

Does Financial Planning Moderate the Relationship between Productivity and Wellbeing of Sarawak Paddy Rice Farmer?

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Abstract

Despite having a vital role in national food security, there is an inadequate emphasis on the smallholder paddy farmer's productivity and wellbeing. Previous studies regarding productivity and wellbeing relationships have no consensus. This research offers financial planning as moderation in the issue of productivity and wellbeing for Sarawak's paddy rice farmers. A face-to-face interview was carried out with 115 paddy farmers. We ran the OLS regression along with an instrumented regression to eliminate reverse causality effects. This study shows that wellbeing improves as productivity and financial planning progress. Farmers are less likely to achieve happiness when their health condition deteriorates. The moderating role of financial planning on the relationship between productivity and wellbeing is not statistically significant. Results indicate that productivity and happiness do not rely on financial planning for paddy farmers. The research provides a basis and guidelines for policymakers to create financial awareness and provide evidence for corresponding studies to determine the role of financial planning for agricultural farmers in both developed and developing countries.

Keywords: financial planning, productivity, happiness, farmer wellbeing, agricultural finance

1.0 Introduction

The potential relationship between productivity and wellbeing of farmers has attracted behaviourists and economists for some time. Economists are interested in the determinants of productivity (e.g., Helfand, and Levine, 2004; Sheng, Davidson, Fuglie, and Zhang, 2016). Meanwhile, behaviourists pay attention to how productivity might affect farmers' wellbeing (e.g., Ahmed and Mesfin, 2017; Agarwal, and Agrawal, 2017; Rutherford, Burke, Cheung, and Field,



2016). Under the bequest motive theoretical perspective, the final goals of a farmer's productivity are threefold: (1) to inherit wealth, (2) to achieve precautionary savings, and (3) to strategically give an example for their family about farming (Yaari, 1964; Bernheim, Shleifer, and Summers, 1986; Almås, Freddi and Thøgersen, 2020).

Agricultural finance literature reveals the positive effects of productivity on wellbeing (e.g., Baker, Cahalin, Gerst & Burr, 2005; Saari, 2011; Paloma, Mary, Langrell & Ciaian, 2016). On the other hand, several empirical findings show the opposite. For example, Easterlin (1974) and Clark and Oswald (1994) conclude no effect of productivity on wellbeing. On the other hand, several findings, such as Prochaska et al. (2011), argue that worker productivity significantly decreases their wellbeing. It implies that the productivity effect on wellbeing remains an intriguing association. Therefore, it is imperative to have moderation to strengthen (or weaken) the relationship between productivity and wellbeing, which is the gap that this research aims to fill.

One reason for these mixed findings may be related to financial planning. Prior research findings from Lusardi and Mitchell (2007), Bucher-Koenen and Lusardi (2011), Mokhtar et al. (2018), and Soepding et al. (2021) argue that financial planning might help the wellbeing of an individual. Therefore, being farmers, who are most likely susceptible to having low financial planning (Bailey and Turner, 1994; Adegbite et al., 2021), could inevitably harm individuals' wellbeing (González, 2014; Kongrunchok, 2016). Given the importance of financial literacy on farmer wellbeing, more productive farmers may act irrationally in their personnel financial management; hence, they have lower wellbeing. A poor understanding of basic financial planning and debt literacy creates limitations in sustaining farm operations would subsequently lead to poor wellbeing (Gaurav and Singh 2012). However, this important topic has not received direct attention in economics and finance research and is thus poorly understood.

In an agricultural-based country with an influential farming culture, productivity and wellbeing remain the most fundamental challenge in Malaysia. On the one hand, the Malaysian government aims to push the productivity of smallholder farmers to induce their wellbeing. Pushing the productivity of smallholder farmers without adequate financial literacy may harm their wellbeing. In a worst case scenario, smallholder farmers exit the agricultural industry, leading to



much more socio-economy problems. With no exception, Malaysia has this severe problem. In contrast, smallholder farmers play a vital role in the agricultural industry, and their wellbeing is poor.

As an agricultural country with rice as the staple food, smallholder paddy farmers are vital for national food security. Intriguingly, 30 per cent of smallholder farmers in Malaysia are living below the poverty line, forcing the farmers to exit the industry. According to the Muda Agricultural Development Authority (MADA) report, the average monthly income of paddy farmers was only RM 2,527 (USD 606) in 2016. That income was in the bottom 40 per cent of Malaysia, where their income was RM 2,848 (USD 684) in 2016, with the median income of Malaysia being RM 5,228 (USD 1,255). In addition, Arshad et al. (2007) reported that the number of employments in Malaysia agriculture decreased significantly, from 66.2 per cent in 1960 to 12.9 per cent in 2005. This number declined to 10 per cent in 2017 and was consistent with the declining number of Malaysian smallholder paddy farms, which was in decline since the 1980s. It implies that many smallholder farmers in Malaysia have converted to non-agricultural occupations. The planted area had similar anecdotal evidence as 716,873ha of paddy in 1980 declined to 381,583ha in 2012, and reached 219,708ha in 2018.

The main driving force behind the role of productivity on smallholders farmers' wellbeing could be their financial planning. Precautionary behaviour could lead to different productivity effects on wellbeing, supported by Ando and Modigliani's (1963) life-cycle hypothesis theory. Theoretically, the presence of adequate financial practices such as a proper contingency plan in money management as guidance, budgeting on income, living expenses, and savings in addition to investment and retirement planning may place farmers in a more relaxed state, especially for their wellbeing. For instance, having sound financial planning deters violent behaviours, anxiety, and declining health (Downing, 2016). Thus, financial planning exists as a precautionary instrument for paddy farmers since cash flow for repayment is seasonal, whereby their income depends on a once or twice yield per year. Building on these theoretical assumptions and anecdotal evidence, we aim to empirically examine the moderating role of financial planning on the relationship between productivity and wellbeing in an agricultural-based country like Malaysia.

