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SMALL AND MEDIUM-SIZED ENTITIES IN THE AGRICULTURAL SECTOR: FAIR VALUE REPORTING CHALLENGES

P.N. Maina* and H.C. Wingard**

ABSTRACT

Biological assets should be valued at fair value less point of sale costs only if an active market exists. The quoted price in an active market is the appropriate basis for determining the fair value of the asset. The objective of this research was to identify the challenges in respect of fair value reporting on the part of small- and medium-sized entities that publish general purpose financial statements, but that do not have public accountability in implementing the requirements of the International Financial Reporting Standard for Small and Medium-sized Entities. Through the research it was established that in Kenya the commodity markets operate in a simplified auction system with no clear price discovery mechanism. The lack of an active and transparent market is a serious challenge in terms of the application of fair value to biological assets. Consequently most of the farmers prefer to model the market information available. In the light of the diverse nature of agricultural produce, this article recommends virtual trading and development of commodity futures in order to reduce the market access cost, to improve accessibility to market information and to transform the role of middle traders to that of market linkages.

Keywords: agricultural sector, fair value, SMEs

JEL Classification: M41

1. INTRODUCTION

For centuries accountants recorded assets at historical cost. However, the International Accounting Standards Board (IASB) now requires measurement of assets at fair value. The application of fair value in financial reporting is becoming more significant and current debates are moving in the direction of full fair value reporting. Since fair value is a market-based measurement, it is

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considered to be more objective as it obviates the issue of management optimism by reflecting the market dynamics (Maina, 2010). Internationally, in respect of the agricultural sector, the requirements of the *International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs)* (IASB, 2009a) are much the same as those contained in International Accounting Standard (IAS) 41, *Agriculture* (IASB, 2009b). These two standards embrace the concept of fair value and make it mandatory for entities involved in agricultural activities to value biological assets using fair value less cost to sell. The sole relief granted by the *IFRS for SMEs* (IASB, 2009a) is that small- and medium-sized entities (SMEs) are entitled to apply fair value only if it is possible to determine the fair value without “undue cost or effort”; otherwise the SMEs are required to apply cost.

International Financial Reporting Standards (IFRS) are increasingly accepted and implemented in Africa, mainly to be able to prepare internationally accepted financial statements, e.g. to report to investors. In both Kenya and South Africa, SMEs form an important part of the agricultural sectors.

The main objective of the research was to establish the challenges regarding the application of fair value reporting by SMEs in the agricultural sector of Kenya in order to propose possible ways of overcoming these challenges. A further objective was to determine whether fair value reporting has any impact on the quality of financial information and the decision usefulness of information for SMEs in the agricultural sector in Kenya. The researchers sought to make recommendations for an appropriate valuation technique in the absence of an active market and in instances where it is not possible to determine the cost of biological assets readily.

This article is organised as follows: in the literature review an overview is given of the importance of the agricultural sector and SMEs, diversity in accounting for biological assets, commodity markets, valuation of biological assets and valuation techniques. The overview is followed by the research methodology applied in the study. The research findings are presented, conclusions are drawn from the findings and recommendations are made for future implementation of fair value.

2. LITERATURE REVIEW

2.1. Importance of the agricultural sector and SMEs

The relative importance of small-scale farming in the context of SMEs continues to assume a vitally important role in the reduction of poverty and in economic development (WBG, 2007). As more SMEs in the agricultural sector become increasingly commercially oriented, the need for sharing financial information and the application of fair value in the valuation of biological assets will become more urgent.

In most countries, SMEs are defined on the basis of a quantified criterion by taking into account revenue, assets, employees or other quantifiable factors. However, the IASB focuses on qualitative aspects in defining SMEs as entities that publish general-purpose financial statements for external users, but that do not have public accountability (IASB, 2009a). Although large SMEs have the option of adopting the full IFRS, the most significant challenge in terms of qualitative definition lies in meeting the needs of small and large SMEs alike (ACCA, 2008).

It may also be argued that most SMEs are managed by owners and that control depends on the owners' personal trust and interaction with management. Lenders and tax authorities are also in a position to request a particular report. This significantly reduces the number of interested parties in respect of the financial statements of SMEs. In Kenya, except for listed companies, compliance with IFRS is largely voluntary and small-scale commercial farmers mainly employ a cash basis of accounting (FSF, 2009). However, it is essential for SMEs to realise that they will be expected to share information with trading partners if they are to participate in global business. These factors justify the need for a common platform in respect of the financial reporting by SMEs.

2.2. Diversity in accounting for biological assets

The inherent difficulties involved in the application of historical cost are critical contributors to the diversity in the accounting for biological assets (Elad, 2004). The objective of general-purpose financial statements is to provide information in a structured fashion about the financial position, performance and cash flows of an entity (Pretorius, Venter, Von Well & Wingard, 2009). The practical challenges of applying the entity concept and the process of biological transformation limit the reliability of cost as a basis for the accounting of biological assets. Due to the traditional role of agriculture as a social activity, the application of the entity concept has constituted a major challenge in streamlining the accounting of agricultural activities.

