of goods and services, small scale, production units owned by individuals or families, using a lot of labor, and relatively simple technology. Made, (2015).

The informal sector is a business unit with an irregular pattern of activity in terms of time, capital and revenue, almost untouched by government regulations or provisions: capital, equipment and supplies and the turnover obtained is usually small and carried out by low-income people, does not require expertise. specialized in carrying out its activities, and in general the business units employ a few workers from the environment, family relationships, and easily change or switch to other businesses. The informal sector is a business unit that is able to create jobs, job opportunities, and has a high absorption capacity for the workforce.

c. Characteristics of the Informal Sector

Government expenditure is part of fiscal policy (Hakim Abdul, 2002), which is a government action to regulate the course of the economy by determining the amount of government revenues and expenditures each year which is reflected in the APBN document for the national and regional / regional budgets. The purpose of this fiscal policy is to stabilize prices, output levels and employment opportunities and spur economic growth. Government spending can contribute to economic According to Effendi (2009), there are 11 main characteristics in the informal sector, namely: (1) Business activities are not well organized because the emergence of business units does not use the facilities or institutions available in the informal sector; (2) In general, the business unit does not have a business license; (3) The pattern of business activities is irregular, both in terms of location and working hours; (4) In general, the government's policy to assist the economically weak groups does not reach this sector; (5) Business units can enter and leave from one sub-sector to another; (6) The technology used is both traditional and modern; (7) Capital and business turnover are relatively small, so the scale of operation is also relatively small; (8) The education needed to run a business does not require formal education because the education needed is obtained from work experience; (9) In general, businesses belong to the "One-man Enterprise" category and if they employ workers, they come from families; (10) Sources and capital generally come from own savings or from unofficial financial institutions; (11) Products or services are mainly consumed by low-income and sometimes middle-income urban communities.

d. Elderly Population Employment Participation

Participation comes from English, namely participate which means to include, to take part. Participation can be broadly defined as active and voluntary community involvement and participation, both for intrinsic and extrinsic reasons. Hadi, (2009). Meanwhile, according to Anoraga, (2005), work is the use of mental and physical processes in achieving some productive goals. So if the two concepts of participation and work are linked then simply work participation can be interpreted as the involvement or participation of a person actively and voluntarily in a job for

earn income or income. The decision to work is a matter where a person must be able to divide his time, one way to take advantage of the available time is by doing activities in his spare time.

According to Borjas (2008) the assumption of the choice of individual working hours is based on a combination of consumption of goods and leisure time to show maximum individual satisfaction. Means, that individuals will choose the level of combination between goods and leisure time that has the highest possible level of utility with the budget constraint. With a high economic status, usually a person tends to increase income and has a lot of free time which means reducing working hours (income effect). However, when the wage level rises, it encourages families to choose leisure time by working to increase their consumption of goods, which is called the substitution effect.

An increase in the wage rate increases working hours when the substitution effect is greater than the income effect. Pratiwi, (2012) Work is one way for the elderly to achieve prosperity by obtaining it, besides that work is a form of self-existence and the way they spend time in old age. According to Lawson (2000), there are two categories of job characteristics that are mostly chosen by elderly workers, namely full-time and part-time. Such as reducing working hours, changing jobs with flexible hours, or owning your own business. According to Affandy (2009), the elderly population's work participation is an activity of the population aged 60 years and over which can be in the form of working/trying to earn income. work, economic pressure, and self-actualization/emotions. In fact, with the elderly still working, it means that they can still support themselves. In fact, not a few elderly people are still supporting the families of their children who live with them, because they live in underprivileged families.

e. Demographic Factors

The term demography comes from the Greek, namely demos which means people or residents and graphein which means writing. Demography means writing or description of the population. Demographics is defined as the study of population. The Demographic Institute of the Faculty of Economics, University of Indonesia (LDFEUI, 2011) added that demography is a tool to study population changes by utilizing population data and statistics as well as mathematical calculations from population data, especially regarding changes in the number, distribution, and composition or structure.

In general, the process of various population events and their implications for the number, distribution, and composition of the population play an important role in the composition and division of labor in society. However, the general concept of demographic transition is known to only pay attention to changes in natural population growth, namely births and deaths and population mobility. The demographic transition according to LDFEUI (2011) is divided into several stages, namely: The first stage is the pre-industrial stage. At this stage the population growth is very low because the mortality rate is very high. Another trigger is crop failure and

high prices which then lead to starvation so that the body is susceptible to disease. The second stage is the early industrial stage. At this stage, the death rate decreased sharply due to the industrial revolution, technological advances, and the discovery of drugs.