Briefly, this study addresses the phenomenon of a recent-year surge in the productivity and wellbeing of farmers. This study is mainly



motivated by the lack of attention given to these deserving farmers despite the importance of rice paddy as a staple food in many developing countries. This article, therefore, investigates three research questions:

1. What is the relationship between productivity and the wellbeing of paddy rice farmers?
2. What is the relationship between financial planning and the wellbeing of paddy rice farmers?
3. Is there any moderating effect of financial planning on the relationship between productivity and the wellbeing of paddy rice farmers?

In sum, this current research proposes financial planning as a moderation in the relationship between productivity and the wellbeing of paddy rice farmers. It coincides with underpinning theories such as Headey and Wearing's (1989) wellbeing theory and Ando and Modigliani's (1963) life-cycle theory. Note that, by far, there is not much research engaging the role of financial planning in productivity and wellbeing. Therefore, this is the gap that this research aims to tackle.

The contribution of the study is fourfold. First, in order to set a common ground among various works of literature, this study's significant contribution is the theory extension of the relationship between productivity and wellbeing by adding financial planning as the moderator. We propose financial planning as the moderating variable by adopting the life-cycle hypothesis theory. Secondly, the research conveys the attention to the imperative role of productivity in farmers' wellbeing. Thirdly, evidence from this study can be a reference and justify other corresponding studies when determining the role of financial planning for agricultural farmers in both developed and developing agricultural countries such as the United States and Africa. Lastly, policymakers can make careful evaluations that highlight the study's strengths and limitations to generate a feasible policy that will help farmers.

The paper is structured as follows: the next section briefly describes the study's literature review. We then outline the study's conceptual model and the generated hypotheses. Next, we discuss the methodology followed by the study, design sampling, and questionnaire development. Finally, we present empirical results, followed by a conclusion.



2.0 Literature Review

This section discusses the existing literature and theoretical framework that provide the bases for our hypothesis and discussion. Our research framework adopts the postulations for major theories such as wellbeing theory, life cycle hypothesis, and agentic working behaviour. The scope of the research is agricultural finance. Firstly, productivity is the output per unit input from agricultural activities. The theory of production by Cobb and Douglas (1928) was initially created for the manufacturing industry. The initial input-output measurements excluded land values and working capital (raw materials, goods that are in the process of manufacture, and finished goods). They only considered machinery, tools and equipment, and factory buildings. Several scholars have adopted this theory of production with a keen interest in measuring productivity in the agricultural sector (Turvey and Lowenberg-DeBoer, 1988; Rada et al., 2019; Sheng et al., 2019). Meanwhile, our definition of wellbeing is limited to the emotional state of farmers. Previous studies such as Argyle, Martin, and Crossland (1989) and Hills and Argyle (2002) measure wellbeing using a happiness inventory.

The vast majority of productivity-wellbeing hypotheses are based on agentic work behaviour theory. This theory is used to comprehensively understand the contribution of productivity to the development of wellbeing. According to the framework of Spreitzer, Sutcliffe, Dutton, Sonenshein, and Grant (2005), agentic work behaviours are associated with thriving at work. It posits that increasing work performance is synonymous with increasing productivity. However, the increase in work performance would lead to higher achievements and earnings (Russell, 2008). Therefore, this theory argues that productivity has positive effects on wellbeing. Baker et al. (2005) and Mutchler et al. (2003) show that being productive at a later stage in life increases an individual's wellbeing. In the case of farmers, higher agriculture production increases their wellbeing (Paloma, Mary, Langrell, and Ciaian, 2016).

While agentic work behaviour theory helps to better understand how productivity affects wellbeing, it does not directly consider an individual's life cycle. Other research, however, elaborates their findings with the life-cycle hypothesis to explain how behaviour follows a life sequence. The life-cycle hypothesis suggests that individuals plan their consumption and savings behaviour over their life-cycle to achieve a higher wellbeing level (Ando and Modigliani, 1963).



Individuals seek to smooth consumption throughout their lifetime by borrowing when their income is low and saving when their income is high. Similarly, Lusardi and Mitchell (2011) conclude that financial planning affects the relationship between behaviour/motive and wellbeing throughout a lifetime. In other words, the behaviour of a person may be different towards their wellbeing if an individual has proper financial planning in each life-cycle phase (O'Neill, Sorhaindo, Xiao and Garman, 2005; Lusardi & Mitchell, 2011; Asebedo & Seay, 2015; Mokhtar & Rahim, 2016, Xiao & Porto, 2017).

In the agricultural context, farmers who advocate recommended financial management are more content with their current wellbeing (Scannell, 1990). It is consistent with the wellbeing theory as it explains that a life event may influence wellbeing. For example, a diligent farmer may have different wellbeings. However, a life event such as surprise, fate acceptance, and tolerance may change the perspective of farmers towards better wellbeing (Krobbuaban & Phompaking, 2012; Khushk, Samah, Hamsan & Ahmad, 2016).