According to Elad (2004), the historical cost, as a way of accounting for biological assets, requires rigorous record-keeping and complex cost-allocation techniques in order to track down the costs if more than one agricultural activity is involved. Since historical cost involves unnecessary complexities, there has been a call for simpler methods in the valuation of biological assets; for example, fair value (HCTC, 2009).

2.2.1. *Cost less accumulated depreciation*

In terms of IAS 41, *Agriculture* (IASB, 2009b), there is a presumption that it is possible to measure fair value reliably for a biological asset. However, that

presumption may be rebutted only on the initial recognition of a biological asset for which market-determined prices or values are not available and for which alternative estimates of fair value are determined to be clearly unreliable. In such a case, such a biological asset is measured at its cost less any accumulated depreciation and less any accumulated impairment losses. Once the fair value of such a biological asset becomes reliably measurable, an entity should measure the biological asset at its fair value less costs to sell. In certain cases the cost of the biological assets may approximate to fair value (IASB, 2009b), particularly if little biological transformation has taken place since the initial cost incurrence or when the impact of the biological transformation on price is not expected to be material.

2.2.2. Convergence toward fair value

The proponents of fair value argue that fair value provides more relevant information to decision makers by reflecting the reality of the market dynamics (D'Souza, 2008). It is also argued that the fair values are more comparable because they take away the “manager’s voice” and give the “market voice” (Elad, 2007). This may be true only where level 1 input (see Figure 1 in section 2.4), unadjusted quoted market prices in an active and liquid market, are available (Chasan, 2008). However, where the market prices reflect volatile prices or a wide ask-bid spread, then the appropriateness of the values used may only be as good as the model that was determined by the management. This situation is exacerbated should the level 2 and level 3 variables (see Figure 1) be used to estimate the fair value because, like the historical cost, they overly reflect management optimism (Fisher, 2009).

As a result of the global integration of financial sectors, it has become necessary to harmonise accounting standards on a global scale so that they become appropriate for both developing and developed economies (Gelard, 2009). Since the Securities and Exchange Commission (SEC) has issued a road map to the issuers of financial statements in the USA in respect of the possible use of IFRS, the convergence of the accounting standards has become a reality.

2.2.3. Challenges in application of fair value

Fair value reporting has faced a number of challenges and controversies and it has been widely criticised for taking away the verifiability of financial statements and replacing this verifiability with the so-called “market voice” (Elad, 2007). This may explain the reason why, despite the proclaimed simplicity of fair value reporting, most farmers if given the choice between fair value and historical cost would prefer either historical cost or a modest blend of the two. According to the World Bank Group (WBG, 2007), it is a major concern regarding the way in which to contain the price volatility of agricultural produce, to improve access to markets

and to develop modern market chains in order to reduce the cost of market access of SMEs.

The debate on fair value has focused mainly on the financial instruments that are traded in well-established financial markets. However, the agriculture commodity markets in many developing countries remain largely underdeveloped and non-transparent and this poses the most significant challenge in the application of fair value to biological assets (Wahome, 2009). The fluctuation of commodity prices worldwide poses a major challenge to fair value estimation (African Tea Brokers Ltd, 2009). In Kenya, there are three commodity markets that operate in a simplified auction system with no clear regulation and no transaction security. The licensing of market participants is riddled with corruption, which, in turn, casts doubt on the integrity of market-determined prices (Odhiambo, 2009).

2.3. Commodity markets

Commodity exchanges fulfil three basic functions: price transparency, price discovery and reduced transaction costs (AU, 2005). According to Sitko and Jayne (2012), transaction costs are reduced by expanding the range of potential trading partners, providing industry-approved inspection and quality certification services, and by providing contract enforcement and arbitration services to protect against default.

Commodity exchanges provide a common platform for information sharing, which, in turn, leads to improved access to finance on the part of producers, processors, traders and distributors. In addition, commodity exchanges may reduce market inefficiencies such as excessive price differentials between regions or from one season to the other (IFPRI, 2008). However, for most agricultural commodities, production is seasonal and volatile, and the underlying commodity may be perishable. These factors make the markets for these products susceptible to supply and pricing distortions and to manipulation.

2.3.1. *Commodity markets in Africa*

The African Union (AU) (2005) views a commodity exchange as a powerful instrument of economic integration, which provides security to the transactions that take place on its trading platform and enables buyers and sellers to discover new regional and international markets. Commodity exchanges signal opportunities to traders for profitable price arbitrage through regional trade and provide farmers with a better opportunity to choose their cropping patterns in order to meet market demand. This means that a commodity exchange can act as a catalyst for more valuable agricultural products and investments in terms of physical market infrastructure, for example, grading facilities, information systems and warehousing structures (IFPRI, 2008).

Despite the relative importance of commodity markets and the concerted efforts that stemmed from the Abuja Treaty of 1991, the AU (2005:1) regrets the underdevelopment of exchange markets in developing economies. In Africa it is only in the economies of South Africa and Nigeria that exchange markets have made significant contributions. The commodity markets in most developing countries have been characterised mainly by information asymmetry and price manipulation (AU, 2005:1). The roles of speculators, insider trading, and inadequate regulations have not aided the situation. Although the existence of exchange markets has facilitated the matching of buyers and sellers, thereby increasing the liquidity, the European Capital Markets Institute (ECMI, 2008:1) notes that commodity prices have always been extremely volatile as a result of unpredictable trends and events such as floods, droughts, and war, technological improvement, fluctuations in economic activity and disruptions in distribution or production.

