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The IAS 41 "Agriculture" and Accounting Regulatory Policies in Uzbekistan; Possible Implementation

by

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I. Introduction

1.1 Theoretical framework

In here, I develop and introduce my theory. I outline my primary research objective and the main goals of the dissertation, which is to develop an applicable model that will help to predict a successful implementation of IAS 41. The firstly, section explains the design and methodology of the research. Later, I will present an analysis of major prior studies in the field that is relevant to my study, categorizing and qualifying the sources in separate groups, including a review of recent research performed in the area and definitions of the terms and subject matter.

Prior research has examined the principles applied by the IAS 41 and their influences from theoretical and empirical perspectives. It dealt with recognition, valuation and disclosure principles prescribed in the standard with a limited number of studies. However, there are no suggestions on the IAS 41 implementation and relative influencing factors. Other non-IAS 41-based studies deal with general IFRSs application and adoption determinants, and show that there are differences among the practices in earlier applications (Nobes 2011). Researchers attempted to measure the impact of the various factors on accounting, often with mixed results; however, the overall link between the environmental factors and accounting standards' practices has been established.

Academic literature also suggests whether one set of accounting standards would be applied consistently by firms operating in varying economic, political and cultural settings. In fact, empirical research on early users of IAS/IFRS has found that firms are not compliant in meeting even the easily observable disclosure requirements (Street et al., 2002). Similarly, a IAS 41-based research also finds the differential level of compliance in three countries (Elad et al., 2011). These findings have caused many authors to conclude that global comparability will be driven by factors other than the accounting standards too.

The IASB's goal of international harmonization of accounting standards aims at assuring that under a single set of standards, similar transactions are treated and reported the same by companies around the world, resulting in globally comparable financial statements. I have conducted my research using three theories.

The first theory is that IFRSs might be adopted successfully by any country, as the principles are the equally observable for all countries. But, the successful implementation may be affected by local policies. Therefore, I chose the IAS 41 and Uzbek GAAPs analysis as my first approach.

Agriculture involves a wide range of activities. It has multiple branches and assets with a variety of functions. On the other hand, there are various factors that have direct and indirect correlations with the accounting for the agricultural activities. Therefore, there might be difficulties in the application of the standard, which will not usually be reported in the databases. In fact, the professionals who are eligible to draft financial statements usually meet with difficulties in the application of the standard. Therefore, my second theory is that there are problematic issues in practical application of the standard and such issues must be found by an assessment of practical professionals' perspectives.

The third theory is that the motivation of the firms plays a main role, as all firms may adopt IAS 41 successfully, but only when it is beneficial. A reasoning can be explained as follows: a country cannot push the firms to adopt by issuing a new rule; even so, firms find new management of adoption in order to meet the authorities' requirements. So, firms can motivate for successful adoption only when the adoption is beneficial. Thus, again, the firms' motivation plays a key role on the successful implementation of IAS 41. I argue that there are factors associated with successful adoption to the standard.

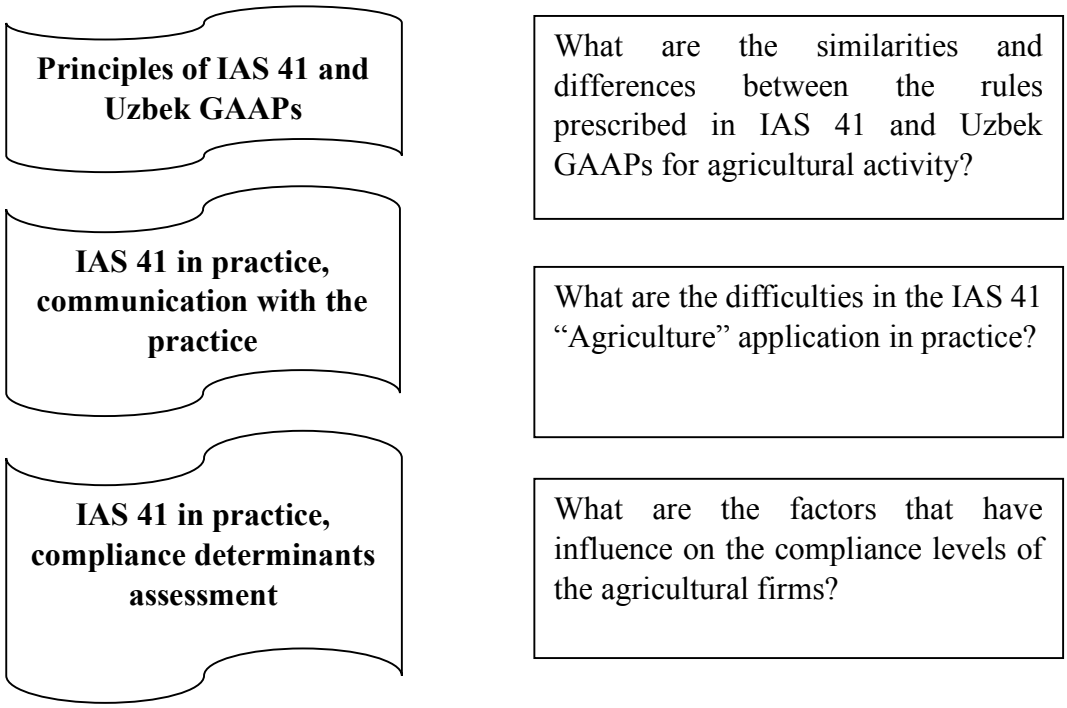
The consistent global use of a single set of financial reporting standards, IFRS, is an ambitious goal, but with many obstacles, including the variation in financial reporting and accounting standards between countries caused by firm and country level factors, along with the local regulatory policies. I deduced that

the same factors and the country's proactive utilization of these factors during IFRS implementation will result in higher-quality financial reporting immediately following IAS 41 adoption.

1.1.1 Research aims and objectives

The aim of the study is to identify accounting and non-accounting factors role in the IAS 41 application, predict IAS 41 implementation in case of Uzbekistan. Figure 1.1.1 provides an overview of the dissertation by exhibiting the three research questions that are addressed in Chapters II-IV. The first research question is linked to principles prescribed in IAS 41 and Uzbek GAAPs, and represents the first study. The second research question is linked to IAS 41 empirical application and represents the second study (Chapter III of the dissertation). The third research question is linked to the determinants of the IAS 41 application and represents the third study (Chapter IV of the dissertation).

Figure 1.1.1: **Research questions of the dissertation**



In this dissertation, I conduct three standalone analyses of IAS 41 application in order to predict a successful implementation in Uzbekistan. The first study

analyses principles applied in both guidance for agricultural activities in order to identify differences. The second study collaborates with practical professionals in order to explore problematic issues in the application of the IAS 41. The third study directly conducts research with IAS 41 application in international firms and focuses on the relative role of factors at the compliance level.

1.1.2 Design and Methodology

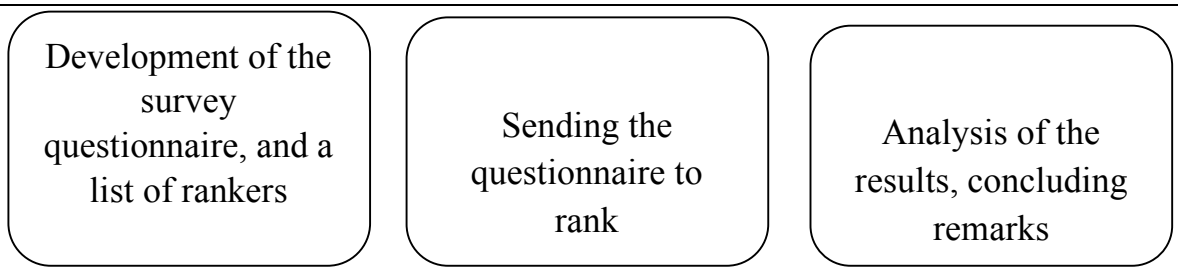
My methodology involves comparing principles, carrying out a survey and hypothesis testing in three studies.

Specifically, the first study outlined in Chapter II conducts research in international and national settings, and covers current principles under the standards. The expected result of this analysis is the identification of similarities and differences between the IAS 41 and Uzbek GAAPs relating to agricultural activities. The sample of this analysis comprises principles described in both standards, and a comparative analysis was applied to carry out this research. The analysis allows me to pinpoint the main differences between Uzbek GAAPs and IAS 41, and additional local-policies that may incur the unsuccessful implementation of IAS 41 in Uzbekistan.

The second study outlined in Chapter III uses a survey method to examine problematic issues in the practical application of IAS 41. The research objective of this chapter is to explore difficulties linked with the use of IAS 41 in practice. The sample of this analysis is comprise of rankings received from listed agricultural firms. Obtained results will be analysed by frequencies and t-tests, Wilcoxon rank-sum (Mann-Whitney) test. The frequencies test shows the fluctuating rankings within the questionnaire. Similarly, the t-test demonstrates the significant levels of fluctuating rankings, along with its mean point. The Wilcoxon test helps me to assess the rankings and their relativity with rankers' other parameters. Together, this

analysis will allow me to make decisions regarding the chapter overall. The analyses in this chapter will be proceeding as represented in Figure 1.1.2.

Figure 1.1.2: Procedure of analysis



In Chapter IV, I analyse IAS 41 implementation in agricultural firms in an international context. The research presents hypothesis that developed based on my knowledge and prior literature findings, and tests such hypothesis in an example of international firms by applying Linear Regression model[1] (OLS test). The research objective of this chapter is to determine positive and negative association of variable settings with compliance levels that has been achieved by the firms. The research study analyses correlation of the following variables and, thus, their impact on the compliance with IAS 41:

- Internationality of a firm
- Size of a firm
- Employed auditor type
- Gain existence by biological transformation/agricultural produce
- Biological assets' intensity
- Biological assets' nature
- Listing status

I use qualitative and quantitative methods in this research, data from IAS 41 adoption, as an example of worldwide-listed agricultural firms. Furthermore, I describe research methods in more details in the relative sections of each chapter.

[1] See in text books, as "Basic econometrics" Gujarati 4th edition, 2004.

This is the first study (to my knowledge) that covers IAS 41 application and variables' association with successful implementation in an international context; thus, the findings should interest the research community, standard setters and accountants.

1.2 Literature review

The IAS 41 "Agriculture" is an internationally accepted guidance, which agricultural enterprises apply in financial reporting to support users with useful, comparable and high-quality information. The standard shows accounting treatments for the biological assets, agricultural produce at the point of harvest and government grants when they are belonging to the agricultural activities. The guidance does not apply to agriculture-related land, the processes of agricultural produce after the harvest or intangible assets, as these items are covered by another applicable standard.

The prior studies were in line with the standard's publication and its first-time implementation in EU. Among them, there are very limited number of IAS 41 studies, and, mostly focused to the importance of standard, fair value issues, disclosure issues. The studies focused on valuation issues and the standard's impact on agriculture. Very early research began with the standard's impact on agriculture (Angiles et al., 2001). The study analysed information importance in agricultural sector and the Farm Accounting Data Network's (FADN) role on informativeness of the agricultural sector, and argued that standardization is important in agriculture. They defined the standard as a management tool and concluded that "…giving a farmer a subsidy will keep him from going to bankrupt for one year, but giving him an accounting tool will allow him to become self-sustainable…" Another group (Bohusova and Pereira, 2011; Elena and Camilia, 2010) studied the consequences of implementing the standard for SMEs. According to their findings, the standard is an excellent framework, and financial reporting conformity with IAS 41 can provide

policy makers and external capital providers with useful information than other sources of data (FADN's data or other). Moreover, it is appropriate guidance for satisfactory interaction between preparers of financial reports and external users. It leads to better farming, resource allocation and efficiency, and decreases the cost of capital. So, studies argued that IAS 41 implies financial reporting more value relevant information through appropriate recognition, reliable measurement and disclosure, better international guidance for agricultural activities than any other national GAAPs.

Recognition and Measurement. IAS 41 prescribes recognition and measurement of biological assets/agricultural produce, revenue recognition and income measurement, and their disclosure in financial statements. However, the standard does not address the format of financial statements or non-accounting aspects' association. Prior studies suggest that the majority of problems relate to biological assets' recognition and measurement. Agricultural produce can be measured at fair value and enterprises have no problem with determining fair value for such produce. Studies (Elad and Herbohn, 2011) examined fair value implementation in enterprises applied for the standard at their financial reporting[2]. They found that there are many proxies used to determine fair value for biological assets, and the historical cost model is still the most widely used valuation basis for biological assets in UK, Australia and France. The study concludes that reliably measuring the fair value for some type of biological assets is undesirable, particularly in forestry and plantation. And, market prices for similar assets depend on many factors, especially in plantation (*ex: market value of a vineyard depends on type of vines planted, location, water access, irrigation methods, trellis method and climate aspects*). Then, management finds fair value estimation is not reliable and continues using historic cost valuation bases. Another finding is that measuring value for biological assets is also based on different valuation bases. Present value

[2] Evidence from empirical research in 67 publicly listed agricultural enterprises in Australia, UK and France.

of feature net cash flows method is the most frequently used valuation base in Australia and UK, while historic cost valuation base is in France. In contrast, financial data is not comparable within or across the countries. There is a disagreement among management and valuing agency and auditors, where the present value of feature net cash flows method is used. They have no satisfaction with discount rate used for valuation. Discount rates are normally established by independent external valuing firms. These rates and asset values may differ considerably from valuing firm to firm. Thus, the study shows that relevant fair value determination is not available for many types of biological assets and many valuation bases for biological assets in practice. In contrast, financial information is less likely to be comparable. A study (Fischer and Marsh 2013) examined standard and US GAAPs for agriculture and argued that IAS 41 is the better guidance for financial reporting comparability, as it can provide users with more useful information than US GAAPs do. They argued that the most controversial part of IAS 41 is the increments or decrements measurement of biological assets at fair value. In livestock, fair value determination of biological assets is more likely to become dependent on the age, sires of animals. But, guidance has a wide range of value determination and management may use different valuation bases. Because there is no active market value for certain types of biological assets, fair value estimation may not be reliable, then, comparability due to international diversity, especially in countries with weak market development.

A study (Rute and Patricia, 2015) examined value relevance of fair value accounting of biological assets in entities, which have applied to the standard[3]. They tested book value's ability to explain market equity value. This study concluded that recognized value of biological assets under fair value accounting model has value that is more relevant in general. Another study (Sarmite and Maira, 2013) reviewed the problems and solutions identified by recent research and checked the evolution

[3] Uses 389 firm-year observations of listed firms worldwide in 27 countries that adopted IAS 41 until 2010, for the period 2011-2013.

of biological assets under IAS 41 in a Latvian entities case[4]. The study argued that none of the methods is perfect but it is still possible for fair value accounting to be, on average, the best. In addition, they argued that Latvian entities are subject to different normative legislation and standards; therefore, financial statements are not comparable, and external users on an international scale may misinterpret the information. Another research (Hinke and Starova, 2013) made a case study[5] on reporting under IAS 41 principles in Greece Republic. Their responders argued that inability to determine fair value for biological assets does not allow fair value accounting to become beneficial for true and fair view of economic reality through statements. A group of researchers (Eduardo et al., 2014) made a case study on fair value application in livestock farming in Brazil. Study argued that fair value can be estimated reliably in livestock, as there are market prices available for most groups of biological assets. Brazilian livestock farms met the requirements; only one requirement - market price for assets in their present condition (example: pregnant cows - market price for calves before they birth) was missing. Using alternative fair value estimation for such case is based on differential valuation bases in practice. Recently, another study examined value relevance issue based on valuation bases for the asset-use and asset-exchange theory[6] (Huffman, 2015). The study examined the value relevance of book value where the fair value model was used for the valuation of in-exchange assets, and the historic cost model was used for the valuation of in-use assets, and vice-versa. The study found that the case of in-exchange assets valued by the fair value model and in-use assets valued by the historic cost model is more value relevant than the other case.

Revenue Recognition. The prior studies (Sarmite and Ore, 2013; Eduardo et al., 2014; Hinke and Starova, 2013; Fischer and Marsh, 2013; Elad and Kathleen, 2011) also analysed revenue recognition and income measurement through

[4] Research uses international experience regarding assessment aspects of biological assets from 2000 to 2011 and compares with Latvian policies for biological assets valuation.
[5] The case study uses questionnaire survey and financial statement's format analysis.
[6] According the study, in-exchange assets are the non-bearer biological assets as defined in IAS 41, and in-use assets are the bearer biological assets as defined in IAS 41.

theoretical research and some of them examined it in practice. The IAS 41 prescribes that gains or losses arising from physical or price changes in a biological asset should be recognized as a gain or loss for the period in which it occurs. The studies argued that these earnings are unrealized and may never be realized. Then, entities try to avoid this earnings availability for dividends and this requirement is missing requirements in practice in various countries[7]. So far, the researchers believe that being able to recognize profits before the assets are sold is not prudent and that the recognition leads to earnings volatility. There is also a concern about the tax implications that recognition may provide incorrect and inconsistent information for tax purposes too (Elad and Herbohn, 2011; Fischer and Marsh, 2013).

Another argument of IAS 41 implementation regards to income measurement. Empirical research (Elad and Herbohn, 2011) show that there are some linguistic or terminology aspects of the notion of income. In France, entities applied IAS 41 and income measurement subject to another accounting policy[8]. Additionally, the term "gross profit" has a different meaning that it only relates to the margin on goods purchased from external sources for resale. It does not relate to a company's internal production, which is reported directly as "production sold" and "production added to inventory." Thus, previous studies argued that there is an unrealized earnings recognition, and income measurement diversity across the countries.

One study (Hinke and Starova, 2013) examined expense presentation in Greece Republic implementation. Most of the entities used income statement by nature format. They found that there is different classification of expenses according Greece's national GAAP. This is related to the problem of different perceptions of "changes in inventories" in the operating cost by nature. Another study (Fischer and Marsh, 2013) found that both approaches do not allow the disclosure of cost of goods sold. And, there is some linguistic issue in by nature approach of IAS 41. In some countries, gross profit and value-added terms have little different meanings. And,

[7] Evidence from empirical researches in France, Brazil, Greece Republic, etc.
[8] Plan Comptable General, first published in 1947 and subsequently revised in 1957, 1982 and 1999.

intermediate consumption has been valued at historic cost when considering as inventories for reproduction. As a result, the income statements are interpreted due to international diversity.

Prior studies (Elad and Herbohn, 2011; Fischer and Marsh, 2013) examined it in countries applied to the standard. They argued that by nature income statement[9] is generally in line with the spirit of IAS 41 because it lays emphasis on value added and the total production output for an accounting period. In this regard, it is noteworthy that biological transformation is a value-added event that causes qualitative and quantitative changes in a living animal or plant through the processes of growth, degeneration, production or procreation. In this format of income statement, both, fair value of a produce and gains arise from changes in fair value includes in the profit for the year. Financial statements clearly show increments and decrements changes included in profit/loose or no included. Thus, it seems that there is some inappropriateness between national policies IAS 41 regarding the financial statements format and terminologies.

Non-accounting aspects of IAS 41 implementation. The early investigation in the international context illustrated the accounting culture and its influences on financial reporting (Hofstede G., 1980; S.J. Gray, 1988). Both studies identified various environmental factors as a first step to their analysis and subsequently attempted to set up a structure for their relationship and classification. Furthermore, a group of studies (Francis, & et al., 2008; I. Helena & et al., 2012) found that there are country-level[10] and firm-level variables[11], which are affecting accounting numbers' quality. Some of them studied firm- and country-level arguments that influenced firms' incentives on the adoption decision. According this group, firm's voluntary adoption incentives depend firm level incentives: expected feature growth

[9] Draft statements of Principles on Agriculture. Exposure Draft E65 IASC, 1999, p. 52; and 2001, p.31
[10] Legal and Political system: Institutional development level (capital markets and other), Importance of capital market, Interacting with global markets, Deference between national GAAP and IFRS
[11] Accounting numbers quality effected by ownership concentration, analyzing activity, external financial needs and industry.

opportunity; foreign owners; export activities. And, firm specific incentives important when country level variables are high. As well as, country level variables are more important when external contracting environment is weak (Francis et al., 2008).

Another area of variables relates to accounting education, and practices by a contribution of some studies (Nelson, 2003; Schipper, 2003; S. Carmona et al., 2008). The studies argued that the accounting and auditing knowledge of a professional is important aspect of reporting under IFRSs. The principles-based and rule-based systems have differences in generalization. In a rule-based system, there are more rules, which guide the professionals in exactly how to deal with accounting treatments in different circumstances. The principles-based system (IFRS) is intended for comparability, adoptability and acceptability through different jurisdictions. That is why it is more generalized (Schipper, 2003). The problem is that rule-based system professionals have no fundamental knowledge about the principles-based system, and dealing with a new system can be misleading and result in errors. On the other hand, auditors also have no fundamental knowledge of a new system and they may give incorrect reports, even that accounting treatment is correct. The enterprise may apply to foreign big-4 audit firms[12], but such firms have difficulties with specific accounting policies in countries. Thus, they conclude that fundamental knowledge of eligible professionals also has positive and negative influences on IFRS' implementation.

There are very few IAS 41-based studies dealing with firm-level and country level variables (Rute and Patricia, 2014). The study examined the variables association with the value relevance issues, measurement practices only. The study argued that firm- and country-level variables have positive and negative associations with value relevance of accounting data, with measurement practices of the firms. Other studies (Elad and Herbohn, 2011; Clavano, 2014; Kurniawan et al., 2014)

[12] Big – 4 audit firms are the audit and assurance firms: PWC, Deloitte Touche Tohmatsu, KPMG, Ernst & Young

examined different areas of financial reporting under IAS 41. They found that compliance with disclosure requirements of IAS 41 was different across the three countries. They indicated that there are some policy matters that are affecting accounting number's quality, firm incentives to compliance with disclosure requirements of IAS 41.