On the other hand, the birth rate is still high, so the population is increasing rapidly. The third stage is the declining birth rate due to fertility factors such as the availability of contraceptives, increased wages, urbanization, reduced subsistence farming practices, education and empowerment of women, increased parental investment costs for children, and social changes. The fourth stage is the mature industrial stage. At this stage, the death and birth rates have reached a low number so that population growth is also low. This is driven by the increasingly advanced social and economic conditions of the community. Based on the concept of demographic transition that has been described, the birth and death rates in the final stages are low. As time goes by, the younger population is getting older. Meanwhile, the low birth rate has resulted in fewer people entering working age than in previous years. As a result, the number of older people is more so that the population structure is dominated by the elderly population (aging population). Robert Malthus, who is famous as a pioneer of population science, is more popularly known as the Principle of Population which states that humans need food to live while the growth rate of food is much slower than the rate of population growth and if there are no restrictions on growth population, humans will experience a shortage of food so that this is a source of human destitution and poverty. In line with the opinion of Mantra, (2000) that the more the number of people, the higher the resulting production.

f. Social and Economic

The relationship between health expenditure on employment opportunities turns out to show different results among the findings of the researchers. Some researchers believe that government spending on health has a positive and significant impact on employment opportunities. In other words, increasing health expenditure has a positive impact on increasing employment opportunities. While some other researchers argue that health government spending does not have a significant impact on employment opportunities. The term economics comes from the Greek, oikonomia consists of two words, namely oikos and nomos. Oikos means household, while nomos means to rule. So oikonomia means managing the household. So that the economy can be interpreted as knowledge that is arranged according to a coherent way in order to regulate the household. According to Ritonga, (2000) household is defined more broadly, the household here is related to social groups which are considered as a unitary group of people who live according to certain norms and rules. According to George, economics is a social science that studies human behavior in people's lives, especially with the effort to meet needs in order to achieve prosperity and welfare. According to Yusuf, (2017) socio-economic is everything related to economic action in meeting community needs such as clothing, food, and housing. Meanwhile, according to Soekanto, (2007) socio-economics is a person's position in

society in relation to other people in terms of the social environment, achievements, and rights and obligations in relation to resources. Then explained that the main components of socioeconomic position include a measure of wealth, a measure of power, a measure of honor, and a measure of knowledge.

A. *Relationship Between Variables*

1. *Relationship of Age to Elderly Work Participation*

Hoetomo, (2005) age is the length of time living or existing (since birth). Age affects a person's perception and mindset. The older they get, the more their grasping power and mindset will develop, so that more and more knowledge is gained. Notoatmodjo, (2003). Performance decreases with increasing age, this is because physical skills such as speed, flexibility, strength and coordination will decrease with age. Junaidi, (2017) that age affects the work participation of the elderly. The older the age, the lower the participation of the elderly to work, this is because the ability to move and work in the elderly will decrease with increasing age. This pattern of decreasing work participation due to increasing age is in line with research by McKee (2006) which states that the decline in elderly work participation decreases slowly with increasing age. This decline is seen after entering the retirement period of 55-60 years in accordance with the current pension policy.

According to McKee, the elderly population in Indonesia who work by opening their own business has increased their working hours until they reach 65 years, but after that they begin to decline. According to Williamson (2001), the age variable in its interaction with low levels of non-work income and health explains the possibility of the elderly working population decreasing with age. Elderly residents who have low non-work income will certainly need additional sources of income by working. However, the increasing age of the elderly, the higher the health problems experienced, thus preventing the elderly from working.

2. *The Relationship of the Income of the Head of the Household to the Work Participation of the Elderly*

According to Karl E. (2007) income is defined as the amount of money that a household can spend during a certain period without increasing or decreasing its net assets. This money received will be a benchmark for community welfare, as stated by Samuelson, (2002) where a person's condition can be measured using the concept of income which shows the total amount of money received by a person or household during a certain period of time. Another definition of income is the amount of income earned from work and usually a person's income is calculated every year or every month. The Central Statistics Agency (2016), based on its classification, distinguishes the income of the population into 4 groups, namely; (a) Very high income group is if the average income is more than Rp. 3,500,000 per month; (b) High income group is if the average income is between Rp. 2,500,000 to Rp. 3,500,000 per month; (c) Medium income group is if the average income is below between Rp. 1,500,000 to 2,500,000 per month; (d) Low income group is if the income is less than Rp. 1,500,000 per month. According to Junandar, (2011) household income is the income of all family members who

are connected to meet the needs of individuals or groups in the household. Meanwhile, according to Afrida (2010), household income is income or income received by the household concerned, both from the income of the head of the household and the income of household members.