While noting the under-utilised potential of agricultural commodity markets in most developing economies, Goggin (2007) explains that, in order to survive, it is essential that agricultural commodity exchanges provide new and innovative services to the market, such as warehousing, risk mitigation and courier services. Commodity exchanges in Africa have difficulty in attracting sufficient volumes of trade due to potentially high transaction costs associated with an anonymous exchange (Sitko & Jayne, 2012). Sitko and Jayne (2012) conclude that while commodity exchanges are envisaged as institutions to drive down transaction costs in African food markets, the perceived costs associated with developing them to ensure contract compliance may exceed the risk mitigation costs of traditional trading networks.

2.3.2. Development of commodity markets in Africa

Given the persistent challenges faced in African food markets, farmers, traders, industrial processors and banks are all theoretically well positioned to derive significant benefits from a vibrant commodity exchange. Therefore it seems puzzling that, in general, agricultural commodity exchanges in Africa have languished, despite substantial support from international donors for their development (Sitko & Jayne, 2012).

There are three visible commodity markets in Kenya: the Kenya Agricultural Commodity Exchange, the Nairobi Coffee Exchange and the Mombasa Tea Auction. According to Wahome (2009), the price discovery and transparency processes are fallacious in these markets. The commodity markets in Kenya remain overly depressed and illiquid, partly due to inefficient government policies. It is believed that the proposal by the Ministry of Finance to allocate Ksh1.8 billion to establish commodities markets at a grass-roots level (GRK, 2009:12) may provide farmers with a better opportunity for fairly “pricing” their produce, and therefore

their biological assets. For many years the Nairobi Stock Exchange (NSE) has focused on developing agricultural commodity futures although little progress has been reported so far (Wanguny, 2008:2).

The experience of other countries is similar. For example the Zambian Agricultural Commodity Exchange (ZAMACE) has not yet achieved the necessary market size to function efficiently (Sitko & Jayne, 2012). When the traded volumes on ZAMACE are compared with those on the agricultural trading division of the South African Futures Exchange (SAFEX), the vast differences become apparent: one day's trade activity on SAFEX is normally valued at more than US\$100 million, while ZAMACE reported a total of US\$78 million since October 2007 to May 2011 (Sitko & Jayne, 2012). High trade volumes allow the fixed costs of operating the exchange to be spread over a large number of transactions, whereby lower costs are imposed on market participants. In the absence of market scale, the cost of operating an exchange per traded transaction is prohibitive for some participants; therefore they opt out of the system, leaving fewer participants to shoulder the remaining fixed costs (Sitko & Jayne, 2012).

2.4. Valuation of biological assets

Biological assets should be valued at fair value less point of sale costs only if an active market exists. The quoted price in an active market is the appropriate basis for determining the fair value of the asset (IASB, 2009b). The fair value of an asset may also be estimated on the basis of an alternative market, sector benchmarks or expected future cash flows, as depicted in Figure 1.

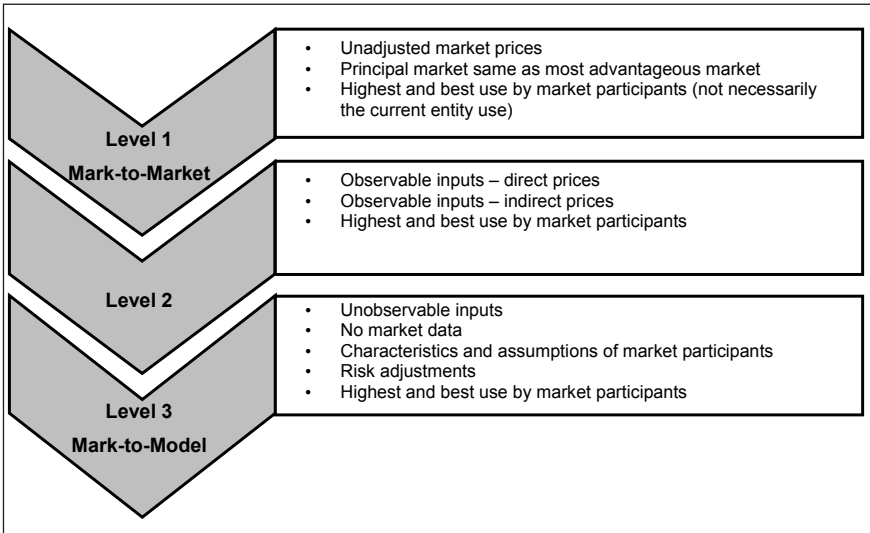


Figure 1: Illustration of the fair value hierarchy from mark-to-market to mark-to-model

Source: Adapted from Marck (2003)

The determination of fair value is based on either market observable inputs (level 1 and level 2) or non-observable inputs (level 3). In order to enhance comparability it is essential that an entity place greater emphasis on the observable variable.