The prior studies show some theoretical and some mixed empirical evidence. The studies dealt with importance of the IAS 41, recognition and measurement, disclosure practices and value relevance issues under the standard. Researchers argued that IAS 41 has advantages in information usefulness of agricultural sector. The studies proposed that there are difficulties regarding the fair value measurement of biological assets. They also found that the role of national policies is significant in some countries. The general IFRSs application based studies suggest that the country-level, firm-level variables have a strong role on the firms' voluntary choices to adopt to the IFRSs. There is also fundamental knowledge issue. In addition, value relevance studies suggest that value measurement practices were shaped by the country- and firm-level factors.

Thus, non IAS 41 studies argued that successful implementation of IFRSs due to many country- and firm-level factors. The IAS 41 studies was limited and mainly used theoretical perspectives, empirical studies have dealt with in only certain countries, covering some specific issues. In other side, there are no studies specifically addressed either IFRS or IAS 41 implementation in Uzbekistan at all. The successful implementation determinants of the IAS 41, its practice in a wider scope, across countries and in example of listed agricultural companies are all missed in literature. The prior literature contributes a few suggests on the IAS 41 implementation.

1.3 Relevant background

1.3.1. The economic system, accounting and financial reporting in Uzbekistan, development and today from a global perspective

Uzbekistan is historically a former Soviet Union country. The country is approximately the size of Morocco or California and has an area of 447,400 square kilometres. It is the 56th largest country. Uzbekistan stretches 1,425 kilometres from west to east and 930 kilometres from north to south. It borders Turkmenistan to the southwest, Kazakhstan and the Aral Sea to the north, and Tajikistan and Kyrgyzstan to the south and east. Uzbekistan is not only one of the largest Central Asian country, but also the only Central Asian country to border the other four.

Uzbekistan is a dry, double-landlocked country of which 10% consists of intensely cultivated, irrigated river valleys. Uzbekistan is divided into 12 provinces with their capital towns, one autonomous republic (Karakalpakstan), and one independent city (Tashkent).

Uzbekistan has relative isolation from the global financial markets, and thus suffers few effects from the global economic downturn. It has been continuing its strong performance, registering 8% growth in 2016. GDP growth was driven mainly by favourable trade terms for its key export commodities such as copper, gold, natural gas, cotton and the government's macro-economic management. Uzbekistan is now the world's sixth-largest producer and the world's fifth-largest exporter of cotton, and the world's ninth major producer of gold. It is also the region's significant producer of natural gas, coal, copper, oil, silver and uranium. Agriculture employs 28% of labour force and contributes 24% of its GDP (2016 data).

Uzbekistan has very rich soil and the country is quite famous in Central Asia with its high-quality and tasty agricultural produces. Uzbekistan agriculture plays a significant role in the consumer market of the country. The country has rich oil, highly irrigated areas and a large volume of available employees. The country has strong experience with the production of varied agricultural produce as well,

rendering it the ability to provide Central Asian counties and the near West with in-demand agricultural goods. The country imports new genetic seeds and new sires of biological assets from leading countries in order to develop the sector.

Figure -1.3.1: The map of Uzbekistan

Although the first discovery of the accounting belongs to Ancient Rome, its further development was known as four accounting ethics: Italian, France, German and Anglo-American (19th century). In Uzbekistan, accounting discovery belongs to the late 19th century (accounting in the Soviet Union). However, main policies, framework and institutional development of accounting re-established after Uzbekistan's independence (1991-2002). During this period, Uzbekistan developed its own policies, and also National Accounting Standards (NASs) based on IAS, which covers accounting principles with respect to the market-oriented economy. So, Uzbek accounting discovery can be considered a mixture of the above accounting ethics. Todays, Uzbekistan's accounting system can be considered as IFRS/IAS-based accounting but also respects the control perspectives of accounting, and is most likely to be used for tax purposes and macroeconomic statistical data.

The Uzbek accounting system has been guided by Uzbekistan General Accepted Accounting Principles (Uzbek GAAPs). Uzbekistan GAAP comprises the

Law on Accounting (LoA), a set of National Accounting Standards (NASs), including some specific statutes and orders. In addition, a unique set of commercial laws has been used as a tool to control all types of business entities. The Uzbek model concerns four degrees of legislations. The LoA is introduced as a first-degree policy, which shows main principles and regulations governing accounting and financial reporting, including bases, responsibilities of regulators, and responsibilities of those involved in the financial reporting process. The second degree shows the scope, the recognition and measurement, and the presentation and disclosure principles for accounting. The third degree consists of different methodical manuals and statutes. They set out the additional rules for specific accounting issues such as formulation of measurements. The fourth is firm-level-documents, which can be established by the management of an entity, namely how to carry out accounting activities and choices in accounting methods.

Uzbek entities have to apply the LoA as a first-degree policy, then the entity must follow NASs' principles and some other manuals depending on the accounting activity taking place. The Uzbek NASs consist of 21 different national standards, which were developed in the very beginning years of independence (1993-1998). The very first non-standard document named the "Conceptual Framework on the Preparation and Presentation of Financial Statements" (NAS-00) is the basis for the remaining standards. Other standards (numbers 1-21) broadly cover accounting and financial reporting principles, such as accounting principles for fixed assets, revenue, inventories, leases and intangible assets, financial statements, etc. The design and approval of NASs is the responsibility of the Ministry of Finance of Uzbekistan (MOF). When an NAS is being developed, the MOF establishes a consultative group including representatives from the Association of Accountant and Auditors, the Republican Union of Auditors and international organizations. This group must comment on all accounting aspects, but the final document must be shaped and approved by MOF. NASs must then registered with the Ministry of Justice of Uzbekistan.

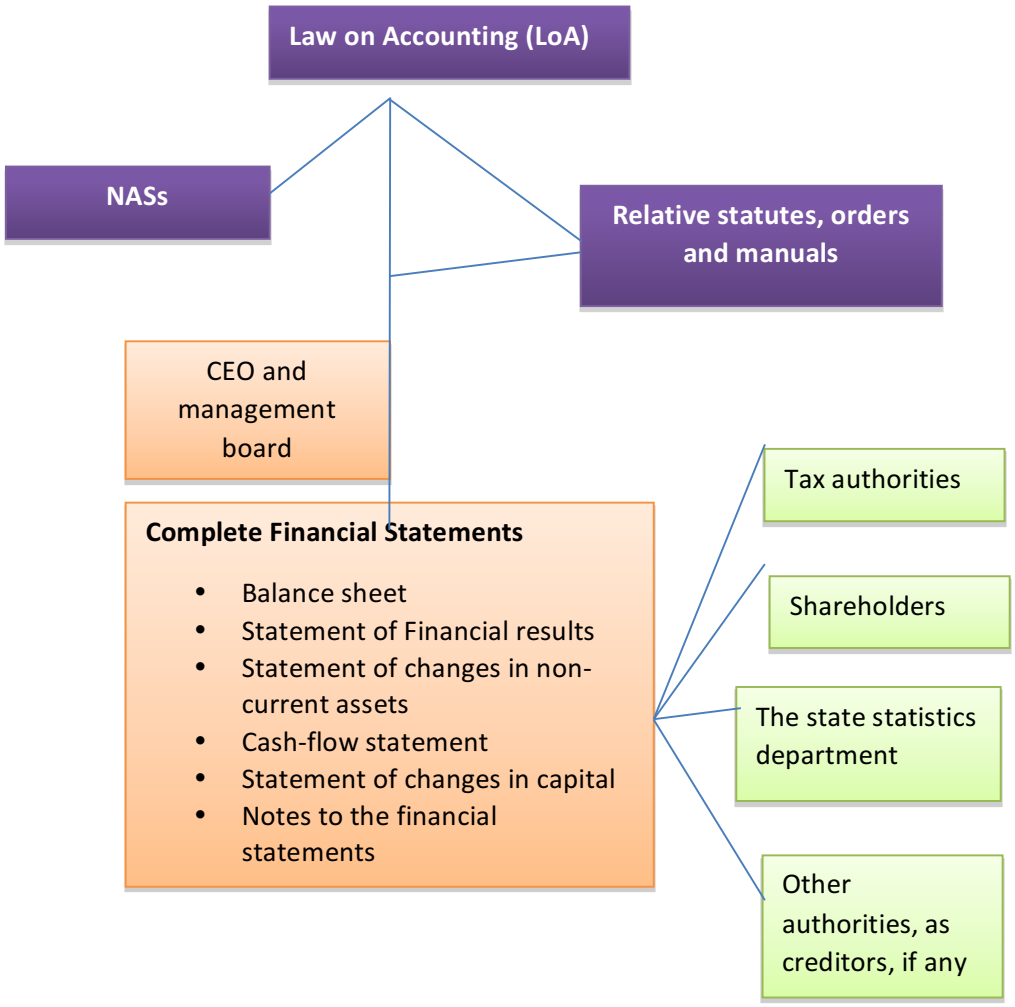
The legal entities, the financial reporting and the requirements can be summarized as follows:

Table – 1.3.1: Corporate financial reporting requirements in Uzbekistan

Financial statements/entities	**Legal entity and Consolidated Financial Statements**	**Audit**	**Public disclosure**
Open joint-stock companies	LoA, NASs	Required	Must publish annual financial statements in the print media
Closed joint-stock companies	LoA, NASs	Required	None
Large private limited liability companies	LoA, NASs	Not Required	None
Small private limited liability companies	LoA, NAS & NAS 20	Not Required	None
Unincorporated businesses	NAS 20	Not Required	None
Insurance companies	LoA, NASs	Required	Must publish annual financial statements in the print media
Banks	Regulation issued by Central Bank of Uzbekistan with conversion of financial statements to IAS/IFRS	Required	Required to publish financial statements and an audit report in the print media
Non-bank financial institutions	LoA, NASs	Required	Required to publish financial statements and an audit report in the print media
State-owned enterprises	LoA, NASs	Required	Required to publish financial statements and an audit report in the print media

The agricultural firms are permitted to be organized in a variety of forms, such as small family farms, large firms, privately owned or joint stock owned, state owned or corporate firms (LoA, LoE). Their forms are also regulated by employee size and shares. However, all of the firms must carry out accounting and financial reporting when they are organized with a status of "legal entity." LoA provides bases and main regulations for accounting and financial reporting of agricultural firms. Accordingly, all legal entities must prepare complete financial statements and deliver to users. The CEO of the firm and management board is responsible for "complete and true" accounting records. If an enterprise has subsidiaries or branches, the entity must prepare consolidated financial statements. LoA also shows that an agricultural firm must prepare financial statements with accordance NASs (second degree). Then, the firm must follow other relative statutes, orders and manuals as third-degree guidance. The following figure shows a mechanism-view of the accounting and financial reporting by agricultural firms in Uzbekistan.

Figure – 1.3.2: The accounting and financial reporting in Uzbekistan



The Uzbek GAAPs recognized a biological asset as a raw material or a property plant/equipment, and defined a biological asset as a Property, Plant and Equipment (PPE), as described in IFRSs. The Uzbek model re-names a biological asset in the scope of inventory with definition … "growing animals" (NAS-4 "Inventories"). If a biological asset is held for the production of agricultural goods/services, it has a productive life more than one year, it is defined in the scope of PPE with a definition of "productive animals and long-lived plants" (NAS-5 "Fixed assets"). Agricultural produce also defined as "agricultural produce" and fall into the term of inventories (NAS-00, NAS-4).

Accordingly, NASs show recognition and measurement principles for a biological asset based on the principles for the inventories and PPEs, respectively. When a biological asset meets the definition of inventory, it must be recognized at its cost (initially), at lower of cost or Net Realizable Value (at subsequent measurement). A biological asset that has a useful life more than one year and is held for production/use must be recognized as a PPE and its value must be measured at cost less any accumulated depreciation. The bearer of biological assets (PPE) must be revalued at an annual base. Revaluation must be based on state indexes[13] for each type of PPE.

The gains or losses must be recognized in a profit or loss account from the exit of such asset (sale or exchange, etc., Statute #54), no matter whether the asset current or long-lived. A surplus arising from the annual revaluation of biological assets (PPE) must be included in reserve accounts. An entity is obligated to report financial results from these activities, not from the recognition and measurement of biological transformation of a biological asset, nor from the recognition and measurement of agricultural produce at the point of harvest. At the end of the accounting year, the statement of financial results shows gains and losses from exit of the biological assets. The biological transformation of the period must be measured in cost and presented on the balance sheet with relative lines "Fixed assets" and "Current assets." Then, the statement in changes in non-current assets shows the value movements of long-lived biological assets. The disclosure of the biological assets also has to be followed by the disclosure principles for the fixed assets and inventories.

So, there is not an approach that specifically focuses to the nature of a biological asset and an asset's role in the income generation, such as accounting for biological transformation. It also does not illustrate any definition for agricultural

[13] Republic of Uzbekistan publishes a list of rates as the indexes - to use in Revaluation of PPEs. The publication can be accessed from the official webpage of Ministry of Statistics.

activity, for a biological transformation, biological assets, respective recognition and measurement, relative presentation and disclosure principles.

Thus, the accounting and financial reporting was established partially in Uzbekistan. It has some issues to do with a planned economy, and some with a market-oriented economy. This might be because Uzbekistan turned to the latter from the former, and establishment of Uzbek GAAPs based on international standards became major. But, the numbers of public-interest-companies, public accountants and public auditors, security markets were not significant in the country. So, it seems that a full adoption of IFRSs or a full establishment of NASs based on IFRSs was not challenging at the first step towards the global financial reporting. In addition, IAS 41 had not been issued yet, and therefore the equivalent NAS may not have existed (1991-1998; 2002).

In recent years, Uzbekistan has been seeking financial reporting in accordance with the IFRSs. Therefore, IFRSs translated into Uzbek language (2015), and some legislations have issued. According to them, joint stock companies are permitted to prepare financial statements accordance with IFRSs voluntarily (Presidential Decree No. UP-4720, April 24, 2015). During the years 2018–2021, the country plans to adapt to the IFRSs, making improvements in auditing, etc. Accounting for agricultural activities has established some inconsistency in principles (Inventories, PPE) to date, or may be a missing issue in the accounting and financial reporting of Uzbekistan. Significant developments are needed on the issue and an implementation of IAS 41 is very necessary at the current time.

1.3.2 IAS 41 "Agriculture" background

Agriculture is an important sector of the global economy and has played a key role in the development of human civilization. Yet historical agricultural activities receive little, or no, attention from the accounting standard setters. This may be the result of the economy being less dependent upon agriculture than the corporate industrial and regulated industries. Over the last two decades, appropriate accounting treatment for activities involved in agriculture and consistent financial reporting with the purpose of providing users with useful information and higher-quality financial reporting have become targeted areas of accounting in agriculture. The advances in accounting standardization led to the publishing international standard (IAS 41) of IASB. In the late 1990s, the International Accounting Standards Committee (IASC) broke new ground by issuing a draft statement of principles and an Exposure Draft on accounting in the agricultural sector (IASC, 1996, 1999). Having secured some financial support from the World Bank for this project, the IASC proceeded unwaveringly to issue the final standard on agriculture (IAS 41) in February 2001 amid strong opposition from many agricultural enterprises, accounting practitioners, and major professional accountancy bodies in the UK, USA, Australia and EU (IASC, 1998, 2000, 2001). The general purpose by issuing IAS/IFRS is "*to eliminate barriers to cross-border investing; to increase reliability, transparency and comparability of financial reports; to increase market efficiency; and to decrease cost of capital. In addition, securing with accounting standards."*

The IAS 41 "Agriculture" is internationally accepted guidance that shows accounting treatments for agricultural activities. The standard introduces that:

"Agricultural activity is the management by an entity of biological transformation[14] of biological assets[15] for sale, into agricultural produce[16], or into additional biological assets" (*IAS 41, IN1*).

The standard establishes as a limit of its area of intervention – related to the definition of the accounting treatment prescribed for the accounting recognition of biological assets (during its period of growth, degeneration, production and procreation) and for the initial measurement of agricultural produce (at the point of harvest) – the process that culminates in the harvest[17]. The guidance does not apply to agriculture-related land, the processes of agricultural produce after the harvest, and intangible assets, as these items are covered by another applicable standard. The standard's objective is to prescribe the accounting treatment for agricultural activities and related disclosure.

Until now, there was a development regarding the standard. A group of practical users stated that fair value accounting under IAS 41 does not support useful information about a certain type of asset in the sector, and an amendment for IAS 41 was issued. This was a limited- scope project to consider an amendment to IAS 41 Agriculture in relation to a bearers of biological assets (BBAs, e.g. fruit trees, grape vines), as to whether these assets would be better accounted for under IAS 16 "Property, Plant and Equipment" rather than using the fair value measurement approach. There is support (especially from those in the plantation industry) for a limited-scope project for BBAs and such a project is supported in the Issues Paper produced by the Asian-Oceania Standard Setters Group (AOSSG) and the IASB's Emerging Economies Group (EEG). Users of financial statements that responded to the IASB's agenda consultation considered a project on bearer biological assets to be important/urgent. The AOSSG noted that concerns had been raised by investors

[14] Biological transformation – comprises the processes of growth, degeneration, production and procreation that cause qualitative or quantitative changes in a biological asset (IAS 41, Par. 5, 2014)
[15] Biological assets - living animals or plants (IAS 41, Par. 5, 2014)
[16] Agricultural produce is the harvested product of the entity's biological asset (IAS 41, Par. 5, 2014)
[17] Harvest – is the detachment of produce from a biological asset or the cessation of a biological asset's life processes (IASC, 2000: par.5)

(as well as preparers) about the relevance and usefulness of information provided to users for certain biological assets accounted for at fair value. Specifically, the paper included a survey performed by the Malaysian Accounting Standards Board (MASB) in 2010 that found that a group of analysts specializing in plantation did not find fair value information for BBAs useful, particularly the presentation of changes in fair value within the profit or loss – which in some instances can be large and distort profits. Further, BBAs are defined as the bearer biological assets (which has a residual value at the end of the useful live) in the scope of IAS 41, and as the bearer biological assets (which have no residual value at the end of useful live – usually bearer plants) in the scope of IAS 16. Thus, the first stage of improvement to IAS 41 has been addressed by an amendment[18].

Today, more than 150 countries have adapted to the standard in world. Many countries have produced a convergence plan to this global accounting standard, and many plan to converge in the near future.

[18] Amendment for IAS 41 and IAS 16, effective for the financial reporting start from January 2016 fiscal year.

II. Similarities and differences between IAS – 41 "Agriculture" and Uzbekistan GAAPs

2.1 Introduction

The chapter examines the similarities and differences between the IAS 41 and Uzbek GAAPs. Specifically, I compare the accounting requirements for agricultural activities by both of the standards and look for relative documents which may affect the successful adoption of the IAS 41 in Uzbekistan. The analysis covers the Definition, Recognition and Measurement, Disclosure and Presentation principles. I focus the study to the role of both guidance in true and fair view of financial statements, and then I identify the main differences between the Uzbek model and IAS 41. Furthermore, the analysis concludes with main remarks, shows the relating documents. I use comparative analysis method in this study.

2.2 Recognition principles analysis

IAS 41 "Agriculture". An entity uses certain kinds of assets to earn gains and carries out accounting to control those assets in values. Internationally accepted accounting for the assets relating to agricultural activities has been followed by IAS 41 principles. The standard shows recognition for the biological assets/agricultural produces, initial value recognition and gains or losses recognition from holding such assets. According to the guidance, an entity shall recognize a biological asset and include it in its balance when the asset meets the following main three criteria:

- The entity controls an asset as a result of past events;
- It is probable that feature economic benefits associated with the asset will flow to the entity; and
- The fair value or cost of the asset can be measured reliably.

An entity must recognize agricultural produce at the point of harvest. Additionally, the guidance divides government grants and their recognition into two groups: conditional and unconditional.

Value recognition for the assets and agricultural produce should be attributed to the acquiring time of assets and produces. According to that, biological assets shall be valued at initial recognition once, and subsequently at each reporting date. Agricultural produce is valued at the point of harvest and further recognition should be followed by another guidance[19].

IAS 41 shows prescription of increments or decrements of value of the biological assets/agricultural produce clearly, and they will be recognized as gains or losses for the period when it arises. Thus, IAS 41 prescribes recognition principles for the biological assets/agricultural produce, principles for initial recognition, gains or losses recognition (which arises from revaluation), and recognition for the government grants related to biological assets' valuation.

Government grants relating to biological assets are covered by two standards (IAS 41 & IAS 20) regarding the valuation bases of a biological asset. Government grants relating to a biological asset measured at its fair value less costs to sell should be treated by applying IAS 41 and, if a biological asset measured at its cost less any accumulated depreciation and any accumulated impairment losses, it should be treated by applying IAS 20.

IAS 20 prescribes two recognition cases of government grants by expenditures. Namely, a government grant that becomes receivable as compensation for expenses or losses already incurred, or for the purpose of giving immediate financial support to the entity with no future related costs shall be recognized in profit or loss of the period in which it becomes receivable (pg. 20). Further, government grants shall be recognized in profit or loss on a systematic basis over the periods in which the entity recognizes as expenses the relating costs for which the grants are intended to compensate. Also, an entity should use either of two measurement methods – Deferred Income or Deducting from the asset's carrying amount (e.g., property plants or equipment) (IAS 20.26 & IAS 20.27). Accordingly,

[19] IAS 2 "Inventories", www.ifrs.org

government grants relating to assets shall be recognized in profit or loss if a condition of the government grant does not require a specific expenditure in feature or present. A second requirement is that government grants relating to assets shall be included in profit or loss systematically, and measured either via Deferred Income or Deduction from the asset's carrying amount if feature or present expenditures are required by the grant's condition.

IAS 41 shows accounting treatment for government grants relating to biological assets measured at its fair value less costs to sell, through dividing the grants into conditional and unconditional categories. If a government grant is conditional, including when a government grant requires an entity not engaged in a specified agricultural activity, an entity shall recognize the government grant in profit or loss only when the conditions attached to the government grant are met. If a government grant is unconditional, the grant shall be recognized in profit or loss when, and only when, the grant becomes receivable (IAS 41.34). Thus, IAS 41 shows accounting treatment only for biological assets measured at its fair value less costs to sell, and a government grant requires that an entity not engage in a specific agricultural activity. The standard shows recognition of government grants and with this notion, the standard encourages an entity to present such grants in its income statement.

