Journal of Information System and Technology Management
JISTM
EISSN: 0128-1666
Volume 6 Issue 24 (December 2021) PP. 01-08
DOI: 10.35631/JISTM.624001

JOURNAL OF INFORMATION SYSTEM AND TECHNOLOGY MANAGEMENT (JISTM)
www.jistm.com

UNDERSTANDING BIG DATA-FAIR VALUE MEASUREMENT MODEL OF BIOLOGICAL ASSETS

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Article Info:

Article history:
Received date: 15.09.2021
Revised date: 15.10.2021
Accepted date: 18.11.2021
Published date: 01.12.2021

To cite this document:

Salehuddin, N., Ibrahim, S., & Yusoff, W. S. (2021). Understanding Big Data-Fair Value Measurement Model Of Biological Assets. *Journal of Information System and Technology Management, 6* (24), 01-08.

DOI: 10.35631/JISTM.624001

Abstract:

This research establishes a Big Data-Fair Value Measurement Model of Biological Assets using a Smart Farming Approach. The aim of the study is to gather literature knowledge about the judgment of biological assets. The use of big data and innovative farming in the agricultural sector is relatively new in Malaysia, making people wonder about its effectiveness, whether positive or negative. However, determining fair value can be a daunting task due to the existence of personal biological properties and the variety of specimens (offspring), classes, and conditions. Agricultural sectors need to be more emphasised by many parties as the increases in cost production is not a trivial matter that can be ignored. There have been pressures from foreign countries such as Thailand, Vietnam, and Indonesia in the agricultural sector. Malaysia faces one major challenge: the cost of production, including wages and inputs, is relatively higher. (Rozhan 2019). Agricultural accounting is a minor standard, but it has a broad scope and a significant impact on agricultural businesses based on the accounting perspective, the MFRS141/IAS 41. The standard improves the transparency of the cost to replace capital (by allowing for depreciation and amortisation) and better reflects the productive lifespan of assets in agricultural operations. However, the application of MFRS 141 Agriculture is still relatively new in Malaysia, and a thorough examination of the literature indicates several gaps and deficiencies. This literature review is vital to support the study on Big Data-Fair Value Measurement Model of Biological Assets as the agricultural sector's involvement was recently popular. It might also offer some good ideas for handling problems involving the fair value measurement. Future studies will help the Ministry of Agriculture and Food Industries, agriculture sector workers, in terms of practical perspective. Therefore, the future result of the study suggests an improvement within the

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agriculture sector related to the treatment in their fair values, issues, and strategies.

Keywords:

Fair Value, Biological Asset, Agriculture, Big Data, Smart Farming

Introduction

Biological assets are also known as living assets in the company. Whether it is plants or animals, biological assets include livestock such as goats, cattle, sheep, pigs, fish, and crops such as corn, grapes, and tomatoes. In other words, the biological asset is somewhat called raw material to specific industries such as fashion industries and food industries. Furthermore, the biological asset can generate revenue for the companies from life stock and vineyard. The biological asset is the same as other raw material like plastic, rubber and paper that generate revenue from it. The only difference is in term of qualitative that the asset is living things. (Corporate Finance Institute, 2020). Biological assets fluctuate and devalue more spontaneously and quickly than other forms of materials. Like many other commodities, biological assets can get into up or down specific characteristics upon on period. It has already become an increase in the supply of chicken and meat. In term of depreciation, according to (Corporate Finance Institute, 2020), the biological asset can easily have depreciation and much faster than other material like tin ore.

In Malaysia, there are several problems regarding the fair value measurement of the biological asset. According to SFAS No.157, fair value accounting may strengthen financial statement accuracy by offering better price-relevant information, allowing investors to decide what is best (Kuepper, 2020). Fair value measurement in Malaysia might affect peoples and the economy because the price will be unpredictable. Also, it will make the citizen suffer more in Malaysia if the fair value for biological assets increases. Farmers or people involved in the agricultural sector will make a profit. However, due to the increase in fair value, citizens will feel unlucky as they will have to pay more because of the increase in prices in the market. However, if the fair value of biological assets decreases, the opposite will happen in the future. As is the case, many people will be affected by the price increase.