2.4.1. Active market

According to IAS 41, *Agriculture* (IASB, 2009b), an active market is a market in which the items traded are homogeneous, where willing buyers and sellers may normally be found at any time, and prices are available to the public. An active market is characterised by a high volume of transactions and market liquidity with narrow ask-bid prices. If an entity has access to different active markets, then the entity will make use of the most relevant of these active markets.

According to Adukia (2006), it becomes increasingly difficult to establish the fair value of a biological asset when the asset is a bearer asset, which itself will not eventually become agricultural produce. This difficulty in establishing the fair value of biological assets also increases the more long-lived the asset is. For example, in the established vineyards in France, grapevines have long lives and it is not uncommon to find productive vines that are over 100 years old and capable of continued production for another 100 years. It is therefore clear that an organised market may exist for mature, consumable biological assets or for

harvested agricultural produce only. Even if an active commodities market were to exist, such a market would not capture the diversity of agricultural produce and the market may be seasonal with variation influenced by qualitative aspects, for example, nutritional content. Thus, even in the case of mature, consumable biological assets, an entity may need to model the prices based on that entity's own estimation and assumption. At level 3 it is supposed that the entity model is using unobservable inputs to estimate fair value, but, according to Liu (2009), mark-to-market is real while mark-to-model has meaning only if the model reflects reality. Although models are operative over the long term, the market may often cause the model to fail at any one specific point for any number of reasons. As Keynes commented, the market may stay irrational longer than market participants are able to stay liquid (Liu, 2009).

2.4.2. Use of "surrogate" markets and sector benchmarks

As a result of the diversity of agricultural activities, homogeneity of products may be impossible to attain; therefore, most valuation involves modelling the market prices of similar products. IAS 41, *Agriculture* (IASB, 2009b) states that, if an active market does not exist, an entity should use one or more of the following, when available, in determining fair value:

- the most recent market transaction price, provided that there has not been a significant change in economic circumstances between the date of the transaction and the balance sheet date
- market prices for similar assets with adjustments to reflect differences
- sector benchmarks such as the value of an orchard expressed per export tray, bushel, or hectare, or the value of cattle expressed per kilogram of meat

The estimate obtained should be adjusted to reflect any differences between transactions and to ascertain fair value within a narrow range of reasonable estimates (IASB, 2009b). An entity should maximise the use of market-observable inputs at level 2.

2.4.3. Present value of future cash flows

In certain circumstances, market-determined prices or values may not be available for a biological asset in its condition at the time. In such circumstances (IASB, 2009b), an entity should use the present value of expected net cash flows from the asset discounted at a current market-related interest rate in determining fair value. The cash flows used should reflect the expectation of market participants in respect of the asset in its most relevant market. Sallmanns (2005) proposes the

use of the business residual valuation method in the estimation of the value of such biological assets. In terms of this method, the market value of the operation derived from the biological assets is determined. The value of the land, equipment and machinery, other assets and identifiable intangible assets such as brand names, are then deducted from the market value of the operation. The resultant residual value may then be allocated as the market value of the biological assets.

The IASB (2009b) explains the same position that, in instances in which biological assets are attached permanently to land, the market value should be estimated for the entire package and then the value of the raw land and land improvement deducted to ascertain the value of the biological assets.

2.5. Valuation techniques

Any valuation techniques used to measure fair value will maximise the use of observable inputs and minimise the use of unobservable inputs (IASB, 2009c). The IASB (2009c) notes that an entity should use valuation techniques that are appropriate in the circumstances and for which sufficient data is available. Should an input not be observable, the measurement objective remains the same – inputs should reflect market views and should be adjusted to exclude any entity-specific views that are inconsistent with the market participant expectations.

The IASB (2009c) explains that the objective of using a valuation technique is to estimate the price at which an orderly transaction would take place between market participants on the measurement date. Valuation techniques consistent with the market approach, income approach or cost approach should be used to measure fair value. The market approach uses prices and other relevant information generated by market transactions that involve identical or comparable assets or liabilities. The income approach uses valuation techniques in order to convert future cash flows or income and expenses to the present amount. The cost approach reflects the current replacement cost of an asset (IASB, 2009c).

3. RESEARCH METHODOLOGY

In Kenya, most SMEs operate informally (FSD, 2008) and this created challenges in defining the population and the sample design.

3.1. Population and sample

The selection of the respondents was based on five categories, namely industrial (cash) crops, horticulture, food crops, livestock and fisheries, and forestry. The number of respondents in each category was based on their contribution to GDP. Table 1 illustrates the distribution of the sample size in respect of the various sub-sectors in the agricultural sector.

A purposive sampling method was adopted in order to target only those respondents who were most likely to provide relevant information for the purpose of the study. As the SMEs that publish financial statements are not listed, this study employed the snowballing sampling technique. Snowballing involves identifying a subject who displays the qualities the researcher is interested in investigating and then asking the respondent to suggest another person (Mugenda, 2008). Majumdar (2005) argues that although the snowballing sampling is prone to bias, it may, with proper control, yield highly reliable results. The problem of non-response is not significant since the researcher has the freedom to select another respondent.

The sample was selected based on entities from the agricultural sector participating in the KPMG 2009 Top 100 SMEs survey, the 2009 Institute of Certified Public Accountants of Kenya Financial Reporting Award and the 2009 Nairobi Agricultural Society of Kenya Trade Fair. The farms selected from the above-mentioned category formed the basis of snowballing. Out of all the entities identified, the questionnaires were administered to 30 farms.