NAS and relating policies. The financial reporting in agricultural sector is regulated by some national standards and regulatory policies in the Uzbek model. NAS 4 "Inventories" applies for the accounting treatment of biological assets and agricultural produce when these assets meet requirements of inventories[20]. Biological assets other than these inventories such as long-lived assets are recognized as fixed assets by the scope of NAS 5 "Fixed assets." Recognition principles for biological assets and agricultural produce are defined by NAS 4 until they reach maturity and, during the maturity period, are recognized as assets that are capable of bearing agricultural produce/additional assets. Therefore, during the

[20] NAS 4 "Inventories" pg. 1 & 10, www.lex.uz

maturity period, biological assets subject to the requirements prescribed in NAS 5 are recognized as property plant and equipment[21]. Furthermore, the law on "use of simplified system of accounting by agricultural producers" prescribes accounting worksheets, forms of book-registers and compulsory financial statements by following another law's range, such as "Law on Accounting" and "Law on Farms."

According to NAS 4 and 5, an entity recognizes biological assets in its balance when an asset meets the following main three criteria:

1. It is probable that feature economic benefits associated with the asset will flow to the entity;
2. An entity owns property rights regarding inventory (only in NAS 4); and
3. The value of an asset can be measured reliably.

Both of the standards illustrate the value recognition for biological assets/agricultural produce as initial recognition, and recognition at each reporting period. Accordingly, recognition of assets will be differentiated depending on the acquirement of assets, and assets can be included in the balance of an entity by following ways:

- Purchase
- Adding proportion as shares from shareholders
- Acquiring for free (as gifts or any other)
- Self-generating
- Other ways of acquiring

Agricultural produce has recognized as inventories by the definition of NAS 4 and their treatment is followed by above requirement. Changes in value recognition at each reporting date for biological assets/agricultural produce under the heading inventories is due to the cost of assets/produce only. Biological assets under the heading long-lived/fixed assets apply NAS – 5. Accordingly, long lived assets have to be taken in to account at initial recognition, at the beginning of each reporting year. Value changes by biological transformation of assets-inventories and assets-long lived shall be recognized as a change in costs. Recognition of gains or losses

[21] NAS 5 "Fixed assets" pg. I-4, www.lex.uz

from holding or using the biological assets/agricultural produce is prescribed by Statute #54[22]. Therefore, Uzbek regulatory policies do not recognize gains from biological assets/agricultural produce at each reporting date. Thus, gains or losses from holding or using biological assets shall be recognized when an item has sold. Before the item has sold, a biologic transformation is recognized as a change in cost.

The Uzbek entities carry out accounting treatment for government grants by applying National Accounting Standard #10 "Accounting for Government Grants and Disclosure of Government Assistance" (NAS 10) and Statute #54. This guidance is compulsory to follow in accounting treatment for government grants by all type of entities. The NAS 10 illustrates prescription for government grants relating to non-depreciable assets. But, it does not specifically focus on the government grants relating to biological assets measured either at the fair value less costs to sell, or at cost model. NAS 10 identifies government grants as conditional and unconditional. These definitions do not differ from the definition of grants in IASs. Unconditional government grants shall be recognized as revenue when, and only when, the grants are receivable. Conditional grants shall be recognized as revenue systematically based on whether the expenses meet the grant condition and shall be systematically presented in financial statements.

The Uzbek model shows measurement of losses by government grants with another policy, namely Statute #54. According to it, expenses to meet government grants conditions shall be accumulated and added to other operational expenses[23]. Then, it will be adjusted/added to losses at the end of the reporting period. Thus, profit or loss from government grants will be treated by the above two regulatory policies, and profit or loss will be presented in Income statement.

[22] Statute #54 "Composition of production costs, cost of sale and formation of financial results", www.lex.uz

[23] Other operational expenses –expenses which are not related to main production expenses of an entity, see at www.lex.uz - Statute N: 54 "Statute of "Composition of production costs, cost of sale and formation of financial results".

The Uzbek model shows that the repayment of grants should not incur any re-treatment of accounts in past periods. Repayment of the grants should be recognized as reduction of the carrying amount of appropriate assets or a reduction of deferred income.

Comparison of the recognition principles. In most accounting scandals, assets' value recognition is taken into account initially, subsequently and at the end of useful life. Biological assets' nature is subject to initial recognition and value changes recognition at each reporting period by biological transformation. In this sense IAS 41 and Uzbek GAAP seem similar. But, they have differences in two recognition areas: specific recognition of biological assets/agricultural produce and value change recognition of biological assets at each reporting date. Uzbek GAAP shows that biological assets have ***nature*** as inventories that use production and do not give specific recognition for the biological assets, or assets recognized as inventories and have raw materials nature rather than biological nature.

The second difference between IAS 41 and Uzbek GAAPs is increments or decrements recognition. Uzbek GAAPs focus on the cost changes of biological assets and agricultural produce. Therefore, they show recognition for assets value decrements at each reporting date. But, assets value increments are not recognized before a disposal of an asset. Deferentially, NAS 5 shows recognition for the long-lived biological assets' value change. Long-lived assets shall be revalued and show recognition for increments or decrements for each reporting year. All long-lived biological assets are recognized as bearer biological plants.

In fact, characteristics of biological assets are subject to biological transformation, acquiring additional biological assets/agricultural produce. IAS 41 clearly shows respective recognition for biological assets and agricultural produce, and recognition for increments or decrements at each reporting period is taken into consideration. Therefore, IAS 41 has greater relevance on the true and fair view of accounting information.

The accounting treatment for government grants relating to biological assets is the same in both guidance. Namely, there are no differences in the separation of government grants into conditional and unconditional categories, recognition and measurement principles – grants' receivable approach, and condition attached to government grants are met approaches, but there are some shortcomings in the Uzbek model, which shows prescriptions only for assets measured at their cost.

2.3 Measurement principles analysis

IAS 41 "Agriculture." An international guidance for measuring value for assets relating to biological characteristics is IAS 41 "Agriculture." The standard shows valuation bases, initial and subsequent measurement principles for biological assets/agricultural produce and government grants. Measurement principles prescribe value measurement methods at acquiring assets, at subsequent value measurement of assets, at the point of harvest of agricultural produce. The standard's measurement principles apply by combining with IFRS 13 "Fair value measurement."

Based on IAS 41 and IFRS 13, there are two main valuation bases for biological assets and agricultural produce relating to agricultural activities:

- Fair value model
- Inability to measure fair value reliable – "Cost less any accumulated depreciation and any impairment losses"

IAS 41 shows that fair value measurement shall be followed by prescription of IFRS 13. According to that, fair value is the price that would be received to sell an asset or pair to transfer a liability in an orderly transaction between market participants at the measurement date (IFRS 13, pg. 9), and there are three approaches to estimate it: Market approach, Cost approach and Income approach. At fair value estimation, used valuation techniques should maximize the use of relevant

observable inputs and minimize the use of unobservable inputs[24]. Also, an entity shall take into account the characteristics of the asset or liability if market participants were to take such characteristics in a principal/advantageous[25] market when pricing the asset or liability at the measurement date. Thus, prescription of the IFRS 13 targets equalizing the value of an asset to its market value as much as possible.

IAS 41 shows value measurement for biological assets/agricultural produce by above fair value measurement. According to it, value measurement at initial recognition and at subsequent accounting shall be accounted at fair value less cost of sales for biological assets. When an entity is unable to measure fair value reliably, a biological asset shall be measured at its cost less any accumulated depreciation and any accumulated impairment losses. The standard differs in its value measurement for agricultural produce, whose produce shall be measured at fair value less cost to sell only at the point of harvest, and its further measurement subject to another applicable standard. Namely, the standard does not suggest above notion (inability to measure fair value reliably) for value measurement of agricultural produce, and considers that there are always available market quoted prices to measure fair value reliably (IAS 41, pg. 32).

One notable aspect of IAS 41 is gains or losses arising from value measurement of biological assets and agricultural produce. It prescribes gains or losses arising on initial recognition of a biological asset at fair value less costs to sell, and a change in fair value less costs to sell of a biological asset (no produce) shall be included in profit or loss for the period in which it arises. So, value measurement shall be at fair value less costs to sell at initial recognition and at each reporting date for biological assets, and it shall be for agricultural produce at the point of harvest. A gain or loss arising from such measurement shall be included in profits or losses for the period. A gain or loss arising from government grants shall be measured as a profit or loss

[24] Fair value hierarchy – inputs levels, see on www.ifrs.org, IFRS 13 appendix A.
[25] IFRS 13 pg. 15-16, The transaction

depending on the grant's condition. An entity is allowed to measure a conditional government grant as a gain or loss when such conditions are met, and unconditional grants when it is receivable, and included in profit or loss for each reporting period.

NASs and relating policies. In the Republic of Uzbekistan, value measurement principles for biological assets and agricultural produce are covered by some NASs and regulatory policies such as "Law on Accounting," Law on "Use of simplified system of accounting by agricultural producers," NAS – 4 "Inventories," NAS – 5 "Fixed Assets," Statute #54 "Statute of "Composition of production costs, cost of sale and formation of financial results" and Statute of "Re-valuation of fixed assets, orders and procedures." These policies show accounting activity, valuation bases and calculation of costs and profit at initial recognition and subsequent value estimation. These policies separate assets as inventories and fixed assets systematically, but do not group them into biological assets and agricultural produces. According to them, a wide range of valuation bases shall be applied for biological assets and agricultural produce: Cost of acquiring, Net Realizable Value, Fair value, and Cost through revaluation – Replacement cost models.

The cost model pertains to the direct and indirect costs relating to activation of an asset (Statute #54, NAS 4). Net Realizable Value (NRV) is the value after deducting *any costs incurred to get the item useable and cost of sales* from market value (NAS 4, pg. 4). Namely, NRV is equal to fair value less cost of sale minus other costs to make the item useable. Cost through revaluation/replacement cost model is an annual revaluation for fixed assets, through rates issued by government authorities[26] at the beginning of each financial year. The application of these valuation bases due to the assets' classifications as inventories or fixed assets.

Uzbek principles also prescribe value measurement at initial recognition and subsequent measurements of biological assets/agricultural produce. But, the value measurement dates and valuation bases differ due to the classification of

[26] Statute of "Re-valuation of fixed assets, orders and procedures" www.lex.uz

assets/produce as inventories or fixed assets by NAS 4 or NAS 5 prescriptions, respectively. A biological asset classified as inventory scoped by NAS 4 and its initial value measurement may become a cost of acquiring and market value (fair value) depending on the initial recognition circumstances. Initial value shall be measured at cost if the biological asset has a nature of purchase or self-generating. Contrastingly, a biological asset shall be initially measured at market value if the asset is acquired as a gift, or added to equity as a share by shareholders. And, a biological asset shall be initially measured at a current exchange rate of Central Bank if an asset is purchased by foreign currency. Value measurement at each reporting date of biological assets shall be the lower of cost at balance (book value) and NRV (NAS 4). Value measurement for agricultural produce is followed by the above rules of inventories when they are harvested and entered into the scope of NAS 4, but before the harvest agricultural produce is in the scope of Statute #54. According to the statute, all direct and indirect costs to acquire the produce are the initial value of such produce at the point of harvest. So, biological assets and agricultural produce will be valued at their cost at initial recognition, lower of cost at balance (book value) or NRV at each reporting date. There will not arise any gains from value measuring of biological assets at each reporting date. Losses arising from value measurement of biological assets/agricultural produce shall be included in losses for the period in which they arise (NAS 4, pg. 47). A gain or loss can be measured and included in profits of losses for the period in which it arises when an asset is sold; an unsold asset has no gains (NAS 4, pg. 50).

Biological assets covered by NAS 5 are the bearer biological assets. These assets enter the classification of fixed assets and defined as assets held in production or service facilities of an entity. NAS 5 prescribes accounting treatment for all fixed assets involving biological assets with respect to the initial measurement of value, revaluation at the beginning of each financial year, and value increment or decrement measurements. Biological assets in the scope of this standard shall be valued at all costs plus any other costs until the asset is available to use. But, in case

of acquired as shares from shareholders an asset's initial value shall be measured at an arranged value determined by the shareholders. If an asset is acquired by self–generating and moved from inventories to fixed assets, its initial value shall be the carrying amount at the date in the scope of NAS 4. Some of the assets can be purchased by foreign currency, and in such a case, a biological asset shall be valued initially by adjusting the foreign currency into national currency through Central Bank's exchange rates at measurement date.

Measurement at each reporting date would be considered as costs to develop a biological asset rather than gain for the period, and this illustrates the cost of quantitative or qualitative changes (NAS 5, and Statute #54). Consequently, there will not arise any gains from qualitative or quantitative changes at each reporting date. However, according to the government revaluation index rates, there will be increments or decrements in value at the beginning of each reporting year, and if an increment occurs, it shall be included in equity under the heading of Revaluation-surplus. If any decrements occur, it should decrease the amount accumulated in equity under the heading of Revaluation-surplus. If the amount estimated as decrement in value is higher than the accumulated amount under the heading Revaluation-surplus, that amount shall be included in other comprehensive expenses for the period. Gains or losses from this type of biological assets will be measured from disposal of such asset. Previous accumulated increments in value under the heading of Revaluation surplus shall be adjusted respectively at the point of disposal (from exit).

Comparison of measurement principles. The main objective of accounting has been providing users with true and fair accounting information. Using a specific accounting method on measurements must give a true and fair view of the counting object. This notion is the main target of accounting treatment for agricultural activities by both IASs and the Uzbek GAAP.

In the international context, it is presumed that value changes of biological assets will occur through qualitative and quantitative changes during their useful life,

and an entity's biological asset generates profits or losses through biological transformation, through an additional biological asset/agricultural produce. Further, management treats the above value-added characteristics through measurement at each reporting period. I have found systematic differences between International Guidance and the Uzbek GAAP, and moreover, differences in valuation bases, value measurement at initial recognition and value measurements at each reporting date, and profit or loss measurement by biological transformation/additional biological assets, agricultural produce.

Uzbek guidance classifies biological assets and agricultural produce systematically different from international guidance such as inventories and fixed assets. It also prescribes methods for biological assets and agricultural produce based on the characteristics of inventories and fixed assets, such as "Lower of book value or NRVs,"

Biological assets and agricultural produce have the same accounting approaches in both of the guidance but accounting methods for the initial value measurement differ. Uzbek GAAPs illustrate the initial value of biological assets/agricultural produce as all expenses directly and indirectly attributable to acquiring an asset or a produce. Further, initial value measurement for the assets purchased and for the assets self-generated differ. Self–generated assets and produce's initial value measurement are based on costs to acquire such item. But, acquiring, which has a purchase nature, has a different measurement according to the purchase circumstances (*Appendix 2.1*). Purchased assets shall be valued at the purchase price by adding all direct and indirect expenses which are attributable with an asset until to make the asset useable. The biological assets purchased by foreign currency shall be re-estimated in national currency by using Central Bank's exchange rate at the estimation date. And, if an asset is added as shares in equity from a shareholder, such asset shall be valued at an arranged value among shareholders. Thus, Uzbek GAAPs illustrate the initial value measurement for the biological assets and agricultural produce as a value that would be spent to acquire

an asset or produce. Initial value measurement by IAS 41 is fair value less costs of sell, or cost model (inability to measure fair value reliably).

As mentioned earlier, biological assets will always change in value through biological transformation (qualitative and quantitative), and it is a simple economic notion that an entity holds biological assets to gain earnings by those changes in further business. Therefore, biological assets' increments or decrements in value at each reporting date by qualitative and quantitative changes are taken into account. Under IAS 41, increments or decrements through biological transformation, and value added through additional biological assets/agricultural produce will be better measured than the Uzbek model at each reporting date. Differently, the Uzbek model takes costs into account rather than value added. Therefore, under the Uzbek model, there will not arise gains through valuation at each reporting date. There might be losses arising under the lower of Book value or NRV model when market value is lower than cost.

Thus, value measurement for biological assets and agricultural produce at initial recognition and at each reporting period will be accounted for better under IAS 41 prescriptions than Uzbek GAAP prescriptions. In these accountings, the following are the differences:

1. There are differential valuation bases between the standards. The lower of cost in balance and NRV is not appropriate for the accounting of biological assets. It does not measure biological transformation.

2. Value added measurement at the point of harvest. Under Uzbek model, self-generating agricultural produce shall be measured at cost. This value might be different from market value at times. If it is different, then profits or losses figures will be measured by inappropriate method.

3. Initial value measurement for an additional biological asset. Under Statute #54, self-generating produces (additional biological assets) shall be accounted for at cost.

4. Fixed assets (biological assets) shall be re-valued at the beginning of the year, not at each reporting date. This will be the true and fair view of financial reporting if the expected inflation rate does not meet an already issued revaluation rate. The following year, they may not re-valued, as it depends on the state's decision.

5. Profit and loss measurement dates. Under the Uzbek GAAP, there will not arise gains from value measurement at each reporting date for the biological assets classified as inventories. A loss may arise at each reporting date and if it arises, it shall be included as expenses for the period in which it arises. Increments or decrements in value can arise at the beginning of the year from revaluation of biological assets classified as fixed assets only, but such increments or decrements shall be included in equity.

The Uzbek model considers biological assets as inventories and PPEs respectively. It separates measurement method into two approaches, such as accounting for inventories and for PPE. But, it does not focus to the measurement of biological transformation. Therefore, Uzbek model has differed from IAS 41 and there are above five measurement differences.

Table 2.4.1: Valuation bases in IAS 41 and Uzbekistan GAAPs

IAS 41	Uzbek GAAPs
• Fair value • Cost less any accumulated depreciation and impairment losses	• Cost of acquiring • Arranged value • Market value • Re-placement cost value • Lower of cost in balance (book value) and NRV

Table 2.4.1 continued: *Initial value measurement method*

IAS 41	Uzbek GAAPs
• Fair value • Cost less any accumulated depreciation and impairment losses	• Historic cost • Arranged value • Market value

Subsequent value measurement method

IAS 41	Uzbek GAAPs
• Fair value • Cost less any accumulated depreciation and impairment losses	• Re-placement cost method • Lower of cost in balance (book value) and NRV

2.4 Presentation and Disclosure principles analysis

IFRSs/IAS 41 "Agriculture." It is an internationally accepted practice that a business entity reports financial results in a form of statements, and prepares disclosures in notes. This presentation provides users with useful information in predict an entity's many functions for a number of purposes. On a basic level, an entity may earn wealth through holding assets and selling them according to price fluctuation, or through producing goods/services, acquiring additional assets, and selling them. If we deal with the theory in the case of entities dealing with agricultural activities, we can see that the wealth can be earned by biological transformation of assets, acquiring additional assets, and production of agricultural goods. This economic notion is well known throughout the world as well. IAS 41 deals with this notion properly. According to the standard's prescription, entities shall value biological assets/agricultural produce at fair value less costs to sell, present gains or losses for the reporting period, and disclose them. Thus, entities shall present the following categories of income under IAS 41:

- Initial gain or loss on actuation of biological assets
- Gain or loss on valuing qualitative/quantitative of biological assets

- Gain or loss on valuing agricultural produce at the point of harvest

Further, an entity shall disclose information regarding gain or loss, entity's biological assets, their valuation bases in the notes of financial statements.

If we think about the above gains or losses, we have to deal with three different cases. Under the standard's prescription, any gains or losses arising from initial recognition of a biological asset shall be included in profit or loss for the period in which it arises, no matter whether such assets are acquired by trade or self-generated. So, an entity buys a biological asset, values it at fair value less costs to sell, and recognizes any gain or loss as a profit or loss for the period in which it arises. By the same way, self-generated biological assets shall be valued and gains or losses must be recognized as a profit or loss for the period which it arises. The second category gain or loss can be created by subsequent measurement of a biological asset. So, it arises from biological transformation and price changes of a biological asset, and must be included in profit or loss for the period in which it arises. The third category is gain or loss recognition from agricultural produce at the point of harvest. At that point, agricultural produce must be valued at fair value less costs to sell, and gain or loss from such estimation must be included in profit or loss for the period which it arises.

The standard requires disclosures specifically relating to biological assets' carrying amount, valuation bases, and gains or losses illustration (*see Appendix 2.2*). Also, the standard encourages disclosure gain or loss to show separately due to price and physical changes. Separating disclosure of physical and price changes is useful in appraising current period performance and future prospects, particularly when there is a production cycle of more than one year. This issue is a bit complicated in practical applications and discussed in the annual improvement meeting of the IFRS Interpretation Committee[27]. The staff decided to amend some wording in the illustrative example of the standard, and concluded that the prescriptions must meet

[27] Staff paper, "IAS 41-illustrative examples – presentation of revenue in the profit or loss account" Agenda reference-14, November 2010.

all areas of agriculture; therefore, pg. 51 of the standard is encourages, agriculture is a diverse range of activities, and only some cases can be covered. After two years, the 51st paragraph was discussed once more[28]. At this time, the issue was "*…under the IASB's recommendation, the current encouraged disclosure would not apply to fair value estimates based on the present value of future cash flows. In present value based estimates of the fair value of a biological asset, current physical quantities are not multiplied by a price to determine present fair value and, therefore, separating physical changes and price change components would be infeasible…*"

This issue also discussed and the staff thinks that: "*…IAS 41 does not cover market approach of fair value estimation. IFRS 13 only shows fair value estimation approaches, an entity allowed increasing use of observable inputs and shall decrease unobservable input, as level 1, 2, and 3. So, an entity can observe data from markets in many cases. And we think that an income approach for a biological asset should provide the same fair value as a market approach because in theory the fair value of a biological asset at the measurement date shall be the same regardless of which valuation technique is used. Where the income approach incorporates the risks in either the discount rate or expected cash flows, the market approach incorporates the risks in the price multiple and for a specific biological asset, the risks are the same and therefore the fair value should also be the same…"*

Thus, IAS 41 covers accounting treatment of agricultural activities in an appropriate way, with a limited scope. Moreover, presentation of profit or loss is followed by the IAS 1. When an entity makes accounting treatment for gain or loss relating to biological assets, agricultural produce and government grants, the entity has to apply IAS 41 prescriptions. So, by applying IAS 41, an entity should estimate:

- Gain and loss from initial measurement of biological assets and agricultural produce at fair value less costs to sell

[28] Staff paper, "Disclosure of the components of changes in fair value and associated valuation techniques" Agenda reference-12, January 2012.