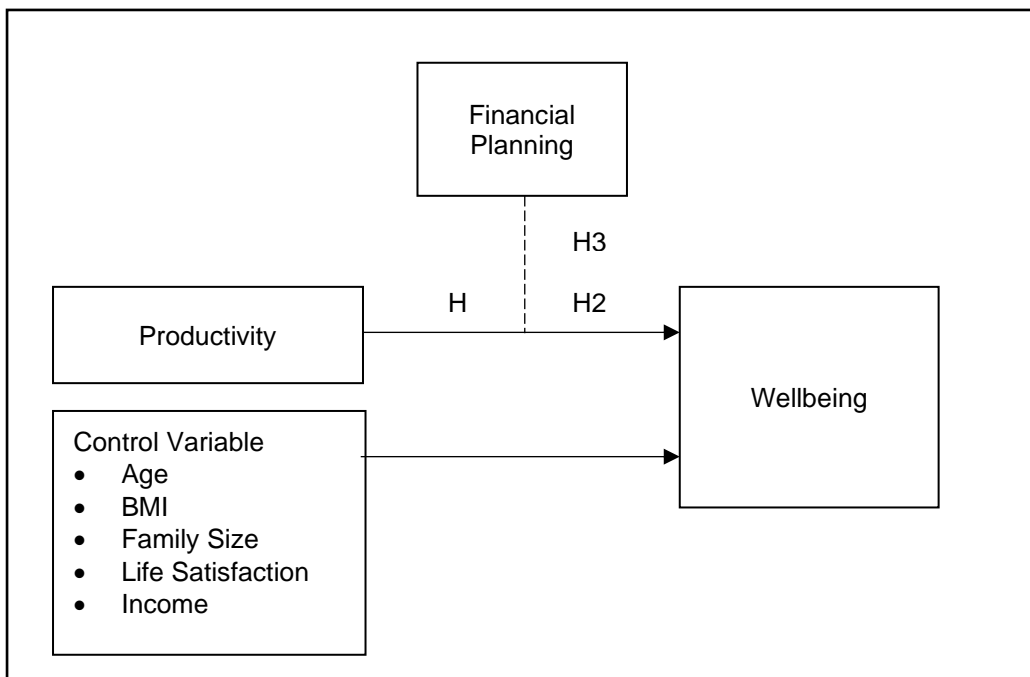


Figure 1 : A Research Framework

2.1 Productivity and Wellbeing

Previous studies report mixed findings on the relationship between productivity and wellbeing. The proponents of agentic work behaviour theory address the positive effect of productivity on wellbeing. Baker, Calihin, Gerst, and Burr (2005) indicate that an older person engaging in productive activities has a higher level of happiness. From the agricultural perspective, Paloma, Mary, Langrell, and Ciaian (2016) suggest that higher productivity and yields from farm production increase farmers' wellbeing. Abid, Schneider, and Scheffran (2016) provide evidence that farm productivity increases by enhancing crop resistance to climate change, indirectly improving farmers' wellbeing. Regarding smallholders in rural areas, being in a farmer's organisation allows the ease of access to fertilizers, pesticides, improved seeds, and market information, which increases the yield of productivity and thus further improves farmer's wellbeing (Mbangari, Fouepe, & Fonteh, 2019). On the other hand, several research papers show that productivity negatively affects or does not contribute to wellbeing. For example, early work from Easterlin (1974) suggests that higher productivity does not contribute to greater happiness. Mutchler, Burr, and Caro (2003) indicate that engaging in productive activities in later stages of life creates a declining state of wellbeing for an individual. Productivity growth will possibly have unfavourable effects on wellbeing. Therefore, pursuing productivity growth in a workplace can intensify workplace factors, such as job insecurity and job demand; both are linked to poorer wellbeing (Isham, Mair, & Jackson, 2020). Thus,

Hypothesis 1 (H_1): Productivity of paddy farmers has a significant association with their wellbeing.

2.2 Financial Planning and Wellbeing

We build our hypothesis from the argument of the life-cycle theory that better financial planning increases wellbeing. Financial difficulties are substantial predictors of depression and harm the farming labour population (Lorenz, Conger, Monague, and Wickrama, 1993; Swisher, Elder, Lorenz, and Conger, 1998). Gorgievski-Duijvesteijn et al. (2005) report that high psychological distress exists among farmers who are faced with further adverse changes in their financial condition. Debt is significantly reduced when proper debt



management programmes are introduced to individuals, thus improving wellbeing (O'Neill, Sorhaindo, Xiao, and Garman, 2005). In addition, retirees who have and practice financial knowledge are likely to have better wellbeing (Lusardi and Mitchell, 2011). According to Asebedo and Seay (2015), the presence of positive psychology in an individual creates positive financial planning, which further enhances their wellbeing. Thus,

Hypothesis 2 (H₂): For paddy farmers, better financial planning leads to better wellbeing.

2.3 The Moderating Effect of Financial Planning

There are limited sources of empirical studies concerning the moderating role of financial planning on the relationship between productivity and wellbeing. For example, Kongrunchok (2016) studied the effectiveness of personal financial planning of rubber farmers in Thailand. The case study on the Suratthani province indicated that Thai rubber farmers in that area practiced ineffective personal financial planning, which led to their poor wellbeing. Although these farmers received high income from lucrative rubber market prices, a lack of assessment of their financial position and understanding of financial planning leads to poor living conditions.

Hypothesis 3 (H₃): Financial planning as moderation strengthens the relationship between productivity and wellbeing.

3.0 Methodology

3.1 Data and Sample

Data on an individual's background was gathered to find out information regarding their demography. Household and retirement savings, budgeting for farming, financial planning, and adherence to the financial plan were obtained for financial planning. Paddy inventory, machinery, total cultivated land, hours worked, hired labour, and paddy production are gathered to determine productivity. Lastly, information on farmers' happiness was gathered to discover their wellbeing. The data was minimal due to the lack of population of smallholder paddy farmers. The sample of smallholder paddy farmers was mainly from Sarawak, Malaysia. The total sample size used in this cross-sectional research was 115. The probability sampling method was used because



elements of the population had a known chance of being chosen as sample subjects. Under the probability sampling method, stratified random sampling was selected in this study. This sampling design, was the efficient choice to differentiate information needed regarding various strata within the population, which are known to differ in their parameters (Sekaran and Bougie, 2010).

3.2 Questionnaire Development

This section describes the definition of all variables used for the estimation model. The key variables of this research were wellbeing, productivity, and financial planning. Meanwhile, age, BMI, family size, life satisfaction, and income were the control variables. We measured wellbeing using the studies by Hills and Argyle (2002), Wei et al. (2011), and Li et al. (2020) by adopting the 29 items of the Oxford Happiness Questionnaire (OHQ). There are many other measurements for wellbeing, such as Profile of Mood State (POMS) (Brahmana and Brahmana, 2016), Wellbeing Inventory (WBI) (Dunham et al., 2019), and Mental Wellbeing Inventory (WEMWS) (Smith et al., 2020). However, the OHQ is closer to the productivity framework, with all the limitations. The subject of which inventory was the best wellbeing measurement was beyond our research scope, so we left it for future research.