Objective of The Research

This literature review will highlight the Establishment of a Big Data-Fair Value Measurement Model of biological assets using a smart farming approach. In Malaysia, this study is relatively new because smart farming is introduced in the early stage. Besides, budget constraints and lack of farming technology become the primary reason, and it is a typical situation in the farming sector in Malaysia. This literature review finds the information on establishing a Big Data-Fair Value Measurement Model of biological assets using a smart farming approach. Propose literature reviews aims to understand the current practices of fair value measurements for biological assets in Malaysian Agricultural Companies. In Malaysia, this kind of measurement is still new and need further research. Usually, fair value is measured by the rules of demand and supply and the quality of the biological asset. In other words, there is no standard in fair value treatment of biological asset even there have been implementing IAS 41 and MFRS 141. For example, there is the reason why those farmers rely on subsidies given by the governments. Due to lower fair value, those farmers have been affected because they cannot generate the biological asset value; thus, the profit is uncertain.

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Next, it is to elucidate the value impact of the smart farming analytic data approach on the fair value judgement of biological assets and its effect on production cost in Malaysian Agricultural Companies. Using smart farming analytic data, farmers can acquire a massive amount of data using smart agricultural sensors(Alexey, 2021).Therefore, farmers may know in advance such knowledge about climate change, soil quality, plant growth status, and animal health which are all factors that need to be considered for its well-being (Lin et al., 2017). This will help the farmers ensure that biological assets' production has a better value in terms of quality. Due to the high quality of biological assets, the fair value may have less chance to fluctuate frequently. The collected data can be used to track the state of business in general and staff performance and equipment efficiency. Thirdly, to integrate the fair value measurement model and the need for big data characteristics to propel a better judgement of biological assets and minimum production cost. Big data characteristics are a system that can make sure the fair value measurement is more systematic and can contribute abundant benefit to biological asset and production cost. Doing that significant big data characteristic can ensure to find an alternate measure to make sure the production cost is minimum. Moreover, to propose a new approach for a better judgement in measuring the fair value of biological assets in Malaysian Agricultural Companies. A new approach may benefit many parties involved. One of them is the Internet of Things (IoT), which may help reduce the farmers' workloads and help maximise the outcome with qualities. With the help of IoT, the fair value measurement might be stabilising. The problems encountered can be solved easily if a new approach is implemented.

Besides, it is to formulate the optimal mathematical model of fair value measurement, reflecting real-time information accuracy and precise value of biological assets. By doing so, the judgement of biological asset will decrease gradually because of the real-time information. Not only that, but it can also help to prevent overestimate or underestimate the assets' economic growth (Cavalheiro et al., 2019). The main reason for developing the optimal mathematical model of fair value is to predict the optimal combination of a smart farming analytic data approach and the traditional method of fair value judgment and recommend decision-makers about enhancing production cost determination biological assets disclosure. Lastly is to make recommendations base on the new findings on an integrated fair value measurement model. New recommendations can open up more opportunities to many parties involved. It will also have a more positive impact that will make it easier for many people.

Literature Review

Developing Country Issues

Developing country is often defined by its economic output. This is because, it has a low gross domestic product (GDP) per person where they tend to rely on agriculture as their prime industry. However, due to lack of single meaning of terms between developed country and developing country, there has been a lot of debate which need to be drawn a line between them. United Nations has some rules for distinguishing between developed and developing countries. The World Bank has stopped using these terms in favor of others, such as low-income or lower-middle-income economies, based on gross national income (GNI) per person (Kuepper, 2020). There are many developing countries in the whole world such as Afghanistan, Philippines, Turkey, Malaysia and many more and according to, International Society for Gynecologic Endoscopy, (2018) but most fastest developing countries are Argentina, China, India, Guyana and Brazil (Elmi, 2020). However, there are still issues plaguing these developing countries. Some of the issues the people there had to faced are safety, corruption, war, poverty, hunger,

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healthcare, and education (Neethling, 2017). Notwithstanding our comfort, in developing countries there are still people in troubles. Exclusion, fear, bullying, damaged facilities, financial difficulties, resources, availability of information and devices are creating the problem (Neethling, 2017). Proposed literature review might help in reducing the problems especially the resources in agricultural sector. If positive effects takes place in this research, it may help many parties as well as increasing the agriculture resources. Despite that, it may help in reducing unemployment rate in the community.

Fair Value

Fair value accounting could enhance financial statement consistency by providing more price-relevant information for investors' decision-making, according to SFAS No.157. According to Lin et al., (2017) Fair value accounting is described as "the price that would be earned to sell assets or charged to move liabilities in an orderly transaction between market participants at the measurement date. On the other hand, Fair value accounting is heavily reliant on managerial discretion, which can negatively impact the financial statement consistency (Lin et al., 2017). When the biological asset is to be recorded in the books, the company need to make a decision either fair value can reliably measure or not. Companies also need to involve with smart farming technologies to define the fair values of the biological assets.