Meanwhile, according to Gilarso, (2008) concretely family income comes from: (1) The business itself: for example trading, farming, opening a business as an entrepreneur; (2) Work for other people: for example as civil servants, employees, laborers, and others; (3) Results of the election: for example land that is leased and others. Another factor that can affect the elderly population in working is also stated by Fitri (2012), that the main factor affecting the elderly population continues to work because the majority of the elderly population is in a low economic family condition which results in the elderly population still playing a role in fulfilling their lives. The results of this study are in line with research conducted by Kartika (2014) that low household income is a driving force for the elderly to participate in work.

3. *The Relationship of the Non-Labor Income of the Head of the Household to the Elderly Work Participation*

Theoretically, if non-labor income (wealth) increases and the opportunity cost of leisure time remains constant, then a person will consume more free time, thereby reducing the allocation of work time. This means that an increase in non-employment income will cause a decrease in working hours, an increase in non-employment income which results in a decrease in working hours is called the income effect. Marhaeni, (2004). Glies (2015) shows similar results, that workers who enter retirement in their old age will tend to stop productive activities in their old age. This will affect the work income earned to be relatively smaller than the elderly who work with the same type of work for a longer time.

4. *Relationship of Education to Elderly Work Participation*

According to Sumarsono, (2009) education is one of the important factors in the development of human resources. Education is one form of investment in human resources. Both of them not only increase knowledge, but also increase work skills, independence, and the formation of an individual's personality so as to increase work productivity. Education is seen not only to increase knowledge, but also to increase skills (skills) for the workforce, which in turn can increase the income and welfare of the population. The level of education possessed by a worker will affect his work participation.

The level of education in Indonesia used based on the Central Statistics Agency (2016) is as follows; (1) No school/never been to school; (2) No/not yet finished elementary school; (3) Elementary school; (4) Junior High School; (5) General High School; (6) Vocational High School; (7) Diklat Program (D3 and D4) ; (8) University. The increase in the absorption of elderly workers is influenced by educated elderly workers who still survive in the world of work.

The elderly population and its increasing growth from year to year affect the increase in the absorption of the elderly workforce itself. This is because workers who are less productive at a young age tend to leave the workforce and they tend to choose to invest in schools, so that their old age will be

more productive with a high level of education. Burtless, (2013). According to Affandi (2009), that the elderly population who finished high school education and above were generally elderly people who used to work in the formal sector with relatively high wages and the majority had pension funds, which caused the elderly to no longer work in old age. In contrast, the elderly population who finished high school education and below, the majority of the elderly who used to work in the informal sector with limited income, and rarely have investments for old age. So that in their old age they are forced to keep working to meet their personal and family needs. The results are the same as research by Leonesio, (2012), that the elderly with high school education and above who used to work with good placements with relatively high wages received which made them able to invest, therefore they no longer need to work in old age. Unlike the elderly with high school education and below, those who used to work to meet their needs without thinking about investing in old age. According to Junaidi (2017); The elderly with higher education generally are those who used to have jobs with relatively high incomes and most of them also have security in their old age (especially the elderly who work in the formal sector) so that in their old age they no longer need to work because they can meet their needs without have to work. Panjawa (2020) that the level of education affects the work participation of the elderly population to keep working or leisure time.

5. *Relationship of Family Status to Elderly Work Participation*

According to Mutiara, (2003). That the elderly population who have marital status not married or divorced have longer working hours than the elderly population with married status. Meanwhile, according to Rimbawan (2008) more elderly women are divorced, while older men are more married, this causes the elderly women to lose their family's economic support, so they have to work. Zulfikar (2014), in his research also states the same thing, older women are more divorced. On the other hand, it is the man who is in charge of providing for his family. This causes the loss of family economic support for the elderly woman, which forces the elderly woman to continue working even though she is of no longer potential age, in order to meet her daily needs. According to Nilsen (2012), the marital status of the elderly population has a negative effect on the decision to stop working. Older people who are married tend to work compared to those who are not married. This is because the marital status shows that there are still dependents on their families in meeting their needs.

6. *Health Relationship to Elderly Work Participation*

Health is defined as a state of complete physical, mental and social well-being and not only free from disease or weakness. According to Azwar, (2004) a healthy human being is not only seen from physically healthy, but also spiritually healthy. So that a healthy body in terms of health includes physical, mental and social aspects and is not only free from disease.

All of these aspects will affect the appearance or activities of each individual, in carrying out daily activities such as working, creating, being creative and doing productive and

useful things. Occupational health is a condition of a worker who is free from physical and mental disorders as a result of the influence of work interactions and the environment. Kuswana, (2014). Occupational health as an aspect or element of health that is closely related to the work environment and work which can directly or indirectly affect work efficiency and productivity. Tarwaka, (2014). This study is in line with Fernandez's (2010) research entitled "Labor Force Participation of Elderly Persons in Penang" that health variables affect the participation of the elderly population. However, the health variable is not significant to this work participation because currently the elderly who have health problems can still work given the availability of modern drugs that can alleviate health conditions.