- Gain or loss from subsequent measurement of biological assets at fair value, less costs to sell
- Gain or loss from recognition of government grants relating to biological assets measured at fair value less costs to sell

and include them in profit or loss for the period in which they arise. Based on IAS 1 requirement, an entity can report the above gains or losses in a separate item-line[29] in a statement of profit or loss. Accordingly, the item-line depends on the entity's choice – if we look for it in practical applications, many entities report it as "Net IAS 41 Movements on Biological assets," and they illustrate gains or losses in the notes of a statement.

NASs and relating policies. Uzbek entities follow specific standards, laws and orders to prepare their financial report in Uzbekistan. The main guidance for entities dealing with agricultural activities is Regulation of "Simplified system of accounting in Farms" (MoF., 2008). According to it, entities can prepare only two financial statements: Statement of Financial Results and Statement of Financial Position. In preparing them, the regulation indicates that an agricultural entity should follow general accounting policies and standards that are appropriate for all sector business-entities. So, an entity dealing with agricultural activity shall prepare the above statements by applying general accounting principles. The GAAPs for financial reporting are: "Law on Accounting"(MoF, 1996), The conceptual framework for the "preparation and submission of financial statements," NAS-1 "Accounting policies and financial reporting," NAS-3 "The statement of financial results," NAS-14 "The statement of changes in equity," NAS-15 "Statement of financial position", the Order on "Financial reporting forms and rules for fill them" (MoF., Order #68, 2012) and Statute #54 "Composition of production costs, cost of sale and formation of financial results" (MoF., St. Order:54, 1999).

[29] Paragraph 55 of IAS 1 "Presentation of Financial Statements", IFRS-2015.

According to the GAAPs, the general purpose of financial reporting is the same as the IFRS's general purpose of financial reporting. The Uzbek conceptual framework also shows very similar concepts to those prescribed IFRSs. Also, based on Uzbek GAAPs, financial reporting has to be done under "accrual-based" accounting. The Uzbek model shows a kind of combinational accounting, and there is a specific procedure of financial reporting in a specific official form of financial statements. According to it, financial results shall be performed by deducting losses from income by elements derived from operations. The official form of statement of financial results is similar to the statement of profit and loss - expenses by function approach under IFRSs *(see Appendix 2.3)*.

The Uzbek model classifies assets into non-current and current assets, and performs these class's carrying amount at the beginning and at the end of period in a statement of financial position. This means the assets that will be used in production more than one year will be under the heading of "fixed assets;" comparatively, assets that will be used in production less than one year will be under the heading of "inventories." Namely, bearer biological assets are classified as fixed assets, and assets other than bearer are classified as current assets, and thus will be presented in non-current and current assets item-lines.

A gain arising from revaluation of fixed assets shall be included in a reserve-fund relative to the class of fixed assets. A gain or loss shall be determined at the point of exit of such fixed asset (sale or other way of exit) by adjusting the reserve fund with exit gain/loss. Before the exit of such fixed asset, a gain/loss cannot be included in profit or loss. Thus, during the useful life, an increment/decrement shall be accumulated as a reserve fund for the relative class of fixed assets, and this fund shall be presented in a separate line in statement of changes in equity. If a loss results, it shall be included in expenses for the period in which it arises. So, a loss arising from adjustment of the reserve fund will be included in the expenses section of statement of financial results (income statement), but the gain will be in a statement of changes in equity under the heading "gain-reserves on revaluation of fixed

assets." Biological assets other than fixed assets will fall to the accounting rules of inventories as Lower of cost and net realizable value. During the accounting period, these inventories will be valued at lower model and there will not arise a gain. A loss from revaluation can arise and if so, it shall be included in losses for the period during which it occurs.

Gain or loss from initial measurement of biological assets and agricultural produce will not arise since the historic cost model apply. All the cost to acquire assets and produce will be recognized as the initial carrying amount of the asset and produce.

Under the Uzbek GAAPs, an entity shall account financial results from whole its activities. An entity shall prescribe the following in statements of financial results:

- Revenue from trade
- Gross financial result from trade
- Other income and expenses of main operation
- Financial result (profit/loss) of main operation
- Income and expenses relating to financial operation
- Financial result of total operations
- Extraordinary gains and losses
- Financial result before income tax
- Profit for the year

Statute #54 is a single guidance on financial results estimation. An entity should estimate financial results by using specific five-income-elements[30]. Financial results determination shall be derived as the following formulations:

[30] Estimation of income by five elements prescribed through specific formulations in Statute #54, "Composition of production costs, cost of sale and formation of financial results" (MoF, 1999). Can be seen on www.lex.uz

I. Gross Profit

$$GP = R - CS$$

R – *Revenue from trade,* CS – *cost of products sold*

II. Profit of main operation

$$MOP = GP - PE + OG - OL$$

PE – *periodical expenses*, OG – *other gains*, OL – *other losses*

III. Financial result of total operations

$$RTO = MOP + FG - FL$$

FG – *gain from financial operations,* FL – *expenses of financial operation*

IV. Profit before income tax

$$PBT = RTO + EG - EL$$

EG - *Extraordinary income,* EL - *Extraordinary loss*

V. Net Profit $NP = PBT - IT - OT$

IT – *income tax,* OT – *other taxes and payments*

Importantly, an entity develops an accounting policy based on Uzbek GAAPs and a note for financial statements. Accordingly, an entity can prepare a letter of explanation and it should illustrate the following:

1	An entity's activity
2	An information regarding the carrying amount of each class of the assets at the beginning and end of the period
3	Prescription of measurement and depreciation methods used
4	An illustration of increments and decrements through revaluation of assets
5	Information relating to assets pledged as securities for liabilities
6	Information that is not disclosed elsewhere and can be better used to understand financial statements
7	Government assistance, grants
8	Net exchange differences arising on the translation of financial statements into a different presentation currency

It is clear from the above that the Uzbek model is also not significantly different from the approaches other countries have been using, and is in line with international practices. Biological assets and agricultural produce will be presented in statement of financial positions in item-lines of fixed assets and inventories. A gain or loss will arise from the exit of biological assets. There is an official format of financial statements that will mention the income statement expenses by function under the IFRSs. Uzbek disclosure also focuses on a broad range of disclosure issues that are well known by international practices.

Comparisons of Presentation and Disclosure principles. It is widely known that agricultural activity is a value added-activity through biological transformation, acquiring additional biological assets and agricultural produce by holding biological assets. Therefore, gain or loss estimation from acquiring biological assets and agricultural produce, and estimating gains or losses arising from qualitative and quantitative change of biological assets, are altogether essentials of accounting in agricultural sector. IAS 41 could, to some extent, deal with these essentials, with all gains and losses taken into account and included in profit or losses. The discussion thus far would suggest that IAS 41 is more likely to present profit or loss of agricultural activities with a relevant approach. The Uzbek model has a macroeconomic approach, focused to main trends only. Importantly, it has nothing to do with wealth that can be derived from qualitative and quantitative changes of a biological asset, value added by biological transformation, value added by acquiring additional biological assets/agricultural produce. We can see it in the following two tables too.

Table – 2.5.1: Recognition requirements in IAS 41 and Uzbekistan GAAPs

IAS - 41	Uzbek model
A gain or loss arising from initial measurement of biological assets shall be included in profit or loss	There is no gain or loss recognition from initial measurement of biological assets

Table – 2.5.1 continued: Recognition requirements in IAS 41 and Uzbekistan GAAPs

Gain or loss from subsequent measurement of biological assets shall be included in profit or loss	Gain or loss from subsequent measurement shall be included in accumulated reserve-fund in case of biological assets under fixed assets notion. A loss can be arisen from subsequent measurement of biological assets under the term of inventory, if so, it shall be included in losses for the period which it arises
A gain or loss arising from value measurement of agricultural produce at the point of harvest shall be included in profit or loss account	No any gain or loss recognized from value measurement of agricultural produce at the point of harvest
A gain or loss from government grants shall be included in profit or loss for the period which it arises	A gain or loss from government grants shall be included in profit or loss for the period which it arises

Table 2.5.2: Presentation requirements in IAS 41 and Uzbekistan GAAPs

	IFRSs/IAS-41	**Uzbek model**
Gains or losses	In statement of profit or loss	• A gain will be presented in statement of changes in equity • A loss will be presented in statement of profit or loss.
Carrying amount of biological assets	Assets carrying amount will be presented at statement of financial position	Assets carrying amount will be presented at the statement of financial position under the heading Non-current – fixed assets and current-inventories

In general, the Uzbek model has similarities on financial reporting, as both models recognize gains and losses in each reporting period, and present as profit or losses in financial statements. Further, the general purpose of financial reporting, financial statement format, income and expense concepts, and disclosure targets are

not different from IFRSs. Both of the models use accrual bases of accounting. Additionally, assets' classification into non-current and current assets is the same in both of the models. But, Uzbek financial statements (*Appendix 2.3*) tell us that there is no profit or loss from holding biological assets or agricultural produce. The first argument is that gross revenue is derived from trade activities only, no gains from the initial and subsequent value measurement of assets or produce. The five elements-income measurement formulation tells us that all type of incomes has been formulated from trade activities.

The conceptual framework gives definition to income as being generated from an entity's operations, whose main operation's income shall be generated from trade of goods and services, inventories, assets (pg. 53). However, it does not define any income before trade activities. NAS 1 and NAS 3 are also do not prescribe requirements for income that can be derived from initial and subsequent measurements. Thus, the Uzbek model does not report profit arising from initial or subsequent value measurements.

It is clear that the majority of differences would be arising from differential recognition and measurement principles. In addition, conceptual framework and a broad range of national standards have differential guides. The most important national policy is Statute #54, whereby there will be a possibility to report gain or losses from only sold produces, and unsold produce will go to inventory by cost valuation.

2.5 Summary and conclusions

The comparative analysis showed that there are some differences between the international guidance and Uzbek GAAPs for agriculture. The main differences are in principles of recognition and measurement, definition, presentation and disclosure principles.

The recognition and measurement principle in Uzbek GAAP is similar to principles of IAS 41. The differences are in the following stages of accounting:

1. Initial value recognition and measurement
2. Subsequent value recognition and measurement
3. The gain or loss recognition and measurement from biological transformation

The results of analysis show that the Uzbek GAAPs do not allow an entity to recognize gain or loss until a biological asset to be sold (until the exit), applies the cost accounting model from activation to exit. The Uzbek model does not illustrate a specific definition of biological assets. Biological assets fall into the definition of inventories or fixed assets depending on their classification.

The Uzbek model does not show prescriptions for the presentation of gain or loss arising from biological transformation at each reporting date. By the same token, it does not require any disclosures for the assets that are biological and any other disclosure for the value movements of biological assets.

In conclusion, I realize that the Uzbek model has systematic differences from IAS 41 for the accounting principles of agricultural activities. The above analyses jointly show that the Uzbek model has macroeconomic approach, which classifies assets into inventories and fixed assets. This is because, the Uzbek GAAP argues, - the gain or loss arises from selling activities. So, there exist the above-discussed differences between Uzbek GAAPs and IAS 41. The relating documents that occur differences between the Uzbek model and IAS 41 are follows:

1. Definition

"Law on Accounting" (MoF., 1996), Law on "Use of simplified system of accounting by agricultural producers" (MoF., 2008), Statute #54 - "Composition of production costs, cost of sale and formation of financial results" (MoF., 1998), "The Conceptual Framework" (MoF., 1998).

2. Recognition and measurement

NAS – 4 "Inventories" (MoF., 2006), NAS – 5 "Fixed Assets" (MoF., 2003), Statute of "Composition of production costs, cost of sale and formation of financial results" (MoF., #54, 1998), and Statute of "Re-valuation of fixed assets, orders and procedures."

3. Presentation and disclosure

Law on accounting (MoF., 1996); "The Conceptual Framework" (MoF., 1998), NAS – 01" Accounting policy and financial statements" (MoF., 1998); NAS – 2 "The Profit of main operations" (MoF., 1998); NAS – 3 "Statement of Financial results" (MoF., 1998); NAS – 4 "Inventories" (MoF., 2006); NAS – 5 "Fixed assets" (MoF., 2003); NAS – 14 "Statement of Equity" (MoF., 2004); NAS – 15 "Statement of Financial position" (MoF., 2003). Order #68 on "Financial reporting forms and rules for fill them" (MoF., Order #68, 2012), Statute #54 - "Composition of production costs, cost of sale and formation of financial results" (MoF., #54, 1999).

Appendix

Appendix – 2.1: Creation ways of biological assets and the relative valuation methods

	Uzbek model	**IAS 41**
By self – generating	*Costs of acquiring*	*Fair value less costs to sell / Cost less any accumulated depreciation and any impairment losses where fair value can not be measured reliable*
Acquiring by trade activities	*Cost of acquiring / by central bank currency unit rates in case assets purchased in a foreign currency*	
Shares from shareholders	*Arranged value between the shareholders*	
Acquiring for free (*as gifts*)	*Market value plus acquiring costs*	
Acquiring by exchange	*Book value of exchanged item*	
Identification of extra assets from inventarization activities	*Market value*	
Acquiring by non-monetary exchanges	*Market value*	
By movements of assets from inventories to fixed assets' group and vice-versa	*Book value*	

Source: NASs and policies – www.lex.uz

Appendix -2.2: The disclosure list prescribed in IAS – 41 "Agriculture"

General disclosure requirement	
IAS 41.40	Aggregate gain or loss arising on initial recognition of biological assets and agricultural produce, and from the value change of biological assets
IAS 41.41	Description carrying amount of each group of biological assets, as appropriate. *Example: Consumable, Bearer, and Maturity, Immaturity*
IAS 41.50	A reconciliation of changes in carrying amount of biological assets between the beginning and the end of the current period • the gain or loss arising from changes in fair value less costs to sell • increase due to purchases • decrease attributable to sales and biological assets classified as held for sale in accordance with IFRS 5

	• decrease due to harvest • Increases resulting from business combinations • net exchange differences arising on the transformation of financial statements into a different presentation currency, and vice-versa, other changes
IAS 41.51	An entity encouraged showing separately the amount of change in profit or loss due to physical changes and to price changes
IAS 41.46	If not disclosed elsewhere in information published with the financial statements, an entity shall describe: (a) the nature of its activities involving each group of biological assets (b) non-financial measures or estimates of the physical quantities of: (i) each group of the entity's biological assets at the end of the period (ii) output of agricultural produce during the period
IAS 41.49 (a)	The existence and carrying amounts of biological assets whose title is restricted, and the carrying amounts of biological assets pledged as security for liabilities
IAS 41.49 (b)	The amount of commitments for the development or acquisition of biological assets
IAS 41.49 (c)	Financial risk management strategies related to agricultural activity
IAS 41.53	If an event occurs that gives rise to a material item of income or expense, the nature and amount of that item are disclosed in accordance with IAS 1 "Presentation of Financial Statements".
IAS 41.57	Nature and extent of government grants, Unfulfilled conditions and other contingencies attaching, significant decreases expected in the level of government grants
Additional disclosure where fair value cannot be measured reliably	
IAS 41.54 (a, b,c)	A description of biological assets, explanation of why fair value cannot be measured reliably, the range of estimates highly likely to lie
IAS41.54(d,e)	The depreciation method rates used, useful lives
IAS 41.54 (f)	The gross carrying amount and the accumulated depreciation at the beginning and end of the period
IAS 41.55	Any gain or loss recognized from disposal of biological assets and reconciliation as pg 50
IAS 41.56	if fair value becomes reliably measurable for assets previously measured at cost model, explanation why fair value has become reliably measurable, effect of changes

Source: IAS 41, 2016.

Appendix – 2.3 IFRS model financial statements 2016
Alt 1 - presentation of profit or loss in one statement with expenses analysed by function

Source	International GAAP Holdings Limited			
IAS 1.10(b), (ea), 51(b),(c)	**Consolidated statement of profit or loss and other comprehensive income** for the year ended 31 December 2014			Alt 1
IAS 1.113		Notes	Year ended 31/12/14	Year ended 31/12/13
IAS1.51(d),(e)			CU'000	CU'000
	Continuing operations			
IAS 1.82(a)	Revenue			
IAS 1.99	Cost of sales			
IAS 1.85	Gross profit			
IAS 1.85	Investment income			
IAS 1.85	Other gains and losses			
IAS 1.99	Distribution expenses			
IAS 1.99	Marketing expenses			
IAS 1.99	Administration expenses			
	Other expenses			
IAS 1.82(b)	Finance costs			
IAS 1.82(c)	Share of profit of associates			
IAS 1.82(c)	Share of profit of a joint venture			
IAS 1.85	Gain recognized on disposal of interest in former associate			
IAS 1.85	Others [describe]			
IAS 1.85	Profit before tax			
IAS 1.82(d)	Income tax expense			
IAS 1.85	Profit for the year from continuing operations			
IAS 1.82(ea.)	**Discontinued operations**			
IFRS 5.33(a)	Profit for the year from discontinued operations			
IAS 1.81A(a)	**PROFIT FOR THE YEAR**			
IAS 1.91(a)	**Other comprehensive income, net of income tax**			

IAS 1.82A(a)	***Items that will not be reclassified subsequently to profit or loss:***			
	Gain on revaluation of property			
	Share of gain (loss) on property revaluation of associates			
	Re-measurement of defined benefit obligation			
	Others (please specify)			
IAS 1.82A(b)	***Items that may be reclassified subsequently to profit or loss:***			
	Exchange differences on translating foreign operations			
	Net fair value gain on available-for-sale financial assets			
	Net fair value gain on hedging instruments entered into for cash flow hedges			
	Others (please specify)			
IAS 1.81A(b)	Other comprehensive income for the year, net of income tax			
IAS 1.81A(c)	**TOTAL COMPREHENSIVE INCOME FOR THE YEAR**			
	Profit for the year attributable to:			
IAS1.81B(a)(ii)	Owners of the Company			
IAS 1.81B(a)(i)	Non-controlling interests			
	Total comprehensive income for the year attributable to:			
IAS 1.81B(b)(ii)	Owners of the Company			
IAS 1.81B(b)(i)	Non-controlling interests			
	Earnings per share			
	From continuing and discontinued operations			
IAS 33.66	Basic (cents per share)			
IAS 33.66	Diluted (cents per share)			
	From continuing operations			
IAS 33.66	Basic (cents per share)			
IAS 33.66	Diluted (cents per share)			

Source: *Deloitte, Model Financial Statements under IFRS as adopted by the EU 2014*

Appendix - 2.3 continues, Uzbek model financial statements 2016

STATEMENT OF FINANCIAL RESULTS form - 2

from 1 January to 1 _____ 20___ year		Codes
	form № 2 по ОКУД	O710002
Company, organization _____	Through КТУТ	
Sector_____	Through ХХТУТ	
Form of incorporation_____	Through ТҲШТ	
Type of ownership _____	Through МШТ	
Ministries, departments and other _____	Through ДБИБТ	
Taxpayer Identification Number	СТИР	
Territory	МҲОБТ	
Address _____	Expulsion Date	
Unit, thous. UZS.	Date of received	
	Deadline for submission	

Indicator	Code row	Year end 31/12/2015		Year end 31/12/2016	
		income (profit)	expenses (losses)	income (profit)	expenses (losses)
1	*2*	*3*	*4*	*5*	*6*
Revenue from sale of goods	010		x		x
Cost of sales (goods and services)	020	X		x	
Gross profit (row. 010 – 020)	030				
Periodical expenses, total (row. 050 + 060 + 070 + 080), including:	040	X		x	
Selling expenses	050	X		x	
Administration expenses	060	X		x	
Other operational expenses	070	X		x	
The costs of the reporting period, deductible from taxable income in the future	080	X		x	
Other gains	090		x		x
Profit (loss) from main operating activities (row. 030 – 040 + 090)	100				
Income from financial operations, total (row. 120 + 130 + 140 + 150 + 160), including:	110		x		x
Dividends income	120		x		x
Interest income	130		x		x
Income on finance leases	140		x		x
Income on foreign currency exchange differences	150		x		x
Other incomes of financial operation	160		x		x
Expenses of financial operation (row. 180 + 190 + 200 + 210), including:	170	X		x	
Interest expenses	180	X		x	
Interest expenses on finance lease	190	X		x	
Loss on foreign currency exchange differences	200	X		x	
Other loss of financial operation	210	X		x	
Income from the operations (loss) (row. 100 + 110 – 170)	**220**				
Extraordinary gains and losses	230				
Profit before tax (row. 220 +/– 230)	**240**				

Income tax expense	250	X		x	
Other taxes and obligatory payments from profit	260	X		x	
PROFIT FOR THE YEAR (LOSS) (ROW. 240 – 250 – 260)	**270**				
The manager_____ CEO_____					

Source: *Uzbekistan GAAP model financial statements, www.lex.uz*

III. Issues associated with IAS 41 "Agriculture" in practice: Survey evidence

3.1 Introduction

The adoption of the IAS 41 and the difficulties associated with it has strong importance in relation to future implementation across several countries. The improvement of it also has significance tied in to the features of accounting in the agricultural sector.

It is expected that the IAS 41 requirements shall fit the recognition and measurement, disclosure initiatives of the biological assets and agricultural produce in a proper way. However, there are some difficulties in the use of the standard. According to prior studies (IASB ED/2013/8 - Project summary and feedback statement), there are difficulties which are mostly relate to the recognition and measurement of bearer plants and fair value measurement. Specifically, the fair value measurement of biological assets is problematic in tropical plantation companies (Elad and Herbohn 2011). The companies are also having problems in fair value measurement in the context of breeding activities (Eduardo et al. 2014). It has been declared that fair value measurement is costly when external valuing firms are employed (Elad and Herbohn 2011).

