

# Factors Affecting the Working Hours of the Elderly in the Agricultural Sector in Buduk Village, Mengwi District

Ni Luh Gede Dyana Pandu Widjayanti<sup>1\*</sup>, Anak Agung Istri Ngurah Marhaeni<sup>2</sup>

<sup>1-2</sup> Bachelor of Development Economics, Universitas Udayana, Indonesia

Email: [dhyanapanduwidjayanti09@gmail.com](mailto:dhyanapanduwidjayanti09@gmail.com)

\* Corresponding Author : Ni Luh Gede Dyana Pandu Widjayanti

**Abstract** The objectives of this study are: (1) to analyze the motivation of elderly individuals to remain employed in the agricultural sector; (2) to examine the simultaneous and partial effects of elderly health, work experience, age, and income outside the agricultural sector on the working hours of the elderly in agriculture; and (3) to analyze the moderating role of income outside the agricultural sector in the relationship between elderly health and the working hours of elderly individuals in the agricultural sector in Buduk Village, Mengwi District. This study employed a quantitative, associative approach conducted in Buduk Village, with a sample size of 100 elderly individuals aged 60 and above. The sampling method used was non-probability sampling, including accidental sampling, snowball sampling, and purposive sampling techniques. Data were collected through observation, structured interviews, and in-depth interviews. The data were analyzed using moderation regression analysis and processed with the assistance of SPSS software. The results of the study indicate that: (1) the primary motivation for elderly individuals to continue working is the absence of others to manage their agricultural land; (2) the variables of elderly health, work experience, and income outside the agricultural sector have a negative and significant effect on the working hours of the elderly in agriculture, while the age variable has a negative but insignificant effect; (3) income outside the agricultural sector serves as a pseudo-moderating variable in the relationship between elderly health and their working hours in the agricultural sector in Buduk Village. The implications of these findings highlight the need for policies that support improving the quality of life of the elderly and empowering them economically through alternative income sources that do not rely heavily on physical labor.

**Keywords:** Agricultural Sector; Elderly Population; Elderly Welfare; Elderly Working Hours.

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## 1. Introduction

In the context of national development, the agricultural sector is expected to play a greater role in enabling farmers to determine the priority of agricultural commodities that serve as key ventures, especially in developing countries like Indonesia. An integrated farming enterprise is fundamentally aimed at increasing farmers' income to support their families and improve their overall welfare (Mubyarto, 1995).

The agricultural sector is one of the main providers of food for the population; thus, accelerating agricultural development plays a vital role in ensuring sufficient and affordable food for all segments of society. The Gross Regional Domestic Product (GRDP) serves as an indicator of a region's economic condition—this study highlights the economic development in Badung Regency, Bali Province. In the past three years (2021–2023), the economic structure of Badung Regency has remained dominated by six main categories: Transportation and Warehousing; Accommodation and Food Service Activities; Construction; Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles; Information and Communication; and Agriculture, Forestry, and Fisheries (BPS, 2024).

In a sustainable agricultural system, farmers must utilize production factors efficiently and effectively to enhance their farming productivity. The number of agricultural households refers to households engaged in at least one type of agricultural activity, where

some or all of the output is intended for sale or exchange—especially in food crop farming, including those whose production is entirely for self-consumption (BPS, 2023). The highest number of households with members working as farmers is found in Mengwi District (Department of Agriculture and Food, Badung Regency, 2024), indicating that a significant portion of the population in this area still relies on agriculture as their primary livelihood.

Efforts to increase food crop production through extensification have become increasingly difficult. Although Mengwi District has the highest number of farming households, it is also experiencing significant land-use conversion. For three consecutive years, Mengwi District has recorded the highest rate of rice field conversion in Badung Regency (Department of Agriculture and Food, Badung Regency, 2024). Consequently, improving food crop production through production efficiency becomes a strategic alternative, allowing farmers to use production inputs optimally. Human resources are one of the most critical factors for increasing food crop production. Based on the *Mengwi District in Figures 2024*, the highest number of farmers is located in Buduk Village, with a total of 10,129 farmers—representing approximately 7.83% of the total population.

The lack of interest among younger generations in the agricultural sector has become a growing concern in many countries, including Indonesia. Several contributing factors include the perception that agriculture is unprofitable, the low income levels, and the view of agricultural work as outdated and labor-intensive. One of the main causes is the lack of awareness of the vast potential within the agricultural sector, such as agribusiness, agricultural technology, and non-traditional employment opportunities. According to Laurens Klerkx in the *Journal of Agricultural Education and Extension* (2019), there is a significant relationship between young people's understanding of agriculture and their interest in pursuing a career in the sector. The study reveals that increasing awareness of opportunities in agriculture—such as the application of advanced technologies and agribusiness—can enhance their engagement. Furthermore, better education and training on modern agricultural practices can attract younger generations. Due to the lack of productive-age human resources interested in agriculture and the abundance of available opportunities, the sector is now predominantly occupied by the elderly.

