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Understanding Fair Value Measurement Practices on Biological Asset: A Study Within Agricultural Sectors

Nurshahirah Salehuddin[1*], Suraiya Ibrahim[1], Wan Sallha Yusoff[1]

[1]Faculty of Business and Communication, University Malaysia Perlis, Perlis, Malaysia

*Corresponding Author: shahirahsalehuddin8@gmail.com

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Abstract: *Numerous nations have developed farming production in an attempt to turn a benefit from agriculture's role in economic development. Agricultural accounting is a minor standard with a wide scope of application that has a significant effect on agricultural biological assets. Considering calculating fair value measurement is fairly difficult, the majority of businesses could not adhere to it and lacked the necessary preparedness. This study sought to better understand the current practices of fair value measures for biological assets in the agricultural sector of Malaysia with reference to IAS41. The objective of this study is to find out the current practices of fair value measurement and also to investigate whether minimum production cost and social elements will influence fair value measurement. Furthermore, this study applies Technology Acceptance Model (TAM) to identify farmers' acceptance of the usage of smart farming analytic data. In this context, a biological asset is any living plant or animal that an organization owns. Biological assets are usually calculated at fair value minus selling costs. A qualitative case study approach will be employed in this study with a focus on gaining an understanding of fair value measurement practices on biological assets. This study's data validity can be accessed via triangulation and thematic analysis. In terms of biological assets, the Harumanis Mango was chosen as the study's sample.*

Keywords: Biological Asset, Fair Value Measurement, Harumanis Mango, Minimum Production Cost, Smart Farming, Social Elements

1. Introduction

Agriculture is interesting. According to World Bank (2020), agriculture is a crucial sector of the global economy, since it is not only one of the world's leading sources of income but also one of the industries responsible for supplying the world's food needs. It consists of biological assets required daily by humans. Biological assets have been acknowledged as among the most important assets in the agricultural sector. Over time, numerous farming operations have evolved into smart farming processes, like the use of the Internet of Things (IoT) and various technologies, such as spraying pesticides with a drone. Numerous nations have used smart farming practices in their regions. This is because the adoption of modern technologies in agricultural farms may enhance market expansion, boosts income levels, and provides opportunities. According to Data Bridge Market Research (2019), smart agriculture is the future of agriculture, particularly in the market. The utilization of increasingly advanced technologies in agricultural fields is a vital component in speeding industry growth. For instance, farmers could pay a great emphasis on tracking livestock and disease identification. This study aims to understand the current practises of fair value measures for biological assets

in Malaysia about IAS41. Additionally, this study is to determine if the minimum production cost and social elements will impact the fair value measurement of the biological asset. Next, this study is to identify farmers' acceptance of smart farming analytic data using the Technology Acceptance Model (TAM).

2. Literature Review

2.1 Biological Asset Perspectives

A biological asset refers to a living animal or plant (Deloitte, 2012). The biological asset is among the accounting concepts that have been used to measure plants and animals and to calculate the cost of production. Biological assets are recognised as one of the most important assets in the agricultural sector. Moreover, according to Goncalves et al. (2017), accounting literature classifies biological assets into two categories: bearer biological assets and consumable biological assets. Bearer biological assets are subject to IAS 16 Property, Plant, and Equipment, whereas consumable biological assets are subject to IAS 41 Agriculture (Jamil et al., 2019). Bearer biological assets, such as grapes, are self-regenerating, whereas consumable biological assets are harvested as agricultural output or sold as biological assets. Examples of livestock include cows and fish. The biological properties of plants include vegetables, fruits, vineyards, trees, and orchards.

The biological assets are continuously evolving. Throughout that, they continue to reproduce, degenerate, and develop. Consequently, the value of biological assets fluctuates frequently. Not only that, biological assets undergo quantitative or qualitative transformations are known as biological transformations (Deloitte 2021). Biological transformation refers to changes that may be measured, examined, and monitored. In addition, Hadiyanto et al. (2018) did a study on the influence of accounting practises on the quality of financial reporting. This study examines whether the use of the fair value method against the historical cost method to biological assets resulted in varying levels of financial reporting quality. For data collecting, an annual report from 38 palm oil grower firms was utilised. Subsequently, the findings of the study indicate that firms that utilise historical cost measurement provide less reliable and appropriate data than firms that implement fair value measurement. However, there is a limitation to this study; the sample consists of yearly reports from 38 agricultural enterprises during a five-year period. Consequently, the content of the report is constantly evolving, which might disrupt the study's findings.

2.2 Fair Value

Fair value is the price made to pay to sell an asset or obtained to transfer liabilities in an organized deal among market participants on the measurement date, as defined by SFAS No. 157, Fair Value Measurement (Deloitte, 2012). Fair value accounting could enhance the consistency of financial statements, allowing investors to rely on their judgments on price-relevant information (Lin et al, 2017). Fair value accounting, on the other hand, relies largely on managerial discretion, which may hurt financial statement consistency, as stated by (Lin et al. 2017). Other researchers, however, presume that fair value is more advantageous than the historical cost in the agriculture sector's agent decision-making process and also in financial statement preparation, based on prior studies (Goncalves et al., 2017).