According to Nababan, (2018) that the elderly population whose health is good (daily activities are not disturbed), has a tendency to choose to work in fulfilling their needs and others compared to the elderly population whose health is impaired. The results of this study are in line with research obtained by Murjana (2002) which states that the desire of the elderly who want to continue to help the household economy is carried out to carry out policies, supported by good physical conditions and the available opportunities. Elderly people who are in good physical condition are 1.3 times more likely to work than elderly people who are not in good physical condition. The elderly population, both men and women who have poor health, will make decisions to reduce their participation in work. Mette (2002).

According to Affandi (2009), the elderly who work can be seen from their health, which allows the elderly to work or not. Older people who are healthy will be more likely to participate in the economy than elderly people who have poor health conditions. Poor health conditions will encourage the elderly to immediately leave the labor market. Murjana (2002) the desire of the elderly in helping the family economy is supported by good physical conditions that allow the elderly woman to continue working. Elderly residents who have poor health conditions will reduce their participation in work. The same research is also in line with Junaidi, (2017) that health has a positive and significant influence on the work participation of elderly women. In his research, it was stated that elderly women with a large number of sick days will have less participation in work than elderly women who have fewer sick days.

7. *Relationship between Number of Family Dependents on Elderly Work Participation*

Research conducted by Kemala (2006) regarding investment, it is very influential on job opportunities and income. The amount of investment value will determine the amount of labor demand. Theoretically, the greater the value of the investment made, the greater the additional use of labor. Assuming that the economy is always trying to achieve optimal conditions, increasing the use of capital through investment activities, which means increasing production capacity, will also increase the use of labor, which in turn raises the maximum level of output that can be achieved. The greater the use of capital, the greater the use of labor, and the greater the output that can be produced

With an increase *i* According to Priyono, (2016) the number of family dependents is a person whose life is borne by the head of the family who lives in one household, including the head of the household itself, because the more family members means the relatively large number of family needs that must be met so that it tends to be more encourage someone to work in order to meet their needs. This number of dependents will have a huge impact on the level of family welfare if it is not balanced with the appropriate amount of income.

Based on the Central Statistics Agency (2016), the number of dependents is grouped into three groups, namely: (a) the number of low family dependents is 1-3 people; (b) the number of medium-sized family dependents is 4-6 people; and (c) the number of family dependents is high, namely > 6 people. The results of this study are in line with what was done by Affandi (2009) which states that the economic reasons that cause the elderly to work, with the large number of elderly working, means that the elderly can still support themselves, not even a few elderly who still support the family of their children who live with them, because living in a poor family.

III. METHODS

Regression analysis models that discuss categories in the dependent variable are logistic models, also commonly called logit models, and if there are only two categories are called binary logistic models. Categorical data analysis using logistic regression model using a dummy variable with a value of one-zero on the dependent variable. Giving a score of one (1) is based on what category you want to research, while the comparison is given a value of zero (0). The logistic regression model based on one-zero indicators, used on the dependent variable (Y), can also be used on the independent variable (X).

The Y or p function is a non-linear function, so it is necessary to perform a logit transformation to obtain a linear function in order to see the relationship between the response variable and the explanatory variable. By performing the logit transformation of p, we get a simpler equation, namely:

$$Y = \ln \left\{ \frac{p}{1-p} \right\} = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + e$$

In such a way that the logit transformation model becomes:

$$\text{Logit}(P) = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + e$$

$$P = \frac{\exp(\beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + e)}{1 + \exp(\beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + e)}$$

P is the probability (proportion, p), ie the occurrence of a "successful" event, namely y = 1 with a probability value of 0 p 1 and i is the parameter value with i = 1, 2, 3,.....n.

The general equation of the logistics model:

$$Y_i = \ln \left(\frac{P_i}{1-P_i} \right) = B_0 + B_i X_i + \mu$$

$$P_i = 1 \rightarrow Y_i = \ln \left(\frac{1}{1-1} \right) = \ln \frac{1}{0} = B_0 + B_i X_i + \mu$$

$$P_i = 0 \rightarrow Y_i = \ln \left(\frac{0}{1-0} \right) = \ln \frac{0}{1} = B_0 + B_i X_i + \mu$$

Estimated Model:

$$\hat{Y} = \ln \left(\frac{\hat{p}_i}{1-\hat{p}_i} \right) = \hat{B}_0 + \hat{B}_i X_i$$

Logistic regression is different from linear regression, in linear regression a normality test is required, however, in this

logistic analysis, normality testing is not required because the independent variable is a dummy variable. Logistic regression also does not require heteroscedasticity test, so that the independent variable does not require homoscedasticity for each of the independent variables. Gujarati, (2003).