Smart Farming Analytic Data

Recently, the words smart farming or biotechnology is no longer words that people rarely hear. With recent technology, smart farming is easy to grow among the farmers with the correct approach. In order to confront the challenges of agricultural production in terms of productivity, environmental impact, food safety and sustainability smart farming are essential to the farmers (Kamilaris et al ., 2017). Smart farming may help to reduce the workloads among the farmers. With only the help of IoT, abundance workloads can be reduced and improve the quality and quantity of the products. For example, Strawberries can grow well with a temperature of 15.6 °C to 26.7 °C, where it is possible to grow well in Malaysia except Cameron Highland. Due to that, with the help of smart farming, strawberry might grow well in hot temperature in Malaysia if smart farming is given the opportunity. Sustainable agriculture is relevant as it linked with smart farming that could enhance the environmental quality and resource that provide basic human needs (Kamilaris et al ., 2017). However, further research needs to be conducted to develop safe, smart farming practices that do not worsen the environment.

Judgement of Biological Asset

In accounting literature, biological assets are usually recognised as vital assets in the agricultural sector. Living animals or plants are biological assets. Goats, sheep, cows, buffaloes, calves, and fish are typical biological assets on livestock. Vegetables, fruits, vineyards, trees, and fruit orchards are among plants' biological properties. The biological assets are constantly evolving. They reproduce, degenerate, and develop.

As a consequence, the nature of biological assets changes quantitatively or qualitatively. Such changes are known as biological transformation. The harvested product of changes like biological assets is known as agricultural produce. Examples of agricultural products include milk, mutton, beef, fruits, coffee beans etc. Farm companies derive profits from biological assets, so they must be recorded in the balance sheet and the revenues generated from them. .

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Minimum Production Cost

The costs of making a product are referred to as product costs. Direct labour, direct products, consumable manufacturing supplies, and plant overhead are included in these costs. The cost of labour needed to provide a service to a consumer may also be viewed as part of the product cost (Bragg, 2021). Low cost can be a significant source of competitive advantage for a business (Ha et al., 2017). Many businesses use continuous process improvement to reduce production costs. To cut costs, automakers are constantly improving work processes, setup times, and operating procedures. Not only for machinery but also the electricity and so on. In the agriculture sector, the cost can be minimised by buying seeds in large quantities at a lower price. The production cost can be minimised.

Big Data Characteristics

Big data refers to massive, complex data sets that must be processed and analysed to extract useful information for companies and organisations. More effort in monitoring agriculture is needed to make sure this sector is easy to analyse and understand. Lots of money and investments are needed in order to use some applications of big data. Hence, in agriculture, big data can monitor the weather, crops, pests, and animals' disease (Kamilaris et al ., 2017). With big data in the agriculture sector, the farmers, instead of recording it in a book that could make a mistake, can help record it much faster, avoid mistakes, and lose data where it is more efficient to use.

Conceptual Framework and Methodology

The proposed literature aims to understand how the current fair value measures for biological assets in Malaysian within the agricultural sector. Three factors can determine the fair value measurement, and it has been mediated by smart farming analytic. The figure 1, theoretical framework construct for this research depicted in the figure below. In this study, Smart Farming Analytic Data plays an essential role in mediating variables, influencing the Fair Value Measurement's dependent variable.