Since 2021, Indonesia has entered the phase of an ageing population, where approximately 1 in 10 individuals is categorized as elderly. This demographic trend can offer a second demographic dividend, in which a growing elderly population remains productive and contributes to the national economy (Heryanah, 2015). However, older adults can also pose developmental challenges if they are no longer productive and become part of the vulnerable population.

Data from the August 2024 National Labor Force Survey (Sakernas) show that more than half of the elderly population (55.32%) is still working. Approximately 3 in 5 elderly individuals (65.24%) in rural areas remain employed—a higher percentage compared to urban areas (48.55%). More than half of these older workers (52.19%) are employed in the agricultural sector, and about two-thirds (66.65%) are self-employed or assisted by paid or unpaid workers. Of those still working, 84.75% are in the informal sector, 75.21% are classified as vulnerable workers, and 18.66% are temporary workers. Moreover, 20.69% of elderly workers are reported to work more than 48 hours per week (excessive hours). This condition is further supported by improvements in elderly health, which contributes to the increase in Life Expectancy (LE).

Life Expectancy (LE) is one of the key indicators reflecting the health status of a population. An increase in LE suggests improvements in public health and longer life spans. Advancements in the health sector positively influence economic and other sectors (Takii et al., 2007). Badung Regency records the highest LE in Bali, which can be attributed to the continuously improving quality and availability of healthcare services. This progress in health services is positively correlated with higher life expectancy (Mantra, 2000:111). A significant impact of this trend is the high availability of elderly labor, particularly in agriculture. In Mengwi District, the population aged 60 and above reaches 6,635 people—comprising 3,249 males and 3,386 females—making it the district with the third-highest number of elderly individuals still actively working in the agricultural sector (BPS, 2024).

In general, the elderly begin to experience health problems and functional decline that may affect their well-being. Hence, the goal of elderly individuals in society today is not merely to avoid illness but also to maintain a good quality of life despite potential health issues or functional limitations (Meyer and Sullivan, 2003). According to Law No. 36 of 2009 on Health,

health care efforts for the elderly should aim to ensure they remain healthy and socially and economically productive.

Older adults also have basic needs that serve as a driving factor for their continued participation in the workforce. These needs are essential for ensuring their independence and are aligned with Maslow's hierarchy of needs (1970), which includes physiological needs, safety needs, belongingness and love needs, esteem needs, and self-actualization (Nurhidayah, 2012). To fulfill these needs, many elderly individuals seek emotional support and close relationships with family members, particularly their children.

Based on the aforementioned explanation, this study aims to analyze in depth the factors influencing the working hours of the elderly in the agricultural sector in Buduk Village, Mengwi District. Not all elderly individuals share the same health status, work experience, age, and income outside of agriculture, which may result in varying levels of labor input. Therefore, the objectives of this study are to analyze: (1) the motivation of elderly individuals to remain active in the agricultural sector; (2) the simultaneous influence of elderly health, work experience, age, and income outside the agricultural sector on the working hours of elderly agricultural workers; (3) the partial effect of elderly health, work experience, age, and income outside the agricultural sector on the working hours of elderly agricultural workers; and (4) the moderating role of income outside the agricultural sector in the relationship between elderly health and their working hours in agriculture in Buduk Village, Mengwi District.

## 2. Method

This study employed a quantitative and associative research approach. The quantitative method was used because the data collected were in numerical form and analyzed using statistical techniques. As such, this study falls under the category of quantitative research. Sampling was conducted by selecting an equal number of respondents from each *banjar* (traditional village unit), with 10 respondents per *banjar*, resulting in a total of 100 respondents. The research was conducted in Buduk Village, Mengwi District, and data were collected through observation, structured interviews, and in-depth interviews. The analytical technique used was moderated regression analysis, chosen on the basis that a moderating variable may either strengthen or weaken the relationship between the independent and dependent variables.

## 3. Results And Discussion

### Results of Data Analysis on Motivation of the Elderly to Continue Working in the Agricultural Sector

This description is to clarify the motivation of the elderly in maintaining their role in the agricultural sector. Data collection has been carried out through observation, structured interviews and in-depth interviews and analyzing data on a number of elderly respondents aged 60 years and over who are still actively working in the agricultural sector.