IFRS 13 specifies three methods for calculating fair value: the market approach, the cost approach, and the income approach. The market approach utilises pricing and other relevant information derived from market transactions involving the same or equivalent (similar) assets, liabilities, or a collection of assets and obligations (e.g., a business). Next, the cost approach

uses the amount required to replace the service capability of an asset (current replacement cost). The income approach transforms future amounts (cash flows or income and costs) into a single present (discounted) value that represents current market assumptions in terms of those future amounts.

2.3 Smart Farming

Smart farming can be defined as the control of the farm system by Internet-connected smart devices (Wolfert et al. 2017). Experts in agriculture have created their technologies, which are sometimes known as agricultural technology, smart agriculture, or smart farming. The enhancement of the agricultural system reduces time, quality, and even quantity of labour. Brazil, the United States (U.S.), India, and China are among the top agricultural-producing nations (Dutta S, 2020). In nations such as China and Japan, the increasing usage of smartphones and Internet of Things (IoT) devices has accelerated the adoption of precise agricultural solutions (Research B.I.S., 2018). Like the rest of the globe, Malaysia plans to adopt IoT in smart farming. This is because foreign nations such as China and Japan have proved that the use of IoT in smart farming appears to offer additional benefits. In addition, current research has been conducted on how smart agricultural technology is integrated into farmers' daily lives, activities, and identities (Jakku et al. 2019). Smart farming is beneficial to farmers in some areas. For instance, the use of drones to spray pesticides to keep pests from destroying crops saves farmers a significant amount of energy and time.

2.4 Minimum Production Cost

Production costs include all direct and indirect expenses incurred by a business when manufacturing a product or providing a service (Bragg 2020). In addition, these expenditures include direct labour, direct products, consumable manufacturing supplies, and plant overhead (Bragg 2020). According to Wouters et al. (2017), seven types of costs must be prioritised when calculating the cost of manufacturing. This includes labour, tools, vehicles, electricity, maintenance, depreciation, and sales costs. According to Ha et al. (2017), a business's low costs can be a key source of competitive advantage. Numerous organisations utilise continuous process improvement to cut production costs. Every firm and organisation in every industry in the world desires to minimise expenses so that they can concentrate on maximising their profit or even lowering their prices. On the other hand, the company is continually enhancing labour methods, setup times, and operational procedures to reduce expenses.

Previous research investigated how female agricultural producers in Australia reacted to the cost-price dilemma. To escape the cost-price dilemma described by Newsome (2020), this study focuses on options for farmers, particularly women, independent of their decision to "get large or get out" of farming, while contributing to the development of alternative food systems. The study found that female farmers are more likely to engage in intensive agriculture on small plots of land. By doing so, the capital and production costs will be significantly decreased and reduced. However, rather than employing both male and female producers, this study focuses solely on female producers. This study will yield far more accurate results and data if both genders are included (male and female).

2.5 Social Element

Social elements are all elements that originate from social, environmental, society, relations, institutions, societal, government, the nation, the media, digital, religious, philosophy, conversation, and interaction, and that influence an individual's personality, behaviours, and way of life (Ullah et al. 2019). Demand will be the focus of the discussion. The need for biological assets increases annually. Innovations may offer farmers new opportunities and the

simplest way to meet the demand for regional biological resources (Anderson et al., 2019). However, diseases are one of the few challenges producers face while seeking to supply demand. For instance, Harum Manis mangoes are susceptible to anthracnose and stem-end rot. Consequently, fungicides such as benomyl, carbendazim, and propiconazole are utilized to prevent infections (Uda et al. 2020). If the disease can be remedied, the yield of Harumanis mangoes could be exceptionally high. Previous research by Kehoe et al. (2019) examines how fruit and vegetable marketplaces function in rural India and the influence of supply and demand on nutrition security. In addition, the value chains for nutrition strategy will analyse the supply and demand for such goods, which could contribute to the creation of interventions to improve diets and lifestyles. Consequently, rural India's fruit and vegetable markets have been impacted by the supply and demand for nutrition security. Researchers selected respondents from the value chain based on their availability and willingness to participate.

2.6 Harumanis Mango

Mango is among the most renowned fruits in Malaysia and has gained widespread popularity among the locals. There is quite a wide range of mango varieties. According to the researcher, some of them are known as Golek, Masuda, Maha 65, Nam Dok Mai, Sala, and Harumanis (Sani et al. 2018). The Harumanis mango is the most well-liked mango among consumers. This is because, when it reaches maturity, this variant has a strongly fragrant aroma and its pleasantly sweet flavour makes consumers look forward to buying it every time the season arrives each year. However, it is only available annually from mid-April to mid-June. Even if the price is somewhat high, people continue to acquire the mango. This mango variety is particularly climatically sensitive. Therefore, blossoming requires an extended time of dry conditions. The environment's temperature and humidity have a major impact on mango growth. Farmers can forecast when the mango will begin flowering by analysing the temperature, humidity, and soil moisture (Nooriman et al. 2018). Hence, Perlis is a suitable place for the expansion of Harum Manis. Harumanis orchards are prevalent across Perlis, especially in Kangar, Mata Ayer, and Arau.