We adopted the Cobb-Douglass Production function as our main predictor of productivity from Cobb and Douglas (1928). It measures physical production by changing the amount of labour and capital utilised to produce goods, indicating the connection between labour, capital, and product factors. However, the attempt was initially conducted to investigate productivity in the manufacturing industry. Recent studies have used the theory of production in agricultural productivity (Dharmasiri, 2012). Furthermore, recent work (see Wadud and White, 2000; Dhungana et al. 2004; Linh, 2012) has applied the Data Envelopment Analysis (DEA), a mathematical programming method, to examine the issue of agricultural productivity in the dimension of agricultural production efficiency.

Data Envelopment Analysis (DEA) is used to measure the productivity of paddy farmers in this research. To measure paddy farmers' productive efficiency, we selected the following outputs and inputs based on (Chauhan, Mohapatra, & Pandey, 2006) Paddy inventory, machinery, total cultivated land, hours worked, and hired labour were the selected inputs. Meanwhile, the output was paddy



production. The productivity score ranged from zero (0) to one (1). A scale zero (0) indicates the lowest productivity, and one (1) indicates the best productivity.

$$\text{Productivity} = \frac{\text{Inputs}}{\text{Outputs}}$$

We adopted the Retirement Confidence Survey (RCS) to construct the moderating variable for financial planning. The financial planning construct consisted of ten (10) items. Lastly, our control variables were constructed based on previous research such as Mroczek and Kolarz (1998), Graham and Pettinato (2001), Shields and Price (2005), and Dolan, Peasgood, and White (2008). The control variables were age, education, hours worked, health, and life satisfaction. Table 1 reveals the definitions of each variable.

Table 1 : Questionnaire Construction

Dimension	Construct	Measures	Notes
Demography:	Age	Age of household head	Mroczek and Kolarz (1998), Mutchler, Burr and Caro (2003), Xing and Huang, (2014).
	BMI	Height and weight of the household head.	Doll, Peterson, and Stewart-Brown (2000); Shields and Price, (2005); Dolan, Peasgood, and White (2008), Katsaiti (2012) Linna, Kaprio, Raevuori, Sihvola, Keski-Rahkonen and Rissanen (2013), Tilai, Brahmana and Hui Wei (2021).
	Family Size	Size of the farmer's family.	McLanahan and Adams (1987), Fuller, Edwards, Vorakitphokatorn, and Sermisri, (2004); Evenson and Simon (2005); Kaplan, Kiernan, and James, (2006); Turagabeci, Nakamura, Kizuki, and Takano, (2007).



Dimension	Construct	Measures	Notes
	Life Satisfaction	Meaning in Life Questionnaire (MLQ)	Borooah, (2006); Steger et. al., (2006); Lyubomirsky, Tkach and Dimatteo (2006); Nemati and Maralani, (2016)
	Income	Income as a farmer, Total Household Income	Diener, (1984); Diener, Horwitz, and Emmons, (1985); Diener and Biswas-Diener, (2002); Frey and Stutzer, (2000); Ahuvia, (2008); Akinin, Norton and Dunn (2009).
Productivity	Cobb-Douglass Production Function	Output: Production Input: Paddy inventory, machinery, total cultivated land, hours worked, hired labour.	Cobb and Douglas, (1928)
Wellbeing	Happiness	29 items adopted from the Oxford Happiness Questionnaire (OHQ)	Hills and Argyle (2002)
Financial Planning	Household and retirement saving, budgeting for farming, financial planning, and adherence to the financial plan.	Retirement Confidence Survey (RCS)	(Ameriks, Caplin and Leahy, 2003)

3.3 Specification of Regression Model

The baseline model of this research was the function of wellbeing. To build our estimation model, we followed the established model in economics and business literature (Mroczek & Kolarz, 1998; Graham & Pettinato, 2001; Dolan, Peasgood & White, 2008). Heeding the literature, we define wellbeing as the function of age, health status, family size, life satisfaction, and income. We measured age by taking the age of the household head (Age_i). The health status of the



household head was measured using the body mass index¹ (BMI_i), The family size was defined as the total size of the household ($Familysize_i$), and the life satisfaction² was measured using life satisfaction inventory ($Lifesatisfaction_i$). Finally, the total income was measured depending on the total revenue received by a family ($Income_i$).

Empirically, the function could formally be put in a regression model.

$$\text{Wellbeing} = \beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{BMI}_i + \beta_3 \text{Familysize}_i + \beta_4 \text{Lifesatisfaction}_i + \beta_5 \text{Income}_i + \varepsilon_{i,t} \quad (1)$$

Then, we introduced productivity in the baseline model (1) to reveal the effect of productivity on wellbeing. The regression model was as follows:

$$\text{Wellbeing} = \beta_0 + \beta_1 \text{Productivity}_i + \beta_2 \text{Age}_i + \beta_3 \text{BMI}_i + \beta_4 \text{Familysize}_i + \beta_5 \text{Lifesatisfaction}_i + \beta_6 \text{Income}_i + \varepsilon_{i,t} \quad (2)$$

Our final regression model specified the estimation by introducing the moderating variable (financial planning) and the interaction term between productivity and financial planning (Productivity * Financial Planning). The regression model was as follows.

$$\text{Wellbeing} = \beta_0 + \beta_1 \text{Productivity}_i + \beta_2 \text{Financialplanning}_i + \beta_3 \text{Productivity} * \text{Financialplanning}_i + \beta_4 \text{Age}_i + \beta_5 \text{BMI}_i + \beta_6 \text{Familysize}_i + \beta_7 \text{Lifesatisfaction}_i + \beta_8 \text{Income}_i + \varepsilon_{i,t} \quad (3)$$

4.0 Findings

4.1 Descriptive Statistics

This research assessed the moderating role of financial planning on the relationship between the productivity and wellbeing of Sarawak paddy farmers. This section covers the empirical results of the present study, starting with the interpretation and analysis of the

¹ Katsaiti (2012) uses BMI as the proxy of health status, and surmise it as the key factor for wellbeing

² Nemati and Maralani (2016) explain the difference between life satisfaction and wellbeing. It argues that life satisfaction is the determinant for wellbeing



empirical results from 115 respondents. The descriptive results showed the sample's maximum, minimum, mean, and standard deviation statistics. It is followed by findings and discussions.