**Table 1. Results of Analysis of Elderly Motivation to Continue Working**

Motivation for the Elderly		
No.	Information	Percentage
1	No one manages the farmland	64.0
2	To meet daily needs	34.0
3	Supporting children/grandchildren	1.0
4	Continuing the Family Business	1.0
Amount		100.0

Based on Table. 1, the main motivation for the elderly to continue working in the agricultural sector is because there are no other parties to manage the land with a percentage of 64 percent. This shows that the sustainability of agricultural land management still depends heavily on the role of the elderly. In addition, daily economic needs are also a significant factor with a percentage of 34 percent. Other reasons such as financing children/grandchildren and

continuing the family business were only recorded at 1 percent each, indicating that the motivation of the elderly is more practical than sentimental or inheriting the business.

This answer is in line with the results of research conducted by Nurfitriani et al. (2021) which states that some elderly farm laborers still have small plots of land that they use to grow food crops such as vegetables, tubers and even horticultural crops such as chilies. This land utilization is one way for elderly farm laborers to overcome their food needs when they are in difficult conditions, such as having no work. Nurfitriani et. al (2021) in their research stated that the elderly work to remain independent. Their intrinsic motivation includes a reluctance to depend on others (children/grandchildren). This is in line with the finding that they will continue to manage their own land if no one takes care of it.

### Results of Data Analysis Using Simultaneous Regression Coefficient Significance Test (F Test)

**Table. 2 Simultaneous Regression Coefficient Significance Test (F Test)**

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17292.911	5	3458.582	66,239	.000b
	Residual	4908.079	94	52,214		
	Total	22200.990	99			

Based on Table. 2 above shows the Sig. value of  $0.000 < 0.05$ . Therefore, it can be concluded that the variables (Elderly Health), (Work Experience), (Age), M (Income Outside Agriculture) simultaneously affect Y (Work Hours).  $X_1X_2X_3$

This simultaneous influence is very important in understanding the factors that influence respondents' work behavior, because although one variable may have a relatively small influence individually, when combined, the four variables form a significant pattern in influencing the dependent variable. This finding is in line with the results of research conducted by Putri and Santoso (2018) which stated that the health of the elderly plays an important role in determining work productivity because healthy physical conditions allow them to work longer and more optimally. In addition, research by Haruyama et. al (2020) revealed that having work experience in agriculture requires a shorter duration of dependency than those who do not, while also showing benefits for active lifestyles and mental health.

Widiyanto and Hartono's (2019) research also supports these results by finding that age contributes to a person's ability to manage working hours, where older workers tend to adjust working hours based on their physical condition and experience. In addition, non-agricultural income as a supporting variable also affects the allocation of working time, as explained by Kusuma (2020) who stated that additional income can motivate the elderly to manage working hours in order to meet economic needs.

### Results of Data Analysis Using Partial Regression Coefficient Significance Test (t-Test) and Moderated Regression Test

**Table. 3 Significance Test of Partial Regression Coefficient (t-Test) and Moderation Regression Test**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	67,457	9,516		7,088	.000
	X1 (Elderly Health/Three Months)	-1,792	.180	-.574	-9.943	.000

	X2 (Work Experience/Year)	-.176	.052	-.181	-3.416	.001
	X3 (Age/Years)	-.064	.144	-.023	-.446	.656
	M (Off-Farm Income/Month)	-6.584E-6	.000	-.767	-6.106	.000
	X1*M	1.475E-7	.000	.906	7,322	.000
a. Dependent Variable: Y (Elderly Working Hours/Week)						

Regression equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 M + \beta_5 X_1 M + e$$

$$\hat{Y} = 67,457 - 1,792X_1 - 0,176X_2 - 0,064X_3 - 6,584M + 1,475X_1M$$

$$\text{Std.err} = (1,513) (0,027) (0,297) (0,128) (0,002) (0,022)$$

$$t = (20,405) (-4,329) (-0,763) (-3,396) (2,806) (0,332)$$

$$\text{Sig} = (0,000) (0,000) (0,447) (0,001) (0,006) (0,741)$$

Based on Table 3 above, variable  $X_1$  (Elderly Health) has a significance value of  $0.000 < 0.05$ . This indicates that variable  $X_1$  (Elderly Health) has a negative and significant effect on Y (Working Hours). In other words, the worse the health condition of the elderly, the fewer hours they can dedicate to work per week. This finding is consistent with the study by Putri and Santoso (2018), which found that elderly physical health plays a crucial role in determining productivity and working hours, where good health supports increased work capability.

Variable  $X_2$  (Work Experience) has a significance value of  $0.001 < 0.05$ . Based on this result, it can be concluded that variable  $X_2$  (Work Experience) has a negative and significant effect on Y (Working Hours). This aligns with the findings of Haruyama et al. (2020), who stated that having work experience in agriculture requires a shorter adaptation period than for those without experience, while also demonstrating benefits for maintaining an active lifestyle and mental well-being.