Table 1: Determination of sample size

Sub-sector	Characteristics	Activities	Contribution (% GDP)	Number of entities
Industrial crops	Primary cash crops	Tea, coffee, sugar cane, cotton, tobacco, sisal, barley and fruits	17	5
Horticulture	Consumable and non-consumable	Vegetables, flowers, nuts, spices	33	10
Food crops	Immediate consumption or staple food	Maize, wheat, rice, sorghum, millet, legumes	32	10
Livestock and fisheries	Meat and fish and livestock products	Poultry, goats, sheep, cattle, fish	14	4
Other sub-sector	Forestry	Timber, beam	4	1

Source: Adapted from Kenya Vision 2030 (GRK, 2007)

3.2. Questionnaire

The research instrument used was a questionnaire with closed-ended questions. The questionnaires were administered to each respondent identified, either personally or through electronic mail. The questionnaire consisted of six sections, each with a different objective.

3.3. Data analysis method

The Statistical Package for the Social Sciences (SPSS) was used in the ranking procedures in section 2 (Tables 2 & 3) and section 6 (Table 4) of the questionnaire.

3.4. Limitation of empirical investigation

The empirical investigation involved certain challenges ranging from a small sample to a poor understanding of IFRS on the part of the respondents. However, since this was an exploratory study, the limitations were not expected to have a marked influence on the research findings and the inferences.

4. RESEARCH FINDINGS

The findings are discussed in the order of the sections in the questionnaire. The snowballing sampling technique and personal administration of the questionnaire accounted largely for the high response rate of 90%.

4.1. Farm profile

Most of the respondents (70%) were private companies, with only 17% being family controlled. This is contrary to the theoretical assertion that most SME farming activities are family based. However, it is important to note that the study targeted only those entities that publish financial statements. In addition, the sampling method was non-statistical, which may have influenced the outcome.

The horticultural sub-sector contributed 30% of the respondents compared with a target of 33% (see Table 1); 27% of the respondents were from the food crops sub-sector compared with a target of 32%; 17% of the respondents were from cash crops and only 13% were from livestock and fisheries. If the responses are compared with the targets, they reflect the diversity of the agricultural sector in Kenya and, thus, form a sound basis for both the analysis and the generalisation.

Almost half of the respondents indicated that they targeted the wholesale and export market in mainly the horticultural sector and industrial crops. Farmers who market their products through cooperative societies prefer to be classified as wholesalers. In addition, 37% of the respondents indicated that they targeted the retail market mainly for food crops that do not require further processing, while only 3% of the respondents indicated that they produced on a contract basis and for household purposes.

Close to 60% of the respondents indicated that they rely on natural climatic conditions and only 27% depended on irrigation and mechanisation. Since climatic patterns in Kenya are unpredictable, there is much uncertainty regarding future expectations. This in turn may, to a great extent, influence the valuation of biological assets. Only 3% of the respondents indicated that they had adopted

biotechnology. Only one of the respondents stated that he was engaged in traditional farming practices.

4.2. Objectives in preparing financial statements

The financial statements represent the single most important tool in respect of management’s sharing of information with the various stakeholders of an entity. Section 2 of the questionnaire sought to establish the purpose of published financial statements, and the basis on which farmers preferred to prepare financial statements.

Section 2, question 1 was: Rank the following components of financial statements in order of their importance to your farm. The components of financial statements were abbreviated as follows:

- STCOMINC – Statement of comprehensive income
- STFINPOS – Statement of financial position
- STECAFLW – Statement of cash flows
- STECEEQT – Statement of changes in equity
- NOTEXPLA – Notes and explanations to the financial statements

The purpose of this question was to establish which components of the financial statements were accorded the most significance by those drafting the financial statements. In order to analyse the findings it was necessary to code the components of financial statements and then to compute the statistical values using SPSS. The results of the statistical analysis are presented in Table 2.

Table 2: Importance of the components of financial statements

	N	Minimum	Maximum	Mean	Standard deviation
STCOMINC	27	1	4	2.70	0.869
STFINPOS	27	1	5	3.59	0.888
STECAFLW	27	1	4	2.41	0.694
STECHEQT	27	5	5	5.00	0.000
NOTEXPLA	27	1	4	1.33	0.784

In Table 2, the most important (minimum) is represented by 1 while the least important or of no importance (maximum) is represented by 5. The statistical analysis of the responses indicates that most of the respondents agreed that the notes and explanations to the financial statements were the most significant, with a highest mean score of 1.33 and a standard deviation of 0.784. These notes and

explanation, which consist mainly of disclosures of accounting policies, as well as a schedule and explanation of non-financial factors, enable farmers to explain the financial statements and thus provide them with flexibility to explain their expectation about the future.