Table 2 : Summary Statistics

	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Age	23.00	83.00	54.4870	12.97458	-.089	-.386
BMI (log)	.00	1.00	.3826	.48815	.489	-1.792
Family Size (log)	1.00	4.00	1.5304	.66651	1.244	1.833
Life Satisfaction	.00	1.00	.8783	.32842	-2.344	3.557
Income (log)	.00	4150.00	786.4550	727.09507	1.949	4.610
Productivity (log)	.05	1.00	.3092	.24967	1.432	1.395
Financial Planning	2.00	5.00	4.0257	.71356	-.563	-.229
Happiness	4.00	6.88	5.5741	.91643	-.536	-.994

Table 2 presents that the mean value of happiness was 5.57, with minimum and maximum values of 4.00 and 6.88, respectively. Meanwhile, the happiness scale used in this research ranged from one (1) to seven (7), with a median value of five (5). The descriptive result of happiness implies that most Sarawak paddy farmers are happy farmers. Comparing the minimum and median values and the range with standard deviation strengthens the happy farmers' statement. According to Kamaruddin et al. (2013), although rural paddy farmers are seen as a poor group in terms of monetary value, they are happy and proud to be paddy farmers because their job is already synonymous with their lives.

The mean value for productivity was 0.30, with the minimum and maximum values of 0.05 and 1.00, respectively, and the median at 0.22. The descriptive results show that the paddy farmers in Bario are not productive. Firstly, this may be due to most paddy farmers rely on a traditional farming system, which depends on rainfall patterns, buffaloes for tillage and manuring, manual labour, and transplanting (Jiwan, 2015). Secondly, older farmers lack the vital interest or skill to implement any new machinery or methods used to increase productivity (Khazanah Research Institute, 2018).



The mean value for financial planning was 4.02, with the minimum and maximum values of 2.00 and 5.00, respectively. Meanwhile, the financial planning scale used in this research ranged from one (1) to five (5), with a median of 4.1. The descriptive result of financial planning implies that Sarawak paddy farmers have basic financial planning knowledge. Shafiai and Moi's (2015) findings suggest that most farmers in Sarawak practice financial planning by saving money either in a small or large amount at financial institutions.

The mean value for age was 54.48 years. The issue of an ageing population among smallholder paddy farmers from our sampling frame was apparent, whereby the town comprises mainly older farmers who are retirees from previous jobs they held in their younger years and children (Khazanah Research Institute, 2018).

The mean value for BMI was 26.3. According to the World Health Organisation, overweight individuals have BMI > 25, and obese individuals have BMI > 30 (Guo, Jiang, and Huffman, 2018). Therefore, most paddy farmers are overweight and are susceptible to moderate health risks (Tilai et al., 2021).

The mean value for family size was 1.53, implying that paddy farmer households were small since most young individuals migrated out to urban cities to further their studies and/or to look for better job prospects (Bala, 2002; Amster, 2006, 2008; Fahmi, Samah, and Abdullah, 2013; Marcus Raja, 2015). The mean value for life satisfaction was 0.87. The descriptive result for life satisfaction implies that most paddy farmers are satisfied with their life. The result is tally with prior research that indicates high life satisfaction among communities living in rural areas (Sørensen, 2014; Helliwell, Shiplett, and Barrington-Leigh, 2019). The mean value for income was 786.45. The descriptive result for income implies that the smallholder paddy farmers are mostly low-income earners. Those farmers tolerate low income since they stay in rural areas, which have a lower cost of living than urban areas (Shafiai and Moi, 2015).

Table 3 reports that the Pearson correlation coefficient was computed to assess the relationship between farmers' productivity and happiness. There was a positive correlation between the two variables, $r = 0.291$, $n = 115$, and the correlation was significant at 0.01. There was a weak, positive correlation between productivity and happiness. An increase in productivity correlates with an increase in the happiness rating among farmers. The Pearson correlation showed a weak correlation between farmers' financial planning and their happiness,



with $r = 0.105$, $n = 115$. However, there were no statistically significant correlations existed between the two variables. It means that an increase or decrease in financial planning does not significantly correlate to an increase or decrease in happiness. Meanwhile, the Pearson correlation between productivity and financial planning showed a weak, positive correlation ($r = 0.081$). The relationship between the two variables concludes that there is no statistically significant correlation between the two variables, meaning that an increase or decrease in productivity does not significantly correlate with an increase or decrease in financial planning.

The Pearson correlation between happiness and demography showed a positive correlation of 13.5 per cent, with 8 per cent and 6.5 per cent, respectively, for life satisfaction, age, and BMI. The Pearson correlation result for income and happiness reveals that the increase in life satisfaction, age, and BMI is correlated with the increase in happiness rating. Income and family size negatively correlated with happiness at -6.4 per cent and -6.2 per cent, respectively. The Pearson correlation results for income and happiness reveal that the increase in income correlates with the decrease in happiness rating.

Similarly, the Pearson correlation result for family size and happiness revealed that an increase in family size correlated with a decrease in the rating of happiness. From the results of the correlation matrix, there is no strong correlation between any pair of explanatory variables, as they have a statistically significant linear relationship. The magnitude or strength of the association is weak.

Table 3 : Correlations

	Age	BMI	Family Size	Life Satisfaction	Income	Productivity	Financial Planning	Happiness
Age	1							
BMI	0.062	1						
Family Size	-0.093	-0.036	1					
Life Satisfaction	-0.056	0.129	0.097	1				
Income	0.219*	0.106	-0.093	-0.139	1			



	Age	BMI	Family Size	Life Satisfaction	Income	Productivity	Financial Planning	Happiness
Productivity	-0.022	-0.009	-0.139	-0.003	-.226*	1		
Financial Planning	-0.033	0.164	0.108	.678**	-0.175	0.081	1	
Happiness	0.085	0.065	-0.062	0.139	-0.064	.291**	0.105	1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

4.2 Results

Table 4 consists of three columns: Column 1, Column 2, and Column 3. Column 1 shows the baseline model results for this study from estimation model 1. Column 2 reveals the results of the estimation model 2. Lastly, Column 3 reports the regression results from the model 3.