This chapter aims to explore the brief identification of the difficulties in relation to the practical application of IAS 41. In order to explore any difficulties, I used the requirements of IAS 41 in a survey questionnaire. The survey questionnaire including 13 items based on the IAS 41 requirements and 4 more independent introduction items which relate to the background information of the practical professionals (*Appendix 3.2*). The items cover scope and definition, recognition and measurement, and the disclosure requirements of IAS 41. I used a sample of 492 practical professionals from international firms from 50 countries that have adopted IAS 41 (*Appendix 3.1*). The practical professionals consist of the CFO and CEO of each of the firms. Each of the respondents was asked to rank the 17 questionnaire

items (13 items based on IAS 41 and 4 more introductory items). The respondents were also asked to comment on any difficulties for each of the questionnaire items if they disagreed with the item. I used a frequency test and Wilcoxon rank sum-(Mann-Whitney) test to analyse the responses and commentaries.

I obtained significant results covering a wide extent of the IAS 41 application. The first analysis showed me the frequency of the rankings of the items of the survey questionnaire. The second analysis showed me if the survey results had any significant association with the background of the firms. The third analysis showed me a summary of the repeated commentaries which particularly related to the difficulties found in the use of IAS 41.

I used survey methods recommended in books, and followed on from the earlier work done by Vivien Beattie who used the survey analysing method to examine the diversity and determinants of corporate financing decisions (2004). The remainder of this chapter is organised as follows. In section 3.2, I discuss the prior studies in terms of the IAS 41 application. In sections 3.3 and 3.4, I analyse the model, sampling and descriptive statistics. Section 3.5 outlines the empirical results. Finally, in section 3.6, I conclude with summaries and a conclusion.

3.2 Related Literature

The prior studies concerning to IAS 41 and difficulties associated with its application are focus on many aspects. Broadly, some of the studies dealt with fair value and its application in the agricultural sector, and some dealt with earning management. Another dealt with the dimensions of an agricultural firm and the dimension's role in the measurements, in relation to value relevance and disclosure practices. There were also some feedback proposals for the scope of the existing standard.

The studies dealing with fair value accounting mostly checked the valuation of biological assets in the chosen firms (Elad and Herbohn 2011; Elena & et al. 2010;

Angiles & et al. 2010; Sarmite and Ore 2013; Eduardo et al. 2014; Huffman 2015). One of the studies examined the fair value application in Brazilian firms and found that fair value accounting is difficult in breeding activities (Eduardo et al. 2014). The next study carried out a survey on accounting preparation and judgement in agriculture using fair value and historical cost models for biological assets, and found that the fair value model is easier and friendlier (Angiles & et al. 2010). Similarly, another study examined the value relevance of the information through fair value and historic cost model application on the biological assets in a wider coverage context (Huffman 2015). The study showed that the case of bearer biological assets being valued at a historic cost and non-bearer biological assets valued using the fair value model is more value relevant than any other cases in practice. Another substantial study examined fair value accounting in UK, France and Australian firms (Elad and Herbohn 2011). The study argued that the fair value model is the most difficult in relation to the use of standard, because it is costly and burdensome in the case of accounting treatments for plantation assets and bearer biological assets.

A group of the studies took into account firms' independent sets as a dimension and thought that such a dimension had an impact on the application of the standard (Maria do Carmo Azevedo 2007; Rute and Patricia 2015). They examined the association between the dimension and standard's issues such as measurements and the value relevance practices of agricultural firms. They found that sets of a firm such as the biological assets' intensity, size, profitability and external shares have a significant role in relation to the application of the standard.

There was a biggest propose regarding the difficulties by a comment letter (AOSSG 2012, IASB agenda ref. 13, 13A, 13B). in the literature. By considering the letter, IASB proposed an amendment for the standard and asked for commentaries (ED/2013/8). According to the worldwide commentaries received, the majority of the difficulties arise in the fair value measurement of bearer biological assets, the recognition of any gain or loss in the profit or loss account results in

inconsistent figures. Then, the IASB argued that there is a distinction between bearer plants and bearer biological assets in practice. Consequently, the board took out bearer plants from the scope of the standard and retained bearer biological assets in the scope of standard, with the consideration that bearer biological assets can generate a residual value at the end of their useful life.

The prior studies regarding to IAS 41 provides mixed findings. Firstly, the commentaries for the amendment for IAS 41 and IAS 16 shows the difficulties associated with the accounting treatment of bearer biological assets only. It doesn't cover any other difficulties which may occur in practice. The prior studies also dealt with the recognition and measurement principles of biological assets in some countries only, by focusing specific topics. The disclosure also covered limited evidence. Thus, the previous studies reveal very limited suggestions for the use of the standard. Therefore, IAS 41 and its influence in the practice is still going to be questioned. This is might be a consequence of the limited number of studies that have taken place yet, it also might be due to the fact that the number of the firms using IAS 41 is significantly low. It might also be a consequence of there being a limited number of academics specialising in the subject.

However, the difficulties linked to the use of IAS 41 in practice is important and it is an in demand question that I have explored in this chapter. In particular, I have sought out the major difficulties that have to be taken into consideration in the implementation of IAS 41. I examined the earlier studies' proposals through specifically focusing on the identification of any difficulty, by covering the major types of biological assets and agricultural produce.

3.3 Model specification

I used the questionnaire type survey method in this chapter. The approach adopted in most of the existing studies sought to explain the observed IAS 41 issues in terms of the factors felt likely to be important, usually using the large-scale cross-selection (and time series) regression method. This approach involves the identification of a broad consensus (average) in the behaviour of firms. It cannot identify difficulties that can arise from the firms' IAS 41 application specifically. Accordingly, some of the researchers argued that it is necessary to augment the dominant archival method by the use of different empirical approaches that offer a greater insight into the behavioural aspects of the decision process (Tufano 2001; Vivien et al., 2004; Denscombe 2010). My research required a method that sufficiently shows the problematic aspects of IAS 41 application. Therefore, the survey method was the most appropriate. It is an efficient way of gathering data to help address a particular research question. In addition, the reasoning was because of the location of the agricultural firms, as the firms were located across multiple countries.

The most important characteristic of survey research is that the respondent must be familiar with the topics that are being asked and the survey's readability. I created the survey questionnaire based on the requirements of IAS 41 which is well known by the respondents. In addition, to give more space to the respondent to answer, the survey questionnaire was structured into seven points. This was so that the respondent had a greater number of choices in order to better select their decision within. The survey questionnaire consisted of 13 items (*SQ-1, ..., SQ-13*). Each of the survey questions involved 7 ranking points from Strongly agree to Strongly disagree. Each of the respondents had the options to rank and comment if he/she disagreed with a relative item. In the final part, the 14th question asked the ranker to write down anything that they thought was missing in the case of IAS 41 application. The survey questionnaire also had three introduction questions that gathered the independent parameters of the responding professionals (*professional experience,*

IAS 41 experience, similar principle experience). The response results scored from *7 = strongly agree statement* to *1 = strongly disagree*.

The results analysis took place in three procedures. The first procedure was the frequency test based on statistical frequency analysis. The second procedure was analysing the rankings and a T-test was employed. The third procedure was analysing the responses by group and the Wilcoxon rank sum-(Mann-Whitney) two sample test was used.

The statistical frequencies test calculated the number of each ranks noted by each of the respondents. This was how many times each item was ranked from Strongly agree to Strongly disagree. The concluding calculation indicated the average range and time of each item by using the agree and disagree directions.

In the second procedure, I used a T test to compare the two set of values by the mean and standard deviation. The T test is generally applied to normal distribution. Therefore, the T test shows me if the mean value of any item is significantly different from the mean point (*3.5 score*). By doing so, it helps me to find the items that are highly varied. Consequently, I can clearly identify which of the items has associated difficulty to apply in practice. The formula of the t test is:

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where,

$\overline{x_1}$ mean of first set of values; $\overline{x_2}$ mean of second set of values; S_1 standard deviation of first set of values; S_2 standard deviation of second set of values; n_1 total number of values in first set; n_2 total number of values in second set.

After this, I used the Wilcoxon rank sum-(Mann-Whitney) two sample test. It is a non-parametric test of null hypothesis. It is equally likely that a selected value from one sample will be less than or greater than a selected value from a second

sample. This test can be used to determine whether two independent samples were selected from populations having the same distribution.

The formula of the test is:

$$W = \sum_{i=1}^{N_r} (sgn(x_{2,i} - x_{1,i}) * R_i)$$

where:

N – sample size, for pairs $i = 1,....,N$,

Sgn – sign function; R_i – is the rank; $x_{2,i}$ *and* $x_{1,i}$ – denote the measurements

The two sided test consists in rejecting H_0 if $|W| > W_{critical,Ni}$

I split the respondents into two groups by experience and similarity to test the differences. The first group of respondents were professionals with less (*L*) experience and the second group were professionals with more (*M*) experience. By doing so, I examined if they gave different rankings and this difference will be based on experience (respectively, *1-7 = L* and *8-15 years = M* for grouping by experience in standard, *1-22 = L* and *23-50 years = M* for grouping by professional experience. The principle of IAS 41 was similar to the one used previously; *similar = 1* and *non-similar = 0*). My H_0 hypothesis is that the difference between the groups follows a symmetric distribution around zero. The alternative hypothesis H_1 is that the difference between the groups doesn't follow a symmetric distribution around zero.

In the third procedure, I analysed frequently reported comments and their relativity with the rankings, conclude with summaries regarding the difficulties encountered in practice.

3.4 Sample and descriptive statistics

The samples comprised of the 2016 fiscal year outcomes received from professionals in listed agricultural firms. During the sample selection, I focused on the rankers' relativity towards the study and the data availability. I selected agricultural firms for this analysis who had biological assets by searching the exchange markets' listings. I viewed the agricultural firms' profiles and collected the professionals' contact details. Unfortunately, the number of firms with agricultural activities is significantly low globally. Consequently, the number of professionals and their contact details was also limited. I found over 700 professionals, but after the re-selection criteria was applied, the number declined to 492. The selection was based on various factors. First, I excluded professionals who were not directly involved in the practical application of IAS – 41, as auditors. Second, I excluded professionals in independent accounting firms. In addition, I focused on the firms' relativity to the study based on if a firms holds biological assets in an appropriate amount, and the firms' distribution across multiple continents. The final sample contained 492 respondents, as shown in the following table:

Table – 3.4.1: Sample composition

Continent	Number of Respondents	Observations	
		Number	Percent
EU	291	4947	59.1
Asia	62	1054	12.6
America	94	1598	19.2
Africa	45	765	9.1
Total	492	8364 (492x17)	100

In summary, the final sample was 492 respondents, with 8364 observations of the 2017 fiscal year data from 4 continents.

The survey questionnaire consisted of 13 items. The items were developed from the requirements of IAS – 41 and forwarded to the rankers. Each user was asked to rank 13 items. In addition, each professional was asked to respond to an extra four introductory questions (appendix -3.2). The observed ranking was then summarised into 17 items.

The survey questionnaire covered IAS 41 by dividing it into items such as recognition and measurement principles of the standard (*SQ1-SQ6*), value measurement period (*SQ5*), disclosure principles (*SQ7-SQ13*). I further divided the recognition and measurement principles in to the common types of biological asset (as bearer and non-bearer biological assets) and the agricultural produce at the point of the harvest. Consequently, the sampling focused on getting more details from the IAS 41 application.

To carry out the analysis on the responses depending on experience and similarity, I re-sampled the responses into smaller groups. Re-sampling was based on the background information (experience in IAS 41, professional experience, similar principles). The first sample was the respondent group with more and less experience in IAS 41 respectively. The second sampling was the respondent group with more than and less than a specific year of professional experience in his/her career. The third sample was the respondent group who had used similar and non-similar principles previously.

Table 3.4.2 exhibits the descriptive statistics of the questionnaires applied in this survey. I analysed the ratings of the survey questions (*SQ1-SQ13*) based on the respondents' ranking. Each of the *SQ* was scored one to seven based on the rankings (panel A, col 3). The survey was sent four times to the eligible respondents. As a major difficulty of the survey method, the response rate was significantly low, around 8 percent (panel B).

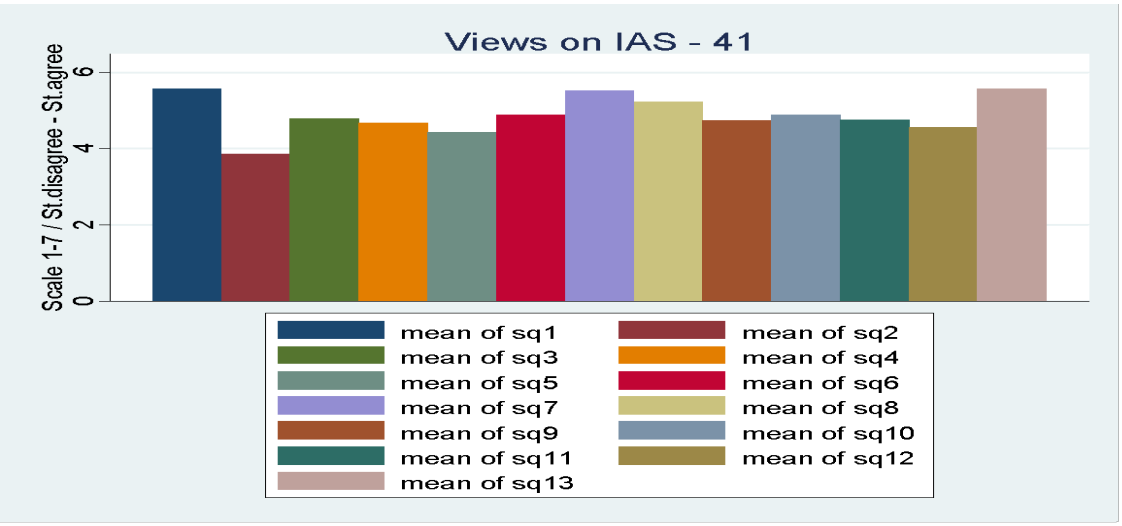
Table 3.4.2: The composition of descriptive statistics and survey procedure

Panel A			
Variable	**Obs.**	**Mean**	**Std. Dev.**
(1)	*(2)*	*(3)*	*(4)*
SQ1	37	5.57	.99
SQ2	37	3.86	2.13
SQ3	37	4.78	1.84
SQ4	37	4.67	2.95
SQ5	37	4.43	2.12
SQ6	37	4.89	1.77
SQ7	37	5.51	1.09
SQ8	37	5.21	1.08
SQ9	37	4.72	1.71
SQ10	37	4.89	1.33
SQ11	37	4.76	1.4
SQ12	37	4.57	1.26
SQ13	37	5.57	.87

Panel B			
	Number of mails sent	**Number of responses**	**Number of responses who didn't want to participate**
First send	492	7 (1.4 %)	0 (0 %)
Second send	484	15 (3 %)	1 (0.2 %)
Third send	468	12 (2.4 %)	2 (0.4 %)
Fourth send	449	2 (0.4 %)	2 (0.4 %)
Total response statistics	**x**	**37 (7.52 %)**	**5 (1.01 %)**

Note: Panel A, mean response and standard deviation were calculated on Computer-Software-STATA, as results of score 7-1 for Strongly agree to Strongly disagree; Panel B calculated as proportion of total mails (492).

Figure – 3.4.1: Extent of Survey response (by mean)



Some of the firms replied with a negative response as outlined in panel B in Table 3.4.2. The most likely reason for this was that they did not hold biological assets any more, and that some of them did not want to participate.

Panel A of Table 3.4.2 documents that the rankings are slightly closer to the strongly agree attitude in general (point seven). The *SQ2* was still ranked reasonably lower than other items, however. The standard deviation of the rankings also indicates that there is a differential agreement between the practical professionals for the *SQ2, SQ4* and *SQ5*. The results can be interpreted to show that the practical users of the IAS 41 agree with the requirements of the standard rather than disagree. But, this is only if a requirement is not accepted with agreement *(SQ2)*. The other two requirements were agreed to with a lower level of agreement *(SQ4 & SQ5)*. The statistics can be interpreted in a way that shows that practical professionals agree with the recognition and measurement requirements to a lesser degree, as well indicating that they somewhat disagree with the value measurement periods. There is also some evidence for this in the disclosure requirements.

3.5 Empirical results

The results of the survey have been presented in Tables 3.5.1, 3.5.2 and 3.5.3. Table 3.5.1 shows the general views and their frequency according to the survey elements. Table 3.5.2 exhibits the general views and their association with the background information of the rankers. Table 3.5.3 illustrates the repeated difficulties encountered in the use of IAS 41.

Table 3.5.1 presents the finding that the practical professionals agree with the requirements of the standard in general. The table further exhibits that there are three frequency ranges which belong to the 'Agree', 'Neither Agree nor Disagree' and 'Disagree' areas of the table. Survey items number two to six have a frequency range belonging to the most likely to agree and disagree sides respectively. Items number one, seven, eight and thirteen have similar frequency ranges which belong to the agree side of the table. Survey items number nine to twelve have frequency range which belongs to the agree and neither agree nor disagree sides of the table. More prescribly, the professionals strongly disagree with the beginning part of the survey to some degree (*SQ2-SQ5*). The table also shows that companies strongly disagree with the recognition and measurement bases for the bearers of biological assets (*SQ2*, column 2). Furthermore, there are some difficulties associated with the valuation bases for the non-consumable biological assets and agricultural produce as well (*SQ3, SQ4*, and *SQ5*, column 2). The rest of the elements of the survey questionnaire were ranked as most likely to agree rates (*SQ7-SQ13*, column 2). The table suggests that there is difficulty in relation to the valuation of the bearer biological assets at fair value less costs to sell (*SQ2*). There are some difficulties in relation to the valuation of non-bearer biological assets and agricultural produce at fair value less costs to sell too (*SQ3-SQ4*). There is also a difficulty regarding each reporting period's value measurement of the biological assets (*SQ5*).

Table 3.5.2 presents whether or not the mean response is significantly different from the neutral point of the survey questionnaire (col. 3). There is a strong outcome in relation to recognition and measurement of bearer biological assets

(SQ2, col. 3), a strong outcome in relation to fair value measurement at each reporting period (SQ5, col.3). Then, there is some outcome in relation to valuation requirements of agricultural produce. The t-test proves that the items regarding the bearer-biological asset's recognition and value measurement has a lower mean value and that it is not significantly diverse from the neutral point. Another confirmation is that the items regarding the value measurement at each reporting period has a lower mean value and it is not significantly divergent from the neutral point. The table confirms that the results do not have much association with the background of the rankers (Table 4, col. 5, 6 & 7). There is some association linked to the experiences of professionals in IAS 41 and in professional careers (*SQ4, SQ5*, column 6).

Table 3.5.3 exhibits that the higher number of commentaries were in association with the item regarding the difficulty of the recognition and measurement of the bearer biological assets (*SQ2*, 22% -12/53). Apart from the bearer biological assets, practical bodies agree with the recognition principle of the non-bearer biological assets and agricultural produce. They declared some of the numbers in relation to the fair value measurement of the non-bearer biological assets and in choosing bases and methodology for the fair value measurement of agricultural produce (*SQ3* and SQ4, 5.7% - 3/53). Table 3.5.3 also demonstrates high numbers in the items regarding the value measurement at each reporting period (*SQ5*, 20.7% - 11/53). According this, there will be a strong variation of the value of the biological assets when the measurement takes place at each reporting period. It is difficult to disclose such treatment and it can also be costly. One more important point to make is that there is a frequently reported issue, in that the "…users are not interested to the fair value calculation…" (*SQ2, SQ3, SQ5* and *SQ14*).

The empirical results have indicated remarkable findings. The t-test showed the core results and furthermore, the specific linking of the results. The Wilcoxon test confirmed that the empirical results are not dependent on the background of the

practical professional. Then, commentaries helped me as a supplementary to address rankings spastically, to make useful decision.

Table–3.5.1: Frequencies and Proportions of agreement for the survey questionnaires

	Strongly Agree		**Agree**		**Little Agree**		**NAD**		**Little Disagree**		**Disagree**		**Strongly Disagree**		**Agree (mean)**	**Disagree (mean)**
(1)									(2)						(3)	(4)
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	**%**	**%**
SQ1	3	8	24	65	2	5	7	19	1	3	0	0	0	0	**0,78****	**0,03**
SQ2	2	5	11	30	5	14	3	8	2	5	6	16	8	22	**0,49**	**0,43**
SQ3	4	11	15	40	4	11	7	19	1	3	2	5	4	11	**0,62***	**0,19**
SQ4	4	11	17	46	4	11	2	5	1	3	3	8	6	16	**0,67***	**0,27**
SQ5	5	13	14	38	1	3	4	11	3	8	5	14	5	13	**0,54**	**0,35**
SQ6	3	8	18	49	4	11	5	13	1	3	3	8	3	8	**0,67**	**0,19**
SQ7	3	8	24	65	1	3	8	22	0	0	1	3	0	0	**0,75****	**0,03**
SQ8	2	5	17	46	7	19	10	27	0	0	1	3	0	0	**0,70**	**0,03**
SQ9	1	3	19	51	3	8	5	14	3	8	4	11	2	**5**	**0,62**	**0,24**
SQ10	1	3	15	41	8	22	9	24	0	0	4	11	0	0	**0,65**	**0,11**
SQ11	1	3	14	38	7	19	10	27	0	0	1	13	0	0	**0,66**	**0,03**
SQ12	1	3	9	24	8	22	15	40	0	0	4	11	0	0	**0,49**	**0,11**
SQ13	1	3	26	70	4	11	5	13	1	3	0	0	0	0	**0,83****	**0,03**

Note: Each of the numbers is the time of topic rated by the respondents (example, SQ1 = 3 means three times rated) and, the relative column is the proportion (%) of it, measured by computer Software-STATA – Summary, descriptive statistics & frequency.