Based on the categorization of the determined variables, the logistic regression model is formulated as follows:

Where Y is the dependent variable or the dependent variable and X1, X2, X3, D1, D2, D3, D4, is the independent variable or independent variable. From what was stated by Widarjono, (2010) this study used logistic regression because the dependent variable was qualitative and had two classes/categories (binary). From equation (1.1) then equation (1.2) is used, namely logistic regression as follows:

$$Y = \left(\frac{p}{1-p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 D_1 + \beta_5 D_2 + \beta_6 D_3 + \beta_7 D_4 + e \dots \dots \dots (1.2)$$

Information:

Y = Employment participation of the elderly in the informal sector in Makassar City

P = Probability of active elderly workforce (participating) in activitie economy,

1-P = Probability of elderly workers who are not active in economic activities

β_0 = constant

$\beta_1 - \beta_7$ = Regression coefficient

X1 = Elderly Age

X2 = Head of Household Income

X3 = Non Labor Income Head of Household

D1 = Education

D= 1 = Elementary school graduate

D= 0 = > SMP

D2 = Family Status

D = 1 = single parent

D = 0 = other

D3 = Health

D = 1 = Pain

D = 0 = No Pain

D4 = Number of Family Dependents

D = 1 = 1-3 people

D = 0 = > 3 people

e = error terms

IV. ANALYSIS AND DISCUSSION OF RESULT

This study aims to determine the effect of age, income of the head of household, non-labor income of the head of household, education, marital status, health and number of dependents on the decision of elderly workers to participate in work in the informal sector in Makassar City. The analytical tool used is a logistic regression model using SPSS 25.

There were as many as 150 respondents who were chosen to represent the reasons for the elderly workforce to decide to work. The selected respondents are respondents who participate in work in the informal sector in Makassar City. To prove the hypothesis, using logistic regression. Scenarios will be carried out, which will then select the best model. The best model criteria will be selected based on statistical justification.

The results of the calculation between the dependent variable (decision on work participation) and the independent variables are age, income of the head of the household, non-labor income of the head of the household, education, family status, health and number of dependents of the family using the logistic regression method are presented in table 1 as follows:

TABLE 1.
Logistics Regression Analysis Results
The Effect of Independent Variables on Elderly Work Participation in the Informal Sector in Makassar City

Variable	B	S.E	Wald	Sig.	Exp(B)
X1	.220	.317	.480	.488	1.246
X2	.000	.000	7.498	.006	1.000
X3	.000	.000	5.919	.015	1.000
D1	2.909	1.686	2.975	.085	18.336
D2	-2.964	1.406	4.446	.035	.052
D3	7.378	2.094	12.417	.000	1601.005
D4	6.373	1.606	15.756	.000	585.772
Constant	-37.089	22.366	2.750	.097	.000
Chi-square	167.216				
2 Log likelihood	38.563				
Cox & Snell R Square	0.672				
Nagelkerke R Square	0.900				

Source: SPSS 25 (2021) Processed Data

Based on the results of the regression in table 1 shows the results of the regression with a significant level of 5%, the variables have an effect on working participation in the informal sector in Makassar City. The variable, X1, ie age does not significantly affect the work participation of the elderly population in the informal sector in Makassar City. While X2, X3 are the income of the head of the household and non-labor income of the head of the household, respectively, have a significant effect on the work participation of the elderly in the informal sector in Makassar City and D1, D2, D3, D4, namely education, family status, health, number of dependents. statistically there is a difference.

a) *Analysis of the Effect of Age on the Work Participation of the Elderly*

The estimation results in table 1 are age has a coefficient of 0.220 with a probability of 0.488. Based on the estimation results show that age has a significant negative effect on the probability of the elderly working. This is because the older the age, the lower the probability of the elderly to work.

The results of this study are in line with Novita's research, (2019) that the higher the age, the lower the participation of the elderly workforce. This is in line with the hypothesis that age has a negative effect on elderly work participation. The results of this study are in line with Junaidi's research, (2017) that age has a significant negative effect on the probability of the elderly working. The older the age, the lower the probability of the elderly to work, this is because the ability to do activities and work in the elderly will decrease with increasing age. The possibility of the elderly population in Indonesia not to work is greater when they get older, one of which is due to the type of sector in which the elderly work.

The results of this study are also in line with research by McKee (2011), the elderly population in Indonesia who work by opening their own business, their working hours are increasing until they reach the age of 65 years but after that they begin to decline.

b) *Analysis of the Effect of the Income of the Head of the Household on the Work Participation of the Elderly*

The estimation result in table 1 is that the income of the head of the household has a coefficient of 0.000 with a probability of 0.006. This shows that the income variable of the head of the household has a great opportunity to work participation, meaning that income will have a very large impact on the work participation of the elderly.