Section 2, question 2 was: Rank your reasons for preparing published financial statements. The coding was done as follows:

- LOANREQU – Loan requirements
- SHAREHOL – Shareholders
- TAXCOMPL – Tax compliance
- DECISINF – Decision-making information
- COMPSTAN – Compliance with accounting standards

As discussed in section 2.1, the objective of the majority of SMEs in respect of financial reporting is compliance with legal regulations or the ascertaining of their tax liability. This question aimed at establishing the main reasons why farmers prepare financial statements. The statistical analysis of the responses indicated the result summarised in Table 3.

Table 3: Reasons for preparing financial statements

	N	Minimum	Maximum	Mean	Standard deviation
LOANREQU	27	1	4	2.15	0.602
SHAREHOL	27	1	5	1.33	0.832
TAXCOMPL	27	1	5	3.07	1.107
DECISINF	27	1	5	3.85	0.770
COMPSTAN	27	3	5	4.56	0.698

In Table 3 the most important (minimum) is represented by 1 while the least important or of no importance (maximum) is represented by 5. The statistical analysis of the responses, as summarised in Table 3, indicates that the majority of farmers prepared financial statements for use by shareholders with a mean score of 1.33 and a standard deviation of 0.832, both of which indicate a high degree of agreement. This is contrary to the theoretical assertion that SMEs prepare financial statements for compliance purposes.

Section 2, question 3 was: Select, by ticking, the most relevant basis of accounting for agricultural produce on your farm:

- Cash basis
- Accrual basis
- Modified accrual basis

In section 2.1 it was alleged that most SMEs in Kenya prepare financial statements on a cash basis. This question sought to establish the most common basis of preparing financial statements.

Sixteen (59%) of the respondents preferred to prepare financial statements on an accrual basis, while nine (33%) preferred a modified accrual basis of accounting. Although this research adopted a snowballing sampling technique, this finding indicates a high prevalence of the accrual basis for the accounting of biological assets, which may, in turn, be an indication of a transition state from cash basis of accounting for biological assets. Contrary to the theoretical findings, only two (8%) of the respondents preferred to prepare financial statements on a cash basis.

4.3. Access to market

In the valuation of biological assets, market-determined prices are accorded the highest priority. Accordingly, it was considered necessary to evaluate the form in which farmers accessed the market.

Section 3, question 1 sought to establish the respondents' perception of the existence of an active market for agricultural produce. This was because the unadjusted quoted price in the principal market is the preferred basis for the valuation of biological assets. Overall, 89% of the respondents disagreed that a readily determinable principal market exists. Of these, 19% strongly disagreed.

Section 3, question 2 aimed at establishing both the form in which agricultural produce is marketed and the way in which farmers deal with post-harvest losses. The processing is necessary particularly for perishable products in terms of which storage and post-harvest losses pose a major challenge. This question was included in order to ensure that the issue of principal market was understood clearly and not confused with the market for processed commodities.

Overall, 56% of the respondents agreed that agricultural produce does require further processing before marketing. This concurs with the assertion that farmers are not able to hoard their products for better market prices. Accordingly, most farmers prefer to transfer the risk for post-harvest loss to middle traders who, in turn, take advantage of this position.

Section 3, question 3 sought to establish the role of middle traders and cartels in the market place. The general belief is that unless a farmer is associated with a certain broker it will be impossible for them to access markets.

Overall, 89% agreed that the role of middle traders is significant. Of these 30%

strongly agreed. Since farmers prefer to transfer the risk of post-harvest loss, the middle traders take advantage by factoring a large margin.

Section 3, question 4 aimed at establishing whether the farmers had confidence in the prices offered in the market as these prices form the basis of the valuation of biological assets. Most of the farmers (82%) disagreed that market prices are fairly determined. Of these, 41% strongly disagreed. Only 18% of the respondents appeared to have confidence in the market-determined prices.

Section 3, question 5 sought to establish whether the farmers understood the pricing mechanism of their products. Most of the farmers (67%) strongly disagreed that the process of price discovery is transparent and understandable, while 18% disagreed. This is a clear indication that the farmers neither understood the markets, nor did they have access to market information on a timely basis. Only 15% of the respondents considered the price discovery mechanism to be both understandable and transparent.

The aim of section 3, question 6 was to establish the form in which the agricultural produce was marketed. The question was considered relevant in order to assess the farmers' understanding of their target market, particularly in respect of bearer biological assets.

Overall, 63% of the respondents agreed that a market existed for agricultural produce only and not for the biological assets. Of these, 4% strongly agreed. The rest of the respondents believed that it is possible to market biological assets.

Section 3, question 7 sought to establish whether farmers had access to a market for bearer biological assets. Most of the respondents (67%) disagreed that there is a market for bearer biological assets. The other 33% appeared to be aware of a market for bearer biological assets.

4.4. Valuation of biological assets

Section 4, question 1 aimed at identifying those farmers who consider quoted price to be the most reliable basis for the valuation of biological assets. As highlighted in section 2.4.1, quoted price is considered to be the most reliable basis for fair value determination.

Almost 75% of the farmers disagreed (of whom 15% strongly disagreed) that market prices constitute a reliable basis for the valuation of biological assets, while only 11% of the respondents preferred the quoted market price as a basis of valuation for the biological assets.

Section 4, question 2 sought to establish which of the farmers modelled the value of biological assets based on similar products or sector benchmarks. As explained in section 2.5, it is recommended that the valuation model optimise the use of observable market information.