Table – 3.5.2: Views on general statements regarding the requirements of IAS – 41

	Questionnaire items	Mean[1,2]	SD	Tests[3]		
				Experience in standard	Professional experience	Similarity
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
SQ1	According the IAS 41, the definition of biological assets into Bearer and Consumable is practical	5.567568***	.9871547	ns	ns	ns
SQ2	Bearer – biological assets shall be measured by the Fair value model. This is because it provides true figures about the asset. Any economic benefit that the asset can generate is best reflected by the fair value model	3.864865	2.136484	$M < L$ * (0.05%)	ns	ns
SQ3	Consumable – biological assets shall be measured by the Fair value model. This is because it provides a true figure about the asset, and any economic benefit that the asset can generate is best reflected by the fair value model	4.783784**	1.842931	ns	ns	ns
SQ4	Agricultural produce shall be measured by the Fair value model at the point of harvest	4.675676*	2.095684	ns	$M < L$ *** (0.05%)	ns
SQ5	Biological assets shall be measured by the fair value model at each reporting period as it provides timely information	4.432432	2.128387	ns	$M < L$ *** (0.05%)	ns
SQ6	There are no active market quotes to measure the fair value of biological assets, but it is still possible to measure it reliable by other references (*Present value approach, or Cost approach – Replacement cost model*)	4.891892***	1.776135	ns	ns	ns
SQ7	Carrying value of biological assets and its reconciliation shall be disclosed separately to provide the users with useful information	5.513514***	1.095993	ns	ns	ns
SQ8	Fair value hierarchy within the group of biological assets/agricultural produce is not difficult to determine (*level 1, 2 and 3*)	5.216216***	1.083593	ns	ns	ns
SQ9	A sensitivity analysis of the carrying value of biological assets is not difficult to deal with and shall be disclosed	4.72973**	1.710241	ns	ns	ns

Table-3.5.2 continued

SQ10	Biological assets shall be disclosed by grouping them into Bearer, Consumable, Mature and Immature. This provides the users with useful information	4.891892***	1.328821	ns	ns	ns
SQ11	Disclosing the quantified description of each group of biological assets is not difficult to deal with. It provides the users with useful information	4.756757***	1.402486	ns	ns	ns
SQ12	Disclosing Financial Risk Management Strategies related to agricultural activities is not difficult to deal with and it provides the users with useful information	4.567568**	1.2592	ns	ns	ns
SQ13	Disclosing the methods used in determining the fair value of biological assets is not difficult to deal with and it provides the users with useful information	5.567568***	.8673248	ns	ns	ns

Notes:

1. Response categories are: 7=Strongly agree; 6=Agree; 5=Little agree; 4=Neither agree nor disagree; 3=Little disagree; 2=Disagree; 1=Strongly disagree.
2. Significance t-test of whether mean response is significantly different from 3.5 = neutral; *** and ** significant at 1% and 5% level, respectively (2-tail test) by computer-software-STATA.
3. Significance level of Wilcoxon-rank-sum (Mann Whitney) two-sample test, respectively - differences between More (M) and Less (L) experience in standard (measurement of groups was 1-7 years, 8-15 years), between More(M) and Less (L) professional experience in accounting (measurement of groups was 1-22 years, 23-50 years), between Similarity and non-similarity (measurement: grouping into two based on – principle of IAS 41 "Agriculture" was similar with the one you used previously or wasn't).

Table – 3.5.3: The repeated reasons of companies (n=53)

	Commentaries	**Frequency**
(1)	(2)	(3)
SQ2	Applying the recognition and measurement principles of IAS – 41 for **bearer biological assets** is very challenging	12 (22.6%)
SQ3	FV measurement is difficult in the early-stage of **non-bearer assets** (an asset has no readily market). Respectively, users are not interested in the fair value due to adjustments.	3 (5.7 %)
SQ4	Challenges involve deciding the basis and methodology that can accurately measure the fair value of the **agricultural produce.** This is difficult.	3 (5.7 %)
SQ5	The variations of FV are likely to be significant when treatement take place **at each reporting period** and technical explanations will be required. Treatment also is/can be excessive and costly for larger entities. Financial analysts and bankers usually ignore the fair value adjustments	11 (20.7%)
SQ6	Industrial scale forest asset sales take place too rarely for valuation benchmarking	5 (9.4%)
SQ10	A description of biological assets, its growth, harvesting patterns and the valuation methodology gives useful information	5 (9.4%)
SQ14	• It is difficult to estimate the inputs of FV for crops under production and, this information is not very valid. • Financial analysts automatically eliminate the relative line due to their understanding that there is a kind of subjectivity in fair value calculations	6 (11.3%)

Note Reasons are shown in number and percent frequencies. A brief comments can be read in appendix – 3.3

3.6 Summary and conclusions

I prepared and sent a survey questionnaire to the practical professionals to explore the difficulties encountered in the use of IAS 41. The results showed some interesting findings which can be useful to take into consideration in the case of IAS 41 implementation. According to the research question, the results showed that there are difficulties in the use of IAS 41 which are strictly linked with accounting for bearer biological assets, with the fair value treatment of non-bearer biological assets, agricultural produce and the valuation periods. In addition, there is external difficulties which have a sufficient impact on such applications.

IAS 41 shows that bearer biological assets shall be valued at fair value less costs to sell and any gains or losses shall be included in the profit or loss account for the period in which it arises. The survey results showed two proposals for this requirement. The first one is that bearer biological assets shall not be in the scope of IAS 41. In many types of business, a bearer of biological assets is not considered to generate value by selling. They are held for use instead. Therefore, as there is no readily market for such assets, determining a fair value for the bearer of biological assets requires taking the market price of commodity exchanges into account which is subject to market forces outside of the supply and demand for the product. Its interpretation is that there is no readily available market price for the bearer of biological assets since they are not sold in markets. If the fair value of this asset is measured by other references (income or cost approach of fair value measurement), then the value becomes unreliable. The second proposal is that bearer biological assets are not in balance in an entity to generate gain or loss by way of biological transformation. They are more likely to generate gain or loss by the production of agricultural produce/additional biological assets. The prior studies in the literature also commented on similar reports (IASB ED/2013/8). According to the comment letters for the exposure draft, bearer biological assets shall not be in the scope of IAS 41. But, IASB has attempted to show that bearer biological assets are capable of biological transformation. There is also a type of bearer biological asset that has a

very high market price based on the biological assets' nature, sires etc. Then, IASB has decided to retain bearer biological assets being in the scope of IAS 41 with a definition for bearer biological assets and for bearer plants as well. So far, there is proceeding issue in the case of accounting treatment for bearer biological assets. Some would prefer to value them using a fair value model on an annual basis. Some also commented that the historic cost is a very appropriate model for bearer biological assets. However, the survey results showed that there is difficulty associated with the reliable measurement of fair value for bearer biological assets.

The next difficulty was about the non-bearer biological assets' valuation bases with little proportion (Table 3.5.1 - 62/18%, Table 3.5.3 – 5 %). There is some difficulty related to fair value determination in the early stages of the biological assets. Specifically, there is no active market for biological assets until they reach a marketable size. Fair value measurement then requires a lot of estimates to be taken into account. Consequently, it requires assumptions which may decrease the reliability of the fair value. Thus, there is a repeated difficulty in relation to the fair value determination of non-bearer biological assets until they reach a marketable size. In contrast to this, there is a little difficulty with the bases and methodology of the fair value measurement of agricultural produce.

The results of the survey regarding fair value measurement at each reporting period was considerable. The frequencies table displayed that there was lower level of ranking for this item. The commentaries table also showed some remarkable comments. Thus, it shows how the fair value of each reporting period is meaningful. If it is in the case of bearer biological assets, then an annual fair value measurement preferred and in the case of non-bearer biological assets, then a fair value measurement at each reporting period is going to be accepted. Namely, such periodical measurement is acceptable when the asset has marketable size. Otherwise it is difficult to measure the market price reliable. Accordingly, treatment can be costly for the entities with a larger scale.

In addition, survey question number 14 asked the practical professionals to comment on any other omissions regarding the use of IAS 41. Most of the comments were about the decisions of the external user. I detected this issue in all of the commentary elements too. The declaration is that financial analysts usually don't take this value into their predictions due to their understanding that there is a subjectivity in fair value calculations.

In conclusion, I have argued that there are difficulties linked with some areas of IAS 41 application. The main difficulty is the recognition and measurement of bearer biological assets. There is no difficulty to do with the recognition of non-bearer biological assets and agricultural produce. The other difficulties are the fair value determination of non-bearer biological assets until they reach a marketable quantity/quality, the difficulty on deciding the bases and methodology used in the fair value measurement of agricultural produce, a higher level of difficulty regarding each reporting period value measurement conception and the difficulty related to the disclosure of information relating to the fair value measurement of biological assets. I have also attempted to indicate that the professionals have no motivation for using other references of fair value measurement (Income and Cost approach). They declared two proposals for this. First, fair value measurement using other references will require a lot of estimates to be taken into the calculations. Therefore, disclosure requires technical explanation difficulties to become a potential, and it can make too much statistical noise as well. The second is that external users such as financial analysts usually ignore this type of fair value measurement during their analysis.

The primary finding of this chapter is that it has identified difficulties in the use of IAS 41. The findings are consistent with the previous IAS 41 studies (IASB ED/2013/8; PWC 2009/2011; Elad and Herbohn 2011; Rute & Patricia 2015; Silva et al. 2012). The secondary finding extends the knowledge of IAS 41 application. The first issue is that professionals would prefer not to apply other references to the fair value measurement (Income or Cost approach). The second issue is that there is a very strong impact from the decisions made by external users on the use of IAS

41. However, there are many areas yet to be covered by further studies. I believe that it would be a beneficial idea if further studies address the secondary finding of this chapter.

Appendix

Appendix – 3.1 The composition of the respondents

Country	*Proportion (%)*	*Country*	*Proportion (%)*
Argentina	1.4	Mauritius	0.8
Australia	1.6	Mexico	1.4
Austria	0.8	Netherlands	3.2
Anguilla	0.61	New Zealand	3.46
Brazil	4.9	Norway	4.88
Canada	3.2	Oman	0.4
Chile	1.2	Peru	0.4
China	3.3	Philippines	0.6
Cyprus	4.7	Portugal	1.8
Czech Republic	1.22	Russia	3.2
Cuba	0.8	S. Africa	3.6
Denmark	2.4	Sri Lanka	0.9
Finland	2.4	Spain	1.01
France	2.6	Singapore	2.6
Greece	1.6	Swaziland	1.01
Ghana	0.8	Sweden	4.2
Germany	1.6	Switzerland	1.01
Hong Kong	0.8	Taiwan	0.8
Indonesia	2.4	UK	7.32
Iceland	0.9	Ukraine	2.24
Italy	1.01	USA	4.6
Ireland	1.5	Zambia	1
Jamaica	0.6	Zimbabwe	0.61
Latvia	1.01	**Total:**	**100 (492)**
Lithuania	0.4		
Luxembourg	0.6		
Malaysia	3.9		

Appendix – 3.2 Survey questionnaire

- **What is your main professional field and year of experience?**
- **How long have you been using IAS – 41 "Agriculture" in financial reporting?**
- **Was the principle of IAS 41 "Agriculture" similar with the one you used previously?**

☐Yes	☐No

Please indicate the extent to which you agree with the following statements: *(To mark click the relative square)*

1. According the IAS 41, the definition of biological assets into Bearer[31] and Consumable[32] is practical

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

2. Bearer - biological assets shall be measured by the Fair value model. This is because it provides true figures about the asset, any economic benefit that the asset can generate is best reflected by the fair value model

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

3. Consumable - biological assets shall be measured by the Fair value model. This is because, it provides true figures about the asset, any economic benefit that the asset can generate is best reflected by the fair value model

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

4. Agricultural produce shall be measured by the Fair value model at the point of harvest

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

5. Biological assets shall be measured by the fair value model at each reporting period and it provides timely information

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

6. There are no active market quotes to measure the fair value of biological assets, but it is still possible to measure it reliable with other references (*Present value approach, or Cost approach - Replacement cost model*)

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

7. Carrying value of biological assets and its reconciliation shall be disclosed separately to provide users with useful information

[31] Bearer biological assets are the assets that capable to biological transformation/additional biological assets, they are commonly considered as bearer livestock in the scope of IAS 41

[32] Consumable biological assets are the assets that capable to biological transformation but aren't capable to produce additional biological asset, they are usually held for the harvest at the end of useful life, as livestock for beef, forestry for wood, plants for fresh fruits, fish and poultry for meat production

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

8. Fair value hierarchy within the group of biological assets/agricultural produce is not difficult to determine (*level 1, 2 and 3*)

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

9. A sensitivity analysis of the carrying value of biological assets is not difficult to deal with and shall be disclosed

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

10. Biological assets shall be disclosed by grouping them into Bearer, Consumable, Mature and Immature. This provides the users with useful information

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

11. Disclosing the quantified description of each group of biological assets is not difficult to deal with. It provides the users with useful information

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

12. Disclosing Financial Risk Management Strategies related to agricultural activities is not difficult to deal with and it provides the users with useful information

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

13. Disclosing the methods used in determining the fair value of biological assets is not difficult to deal with and it provides the users with useful information

☐ Strongly agree ☐ Agree ☐ Little agree ☐ Neither agree nor disagree ☐ Little disagree ☐ Disagree ☐ Strongly disagree

If you disagree, comment please

14. Did I forget anything in the practical scope of IAS 41? If yes, please specify

Appendix – 3.3: The repeated reasons of companies (n=53)

#	Commentaries		Frequency
SQ2	• A bearer asset is not in the balance sheet to generate value growth in itself, most bearers do not have a readily market. Fair value measurement would need a lot of estimates and it generate volatility in Financial Statements	9	12 (22.6%)
	• The majority of financial analyst do not take this value in their analysis or projections	3	

SQ3	a.	FV generates a lot of volatility in Financial Statement, and the users (investors and analysts) are not interested in the fair value adjustment. We believe that they are more interested in the cash flow. Mature fish (above 4 kg) is best measured at fair value. There is a market for mature fish compared to immature fish (from 0,5 kg - 4 kg) where the fair value is not readily available.	3	3 (5.7 %)
SQ4	a.	FV measurement requires the use of accounting estimates and assumptions. Challenges involve in deciding the basis and methodology that can accurately measure the fair value of agricultural produce is difficult. For many crops it is not possible to measure the quanties reliably	3	3 (5.7 %)
SQ5	a.	For larger entities full FV treatment for each reporting period (for interm reporting) is/can be excessive and costly where third party valuers need to be involved	1	11 (20.7%)
	b.	It depends how meaningful this information is for users of account. If the variations are likely to be significant at each reporting period and technical explanations will be required, these may not be easily understood by users at each reporting period, Financial analysts and bankers usually ignore the fair value adjustments	10	
SQ6	a.	I agree. In most markets there is frequent trading of all age class forest assets and mature/harvested wood sales but industrial scale forest asset sales take place too rarely for valuation benchmarking	1	5 (9.4%)
	b.	These approaches are simply not relevant to the great majority of crops nor to some livestock	4	
SQ9	a.	Sensitivity analysis is always difficult because it requires judgement about which hypothetical scenarios would generate useful information for financial statement readers	4	4 (7.5%)
SQ10	a.	Grouping of biological assets (especially into consumable or bearer) do not provide any useful information for the financial statements' user. A description of biological assets, its growth and harvesting patterns and the valuation methodology applied give enough useful information to the readers of the financial statement	5	5 (9.4%)
SQ12	a.	In certain cases it may be difficult to accurately assess the risks from a quantitative perspective	2	2 (3.8%)
SQ13	a.	It is not difficult to explain but it could be difficult for people to understand and maybe could generate a lot of noise	2	2 (3.8%)
SQ14	•	For crops under production it is difficult to estimate the harvest result, and I do not think this information is very valid. It may all be more relevant for very large scale companies with long term crops. For crops there is also the fact, that when you put it to fair value at harvest, your production costs will be very difficult to evaluate for the reader of the accounts		6 (11.3%)
	•	I only want to say a personal opinion. I think that IAS 41 do not have to be valued at fair value do to the fact that in practice when financial analyst review your Financial Statements, they automatically eliminate this line due to they understand that there is a kind of subjectivity in this type of calculations		

IV. Determinants of compliance with the IAS 41" Agriculture": An international derivatives review

4.1 Introduction

The firms comply with external standards when using it beneficial for firms. The issue is that compliance with IFRS is going to sign about the incentives that benefit a firm. From another view, the compliance level may also differ depending on principles required and the particular nature of the agricultural sector. So, the firm-level determinants and requirements of standards may have impacts on firms' compliance extent.

There are several views on compliance with IFRS, all of which concern the voluntary and mandatory adoption determinants and consequences of IFRS, disclosure studies and its determinants. They captured the arguments in assessing the IFRS application. The worldwide studies focus mainly on the factors that explain voluntary adoption choice (Street et al., 2002; Francis et al., 2008). Their research looked for an answer for the question of: *with what kind of parameters are firms voluntarily adapted to the IFRS*? Research found the firm-level determinants explained the voluntary adoption choices of the firms. Other studies (Cooke, 1989; Francesco et al., 2012; Rute and Lopes, 2014) focus on the disclosure extent of the firms, and found that firm-level factors determine the disclosure levels.

The general purpose of using IFRS reveals that using IFRS would benefit the firms in opportunities extension. Further, prior literature has shown that the extent of compliance with the requirements is definitely in correlation with firm-level variables. So, there is the argument that an incentive is ultimately the driver of the compliance level.

To my knowledge, this is the first study to learn the extent of compliance level of agricultural firms and its determinants in a wider range by including the factors relating to the nature of the agricultural sector. My finding must supplement prior literature in two ways. First, I analyse compliance determinants in a particular agricultural sector. Second, I show firms' compliance with the standard and firm-level characteristics.

To carry out an empirical test, I used financial statements of agricultural firms. I evaluated compliance index (ComINDEX) based on requirements prescribed in IAS 41. Then, I evaluated firm and IAS 41 level factors based on prior literature and my knowledge. The ComINDEX used as dependent variable, and a number of factors used as independent variables. An empirical test took place in two approaches:

1- Total hypothesis test (General model).

2- Standard based hypothesis test (Specific model).

I tested the entire hypothesis in sample of firms. The second approaches carried out by re-selecting the firms. Specifically, I held the first group independent variables highly positive correlated and tested IAS 41 based hypothesis.

4.2 Related literature and hypothesis development

There is limited number of prior studies regarding the compliance with IAS 41 by agricultural firms. Therefore, I also refer to past studies that related to the key aspects of my study even they are not directly linked with the agricultural sector.

The prior literature focused on firms' disclosure extent with two approaches: first, mandatory disclosure of the information, and second, firms' voluntary adoption choices to the IFRSs (Cooke, 1989; Street et al., 2002; Francis et al., 2008; Heitzman et al., 2010; Glaum et al., 2012; Marie et al., 2006; Martin et al., 2012; Francesco and Pereira, 2012; Mazni et al., 2012; Francis et al., 2018). The earliest research as to why firms comply with international accounting standards (IFRS/IAS) comes from Switzerland. The first direct investigation was conducted by Dumontier and Raffournier (1998), who examined eight characteristics of firms with voluntary compliance to IAS in 1994, including listing status, internationality, size, ownership structure, leverage, capital intensity, profitability and auditor's reputation. Their results indicate that size and internationality play a major role in the disclosure policy of the firms, large and internationally diversified companies tending to disclose more information than small, purely domestic enterprises. Subsequently, research (Cooke, 1989; Street and Gray, 2002; Marie et al., 2006; Francesco and Pereira, 2012) found some determinants that explain voluntary compliance. They

found that internationality, leverage, firm size, and an auditor's reputation present a significant positive impact on a firm's choice in voluntarily selecting IFRS.

In the case of mandatory disclosure, it may seem less reasonable to analyse it. After all, if firms are obliged to answer to specific information, ideally there would be no reason for differences to occur in disclosure reporting. But in fact, with respect to even mandatory disclosure, researchers have found that firms still have some flexibility in the way they report the information (Chavent et al., 2006). The findings of their research related to several theories, such as agency theory, signalling theory, stockholders theory and political economic theory. Another study examined determinants and consequences of IFRS compliance levels following mandatory IFRS adoption in developing countries (Francesco and Pereira, 2012). This research found that disclosure quality is ultimately shaped by reporting incentives, and cost of compliance has significant impact on compliance levels in developing countries too. Thus, international literature shows that there are firm-level determinants, which are the main factors to explain firms' compliance when the compliance is mandatory, and also such determinants played a key role in firms' voluntary adoption choices to the IFRSs: ownership concentration, firm size, leverage, listing status, profitability, growth, auditor type, and cost of compliance.

Unfortunately, there is very limited literature regarding compliance with IAS 41. The studies regarding IAS 41 mainly covered issues that are relating to the influences of the standard on the financial reporting in the agricultural sector, and valuation principle proxies. Some research was conducted with disclosure practices of the listed firm (Elad and Herbohn, 2011; Rute and Lopes, 2014; PWC, 2009/2011). The researchers found that there is a lack of comparability of disclosure practices, in which French firms incline not to disclose complete information on biological assets. So, they pushed the idea that different accounting practices have different influences on disclosure practices, and that the country's accounting culture explains disclosure levels. There was one more study conducted with disclosure practices of listed firms (Rute and Lopes, 2013, 2014). The research dealt with firm- and country-level factors, which can explain the differences in disclosure levels on biological assets among listed firms. The study found that biological assets' intensity, firm size and sector have a significant positive impact on mandatory and

voluntary disclosure practices. It also found that biological assets' intensity is a significant determinant in explaining disclosure practices, and argued that firms with core business is agriculture and firms with no agriculture have differences in disclosure practices.

With a different approach, researchers checked Brazilian livestock firms' compliance with IAS 41 (Silva et al., 2012). Their study did not analyse firm- or country-level factors. They focused on the importance of items based on disclosure requirements of IAS 41. They found that the disclosure types of biological assets, and reconciliation of the carrying value of their changes, are the most frequently reported items, but other items are neglected. PriceWaterhouseCooper (PWC) has also elaborated on two international studies (2009, 2011) concerning the impact of adopting IAS 41 in the timber sector of Agriculture. The main goal was to provide what might be considered establishing best practices in fair valuing of this sector and the related disclosures. PWC has identified the major pronouncements described in the notes of the financial statements, highlighting some of the main constraints, comparisons and dissimilarities. In general, firms have different levels of transparency regarding biological asset disclosure and usually do not discuss fair valuation assumptions. PWC argued that each field of the sector has a specific way of complying with IAS 41 (*as a tradition*), and noteworthy is that there is a management of disclosure.

In summary, the literature comprises an examination of disclosure levels, developed and still developing country determinants where the disclosure is mandatory, and determinants of compliance for the case of listed and unlisted firms. They all reveal the same determinants. There is a set of firm-level factors, that explain compliance with mandatory disclosure requirements, and the same factors play a key role in firms' voluntary choice to adapt to the IFRS.