The findings from Column 1, Column 2, and Column 3 were consistent. First, all control variables shared a similar conclusion. All variables were not statistically significant on wellbeing except BMI for column 1. However, higher BMI leads to lower wellbeing. The result reaffirms Doll, Peterson, and Stewart-Brown's (2000) research, whereby the study finds that overweight and obesity are associated with decreasing levels of physical and emotional wellbeing. To conclude, age, family size, life satisfaction, and income do not affect wellbeing.

The results of our hypothesis testing are reported in Column 3. For the first hypothesis (H1), we find that productivity has a positive relationship with wellbeing ($\beta=0.7706$ SE=0.1977), implying that higher productivity increases wellbeing. In economic terms, for each increase in productivity, a farmer's wellbeing increases by 0.7706. It is consistent with the findings from Paloma, Mary, Langrell and Ciaian (2016).

Our second hypothesis (H2) is in the column on the relationship between financial planning and wellbeing. Column 3 in Table 4 reports the positive association between financial planning and wellbeing ($\beta=0.1856$ SE=0.0562). It indicates that higher financial planning increases the farmer's wellbeing. Practically, an increase in financial planning leads to an increase of 0.1856 in farmers' wellbeing, supporting the findings by Asebedo and Seay (2015).



However, the interaction term between financial planning and productivity is not statistically significant to wellbeing. The result is aligned with prior research, suggesting no direct effect of financial complications on wellbeing (Bernard and Krupat, 1994). Communities, including farmers in the rural areas, are self-dependent and self-sufficient, which causes them to take the importance of financial planning lightly (Bailey and Turner, 1994). Financial aptitude and debt literacy are low among rural farmers (Gaurav and Singh, 2012). Hence, this rejects our third hypothesis (H3).

Table 4 : Financial Planning Moderation Results

	1	2	3
Age	0.0048 (0.0044)	0.0046 (0.0044)	0.0039 (0.0042)
BMI	-0.2537** (0.1061)	-0.2490** (0.1036)	-0.2117** (0.1065)
Family Size	0.0608 (0.0746)	0.0941 (0.0711)	0.1117 (0.0682)
Life Satisfaction	0.0671 (0.0580)	0.0185 (0.0599)	0.0329 (0.0567)
Income	-0.0569 (0.0615)	-0.0011 (0.0670)	0.0029 (0.0602)
Productivity		0.6571*** (0.2270)	0.7706*** (0.1977)
Financial Planning			0.1856*** (0.0562)
Productivity*Financial Planning			0.0111 (0.0584)
(Constant)	4.5213*** (0.5732)	3.7042*** (-0.5320)	3.5301*** (0.5425)
N	115	115	115
R ²	0.074	0.1387	0.2172

Note: The figures represent the coefficient values of the variables. The values in the parentheses stand for standard error. The level of significance is denoted using the asterisk symbol with *, **, and *** which are equivalent to 10%, 5%, and 1% levels of significance

4.3 Robustness Check

Table 5 summarises the instrumented results for the productivity model column (4) and the full model column (5). To ensure there is no endogeneity problem or reverse causality between productivity and wellbeing, we applied the Instrumental Variable (IV) estimation. The



robustness check for the instrumented table ensured that productivity predict wellbeing and not vice-versa. The research argument inferred that the evaluations attained through traditional ordinary least squares (OLS) regressions were biased by endogeneity. Furthermore, it suggested a possible correlation between an explanatory variable and the error term in the regression model for this study. A possible solution for the IV estimation is to tackle the endogeneity problem by applying two-stage least squares (2SLS) regressions (Bollmann, Rouzinov, Berchtold, and Rossier, 2019). The instrument included the hours of family labour, hours of hired labour, production cost, no family who are not working, and no family who has non-paddy farming income.

Table 5 reports that most control variables have no significant effect on wellbeing except BMI. For example, it is reported that BMI has statistically influenced wellbeing ($\beta = -0.2196$ SE=0.1072). It means that BMI has a negative relationship with wellbeing, where the higher the BMI, the lower the wellbeing. In the economic term, increasing one unit of BMI decreases the wellbeing by 0.2196. Therefore, the result for BMI in the instrumented result is tallied with the BMI result from Table 4. The results affirm previous findings from Doll et al. (2000) which suggest that overweight and obesity are associated with decreasing physical and emotional wellbeing levels.

Similar to Table 4, other control variables have no effect on wellbeing for both models in the instrumented results. It implies that no matter how high or low the age, life satisfaction, family size, and income, each does not make any difference in the happiness of Sarawak's paddy farmers. The result for age is consistent with Zaninotto, Falaschetti, and Sacker's (2009) research that shows cross-sectional age is not related to subjective wellbeing. Also, the wellbeing of paddy farmers does not show any difference in the size of a family. Rojas (2016) reports that household size makes no difference to the level of subjective wellbeing for both happiness and life satisfaction. Life satisfaction has no statistical influence on wellbeing. According to Feldman (2019), an unreflective individual might be satisfied with life at that very moment, and judgments are made solely based on that current moment without reflecting on his or her whole life. According to Kahneman and Deaton (2010), income does not affect emotional wellbeing, but a high income improves evaluation of life.

Financial planning statistically influences wellbeing ($\beta = 0.1513$ SE=0.0600). It means that financial planning has a positive relationship with wellbeing, whereby an increase in financial planning could improve



farmers' wellbeing. In the economic term, an increase in one unit of financial planning increases 15.13 per cent wellbeing. The result for financial planning in the instrumented result is consistent with the financial planning result from Table 4. The result is also in line with the research by Lusardi and Mitchell (2007) and Bucher-Koenen and Lusardi (2011), which suggest that financial planning might help the wellbeing of an individual.

The full model result in the instrumented result is inconsistent with the third alternative hypothesis (H3) and the result in Table 4. The moderator of interaction between productivity and financial planning has no statistical influence on wellbeing. No significant result signifies that the moderator does not strengthen nor weaken the relationship between productivity and wellbeing. It means that the presence of financial planning for paddy farmers does not change the relationship between their productivity and wellbeing. It is aligned with Hilkens, Reid, Klerkx, and Gray (2018), which report that being good at financial planning is not central to a farmer's identity. Farmers have a low level of interest in financial planning and do not actively seek financial advice.