Most (74%) of the respondents preferred model market information as a basis

for the valuation of biological assets and agreed that valuation is modelled on the basis of sector benchmarks. The minority (26%) disagreed by stating that modelling is not an appropriate basis for the valuation of biological assets.

Section 4, question 3 aimed at establishing whether the respondents preferred to value biological assets on the basis of a scrap market. As explained in IAS 41, *Agriculture* (IASB, 2009b), immature biological assets are not in a position to sustain regular harvests; therefore any attempt to predict future outcomes may be difficult. However, it is appropriate to reiterate that the scrap market is not a recommended basis for the valuation of immature biological assets if the entity has the intention and the ability to grow the immature biological assets to maturity.

Overall, 70% of the respondents disagreed that a scrap market exists for biological assets. Only 30% of the respondents would prefer to value biological assets using the scrap market. It is important to highlight that most immature biological assets are valued on the basis of cost, which does not reflect the effect of biological transformation.

Section 4, question 4 aimed at establishing the proportion of respondents who preferred to value biological assets on the basis of projected future cash flows. As explained in section 2.4.4, in situations in which there is no market observable information, fair value is estimated on the basis of future cash flows by reflecting the expectation of market participants in the most relevant market.

Overall, 70% of the respondents disagreed that they would rather use projected cash flows as a basis for establishing the fair value of biological assets, while 22% strongly disagreed. Only 30% of the respondents applied projected future cash flows as a basis for the valuation of biological assets. The projection of future cash flows involves making assumptions about both future climatic conditions and the expected useful life of the biological assets, which might be difficult to predict.

The objective of section 4, question 5 was to establish which farmers preferred the use of historical cost as the basis for the valuation of biological assets and, specifically, to the extent they regarded the cost to approximate to fair value.

Overall, 81% of the respondents disagreed that the cost of biological assets as a basis for the valuation of biological assets was reliable (44% disagreed, while 37% strongly disagreed). Only 19% considered cost to be a reasonable basis or approximation to fair value. This agrees with the assertions in section 2.4.1 that biological assets are held for a lengthy duration either to regenerate or to undergo biological transformation; therefore the cost of such biological assets cannot approximate to their fair value.

4.5. Challenges in fair value estimations

The aim of section 5, question 1 was to determine whether the farmers were in a position to predict the prices of their produce. Should there be price stability, it

would be possible to rely on the market information for valuation purposes. As explained in section 2.3.1, commodity markets in most developing countries are characterised by information asymmetry and by manipulations.

Most (74%) of the respondents strongly agreed that market prices are volatile and unpredictable; thus they did not constitute a reasonable basis for the valuation of biological assets, while 18% agreed that it was because of price volatility and unpredictability that they did not use quoted market prices. This agrees with the theoretical assertions in section 2.3.1 that market-determined prices for agricultural produce are not reliable. This would explain why most of the farmers preferred to model prices to reflect their expectations.

The aim of Section 5, question 2 was to establish the extent to which the farmers considered the grading process to be a hindrance in establishing the market value of agricultural produce. Unlike various other forms of assets, biological assets are unique because their quality may greatly influence the prices. This quality may not necessarily be visible and, in some cases, detailed analysis may be required before grading. As explained in section 2.4.1, the quality of biological assets is influenced by multiple factors such as the nurturing of the biological assets and post-harvest handling.

Overall, 77% of the respondents agreed that the results of grading caused a considerable variability in pricing, even for the same product. Of these, 33% strongly agreed. The fact that the quoted price in an active market is applicable only to homogeneous products explains why farmers may not prefer the market prices and, instead, may prefer to model such market price. Only 23% of the respondents did not consider the grading of products as an obstacle to valuation.

The aim of section 5, question 3 was to establish whether farmers supported the notion that highest and best use of biological asset is not appropriate for the valuation of biological assets. Most (93%) of the farmers agreed that the highest and best use of biological assets is not an appropriate basis of fair value determination. Of these, 59% strongly agreed. Although some farmers appeared not to appreciate the concept of highest and best use of biological assets, most of the respondents argued that the concept of market participants detaches the reality of the business as it is not possible to specify precisely the expectation of the market participants.

The objective of section 5, question 4 was to establish the extent to which the farmers considered interrelations between different agricultural products or activities to be a challenge in estimating fair value. Biological assets, but not biological produce, involve considerable interdependence, some of which is symbiotic and synergetic. This interrelation may improve or enhance the value of the relevant biological assets.

Overall, 56% of the respondents agreed that the interrelation between different products results in the valuation of biological assets becoming a challenge.

Although 44% of them did not consider such relationships between different activities to be a hindrance in the determination of fair value, only 4% of them strongly disagreed.

Section 5, question 5 sought to establish whether the farmers considered that modelling is hindered by the diversity of agricultural activity. The modelling of market prices and sector benchmarks is greatly influenced by management's understanding of their business. Overall, 59% of the respondents did not see diversity as an obstacle to the use of modelling as a tool in the estimation of the fair value of biological assets. However, a significant 41% did consider diversity to be an obstacle in the estimation of the fair value of biological assets.