The results of this study are in line with research conducted by Sudibia, (2014) that low household income is a driving force for the elderly to participate in work. The results of this study are in line with research conducted by Fitri (2012), that the main factor that affects the elderly population continues to work because the majority of the elderly population are in low-income family conditions which result in the elderly population still playing a role in fulfilling their lives. The results of this study are also in line with research conducted by Andini (2014) that low household income is a driving force for the elderly to participate in work.

c) *Analysis of the Effect of Non-Labor Income of the Head of the Household on the Work Participation of the Elderly Population*

The estimation result in table 1 is that the non-labor income of the household head has a coefficient of 0.000 with a probability of 0.015. This shows that the non-labor income variable provides a great opportunity for the participation of the elderly workforce, meaning that non-labor income has an impact on the elderly workforce in participating in work. This fact shows that there are basically two categories of elderly workers in terms of working hours. First, the elderly who work just to increase family income or just fill their spare time (so they work less hours). Second, the elderly who work as the main breadwinner (head of the family), because they work in low-productivity jobs, the extension of the work time allocation is a survival strategy taken by the elderly.

These results confirm previous findings that the ownership of non-labor income in the elderly can reduce their probability of continuing to work at retirement age. The problems faced by Indonesia are the same as other developing countries, where many elderly workers do not have pension insurance. Only one in ten elderly people in Sri Lanka receive pension insurance, this encourages the elderly population to continue working in the informal sector. Vodopivec, (2011).

The results of this study are in line with the findings of Berglund, (2017) that those who work with high physical demands generally work at a low level so they have low non-labor income. This encourages them to keep working even though they are reaching retirement age. If judged from their health condition, those who are accustomed to high physical demands generally have good health conditions that allow them to continue working at retirement age. The results of this

study are also in line with research by Williamson (2001), that the elderly population with low incomes will need additional sources of income by working in other sectors. The results of this study are also in line with research conducted by Andini, (2013) that the presence or absence of old-age benefits is a direct factor that affects the elderly still working. The large number of elderly people who are still active in the labor market (especially in developing countries) is caused by the absence of social security in old age.

d) Analysis of the Effect of Education on the Work Participation of the Elderly

The estimation result in table 1 is that education has a coefficient of 2,909 with a probability of 0.085. This shows that education does not have a significant effect on the work participation of the elderly population, meaning that education is not a driving factor in carrying out elderly work participation in the informal sector. This is because the majority of the elderly who work in the informal sector generally have a history of low education.

The results of this study are in line with research conducted by Dimos (2017), that the education variable shows an insignificant negative effect on the participation of the elderly workforce in Padang City because in general the elderly in Indonesia have a low educational background. This is also supported by research conducted by Affandy (2009), that the elderly with higher education are generally those who used to have jobs with relatively high incomes and most of them also have old-age/retirement insurance (especially for the elderly who used to work in the agricultural sector). formal) so that in their old age they no longer need to work because they can provide for themselves and their families without having to work. On the other hand, the elderly with low education are generally those who used to work in jobs with limited income (so they are unable to save/invest for their old age), so that when they enter old age, they still have to work to meet the necessities of life.

This is also supported by research conducted by Adietomo, (2018) that those with basic education have a tendency to continue working at retirement age compared to those with higher education. Those with basic education are absorbed into informal types of work that do not have a pension guarantee, so they are forced to work even though they have entered retirement age. This is also supported by research conducted by Leonesio, (2012). Unlike the case with the elderly with low education, the elderly are forced to work only to meet their needs at that time, without thinking about old age guarantees, thus when entering old age the elderly do not have savings that can guarantee their old age.

e) Analysis of the Effect of Family Status on the Work Participation of the Elderly

The estimation result in table 1 is that family status has a coefficient of -2,964 with a probability of 0.035. The results of the study indicate that there are differences between workers with single parent status and other elderly workers who participate in work in the informal sector. The fact that the elderly population with the status of the head of the household

has a higher probability of work participation than the elderly population who has a status other than the head of the household. This is driven by economic needs and responsibilities in family relationships and dependents who must be paid for in daily needs. This shows that even though they have entered an age that is no longer productive, but with the large responsibility as the head of the household, the elderly must continue to work in order to meet the needs of their household life. In fact, the magnitude of the responsibility causes the elderly with relatively old age (65 years and over) to be "forced" to keep working.

The results of this study are in line with research conducted by Rimbawan (2008) that the elderly are more divorced. This causes the elderly to be forced to work in order to survive to meet their daily needs. In other words, elderly people with other marital status (divorced/dead) have longer working hours than older people with married status. These results are in line with research conducted by Utami (2017), namely the elderly population in Padang City which includes socio-demographic variables with marital status simultaneously affecting the labor supply of the elderly population.

f) Analysis of the Effect of Health on the Work Participation of the Elderly

The estimation result in table 1 is that health has a coefficient of 7,378 with a probability of 0.000. The results showed that there was a difference between elderly workers who were not sick and workers who were sick to participate in work in the informal sector. So it can be said that the better the health condition of the elderly, the greater the opportunity to participate in work compared to the sick elderly workforce.