Variable  $X_3$  (Age) has a significance value of  $0.656 > 0.05$ . Therefore, it can be concluded that variable  $X_3$  (Age) has a negative but insignificant effect on Y (Working Hours). This is consistent with the findings of Widiyanto and Hartono (2019), who argued that age is not always the primary factor in determining the number of working hours. Instead, health condition and work experience play more dominant roles.

Variable M (Income Outside the Agricultural Sector) has a significance value of  $0.000 < 0.05$ . This indicates that M (Income Outside Agriculture) has a negative and significant effect on Y (Working Hours). The findings of Kusuma (2020) support this result, stating that alternative income enables elderly individuals to reduce their working hours in accordance with their needs and physical condition.

Overall, the variables of elderly health, work experience, and income outside agriculture have a negative and significant influence on weekly working hours, while age does not have a significant effect.

The interaction variable  $X_1*M$  has a significance value of  $0.000 < 0.05$  and a coefficient of  $1.475E-7$  or  $0.00000014575$ . Based on this result, it can be concluded that income outside the agricultural sector acts as a quasi-moderating variable, meaning it moderates the relationship between the independent and dependent variables while also serving as an independent variable (Suyana, 2016). If  $\beta_1$  is negative (significant or not) and  $\beta_5$  is positive and significant, then M functions as a moderating variable that weakens the effect of  $X_1$  on Y (Suyana, 2016).

The positive coefficient of the interaction variable  $X_1*M$ , amounting to  $1.475E-7$ , can be interpreted as follows: as income outside the agricultural sector increases, the influence of health on the elderly's working hours diminishes. This means that the effect of elderly health on working hours is weakened. These results are supported by Che Mata et al. (2020), who stated that income from outside the agricultural sector affects the welfare of farming households. Their findings indicate that non-farm income reduces dependence on agricultural work; as non-agricultural income increases, dependence on agricultural working hours decreases.

#### 4. Conclusion

- a. The motivation of elderly individuals to continue working in agriculture is driven by both internal and external factors. In-depth interviews revealed that the most dominant motivation, expressed by 64 percent of respondents, was the absence of other individuals to manage their agricultural land. This indicates a strong sense of responsibility among the elderly toward land ownership and the sustainability of inherited resources. Additionally, 34 percent of respondents reported that they work to meet daily needs, suggesting that agriculture remains a primary source of livelihood for many elderly individuals. A smaller portion, 2 percent, stated that they continue working to carry on family businesses such as rice milling or agricultural produce collection—ventures that have long existed and become part of their family identity.
- b. The results of multiple linear regression analysis indicate that the four independent variables—elderly health ( $X_1$ ), work experience ( $X_2$ ), age ( $X_3$ ), and income outside the agricultural sector ( $M$ )—simultaneously have a significant effect on the dependent variable, namely the weekly working hours of the elderly ( $Y$ ). The obtained significance value of  $0.000 < 0.05$  suggests that these variables collectively explain the variation in elderly working hours per week. This finding confirms that elderly working hours are influenced not only by physical condition but also by experience, age, and additional income.
- c. Partially, the analysis reveals that three out of the four independent variables have a significant effect on elderly working hours:
  - Elderly health has a negative and significant effect (sig.  $0.000 < 0.05$ ), indicating that poorer health conditions lead to fewer working hours. This demonstrates that elderly productivity is highly dependent on physical condition.
  - Work experience also shows a negative and significant effect (sig.  $0.001 < 0.05$ ), implying that more experienced elderly workers are better at managing their time and workload, often reducing working hours due to improved efficiency.
  - Income outside agriculture has a negative and significant effect (sig.  $0.000 < 0.05$ ), meaning that higher additional income from non-agricultural sources leads to reduced working hours in agriculture. Elderly individuals tend to spend less time farming because they already have alternative income sources.
  - Meanwhile, the age variable has a negative but insignificant effect (sig.  $0.656 > 0.05$ ), suggesting that age alone is not a primary determinant of working hours. Instead, factors such as health and personal motivation play more crucial roles.
- d. Income outside the agricultural sector is proven to moderate the relationship between health and elderly working hours. The interaction variable between health and income outside agriculture has a significance value of 0.000, with a very small positive coefficient ( $1.475E-7$ ), indicating that income serves as a quasi-moderator. In other words, when elderly individuals have additional income from outside agriculture, the negative impact of declining health on working hours is reduced. They are still able to meet their living needs despite working fewer hours due to physical limitations. This strengthens the argument that diversifying income sources is a vital strategy for elderly individuals to maintain a dignified and sustainable livelihood.

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