3. Underpinning Theory and Theoretical Framework

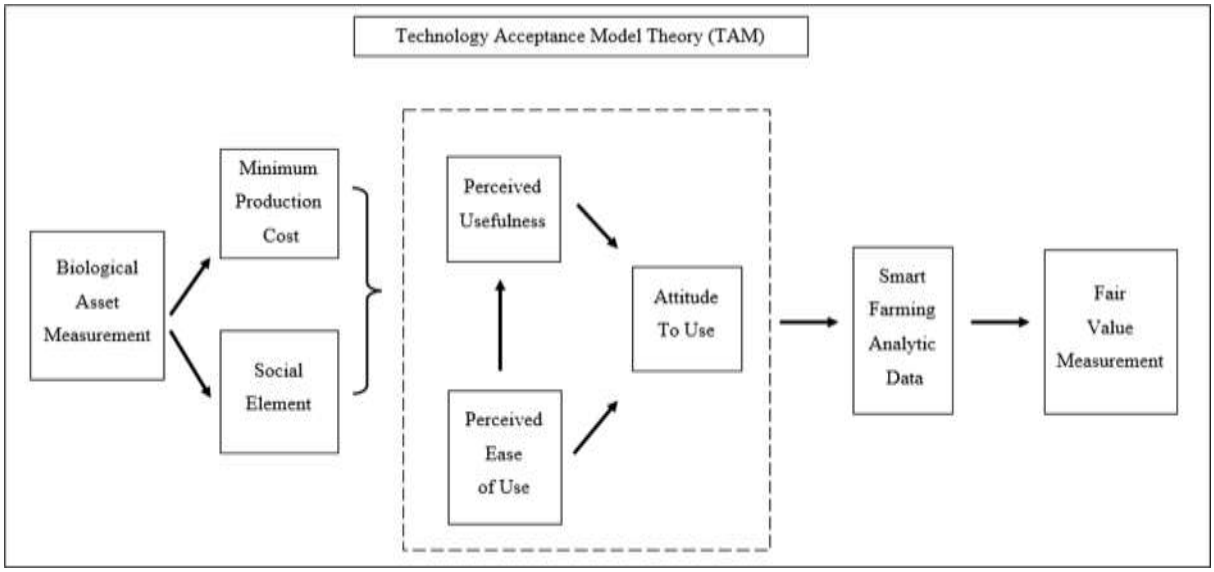

Figure 1: Adoption of TAM into Theoretical Framework

Based on Figure 1, the Technology Acceptance Model (TAM) will be utilised in this study. This study employing TAM because of the model's component could support and expand the

research framework. TAM is primarily comprised of perceived ease of use (PEU) and perceived usefulness (PU). The application of smart farming analytic data to assess fair value is dependent not only on modern technology, but also on the user's mindset, willingness to apply, and the technology's ease of use. Through interviews and observation, this study develops a research model of a fair value measurement model of biological assets using a smart farming approach to test users' willingness to use technology to measure fair value. The term perceived ease of use (PEU) refers to how straightforward a person believes technology to be to use (Ma et al., 2017). In other words, (PEU) is an individual's perception of the ease of using technology. The more user-friendly technology is, the more people will adopt it, particularly less-educated individuals.

Additionally, "perceived utility" (PU) can be defined as a person's perception of a system's benefits (Ma et al., 2017). Even though the technology is easy to use, its simplicity may become inappropriate for its utility. It is essential that each function of new technologies serve a specific purpose, as demonstrated in this study by the capacity of intelligent agricultural analytical data to determine the fair value of biological assets.

4. Research Methodology

This study will apply a qualitative case study approach with an emphasis on understanding fair value measurement practises on biological assets. This study was socially planned and implemented with the participation of participants throughout the relevant context, resulting in the study's capacity to provide options for farmers who operate in Harumanis plantation circumstances to strongly identify with and gain knowledge from them (Guba and Lincoln, 1994). A series of interviews, document reviews, fieldwork, and observations were conducted with the selected Harumanis farm entrepreneurs to obtain the data. This study will use triangulation and thematic analysis to evaluate the validity of its data. This study will initially develop an interview protocol applicable to its objectives. Using smart farming analytic data, this study will gather data from any Harumanis firm in Perlis as a sequence to investigate the study of fair value measurement of biological assets. According to a study conducted by Ma et al. (2017), perceived usefulness and perceived ease of use are crucial factors in assessing the fair value of biological assets using smart farming analytic data.

5. Conclusion

Following exhaustive literature review, the purpose of this study is to comprehend fair value measurement practises for biological assets in the agriculture sector. It will be investigating the lowest production cost and social elements that can affect the fair value of a biological asset (Harumanis Mango). In an attempt to decide the fair value of the biological asset (Harumanis Mango), this study employs smart farming analytic data for measurement purposes. However, this method is superior to the rest of the business owners and operators on mango farms. This work applies a technology acceptance model to secure the adoption of smart farming analytical data for calculating the fair value of biological assets. Therefore, the proposed framework must be studied for greater comprehension.

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