The literature involving the practical area of IAS 41 dealt with disclosure practices of agricultural firms, and examined it with a very limited scope. An early study took an overall approach and believed country differences have influences on compliance level of the firms (Elad et al., 2011). The question now becomes one of international coverage. Namely, What are determinants that explain compliance levels if the firms do not belong

to a group of specific countries? Another study dealt with some items of IAS 41, and argued that some of the items have more importance than other items required by the standard (R.L.M.Silva..). The worldwide auditor's report shows disclosure differences depend on the field of the agricultural sector, and management of it. However, agricultural firms also have different disclosure practices even if disclosure is mandatory. The prior studies are very mixed and did not focus on the compliance level with IAS 41 in the case of agricultural firms in the world. Bearing in mind prior literature signals, I adjust firm-level determinants into agricultural sector samples and add some factors that I consider significantly relative determinants. My setting allows me to compare firm-level determinants across a wider range and their association with compliance practices of agricultural firms.

Hypothesis development. IAS 41 is the single guidance to carry out accounting treatments for agricultural activities. Other relating IFRSs are the guidance that shall be used by combining them with IAS 41. So, in theory, disclosure requirements are also mandatory and there is no reason to value firms' compliance with requirements. However, prior literature signal that companies have different disclosure practices and there are factors occurring it. In sum, there is an argument that an incentive is ultimately the driver of the compliance of a firm, and the standard- and firm-level parameters are the characteristics that could improve such incentive. To carry out this empirical analysis, my hypotheses took on the following forms:

Internationality. Generally, firms operating internationally are more likely to have a larger group of stakeholders and must report to various international constituents. They also must reduce restatement cost and increase reporting quality. In order to support stakeholders with complete information and reduce the cost of communication, the international firms are more likely to comply with the standard's requirements (Street et al., 2002; Paul Andre et al., 2012). Previous research also supports that internationality acts as a driver in adoption of the firms to the IFRSs.

H1: *There is a positive association between internationality of the firm and compliance with the requirements regarding the biological assets.*

Size. The firm's size and compliance with disclosure requirements has a reasonable linking. There are at least two reasons for this link. First, the costs associated with a higher disclosure level are always lower for large firms. Second, production costs and political costs must drive larger firms to disclose more information voluntarily. Furthermore, large firms are required to assure a more developed level of information for users through an external way as well. The literature is in agreement on the positive relationship between the firm's size and its information disclosure level (Street et al., 2002; Paul Andre et al., 2012; Rute and Lopes, 2014). The above consideration means an expected positive sign for the relationship.

H2: *There is a positive association between size of a firm and compliance with the requirements regarding the biological assets.*

Auditor type. The audit is strongly linked with information reported by a firm in order transparency and reliability, and it is an important representative of the financial reporting. But, audit firms independently differ from one another, disclosure level can also depend on the type of an audit firm employed. Therefore, the type of audit firms also affects disclosure levels. Prior literature indicates that the strength of enforcement of accounting standards by stronger audit firms has a positive association between disclosure level and being audited by the big-4 audit firms (Stefano and Gassen, 2012). I also expect an association between the compliance level of the firms and employed audit firm.

H3: *There is a positive association between audit firm employed and compliance with the requirements regarding the biological assets.*

Profitability/gain existence. Profitability of a firm has significant importance in assessing the firm's future performance. It provides attractiveness of a firm for fund providers, as well as for the community. Therefore, firms have more incentives to announce when they have a higher level of profitability. This consideration reveals a positive relationship between a firm's disclosure level and its profitability.

In prior research, Singhvi and Desai (1971) identified that when the rate of return is high, managers are motivated to disclose detailed information in order to support the continuance of their positions. Conversely, when the rate of return is low, they may

disclose less information in order to avoid the reasons for losses or declining profits. M. Silva (2015) also identified that Brazilian firms have earnings management concerning the valuation method of biological assets. PWC (2011) also indicated that there is some disclosure management in the timber sector, as earnings and relative disclosure items are followed by disclosure management. So, I conclude following hypothesis:

H4: *There is a significant positive association between gains from biological transformation and compliance level.*

Biological assets' intensity. The positive link between the relative proportion of provisions and their disclosure level is a rational consequence of application of the materiality principle. When provisions are equivalent to a high percentage of total assets, they become a major factor in evaluating the firm's risk level. Prior literature states that there is an association between capital intensity and relative disclosure level. For example, goodwill impairment firms have a higher propensity to disclosure when they have larger amounts of non-financial assets (Heitzman et al., 2010). Moreover, goodwill impairment requires valuation skills, so there is also a strong expectation that companies will allocate more resources to improve quality report when they have a relative materiality position (Glaum et al., 2012). That might be the case for agricultural firms too.

H:5 *There is a significant positive association between biological assets' intensity and compliance level.*

Biological assets' nature. In theory, biological assets are capable of biological transformation through qualitative and quantitative changes[33]. Therefore, accounting for it requires a fair value model. But, there is also departure from this approach. Biological assets are naturally separated into two major class of the assets. In the first class, biological assets are capable of agricultural production, additional biological assets and becoming agricultural produce by themselves, often referred as consumable bearer biological assets[34]. The second class, biological assets are not capable of agricultural production or additional biological assets during their useful life, only capable to become agricultural

[33] See IAS 41 "Agriculture" pgs. 5-9 for the qualitative and quantitative change.
[34] This type of asset is not covered by the scope of amendment for IAS 41 and IFRS 16, because they have residual value at the end of their useful life. Therefore, this category is going to stay in the scope of IAS 41.

produce by themselves. The nature and function of the biological assets also asks two different considerations. Namely, biological transformation is less material when an asset is of a mature nature and production function, and vice versa. In addition, the measurement period also has no influences, as there is no transformation. Consequently, value measurement at each reporting period under the alternative way of fair value[35] may increase an unreliability of such measurements results.

Also consistent with prior studies, A. Huffman (2015) separated biological assets into two classes – in-use assets and in-exchange assets –to examine value relevance. IASB Emerging economies group also separated them into consumable and bearer biological assets in their issue paper (2012). Furthermore, some researchers argued that recognition of unrealized earnings for in-use assets is not prudent (Elad and Herbohn, 2011, Fischer and Marsh, 2013).

Thus, it is reasonable that a firm may have less incentive to disclose information if its assets are in-use biological assets with respect to unrealized earnings and biological transformation materiality (for example, holding only CBBA in business obviously increases an unrealized earnings proportion in earnings), and conversely, firms may have more incentives to disclosure information if their assets are in-exchange biological assets.

Thus, my next hypotheses become as follows:

H6: *There is a negative association between in-use biological assets[36] and compliance with the requirements.*

H7: *There is a positive association between in-exchange biological assets[37] and compliance with the requirements.*

Listing status. The companies may have more foreign activities now than in past decades. Today, a company can be listed in the domestic and foreign stock exchange in

[35] Most of the time, biological assets have no accessible market value and, therefore, their fair value will be measured by Income approach or Cost approach of Fair value measurement.
[36] CBBA – consumable bearer biological assets that are suggested in IAS 41, and they are naturally subject to slower biological transformation, and they are in the scope of the IAS 41 after 2016.
[37] CBA – consumable biological assets that are suggested in IAS 41, and they are naturally subject to faster biological transformation.

order to engage with different financial opportunities. As an opposition for this, stock exchange markets may also require a certain kind of information disclosed. On the other hand, foreign agents of the company may benefit from more than required information display. Therefore, firms must have more incentives to display more information. Thus, there can be an association between the listing status of a firm and its display/supply of information.

Several previous studies have also appeared listing status as an effective variable (Cooke, 1989; Street et al., 2002; Rute and Patricia, 2014). According to them, companies cross-listed have higher compliance with disclosure requirements of the standards. I also expect an association between compliance level of the firms and listing status of an agricultural firm.

H8: *There is a significant positive association between listing status and compliance with the requirements regarding the biological assets.*

The measurement, hypotheses and expected signals of the above independent variables were as described in Appendix 4.3.

4.3 Model Specification

I used OLS regression to test my hypothesis, as well as disclosure indexes to value each firm's compliance levels with requirements. Independent variable comprises firm-level variables that have independence by themselves, such as *Internationality, Size, Auditor type, Profitability, Biological assets' intensity, Biological assets' nature* and *Listing status*. The dependent variable is an awarded *compliance index for a firm (ComINDEX)*. The regression model examines associations between independent and dependent variables, and the compliance indices values firms' compliance with required items. The regression is derived from earlier work of J.R. Francis (2008), Ohlson (1995). I formulated a study model as follows:

$$\mathbf{ComINDEX_{GM}} = b_0 + b_1 INTERoF + b_2 SIZEoF + b_3 AUDFB4 + b_4 GE + b_5 BAI - b_6 BAU + b_7 BAE + b_8 LS + e_i$$

$$\boldsymbol{ComINDEX} = b_0 + b_1 GE + b_2 BAI + b_3 BAU + b_4 BAE + e_i$$

The internationality *(INTERoF)* corresponds to a natural log of groups of the firm located in different countries. The prior literature has adopted three main ways when valuing firm size: natural logarithm of total assets, a firm's operating revenue, and the number of firm employees. I adopted a natural logarithm of total assets for the choice of size *(SIZEoF)*. Auditor type (*AUDFB4*) is a dummy variable coded 1 for clients of the Big – 4 auditing firms, and 0 otherwise (in 2015, the Big-4 audit firms were PWC, Deloitte Touche Tohmatsu, Ernst and Young and KPMG). Profitability was measured in several ways by prior studies, such as profit margin ratio, EBITDA ratio, and return on total assets. My study departs from prior consideration, in that I oriented my assumptions to the gain or loss from biological transformation. Therefore, my profitability (*GE*) variable is measured by the ratio between gain from biological transformation and biological assets. The biological assets' intensity (*BAI*) corresponds to a ratio between biological assets and total assets. The biological assets in use (*BAU*) correspond to the ratio between biological

assets in use and the total biological assets. If the firm has not designated the biological assets into such groups, then the variable becomes a dummy variable, coded 1 if the firm has in-use biological assets, and 0 otherwise. The second category of the biological assets is in-exchange biological assets. In-exchange biological assets (*BAE*) are also a dummy variable, coded 1 if a firm has in-exchange biological assets, and 0 otherwise. Listing status of a firm is measured based on whether a firm listed in one or more foreign stock exchanges.

To evaluate the dependent variable, I use the compliance index *(ComINDEX)* and score the firms' compliance levels. Resulting it, each of the firms had its relative index.

There are two main approaches to developing a scoring scheme to capture the level of disclosure compliance. The approach advocated by Copeland and Fredericks (1968) is to use a criterion based on the presentation of the information. They cite the number of words used to describe an item disclosure. This approach leads to a scale of disclosure, which varies between zero and one. In this absence, the allocation of scores along the continuum is somewhat subjective.

The second approach which is I am using, is used by Cooke (1989) to capture disclosure scores. This approach uses a dichotomous procedure in which an item scores one if it is disclosed and zero if it is not. The total disclosure (***TD***) score for a firm is:

$$TD = \sum_{i=1}^{m} d_i$$

where, $d = 1$ if the item d_i is disclosed

0 if the item d_i is not disclosed, and

$m \leq n$ (m-discussed in below).

When there is no mention in the annual report of a disclosure item, it is concluded that the item was not relevant to that firm in the existing year. Consequently, a firm was not penalized for non-disclosure of information that was not relevant for it. In contrast, if it is apparent that an item of disclosure is relevant (e.g., by mentioning biological assets measured under fair value model but without disclosing assumptions used), then clearly

the item relating to the assumptions used gets zero, d_i=0. The additive model used here is un-weighted. The implied assumptions are that each item of disclosure is equally important.

Once all the items have been scored, an index is created to measure the relative level of compliance by a firm. The index is a ratio of the actual scores awarded to a firm to the scores that firm is expected to earn. Consequently, a firm is not penalized for those items that are not relevant to it. Thus, the maximum score (***M***) a firm can earn is:

$$M = \sum_{i=1}^{n} d_i$$

where, d = expected item of disclosure

n = the number of items which firm is expected to disclosure, i.e. $n \leq 87$

The total index ***(TI)*** for each firm then becomes:

$$TI = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{m} d_i} = TD/M$$

4.4 Sample and Descriptive statistics

I observed the samples by focusing on the relativeness of the samples for the study. I followed the disclosure requirements prescribed in IAS 41 and developed a checklist. A number of studies have used checklists to capture firms' compliance with disclosure requirements. First, Ch.Elad (2011) used a checklist to analyse the extent of disclosure of agricultural firms over three countries (France, UK and Australia). Then, R. Goncalves (2014) used a similar checklist to examine firms' disclosure practices. Further, audit firm Deloitte (2006) developed a guide[38] for presentation and disclosure checklist under IFRS. So, based on prior works and auditors' guides, I developed a checklist of 25 items for my empirical work. The checklist (as outlined below) is based on the requirements prescribed

[38] See in IFRS Presentation and Disclosure checklist, 2006, pp.145-148
https://www.iasplus.com/en/publications/global/models-checklists/2016/ifrs-mfs-2016-ifrs-9

in IAS 41 for assessing the compliance indexes of the firms (*Appendix 4.1*), and some of the items were excluded from the checklist, because they do not apply to all the companies:

- Information on the existence and carrying amount of biological assets whose title is restricted, and carrying amount of biological assets pledged as security for liabilities
- The amount of commitments for the development or acquisition of biological assets
- A reconciliation of changes in the carrying amount of biological assets between the beginning and end of the accounting period, showing separately; net exchange differences arising on the translation of financial statements of a foreign currency
- If fair value of biological assets become reliably measurable, an entity should explain the reason fair value has become reliably measurable, description of biological assets and effect of changes
- Disclosure items regarding to government grants

In addition, measurement and recognition items were also evaluated. Thus, the compliance index comprises the items of disclosure and items regarding compliance with the fair value model and relative recognition. And, the consideration of the inability of measuring fair value, namely consideration of the cost accounting model, included too.

The samples comprise 2016 fiscal year financial statements downloaded from company profiles from available networks. According to the purpose of the study, I differentiated the agricultural firms into the most relative firms for the study. First, I excluded the firms when their biological assets were bearer biological assets, which is excluded from the scope of IAS 41 "Agriculture" (covered by the scope of the amendment for IAS 41 and IAS 16 from the 2016 fiscal year). Second, I also excluded the firms that applied to IAS 41 for the first time (e.g., Malaysian firms, IFRS-1). Additionally, agricultural firms have many kind of biological assets, and they may have different natures and functions. Thus, I had to focus on the population of the firms by fields in order to capture their real practice. Keeping in mind this exception, I also selected the firms by focusing their population. So, firm samples were comprised of Forestry (31.1%), Fishery (16.1%), Livestock (32.1%) and Crops/Vegetables (20.7%). In addition, I focused on

better capturing the target of the study using a distribution across the continents. Consequently, the final sample consisted of 25 items over the 87 firm samples, as shown in the following table:

Table – 4.4.1: The sample composition

Continents	Number of the observations	Number of the firm
EU	1300	52
Asia	400	16
America	250	10
Africa	225	9

In summary, the final sample consisted of 87 firms, 2,175 observations, and 2015- or 2016-fiscal-year examples from four continents.

Table - 4.4.2: Descriptive Statistics *(General Model)*

Variable	Obs.	Mean	Min	Max	Std. Dev.
ComINDEX	87	.7143552	.2545455	1	.1589481
INTERoF	87	1.30196	0	2.197225	.4386667
SIZEoF	87	13.21728	7.939872	16.8205	1.660832
AUDFB4	87	.6321839	0	1	.4850064
GE	87	.5862069	0	1	.4953675
BAI	87	.194667	.0035778	.7419927	.1682425
BAE	87	.7126437	0	1	.4551526
LS	87	.7126437	0	2	.5262426

Table – 4.4.3: Descriptive statistics *(Specific Model)*

Variable	Obs.	Mean	Min	Max	Std. Dev.
ComINDEX	42	.7478806	.3809524	1	.1473334
GE	42	.5714286	0	1	.5008703
BAI	42	.1871523	.019576	.5323066	.1474433
BAE	42	.7380952	0	1	.4450006
BAU	42	.5238095	0	1	.5054867

4.5 Empirical results

I developed the hypothesis by focusing the firm- and standard-level variables. The dependent variable was the compliance level of a firm, and independent variables were specific settings of a firm. Independent variables were predicted as either positively or negatively correlated with compliance levels of the firms. Consistent with prior compliance research, both specific and general model independent variables correlated with compliance level of firms in all estimates. Tables 4.5.1 – 4.5.4 exhibit the empirical results. Table 4.5.1 shows the correlation and significance of the independent variables with the dependent variable of the General model (hypothesis (1) – (8)), and Table 4.5.2 displays the correlation and significance of the independent variables with dependent variable of the Specific model (hypothesis (4) – (7)). Furthermore, Tables 4.5.3 and 4.5.4 exhibit regression results including the significance levels.

Table – 4.5.1: Correlation test signs *(General Model)*

Independent variables	Expectations	r
INTERoF	+	0.0354
SIZEoF	+	-0.0694
AUDFB4	+	0.0463*
GE	+	0.4047***
BAI	+	0.4182***
BAE	+	0.1539**
LS	+	0.4243***

Table 4.5.2: Correlation test signs *(Specific Model)*

Independent variables	Expectations	r
GE	+	0.3529***
BAI	+	0.3260***
BAE	+	-0.0751
BAU	-	0.1137

Note. Tables 4.5.1 & 4.5.2 report the correlation results of OLS model. *, **, *** indicate significance levels of less than 10%, 5% and 1%, respectively. Signs "+" and "-" mean positive and negative correlations. For expected signs of all variables, see Appendix 4.3.

Table – 4.5.3: Influence of determinants by significance levels *(General Model)*

Independent variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
INTERoF	.0128204	.0196218	.0173374	.0026945	.0267276	.0247903	.0103224
	(.0392771)	(.0404649)	(.0408808)	(.0379214)	(.0355331)	(.035248)	(.0337237)
SIZEoF		-.0078268	-.0088323	-.0028457	-.0073891	-.0082299	-.0056881
		(.0106878)	(.0109087)	(.0101848)	(.009471)	(.0094047)	(.0089511)
AUDFB4			.0190516	.0183572	.0331877*	.0275704	.0358512*
			(.0367736)	(.0339464)	(.0315575)	(.0314926)	(.0299673)
GE				.1286655***	.1009966***	.0928791***	.0859673***
				(.0327837)	(.0310726)	(.0312432)	(.0296969)
BAI					.3598864***	.3787901***	.3061931***
					(.0920774)	(.0920874)	(.0902527)
BAE						.0517521**	.0400177**
						(.0332784)	(.0317626)
LS							.0887795***
							(.0280336)
_cons	.6976636	.7922576	.7964778	0.2561	.6269764	.608361	.551645
	(.0539301)	(.1400345)	(.140884)	(.1345263)	(.1244646)	(.1239682)	(.1188707)
Prob > F	0.7449	0.7262	0.0108	0.0043	0.0000	0.0000	0.0000
R squared	0.0013	0.0076	0.0108	0.1672	0.2994	0.3199	0.3965
Adj R squared	-0.0105	-0.0160	-0.0250	0.1266	0.2561	0.2689	0.3431

Note: Table 4.5.3 reports the results of the OLS model. Each column represents coefficient, standard error and significance level of independent variables with the dependent variable. The last column of the table represents the total variables' coefficient, standard errors and significance levels with the dependent variable. *, **, *** indicate significance levels of less than 10%, 5% and 1%, respectively. The last rows of the table show probability coefficients and R squared coefficients. For a description of all variables, see Appendix 4.3.

Table - 4.5.4: Influence of determinants by significance levels *(Specific Model)*

Independent variable	*(1)*	*(2)*	*(3)*	*(4)*
GE	.1298698***	.1073362***	.0989547***	.0985743***
	(.031825)	(.0302696)	(.0303681)	(.030363)
BAI		.3319288***	.3543474***	.3737552***
		(.0891247)	(.0892016)	(.0911876)
BAE			.0545199**	.0813112**
			(.0326143)	(.0418714)
BAU				.03821*
				(.0374645)
_cons	.6382246	.5868184	.5485143	.5061027
	(.0243666)	(.0265738)	(.0348776)	(.0542687)
Prob > F	0.0001	0.0000	0.0000	0.0000
R ^{squared}	0.1638	0.2823	0.3057	0.3144
Adj R^{squared}	0.1540	0.2652	0.2806	0.2810

Note. Table 4.5.4 reports the results of the OLS model. Each column represents coefficient, standard error and significance level of independent variables with the dependent variable. The last column of the table represents the total variables' coefficient, standard errors and significance levels with the dependent variable. *, **, *** indicate significance levels of less than 10%, 5% and 1%, respectively. The last rows of the table show probability coefficients and R squared coefficients. Description of all variables, see Appendix 4.3.

Focusing on the above correlation tables (4.5.1 and 4.5.2), I found a good level of approval of my expected signs. In the General model, I predicted internationality, size, audit firm big-4, gain from biological transformation, biological assets' intensity, biological assets in exchange and listing status of a firm are positively correlated with the compliance level of the firm with the standards' requirements.

The general model results show that my predictions were right (Table 4.5.1). Among the variables, the listing status of a firm (*LS*), gain existence from biological transformation (*GE*) and biological assets intensity (*BAI*) variables are correlated with the compliance level (*ComINDEX*) of a firm. The variables audit firm big-4 (*AUDFB4*) and biological assets in exchange (*BAE*) are also correlated. There is only one variable (*SIZEoF*) that did not fall in line with my prediction. The Specific model correlation

(Table 4.5.2) also met my predictions. Namely, I held a group of variables (*INTERoF, SIZEoF, AUDFB4* and *LS*) highly correlated with the compliance levels and tested IAS 41 based variables' (*GE, BAI, BAE* and *BAU*) correlation. Further, I found that three out of four variables are positively correlated and one variable (BAU) is negatively correlated.