The results of this study are in line with research conducted by Gusti (2019) that the health of elderly respondents in the city of Mataram is in a healthy condition with a fairly long outpouring of working hours (more than 35 hours per week. This is in line with Putri's research, (2020) that health conditions has a significant positive effect on the work participation of the elderly. The results of this study are also in accordance with the research of Murjana (2002) that the desire of the elderly who want to continue to help the household economy is supported by good physical conditions and the available opportunities. Elderly who are in good physical condition have the possibility work 1.3 times more than the elderly who are in poor physical condition. The elderly population, both men and women who have poor health, will make decisions to reduce their participation in work.

g) Analysis of the Effect of the Number of Family Dependents on the Work Participation of the Elderly

The estimation results are in table 1. namely the number of dependents of the elderly family has a coefficient of 6373 with a probability of 0.000. The results showed that there was a difference between the elderly population with more than 4 family dependents and 1-3 family dependents on work participation in the informal sector.

The results of this study are in line with what was done by Affandy (2009) that not a few elderly people still support the family of their children who live with them. In this regard, the elderly who are still supporting their children's families are because their status is still the head of the family in the household. The results of this study are also in line with research conducted by Fitri, (2012) that the number of family members determines the number of family needs. The more family members, the relatively large number of family needs that must be met so that it tends to encourage someone to work to meet the economic needs of his family. The results of this study are also in line with research conducted by Sudibia (2014) that the more family members who are still dependents, the more likely the elderly population decides to work.

V. RECOMMENDATIONS

- 1) The Makassar City Government can encourage policies that provide leeway for workers who have entered old age but are still able to work, for example regulating flexibility in working hours and workplace environmental conditions that are created friendly for elderly workers as well as facilities obtained by the elderly such as guarantees for health services on a regular basis. routine so that elderly workers in Makassar City can have a positive impact on the success of development.
- 2) The Makassar City Government can further increase the elderly's access to social security for the elderly population who work in the informal sector and seek to establish an old-age benefit program for the elderly population who are absorbed into the informal sector. Considering the number of elderly people who still work in the informal sector is more than the elderly who work in the formal sector.
- 3) There are still many shortcomings in this study, it is hoped that further researchers will develop research models using variables outside of this study.

V. CONCLUSION

Based on the results of research and analysis that has been done, it can be concluded as follows:

1. Based on the results of the study, it shows a number of variables that have an effect or do not have an effect, namely:
 - a. The age variable (X1) has no significant effect on the work participation of the elderly population in the informal sector in Makassar City.
 - b. The income variable of the head of household (X2) has a significant effect on the work participation of the elderly population in the informal sector in Makassar City.
 - c. The non-labor income variable of the household head (X3) has a significant effect on the work participation of the elderly population in the informal sector in Makassar City.
2. Based on the results of the study showed a number of variables that have differences or no differences, namely:
 - a. From the results of data analysis and research discussion, it is shown that there is a difference between elderly workers with <SD and>SMP

education on the work participation of the elderly population in the informal sector in Makassar City.

- b. The results of data analysis and research discussion show that there are differences between elderly workers with single parent family status and other statuses on the work participation of the elderly population in the informal sector in Makassar City.
- c. From the results of data analysis and discussion of research, it shows that there is a difference between the elderly workers who are sick and not sick on the work participation of the elderly population in the informal sector in Makassar City.
- d. The results of data analysis and research discussion show that there is a difference between elderly workers with family dependents > 4 people and the number of family dependents 1-3 people on the work participation of the elderly population in the informal sector in Makassar City.