Table 5 : Instrumented Result

	4	5
Productivity (Instrumented)	1.0899*** (0.3193)	1.0614*** (0.3332)
Age	0.0045 (0.0044)	0.004 (0.0042)
BMI	-0.2025* (0.1028)	-0.2196** (0.1072)
Family Size	0.0708 (0.0704)	0.0773 (0.0690)
Life Satisfaction	0.0475 (0.0579)	0.0651 (0.0579)
Income	0.0327 (0.0652)	0.0245 (0.0635)
Financial Planning		0.1513** (0.0600)
Financial Planning*Productivity		0.0287 (0.0614)
(Constant)	3.7042*** (0.5789)	3.2513*** (0.6400)



	4	5
R ²	0.1195	0.1737

Note: The figures represent the coefficient values of the variables. The values in the parentheses stand for standard error. The level of significance is denoted using the asterisk symbol with *, **, and *** which are equivalent to 10%, 5%, and 1% levels of significance

4.4 Discussion

The coefficient for the productivity variable reveals that productivity has a significant effect on wellbeing. Hence, the first hypothesis, which is 'the productivity of paddy farmer has a significant influence on their wellbeing,' has been supported by similar findings from prior empirical studies such as Harter, Schmidt, and Keyes (2003), Saari (2011), DiMaria et al. (2014), and Oswald et al. (2015). The positive relationship implies that productivity increases wellbeing. However, Harter et al. (2003), Saari (2011), DiMaria et al. (2014), and Oswald et al. (2015) primarily suggest that happiness raises productivity, whereby in a workplace setting, employees are more productive when better wellbeing is achieved.

However, our findings are aligned with prior literature, including Paloma, Mary, Langrell, and Ciaian (2016) who suggest that higher productivity and yields from farm production increase farmers' wellbeing. Therefore, it is more likely that increased productivity raises happiness from an agricultural standpoint. A farmer's family welfare is improved when there is a higher consumption of home-grown products and additional cash income from sales of the surplus farm production. In the case of paddy farmers, despite having low productivity, they are happy because rice cultivation has an enormous social and cultural significance and plays an integral part in the traditional religion of indigenous groups in Sarawak (Janowski, 1991). Therefore, despite having low paddy production, being a paddy farmer is a sign of status and prestige. They are happy and proud individuals, and monetary rewards as farmers are not the only determinant of their level of happiness (Kamaruddin et al., 2013).

This research applies the Instrumented Variable (IV) estimation. The results show no reverse causality between productivity and wellbeing. Therefore, the research finding is aligned with the agentic work behaviour theory (Niessen, Sonnentag, and Sach, 2012). Paddy farmers always associate their tasks with rice cultivation (Janowski, 1991), which relates to task focus. Meanwhile, according to Bala



(2011), paddy farmers residing in rural areas are a closely knitted community and have highly value community interaction (Terano and Mohamed, 2013), which relate to heedful relating.

The agentic behaviours of task focus and heedful relating can be perceived as the production of individual resources (Stadtler, Schmitt, Klarner, and Straub, 2010), whereas thriving has been distinguished from related concepts reflecting positive functioning, such as flow, flourishing, subjective wellbeing, self-actualisation, resilience (Carmeli and Spreitzer, 2009; Spreitzer et al., 2005). As individuals enhance focus on their tasks and have meaningful interactions, they experience enhanced positive affect. The theory is aligned with the research finding which suggests that productive farmers experience improved wellbeing.

Based on the regression result, the beta coefficient value of the financial planning variable records a significant relationship between wellbeing and financial planning. Hence the second hypothesis, 'for paddy farmers, better financial planning leads to better wellbeing,' is not rejected. The results of financial planning variable in this study are similar with findings by Gorgievski-Duijvesteijn, Bakker, Schaufeli, & van der Heijden (2005), O'Neil (2005), O'Neill, Sorhaindo, Xiao and Garman (2005), Lusardi and Mitchell (2011), and Asebedo and Seay (2015). They demonstrate a significant relationship between wellbeing and financial planning in their research.

Lusardi and Mitchell (2007) and Bucher-Koenen and Lusardi (2011) argue that financial planning might help the wellbeing of an individual. Individuals with low financial planning knowledge or deprivation of financial services often possess poor psychological and physical traits (e.g., O'Neill, Sorhaindo, Xiao & Garman, 2005; Downing, 2016). In the farming industry, farmers, particularly those in the rural areas, are susceptible to have low financial literacy (Bailey and Turner, 1994) and bad financial planning, which inevitably has a negative impact on their wellbeing (e.g., González, 2014; Kongrunchok, 2016).

This study reports that financial planning is positively linked to wellbeing. It implies that higher or better financial planning leads to better wellbeing among Sarawak paddy farmers. The finding is in line with Ando and Modigliani's (1963) life-cycle hypothesis theory. The theory describes how individuals distribute their income between spending and saving and the way they borrow. The theory unifies the income hypothesis and bequest motive theory (Ando and Modigliani,



1963; Xiao & Anderson, 1997) and concludes that financial planning affects behaviour/motive and wellbeing (Lusardi & Mitchell, 2011). In other words, people's behaviour towards wellbeing may be different if they have good financial planning (O'Neill, Sorhaindo, Xiao and Garman, 2005; Lusardi & Mitchell, 2011; Asebedo & Seay, 2015). In addition, the presence of adequate financial practices, such as a proper contingency plan in money management as guidance, budgeting on income, living expenses, and savings, in addition to investment and retirement planning, enable farmers to experience the desired wellbeing.

Paddy farmers have basic financial planning knowledge, whereby they plan their savings, budgeting, and retirement. However, households with better financial knowledge may result in better financial outcomes (Chu, Wang, Xiao, and Zhang, 2017). Farmers do have financial planning (Van Asseldonk, Van der Veen, and Van der Meulen, 2010). Shafiai and Moi (2015) suggest that most farmers in Malaysia practice financial planning by saving money either in a small or large amount at financial institutions. In addition, paddy farmers in our sample mostly have high wellbeing. The findings from this study reaffirm studies by Lusardi and Mitchell (2007) and Bucher-Koenen and Lusardi (2011) that financial planning helps the wellbeing of an individual. It is aligned with the life-cycle hypothesis theory whereby farmers know how to distribute their income between spending and saving and the way they borrow, which would sequentially increase their wellbeing.