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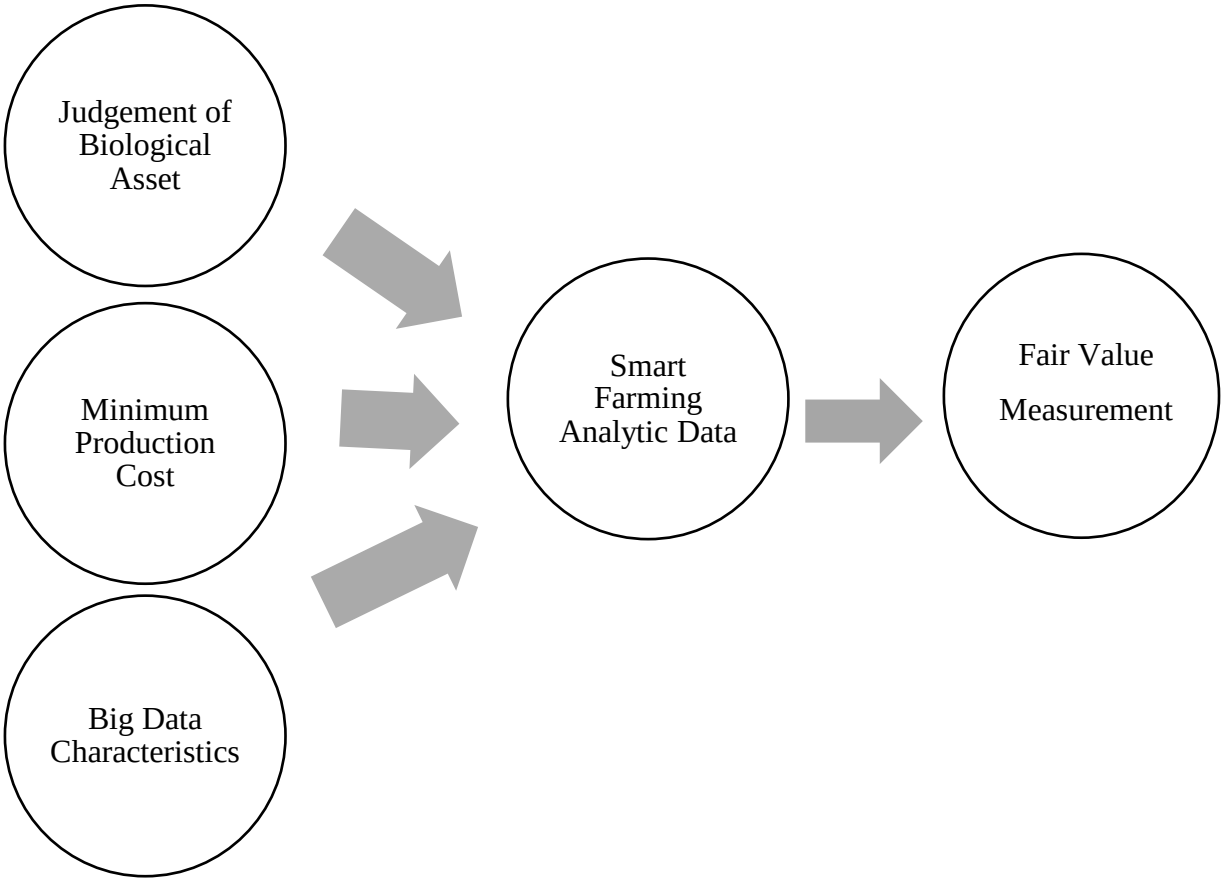

Figure 1 : Theoretical Framework

The proposed approaches outlined in this paper are qualitative and quantitative methods. Different categories of each research design will be investigated, including particular areas within each research method. Quantitative research is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations (DeFranzo, 2020). It is also used to discover deeper into the research problems. The sample is also small compared to quantitative research as the respondents are being selected to fulfill a given quota (DeFranzo, 2020). Qualitative refers to studies that are hard to quantify, such as art history (Aspers et al., 2019). Difference with qualitative methods, quantitative methods is more towards generate numerical data or data than can be transformed into usable statistics. The sample population is also larger than qualitative research (DeFranzo, 2020). Due to larger sample, it uses measurable data to formulate facts and uncover patterns in research. In order to collect the data, various surveys forms are used. For example, online surveys, mobile surveys and kiosk surveys, paper surveys, online polls, telephone interviews and many more (DeFranzo, 2020).

This proposed study will also be using inductive and deductive approach. A deductive approach begins with a theory, typically generated via academic literature, and then develops a technique to test the theory. The deductive approach has the characteristics needed in this research which develop by reading multiple academic journals; that is why it has been chosen beside the other two approaches. One of the main issues involving the deductive approach is explaining the relationship between concepts and variables. This research is about establishing a Big Data-

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Fair Value Measurement Model of biological assets by using a smart farming approach. The second issue demonstrates the need to operationalise the idea of use in research, in which facts must be measurable. In this research, the information gathered from the interview and questionnaire of Establishment of Big Data-Fair Value Measurement Model of biological assets by using smart farming approach may be used to present its importance. The final issue worth mentioning is a generalisation, which refers to the extent to which the findings of this study may be generalised to populations other than those studied.

Challenges of Fair Value Measurement

There are few challenges to the Understanding of the Big Data-Fair Value Measurement Model of biological assets. One of them is, when the current market price or value of a biological asset is unavailable, the present value of the asset's predicted net cash flows should be used instead. Secondly, the current market value is too unpredictable to measure as it has its ups and downs in terms of price (Smith, 2021). It will affect everything in the economic sector, including the original cost of the biological asset. Furthermore, current weather also played a significant role to measure the fair value. It became more challenging when certain countries have four seasons each year, making the price of biological asset fluctuate each season (Corporate Finance Institute, 2020). Next, the quality of biological asset has a significant impact on the measurement of fair value. It is difficult to maintain the quality of the biological asset. It is excellent in term of quality, so it is easy to measure the fair value. Still, however, there is a scenario in another way around that is the fair value is hard to measure due to the bad quality of the biological asset. Lastly, the cost itself is one of the challenges because to process the biological asset; will require a particular machine to process it. However, the machine itself has its own cost, such as maintenance expenses. Due to that reason, the fair value might be higher even though the biological asset is lower.