The aim of section 5, question 6 was to establish whether it would be possible to predict such cash flows with any ease. As noted in section 2.4.1, most bearer biological assets are held over the long term and, in some cases, the scrap market is not an appropriate basis for the valuation of such assets. It was further highlighted in section 2.4.3 that the valuation in such a situation would depend on the expectations of the market participants about the ability of the biological assets concerned to generate future cash flows in the most relevant market.

Overall, 63% of the respondents agreed that uncertainty about future cash flows represents a challenge in the estimation of fair value. They preferred not to make simplistic assumptions about the climatic conditions remaining constant over a lengthy period of time. Of the respondents, 37% felt that it is possible to estimate future cash flows reliably.

Section 5, question 7 aimed at establishing the extent to which it may be impossible to determine cost or whether cost may be an unreliable basis for estimating the value of biological assets. As explained in section 2.2.1, there is a presumption that it is possible to measure fair value reliably for a biological asset. However, the presumption may be rebutted under certain circumstances.

Overall, 55% of the respondents disagreed that it is impossible to ascertain the cost of biological assets. Of these, 18% strongly disagreed. This indicates that, despite the practical difficulties of determining cost, some of the farmers still preferred cost as the basis of the valuation of biological assets. Only 45% of the respondents were of the opinion that it is impossible to determine the cost of biological assets and that this may not constitute a reliable basis for the valuation of biological assets.

4.6. Ranking of the challenges

The aim of section 6 was to establish the order in which respondents would rank the different factors in terms of these factors constituting a challenge in the determination of fair value. In order to analyse the results it was necessary to code

the factors and then to compute the statistical values using SPSS. The results of the statistical analysis are represented in Table 4 below with the coding as follows:

- PRINMARK – Principal market is inaccessible and establishing the highest and best use of biological assets is impractical.
- USERGRPS – The information requirement of the different user groups is dynamic and ever changing.
- COSTPREP – The cost of preparing and presenting financial statements on the basis of fair value is higher than it would be using any other basis.
- PREKNOWL – As a result of limited knowledge, we rely on consultants or external experts in the estimation of the value of biological assets.
- DIVERSIT – The diversity and interrelationships of agricultural activities impede the valuation of biological assets.
- CULTTRAD – The cultural and traditional practices of agricultural activities impede the valuation of biological assets (sentimental attachment or taboos).

Table 4: The challenges for the valuation of biological assets

	N	Minimum	Maximum	Mean	Standard deviation
PRINMARK	27	1	3	1.07	0.385
USERGRPS	27	2	6	5.37	1.214
COSTPREP	27	1	4	2.48	0.643
PREKNOWL	27	2	6	2.85	1.027
DIVERSIT	27	3	6	4.15	0.602
CULTTRAD	27	3	6	5.07	0.675

In Table 4 the highest challenge (minimum) is represented by 1 while the least challenge (maximum) is represented by 6. According to the results presented in Table 4, the accessibility of the principal market and the use of the highest and best use in the valuation of biological assets are considered to be the most challenging with an average score of 1.07 and standard deviation of 0.385. The impact of fair value on the cost of preparing and presenting financial statements was considered significantly ahead of the knowledge of those preparing the financial statements. This finding was also deemed to be consistent in the light of the fact that farmers are able to rely on expert valuation and, thus, their own understanding is not necessarily a limitation.

5. CONCLUSIONS AND RECOMMENDATIONS

The main objective of the research reported in this article was to establish the challenges in respect of the application of fair value reporting by SMEs in the agricultural sector in Kenya in order to propose possible ways to overcome these challenges. A further objective was to determine whether fair value reporting has any impact on the quality of financial information and the decision usefulness of information for SMEs. The researchers sought to recommend an appropriate valuation technique in the absence of an active market, and in instances where it is not possible to determine the cost of biological assets readily.

In the literature review an overview was given of the importance of the agricultural sector and SMEs, diversity in accounting for biological assets (including challenges in application of fair value), commodity markets, valuation of biological assets, and valuation techniques. The findings indicate that the most significant challenge in terms of the application of fair value to biological assets is the lack of an active and transparent market. As a result of the lack of market-determined prices, fair value estimates are based on a model. Should management be accountable and transparent, then the fair value estimates will not only be relevant, but they will also provide a reliable basis for quality decisions on the part of all the users of the financial statements.

As commodity markets in Kenya remain largely underdeveloped despite previous government efforts that were frustrated by cartels and middle traders for short-term gains, virtual trading is recommended as an alternative to the physical market. This possibility is now being explored by the government. It is recommended that the price discovery mechanism under a virtual trading platform be investigated. This would not only reduce the cost of market access, but it would also ease the sharing of market information. The use of commodity futures is recommended to match supply and demand. The use of the virtual trading commodity market would also transform the role of the middle traders to that of market linkages.

Internationally, biological assets should be measured at fair value. In the absence of an active market, fair value may be estimated if it can be done reliably. SMEs may apply cost if it is not possible to determine fair value without undue cost or effort. As more small-scale farmers (SMEs) appreciate farming as a commercial activity, it is essential that an awareness of the benefits of standard financial reporting and access to global markets be enhanced. This is not only applicable to farmers in Kenya, but also to farmers in South Africa and in other developing economies in Africa.

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