Based on the regression results, the beta coefficient value of the moderating effect of the financial planning variable records no significant relationship between productivity and wellbeing. Hence, the third hypothesis, 'financial planning as moderation strengthens the relationship between productivity and wellbeing,' is rejected. Hilkens, Reid, Klerkx, and Gray (2018) suggest that being good at financial planning is not central to a farmer's identity. Farmers do not actively seek financial advice (Hilkens et al., 2018). Due to the close-knitted community of rural farmers, financial problems are dealt informally by borrowing money from friends or relatives (Turvey and Kong, 2010). According to Bernard and Krupat (1994), financial complications have no direct effect on self-reported illness. Perhaps, an entire array of other, more direct aspects may affect farmers' physical health, for instance, health hazards associated with work. Additionally, outdoor physical work could have toughened farmers.



No significant effect signifies that the moderator does not strengthen nor weaken the relationship between productivity and wellbeing. It means that financial planning does not change the productivity and wellbeing relationship of the paddy farmers. Paddy production is the central attention, whereby it is their source of livelihood. As paddy production income from selling rice production is dependent on a once-a-year basis cycle, the income is immediately used and quickly diminished to sustain their daily needs. Nevertheless, living expenses are low in rural areas, besides that rural communities are self-reliant and tend to use natural sources. Smallholder paddy farmers are more concerned with rainfall patterns, natural disasters, and diseases to their crops or pest infestation, which could harm their productivity and make them unhappy. Therefore, being happy to generate good productivity for rural paddy farmers is not affected by having a proper contingency plan in money management as guidance, budgeting on income, living expenses, savings, and investment, and retirement planning.

5.0 Conclusion and Recommendations

Agricultural productivity is the primary source for rural farmers to sustain their wellbeing. However, most of these farmers live in poverty, and there is a considerable income gap between them and the community living in urban areas. As a result, financial planning is recognised as a tool to help improve wellbeing. This paper uses financial planning as moderation in the relationship between the productivity and wellbeing of paddy farmers. The data from 115 paddy farmers in Sarawak was used.

The empirical analysis suggests four key findings. First, productivity has significant effects on the farmers' wellbeing. It implies that strengthening and maximising farmers' productivity will improve their wellbeing. Second, the analysis reveals the positive association between financial planning and wellbeing. Farmers with a high financial level tend to have higher wellbeing. However, this study records no moderating effect of financial planning on the relationship between productivity and wellbeing. It is believed that farmers need to be productive or have proper financial planning to have better wellbeing as a result of the rural agricultural environment in which these farmers live. According to Kongrungchok (2016), even though these rural farmers are equipped with financial planning, they are still susceptible to poor living conditions because of their lack of knowledge in personal



finance. Farmers express less awareness of financial information since it is not essential to farmers' identity (Hilkens et al., 2018). Being in a close-knitted community, paddy farmers rely on each other with their farming activities (Janowski, 1991) and when having financial complications (Turvey and Kong, 2010).

However, extensive research on smallholder rural farmers' financial planning reveals supplementary clarification and validation for the findings gathered in our research. This study emphasises the investigation of the moderating role of financial planning on the relationship between a farmer's productivity and wellbeing. Grounded on some mutual characteristics of smallholder rural farmers, particularly in developing countries in parts of Asia and Africa, a few extensions can be further constructed upon this analysis. Firstly, the analysis involving other agricultural products with Geographical Indication (GI) planted by different communities from different parts of the world, such as Adan Rice from Indonesia and Timiz (long black pepper) from Ethiopia, can contribute distinctive evidence for the extension of the current literature. Secondly, the direction of measuring happiness may embark on a different path to determine psychological wellbeing since there are numerous types of measurement in identifying a farmer's wellbeing.

Regarding policy implications, the current research provides guidelines for workshops made by relevant government agencies to form knowledge transfer programmes to help smallholder paddy farmers in terms of production and financial planning. Moreover, the federal government can form social protections that are well suited based on the smallholder paddy farmers' situation. In addition, the current research can create financial planning awareness within a rural agricultural community. As a result, local authorities could highlight the importance of financial literacy for paddy farmers.

The current research was designed and conducted with utmost care and attention to enhance the capability of the study to accomplish its objectives. However, as with the majority of studies, the current research design is subject to limitations. Firstly, this research focused on farmers' financial planning. Financial planning is reflected in the queries investigating whether farmers ever assess their financial saving needs. The assessment of financial literacy and the information for planning were not explored for this study, even though both are equally critical in investigating farmers' saving decisions, the capability to plan, and the implementation of these plans (Lusardi & Mitchell,



2011). However, this study focused on whether rural farmers had financial planning prior to previous studies showing that rural farmers have poor financial literacy (Gaurav & Singh, 2012). In addition, information for planning is mostly insignificant and is not highly valued by farmers (Bailey & Turner, 1994). Therefore, investigation of financial planning is sufficient when targeting rural farmers.

Secondly, this study is limited to the measurement of happiness for wellbeing. There are various ways to measure happiness. For instance, Yiengprugsawan (2012) uses mental health to measure happiness. Steptoe and Wardle (2005) focus on studying happiness by looking at different biological factors such as samples for measurement from saliva and heart rate in estimating the positive effect. Besides that, the measurement of happiness is derived based on life expectancy, whereby the difference between actual and expected life expectancy is calculated (Puri & Robinson, 2007). This study measured the respondent's happiness using psychological testing through self-report, whereby detailed information regarding how satisfied and happy the respondents were with their daily lives. Also, detailed information about their characteristics was known using the Oxford Happiness Questionnaire (OHQ). The result of this study might be different if compared to other measurements. Even so, the measure of wellbeing by Hills and Argyle (2002) is the most suitable method to measure happiness in this research.

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