REFERENCES

- [1] Affandi, M. (2009). Factors Affecting Elderly Population Choose to Work. *Journal of Indonesian Applied Economics* Volume 3 Number 2 October 2009, 99-110. Malang: Faculty of Economics, Universitas Brawijaya. Taken on October 26, 2016 from jiae.uib.ac.id/index.php/jiae/article/download/131/100.
- [2] Andini Ni Kadek, et al. 2013. Factors Affecting Older People Still Working. *Scientific Journal: Faculty of Economics and Business, University of Udayana*.
- [3] BPS. 2013. Indonesian Population Projection 2010-2035. Jakarta: BPS. Taken on June 23, 2016 from <https://www.bps.go.id/linkTabelStatistik/view/id/1274>
- [4] Bagoes Mantra, Ida. 2003. *General Demographics*. Yogyakarta: Student Library..
- [5] Berglund, T., Selden, D., & Halleröd, B. (2017). Factors affecting prolonged working life for the older workforce: The Swedish case. *Nordic Journal of Working Life Studies*, 7(1), 19-36. doi:10.18291/njwls.v7i1.81396.
- [6] Borjas, George. 2008. *Labor Economics*. 4th Edition. Harvard University.
- [7] Effendi, 2009. *Management of Community Health Centers*. Jakarta: Salemba Medika.
- [8] Ermawati, Liya. 2016. *Econometrics Module*. UIN Raden Intan Lampung.
- [9] Fitri, Hanna and Basri. 2011. The factors that influence the elderly working in the Simpang Baru village, Tampan District, Pekanbaru City.
- [10] Ghozali, priest. 2001. *Application of Multivariate Analysis with SPSS Program*. Semarang : Diponegoro University Publishing Agency.
- [11] Gilarsa, T. 2008. *Introduction to Microeconomics*. Edition : Five . Yogyakarta : Kanisius.
- [12] Junaidi. 2015. Socio-Economic Factors Affecting the Involvement of the Elderly Population in the Labor Market in Jambi Province. *Scientific Journal: Jambi University*.
- [13] Demography Institute, Faculty of Economics, University of Indonesia. (LDFEUI). 2011. *Development of Behavioral Policies Concerning the Consequences of the Elderly Population: The Case of Indonesia*. Jakarta: Demographic Institute of the Faculty of Economics of Indonesia.
- [14] Made Susilawati et al. 2014. Determinants of Employment Status based on Socio-Economic Characteristics of the Elderly in Rural Bali Province. *Scientific journals. Faculty of Economics, Udayana University : Denpasar, Bali*.
- [15] Madrid. 2021. *STATISTICS. Application of Regression Model in Scientific Writing*. Makassar : PT. National Media Indonesia.
- [16] Mankiw, G.N. 2006. "Macroeconomics Sixth Edition". By Worth Publishers News York and Basingstock. Translation. Jakarta : Erlangga.
- [17] Manning, Chris and Tadjuddin Noer Effendy. 1996. *Urbanization, Unemployment and the Informal Sector in Cities*. Jakarta: Indonesia Torch Foundation.

- [18] Mulyadi, S. Economics of Human Resources in the Perspective of Development. Jakarta : PT. Raja Grafindo Persada, 2014). Thing. 71.
- [19] McEachern, William. 2000. "Macroeconomics - Contemporary Approach". Sigit Triandaru Translation. Jakarta: Four Salemba.
- [20] McConnell. R Campbell at all. 2010. Contemporary Labor Economics. 9th edition. North America: McGraw-Hill.
- [21] Mckee, Douglas. 2006. A Dynamic Model of Retirement In Indonesia. Journal International: California Center for Population Research.
- [22] Munarfah, A., & Muhammad, H. 2009. Research Methods. Jakarta : CV. Universal Literacy Practice.
- [23] M.T Ritonga et al. 2000. Socio-Economic Knowledge. Jakarta : Erlangga.
- [24] Purwanto. 2007. Research and Educational Instruments Development and Utilization. Yogyakarta: Student Library.
- [25] Pratiwi, Reni. 2012. Basic Concepts of the Informal Sector, Characteristics and Roles of the Informal Sector.
- [26] Sugiyono. 2015. Research Methods (Quantitative, Qualitative and R&D Approaches). Bandung: CV. Alfabeta.
- [27] Sumarsono, S. 2009. Human Resource Economics Public Policy Theory. Yogyakarta: Graha Ilmu. Thing. 3.
- [28] Supardi.2005. Methodology of Economics and Business Research. Yogyakarta: UIIPress.
- [29] Seville, Consuelo G. et. al. 2007. "Research Methods".
- [30] Soekanto Soerjono. 2007. Introduction to Sociology. Jakarta : PT. Grafindo King.
- [31] Todaro, M.P. 2011. "Economic Development Volume 1 Edition 10". Jakarta: Erlangga.
- [32] Tri Wahyudi, Setyo. 2016. "Concept and Application of Econometrics Using E-VIEWS". Jakarta : PT. King Grafindo Persada.
- [33] Tiur Sarachi Nababan .2019. Analysis of Elderly Labor Participation in Central Java Province. Case Study : Susenas 2018
- [34] Law Number 13 of 1998 concerning the Welfare of the Elderly (State Gazette of 1965 Number 32, Supplement to the State Gazette Number 2747).
- [35] Vodopivec, M., & Arunatilake, N. (2011). Population aging and labor market participation of old workers in Sri Lanka. Journal of Population Aging, 4(3), 141–163. doi:10.1007/s12062-011-9045-5.
- [36] Zulfikar, Wimbo. 2014. Analysis of the Absorption of Older Workers in Central Java. Scientific Journal: Faculty of Economics and Business, Diponegoro University.