Jointly, the tables (4.5.1 and 4.5.2) show remarkable relations in both model. A gain existence from biological transformation (*GE*) and biological assets' intensity (*BAI*) are strongly correlated with the compliance level of a firm in both of the models. It suggests that gain existence from biological transformation and biological assets' intensity are strongly associated variables no matter if the other variables' correlation through General or Specific model. If we compare results, General model variables have greater influences on compliance than those of the Specific model (comparing Tables 4.5.1 and 4.5.2).

Focusing on the influence of determinants (Tables 4.5.3 and 4.5.4), there are significant impacts of independent variables on the dependent variable. The tables outline that dependent variable influenced by independent variables as significant, and strongly significant. The dependent variable is strongly influenced by biological assets' intensity (*BAI*), the gain existence from biological transformation (*GE*) and listing status (*LS*) by the outcomes of the General model. Two other variables (*AUDFB4, BAE*) also have influences on the dependent variable but are not as strong. Independent variables internationality and size of a firm (*INTERoF, SIZEoF*) has no influences on the dependent variable. The specific model outcomes show that biological assets in exchange and in use (*BAE* and *BAU*) also have influences with some extensions, the other two independent variables (*GE, BAI*) has strong influences to the dependent variable. Remarkable, the dependent variable was strongly influenced by independent variables, biological assets' intensity, gain existence and listing status variables in both of the models. The second argument is that they have strong influences even if I hold the first group of variables (*INTERoF, SIZEoF, AUDFB4* and *LS*) positively correlated in specific model.

Finally, the empirical results show that there is remarkable relationship between independent and dependent variables in firm-level coverage. And, there is relationship between the independent and dependent variable in IAS 41 based coverage too.

4.6 Summary and conclusions

I investigated the question: what are the variables that have impacts on the successful implementation of IAS 41? To do analysis, I developed eight hypotheses regarding principles of IAS 41 and firm-level variables. Based on these, I tested my hypothesis in empirical application of IAS 41. The results showed that all of the predicted variables have impacts on compliance levels of firms to the requirements, except first two variable: internationality and size (*H1* and *H2*).

Results for hypothesis 3 reveal that employing qualified audit firms or other audit firm does not make a significant contribution to the compliance level. There is a little significance. An interpretation is going to be as, compliance with requirement of the standard is not strongly influenced by employing big-4 audit firms.

Results for hypotheses 4, 5 and 8 reveal that compliance levels of the firms are strongly influenced by profitability (gain from biological transformation), biological assets' intensity and listing statuses. Firms with a higher proportion of biological assets in business are more likely to comply with IAS 41 at a higher level. Remarkably, firms listed in developed exchange markets also tend toward a higher compliance level. Practically, the developed exchange markets are the EU and American stock exchange markets. So, being listed in more developed exchange markets lends itself to compliance at a higher level. Firms with a higher level of profitability are also most likely to comply with the standard at a higher level.

Results for hypotheses 6 and 7 reveal that there is a little role of the requirements of the standard on compliance level. The biological assets in use or in exchange (*BAU* and *BAE*) are not variables that have strong influences on firms' compliance levels.

Finally, the analyses showed that all of the variables are the main determinants of compliance levels among the agricultural firms. There is some relation between the standard requirements and compliance level, but it is not as strong. There is a persisting strong relation between the firm-level variables and compliance level. Among the determinants, biological assets' intensity, gains existence from biological transformation and listing status are the explanatory variables with a strong influence. Thus, the

compliance determinants of IAS 41 are the above IAS 41- and firm-level factors in publicly listed agricultural firms.

A limitation of the study is that firms using IAS 41 are the international and bigger-sized firms. Therefore, it was difficult to examine internationality, size factors and their role on IAS 41 application in agricultural firms. Further studies can address the limitations of this study. In addition, the empirical results showed that there is strong relationship between listing status of a firm and compliance level, indicating that external users have impact on the compliance level in a higher degree. Therefore, it would also be interesting to examine the relationship between IAS 41 and investment initiatives on IAS 41 application.

Appendix

Appendix – 4.1: Compliance checklist items, relative paragraphs

#	Disclosure requirements of IAS 41	Paragraphs
1	Initial Fair value measurement and Initial gain or loss recognition	.12,.26
2	Subsequently Fair value measurement and Gain or loss recognition	.12,.26
3	Gain or loss recognition and measurement at the point of harvest of agricultural produce	.13, .28
4	Description of entity's activities	. 46.a
5	Description of biological assets (Bearer, consumable, Mature and Immature as appropriate)	.40 .41, .42, .43, .44, .45
6	A quantified description of each group of biological assets	.41
7	Financial risk management strategies related to agricultural activities	.49.c
8	The non-financial disclosure of agricultural produce harvested in accounting period	.46.b
9	Reconciliation of the gain or loss arising from changes in fair value less costs to sell	.50.a
10	Reconciliation of changes in carrying amount of biological assets, showing separately increase due to purchase	.50.b
11	Reconciliation of changes in carrying amount of biological assets, showing separately decrease attributable to sales, and biological assets classified as held for sale	.50.c
12	Reconciliation of changes in carrying amount of biological assets, showing separately decrease due to harvest	.50.d
13	Reconciliation of changes in carrying amount of biological assets, showing separately increase resulting from business combinations	.50.e
14	Disclosure of gain or loss due to physical change and due to price change *(encouraged)*	.51, .52, .53
	Additional disclosure requirements of IAS 41	
15	A description of biological assets measured under historic cost model at the end of the period	.54.a
16	An explanation of why fair value can not be measured reliable	.54.b
17	If possible, the range of estimates within which fair value is highly likely to lie	.54.c
18	Useful lives, depreciation rates used	.54.d & e
19	The gross carrying amount and accumulated depreciation/impairment losses at the beginning and end of the period	.54.f
20	Reconciliation of changes in carrying amounts between the beginning and end of the period showing impairment losses and reversals of impairment losses	.50 & .55.a,b

21	Reconciliation of changes in carrying amounts between the beginning and end of the period showing depreciation	.55.c
22	Headings showing the carrying amount of biological assets in separate item lines in statement of financial positions	IAS-1.54.f
23	Headings showing aggregate gains and losses in separate item lines in statement of profit or loss	01.85 A.a,b
24	A description of fair value hierarchy by its levels within the each group of biological assets	IFRS-13
25	The assumptions on future prices and costs, as well as discoursing a sensitivity analyse with multiple parameters	IFRS-13

Appendix – 4.2: The composition of the firms by locations

Country	**Numbers**	***Proportion (%)***	**Country**	**Numbers**	***Proportion (%)***
Argentina	1	1,149425	Portugal	1	1,149425
Australia	2	2,298851	Republic of Mauritius	1	1,149425
Austria	1	1,149425	Russia	4	4,597701
Brazil	6	6,896552	S. Africa	6	6,896552
Canada	3	3,448276	Sri Lanka	1	1,149425
China	4	4,597701	Spain	1	1,149425
Cuba	1	1,149425	Sweden	2	2,298851
Denmark	1	1,149425	Singapore	3	3,448276
Finland	3	3,448276	Cyprus	3	3,448276
Greece	2	2,298851	Swaziland	1	1,149425
France	1	1,149425	Taiwan	1	1,149425
Germany	2	2,298851	UK	13	14,94253
Indonesia	2	2,298851	Ukraine	4	4,597701
Luithiana	1	1,149425	USA	1	1,149425
Italy	1	1,149425	Zambia	1	1,149425
Mexico	1	1,149425	Zimbabwe	1	1,149425
Netherlands	2	2,298851	**Total:**	**87**	**100**
New Zealand	1	1,149425			
Norway	6	6,896552			
Philippines	2	2,298851			

Appendix – 4.3: Hypotheses, measurements and expected signals

Firm characteristics	Measurements used	Expected signals
Internationality	*INTER* = natural logarithm of number of firm segments located in foreign country	Positive
Size	*Size* = natural logarithm of firm's total assets	Positive
Auditor type	*AUD* = 1 if the auditor is Big – 4, and 0 otherwise (dummy variable)	No significantly positive
Gain existence	*GE* = gains/loss from biological transformation/total biological assets	Positive
Biological assets intensity	*BAI* = (biological assets) / total assets	No significantly positive
Biological assets nature	*BAU* = 1 if firm has in-use biological assets, and 0 otherwise, (dummy variable)	Negative
	BAE = 1 if firm has in-exchange biological assets, and 0 otherwise (dummy variable)	Positive
Listing status	*LS = Variable based on whether a firm is listed in one or more than a foreign stock exchange (binary variable)*	Positive

Appendix – 4.4: Compliance Index of the firms

Company name	Index awarded
AB Linas Agro Group	0.82
ABICO Holding Public Company Limited	0.75
Agriterra Limited	0.70
Astral Foods Limited	0.43
Atria Oyj	0.26
C.P. Pokphand Co. Ltd.	0.69
Camellia PLC	0.85
China Milk Products Group Limited	0.94
China Modern Dairy Holdings Ltd	0.88
Country Bird Holdings Limited	0.71

Crookes Brothers Ltd.	0.82
FirstFarms A/S	0.83
Genus plc	0.93
Granswick	0.65
Industrias Bachoco S.A.B. de C.V.	0.57
Innscor Africa Ltd.	0.74
JBS S.A.	0.48
JG Summit Holdings, Inc.	0.56
Livestock Improvement Corporation Limited	0.81
M.P. Evans Group plc	0.94
Marfrig Alimentos SA	0.52
Mriya Agro Holding Public Limited	0.82
Nutreco N.V.	0.77
Jamaica Broilers Group Limited	0.53
PGG Wrightson Limited	0.56
Ros Agro PLC	0.94
Zambeef Products Plc	0.62
Acadian Timber Corp.	1.0
UPM-Kymmene Oyj	0.82
Golden Agri-Resources Ltd.	0.83
Anglo Eastern Plantations plc	0.82
Asian Citrus Holding plc	0.78
Asian Bamboo AG	0.81
Camellia PLC	0.71
Crookes Brothers Ltd.	0.75
Forest England	0.52
Klabin S.A.	0.75
M.P. Evans Group plc	0.87
Masonite Africa Ltd.	0.70
Massimo Zanetti Beverage	0.38
Mondi plc	0.67
Inch Kenneth Kajang Rubber plc	0.29
Phaunos Timber Fund Ltd.	0.68

SCA Hygiene Products SE	0.69
SEMAPA	0.63
Svenska Cellulosa Aktiebolaget SCA	0.69
Austevoll Seafood ASA	0.65
Grieg Seafood ASA	0.70
Lerøy Seafood Group Asa	0.65
Morpol ASA	0.73
Nireus Aquaculture SA	0.82
Norway Royal Salmon AS	0.68
Piscanova S.A	0.30
PF Bakkafrost	0.81
SalMar ASA	0.71
Selonda Aquaculture AEGE	080
Associated British Foods plc	0.59
Agroton Public Limited	0.86
AgroGeneration, SA	0.94
Amtheon Agro	0.76
Avi Ltd.	0.59
Black Earth Farming Limited	0.74
Camposal Holdings PLC	1.0
FYFFES plc	0.59
Kernel Holding S.A.	0.76
Lonrho Plc	0.40
Minerva S.A	0.47
Produce Investments PLC	0.81
Terra Mauricia Ltd.	0.64
Trigon Agri A/S	0.94
Village Farms International, Inc.	0.47
Olam	0.79
Adecoagro S.A.	0.81
R.E.A. Holdings Plc	0.59
Kencana Agri Limited	0.78
Dekeloil Public Ltd	0.69

Westrn Forest Products Inc.	0.87
SIPH Plc.	0.76
Yamada Green Recourses Limited	0.86
Universal Robina Corp.	0.72
TFS Corp.	0.73
Tongaat Hulett	0.58
PJSC Cherkizovo Group	0.87
Tassal Pl.	0.75
York Timbers	0.88
The Scottish Salmon Company PLC	0.71
United Food Holdings Ltd.	0.71

Appendix 4.5: Regression results

ComINDEX INTERoF SIZEoF AUDFB4 GE BAI BAE LS, statistics (mean min min median sd p5 p95)

stats	ComINDEX	INTERoF	SIZEoF	AUDFB4	GE	BAI	BAE	LS
mean	.7143552	1.30196	13.21728	.6321839	.5862069	.194667	.7126437	.7126437
max	1	2.197225	16.8205	1	1	.7419927	1	2
min	.2545455	0	7.939872	0	0	.0035778	0	0
p50	.7391304	1.386294	13.21458	1	1	.1498836	1	1
sd	.1589481	.4386667	1.660832	.4850064	.4953675	.1682425	.4551526	.5262426
p5	.4	.6931472	10.75558	0	0	.0099984	0	0
p95	.9411765	1.94591	16.50108	1	1	.5256882	1	1

```
. regress ComINDEX BAU INTERoF SIZEoF AUDFB4 GE BAI BAE LS
```

Source	SS	df	MS	Number of obs =	87
				F(8, 78) =	6.67
Model	.882453618	8	.110306702	Prob > F =	0.0000
Residual	1.29029272	78	.016542214	R-squared =	0.4061
				Adj R-squared =	0.3452
Total	2.17274634	86	.025264492	Root MSE =	.12862

ComINDEX	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
BAU	.0440894	.0392304	1.12	0.265	-.0340123	.1221912
INTERoF	-.0010256	.0351492	-0.03	0.977	-.0710024	.0689512
SIZEoF	-.0023185	.0094257	-0.25	0.806	-.0210837	.0164467
AUDFB4	.0415364	.0303422	1.37	0.175	-.0188702	.1019431
GE	.0880491	.0297053	2.96	0.004	.0289103	.1471879
BAI	.3215959	.0911392	3.53	0.001	.1401518	.5030401
BAE	.0694225	.0411106	1.69	0.095	-.0124224	.1512674
LS	.0908489	.0280475	3.24	0.002	.0350106	.1466873
_cons	.4688359	.1396871	3.36	0.001	.1907402	.7469317

```
. regress ComINDEX GE BAI BAU BAE
```

Source	SS	df	MS	Number of obs =	42
				F(4, 37) =	2.81
Model	.207227776	4	.051806944	Prob > F =	0.0394
Residual	.682764238	37	.018453088	R-squared =	0.2328
				Adj R-squared =	0.1499
Total	.889992014	41	.021707122	Root MSE =	.13584

ComINDEX	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GE	.0981728	.0434965	2.26	0.030	.0100405	.186305
BAI	.3120325	.1592737	1.96	0.058	-.0106866	.6347516
BAU	.0646845	.0520597	1.24	0.222	-.0407984	.1701674
BAE	.0527149	.0629608	0.84	0.408	-.0748558	.1802857
_cons	.5605932	.0866796	6.47	0.000	.3849636	.7362229

Summary and Conclusions

Accounting has been used as a universal language to provide users with useful information regarding many trends of a business. Uzbekistan is also using it for the same purpose, and is developing it along with development strategies. The IASB's goal of the international harmonization of accounting standards aims at assuring the world that under a single set of standards, similar transactions are treated and reported in the same way by companies around the world, resulting in globally comparable financial statements.

The aim of my research study is to identify accounting and non-accounting factors' role in the IAS 41 application, and to predict IAS 41 implementation in the case of Uzbekistan. I conducted three standalone rule-principles and post-IAS 41 application based studies. Accordingly, I have addressed three research questions that have been tackled by a qualitative approach. The research questions addressed in the research chapters II-IV outlined below:

1. **Research Chapter II:** What are the similarities and differences between the rules prescribed in IAS 41 and Uzbek GAAPs for agricultural activity?
2. **Research Chapter III:** What are the difficulties in the IAS 41 "Agriculture" application in practice?
3. **Research Chapter IV:** What are the factors that have influence on the compliance levels of the agricultural firms?

The first research question is related to the accounting rules for agricultural activities prescribed in IAS 41 and in Uzbekistan's GAAP. The next two research questions are related to the international practices of IAS 41: the difficulties from the perspectives of the preparers; the compliance determinants of IAS 41.

The research objective of Chapter II is to identify the similarities and differences between IAS 41 and Uzbekistan's GAAP. Prior studies have found that there is an international diversity in IFRS practice which has occurred through the different accounting practices (Salvador et al. 2008; Francis et al., 2008; Leuz et al., 2010; Nobes 2011; Elad et al. 2011; Henke et al., 2013). Some of them related to the IAS 41 application (Elad et al. 2011; Henke et al., 2013) and found local policies as factors that affect IAS 41

implementation (Czech Republic, UK, France and Australia). The Chamber of the Auditors of Uzbekistan declared that the Uzbek GAAP is significantly different from IFRS in their recent discussions. But, they did not bring up any issues regarding the identity of differences. I compared the rules regarding the definition, recognition, measurement, presentation and disclosure principles of IAS 41 with Uzbek GAAP. My comparative analysis showed that the main differences between the Uzbek model and IAS 41 arise in the definition and recognition principles. The Uzbek GAAP does not specify a definition for the biological assets, for agricultural activity and for the gains or losses therein. Accordingly, the Uzbek GAAP doesn't recognize any increments or decrements by way of biological transformation. It also doesn't show any relative presentation of the gains or losses, and any other relating disclosures. Furthermore, my comparative analysis also showed that the Uzbekistan's specific policies regarding income measurement (Statute #54) do not allow the preparation of the financial statements to include any unrealised earnings in the profit or loss account for the year. The Uzbek accounting for agricultural activities is similar with accounting treatments shown in IAS 41. The comparative analysis revealed above differences and they are related to definition and recognition principles mostly. Relating documents implying the differences was as presented in 2.5 section of dissertation.

The Chapter III explored the difficulties linked with the use of IAS 41 in practice. Prior studies found that the firms are not agree with the recognition of unrealised earnings in the IAS 41 application (Elena et al., 2008; Elad et al., 2011; Fischer et al. 2013; Sarmite et al., 2013). The studies also found that fair value measurements in the present condition is difficult, other requirements of the standard are observable in practice (Eduardo et al., 2012). Overall, the prior studies addressed some issues of IAS 41 application and found a few difficulties.

I used the survey method to explore difficulties in IAS 41 application in practice. The survey questionnaire covered items regarding the IAS 41 requirements and addressed with IAS 41 practical difficulties. The survey respondents comprised 492 professionals that involved in the practical use of IAS 41. Unfortunately, I received 37 useable responses with 53 commentaries (8 %). To analyse rankings and relative commentaries, I used the

Frequency test, T test and Wilcoxon tests. The analysis jointly showed that most of the difficulties arise at fair value measurement - when there are no market prices, in valuation periods, in the trust of external users. Specifically, the analysis showed low rankings in the recognition and measurement requirement for the bearers of biological assets. The professional stated that the bearer biological assets' fair value measurement and gains or losses recognition under the requirements is clearly unreliable. The second, analysis showed some observations and relative commentaries for the non-bearers of biological assets as well. The difficulty arises in early life stages of the non-bearers of biological assets at fair value measurement by other references (Income & Cost approaches). The third, analysis revealed that a value measurement requirement in each reporting period is difficult. The four, the few difficulties arise in choosing the method and bases in the fair value measurement of agricultural produce. The most of reasoning was that there is the difficulty when there are no quoted market prices. By the other references of fair value measurement, unreliable figures will be generated and fair value of the biological assets becomes unreliable. The commentaries analysis showed an additional difficulty, which is that the external users of the financial statements do not take the fair value information into their analysis, due to them understanding that there is a subjectivity involved in fair value calculation.

The Chapter IV explored the IAS 41 compliance determinants in example of 87 agricultural firms. Prior studies found the country- and firm-level variables as the influencing factors on voluntary choices of firms to adopt the IFRS (Francis et al., 2008; Helena et al., 2012; Martin et al. 2012; Hans et al., 2015). The IAS 41-based studies dealt with fair value issues and found mostly valuation-related findings. There were no studies that particularly deal with the IAS 41 compliance determinants. I developed hypothesises based on general IFRS studies and my knowledge, and tested them in the worldwide application of IAS 41. The hypothesis regarded the variables that have an influence on the compliance level of firms: the internationality of a firm; the size of a firm; the employed audit type; gain existence from biological transformation; the biological assets' intensity; biological assets' nature; and the listing status of a firm. I used the OLS test method to test the hypothesis. The results showed the variables in both a positive and in negative

association with IAS 41 compliance in practice. The compliance with IAS 41 is high: when a firm has a higher biological assets intensity in total assets (0.05% sig level); when a firm is listed on a developed exchange market (such as -EU, USA, Australia, Japan etc. (0.05% sig. level)) and when a firm has gains arising from biological transformation (0.05% sig level). The compliance level was higher when a firm audited by a big-4 audit firm (0.10% sig level). The compliance level also was higher when a firm holds non-bearer biological assets (0.10% sig level). The results also showed that the size and internationality of a firm has a positive correlation with compliance but is not significant. This might be because all of the firms using IAS 41 are similarly-sized, and international.

In conclusion, the research showed substantial support regarding IAS 41 and its application. The accounting framework for agricultural activities is limited in Uzbekistan. The Uzbek model recognises the biological assets and the agricultural produce as inventories and PPEs respectively. The main aspect of the Uzbek model is that it does not focus to the role of biological transformation of biological assets/agricultural produce in income generation. Hence, it shows a framework that has significance in accounting for inventories and PPEs. Uzbekistan must also consider local policies (Statute #54) in the case of IAS 41 implementation. In contrast, IAS 41 successful application may not be achieved, or the users of the financial statements may misinterpret accounting information. Further, the second research study revealed that practical professionals in a good agreement with the IAS 41 application in general. The recognition and measurement of the bearers of biological assets becomes a particular difficulty. Other difficulties of IAS 41 arise in relation fair value measurement by other references, valuation periods, and an attitude of external users. Finally, the third research study showed that all of the variables (in Chapter IV) correlated with the compliance levels of the firms. The variables are the compliance determinants of IAS 41 “Agriculture”.

To my knowledge, this is the first study that has linked with IAS 41 application in a wider coverage. My findings support standard setting framework that linked with the IAS 41 application, and, they support Uzbekistan’s particular case. I predict that a successful implementation of the IAS 41 can be achieved by addressing the above

determinants, difficulties in the use of the standard, and the differences between the IAS 41 and Uzbek GAAPs. As a result, there is a success of IAS 41 implementation.

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