Conclusion

In conclusion, this research investigates the impact of smart farming analytic data with the involvement of big data characteristics in the agricultural sector towards the judgment of biological asset and fair value. Smart farming analytic data in the agriculture sector might help many parties. Regardless of how it happened, smart farming may help the farmer make better decisions and create faster results after undergoing a biological transformation. It can improve the qualities and increase the production that will affect cost where it might give lots of profit to the agricultural sector.

Acknowledgement

This research is funded by the Ministry of Education, Malaysia under the FRGS Scheme Phase. The reference number is FRGS/1/2020/SS01/UNIMAP/02/1

References

4hlnet. (2019, September 4). *What is a farm?* 4. https://4hlnet.extension.org/what-is-a-farm/.

Alexey, C. (2021, April 20). *IoT in Agriculture: 5 Technology Use Cases for Smart Farming (and 4 Challenges to Consider)*. Eastern Peak - Technology Consulting & Development Company. https://easternpeak.com/blog/iot-in-agriculture-technology-use-cases-for-smart-farming-and-challenges-to-consider/.

Aspers, P., & Corte, U. (2019). What is Qualitative in Qualitative Research. *Qualitative Sociology*, *42*(2), 139–160. https://doi.org/10.1007/s11133-019-9413-7

Journal of Information System and Technology Management
EISSN: 0128-1666
JISTM
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DOI: 10.35631/JISTM.624001

Biological Assets - Overview, How to Measure, Cannabis Examples. Corporate Finance Institute. (2020, December 4). https://corporatefinanceinstitute.com/resources/knowledge/accounting/biological-assets/.

Bragg, S. (2021, April 18). *Product cost definition*. AccountingTools. https://www.accountingtools.com/articles/what-is-product-cost.html.

Cavalheiro, R. T., Gimenes, R. M., Binotto, E., & Fietz, C. R. (2019). Fair Value of Biological Assets: An Interdisciplinary Methodological Proposal. *Revista De Administração Contemporânea*, *23*(4), 543–563. https://doi.org/10.1590/1982-7849rac2019180254

DeFranzo, S. E. (2020, September 7). *Difference between qualitative and quantitative research.* Snap Surveys Blog. https://www.snapsurveys.com/blog/qualitative-vs-quantitative-research/.

Elmi, L. (2020, March 15). *Top 5 Fastest Developing Countries*. The Borgen Project. https://borgenproject.org/top-5-fastest-developing-countries/.

Gerring, J. (2017). Qualitative Methods. *Annual Review of Political Science*, *20*(1), 15–36. https://doi.org/10.1146/annurev-polisci-092415-024158

Ha, A. Y., Tian, Q., & Tong, S. (2017). Information Sharing in Competing Supply Chains with Production Cost Reduction. *Manufacturing & Service Operations Management*, *19*(2), 246–262. https://doi.org/10.1287/msom.2016.0607

ISGE 2018. (2021, June 20). https://isge2018.isgesociety.com/registration/list-of-developing-countries/.

Kamilaris, A., Kartakoullis, A., & Prenafeta-Boldú, F. X. (2017). A review on the practice of big data analysis in agriculture. *Computers and Electronics in Agriculture*, *143*, 23–37. https://doi.org/10.1016/j.compag.2017.09.037

Kuepper, J. (2020, October 18). *What Is a Developing Country?* The Balance. https://www.thebalance.com/what-is-a-developing-country-1978982.

Lin, Y.-H., Lin, S., Fornaro, J. M., & Huang, H.-W. S. (2017). Fair value measurement and accounting restatements. *Advances in Accounting*, *38*, 30–45. https://doi.org/10.1016/j.adiac.2017.07.003

Neethling, S. (2017, July 12). *A free, open resource to solve our third world problems*. Opensource.com. https://opensource.com/article/17/7/third-world-problems-project.

Plugging the Gaps in the Audit of Biological Assets. Accountants Today. (2021, January 6). https://www.at-mia.my/2020/11/16/plugging-the-gaps-in-the-audit-of-biological-assets/.

Smith, T. (2021, May 19). *Random Walk Theory*. Investopedia. https://www.investopedia.com/terms/r/randomwalktheory.asp.

Withaar, L. D. (2019, October 16). *What Is the Meaning of Biological Assets?* Bizfluent. https://bizfluent.com/about-6310925-meaning-biological-assets-.html.