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The University of Southern Mississippi

U.S. GAAP Versus IFRS: Reconciling Revenue Recognition Principles in the Software
Industry

By

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A Thesis

Submitted to the Honors College of
The University of Southern Mississippi in Partial Fulfillment
of the Requirements for the Degree of Bachelor of Business Administration
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Abstract

In the world of financial accounting, a demand for universal standards exists. The two primary standard setting boards, The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), have made some strides in developing universal standards, but they still are not fully reconciled in the area of **software revenue recognition**. The main reason the two standards are not reconciled in the area of **software revenue recognition** is that a difference exists in the *critical event* between the standards. The *critical event* refers to the exact time a company recognizes revenue on its books. The purpose of the study is to determine how close the two standards are becoming to being fully reconciled in the area of **software revenue recognition** and the two standards' *critical event*.

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Introduction

In the discipline of financial accounting, a demand for universal standards exists. The reasons for the existence of this demand range anywhere from the growth of cross-border investing and capital flows to additional costs companies incur when preparing their financial statements. In the world market today, two significant systems are used for financial reporting - International Financial Reporting Standards (IFRS) and United States Generally Accepted Accounting Principles (U.S. GAAP). The Financial Accounting Standards Board (FASB) sets U.S. GAAP, and the International Accounting Standards Board sets IFRS. Because of the demand for uniform accounting standards, U.S. GAAP and IFRS are very similar, but some differences exist. One of the major differences between the two standards concerns the timing of recognition of revenue. The specific industry in which these differences become most evident is the software industry.

Since the differences between revenue recognition principles between U.S. GAAP and IFRS are well documented conceptually, my first focus on the problem is to evaluate the historical perspective surrounding the recognition of revenue. The seminal article that details the current standard setting stage in accounting is Stephen A. Zeff's *The Rise of Economic Consequences*. Zeff (1978) describes *economic consequences* as accounting reports that have a significant impact on decision making to businesses, governments, unions, investors, and creditors. Zeff also describes how the accounting reports have been subject to increasing *outside forces*. These *outside forces* are individuals and groups who, in the past, have not shown any interest in the setting of accounting standards, and they invoke arguments contrary to what accountants have traditionally employed in setting standards. An example of the traditional argument for accounting was to be as neutral as possible as described by the FASB. Zeff argues that because of *economic consequences*, these traditional assumptions are being severely questioned. Zeff concludes that the Financial Accounting Standards Board (FASB) must take these *economic consequences* into consideration, mostly because of the possible adverse consequences possible accounting standards could have on economic and social policies pursued by the government (Zeff, 1978).

Zeff's argument in a historical context is very relevant to accounting standard setting today since it was written in the same era of standard setting for accounting. The

era is known as the *decision usefulness* era. The *decision usefulness* era began around the time when Zeff wrote his piece on *economic consequences*. According to FASB *Concepts Statement No. 8* (2010), the purpose and objective of *decision usefulness* is to provide financial information about the firm that is useful to present and potential investors and other creditors. This will assist firms in making economic decisions about providing resources to the firm (FASB, 2010). Zeff's article sets the stage for the potential consequences of standard setting from the concept of *decision usefulness*. The financial statements in both U.S. GAAP and IFRS are specifically focused on the idea of *decision usefulness*. For example, on the balance sheet in both standards, the company lists its assets, liabilities, and stockholders' equity. From that list, potential investors and creditors can see the firm's solvency and liquidity; thus, from this information they can make the appropriate economic decisions about whether to invest in the firm. In terms of revenue recognition, it is very important to understand the concept of *decision usefulness*, since both U.S. GAAP and IFRS apply the concept to their own standard-setting decisions. The possible consequences described in Zeff's paper can explain much of the reason behind why U.S. GAAP and IFRS still differ in this revenue recognition area. Zeff describes one of the consequences is that accounting standards are becoming less neutral; thus, this can allow for greater subjectivity when it comes to some areas. One possible area that can possess some of the subjectivity Zeff was describing could be revenue recognition.

While standard setting in accounting was transitioning to the idea of *decision usefulness*, another important historical note was that a push was made for a conceptual framework. A conceptual framework is essentially an attempt to establish a common set of rules for all companies to follow when preparing their financial statements. Although there was a push for a conceptual framework well before the *decision usefulness* era, almost all of the statements published were during the *decision usefulness* era. The conceptual framework adopted by the Financial Accounting Standards Board (FASB) was based almost entirely on *decision usefulness*. In Stephen A. Zeff's (1999) article *The Evolution of the Conceptual Framework for Business Enterprises in the United States*, he describes the evolving state of the conceptual framework, with the most crucial point coming when the FASB decided to tackle the idea of a conceptual framework based on the Trueblood Committee Report. The report embraced the idea of *decision usefulness* (Zeff, 1999). The simultaneous historical development of the conceptual framework and

the *decision usefulness* approach helped spread the idea of *decision usefulness* to all facets of the standard setting environment in financial accounting. Every rule and statement in U.S. GAAP and later IFRS were based on the idea of *decision usefulness*.

From a historical perspective, it has become clear to me that revenue recognition can have some subjectivity since the current standard setting environment of accounting is in the *decision usefulness* era. In order to understand the central issue of why revenue recognition is not completely reconciled yet under U.S. GAAP and IFRS, it is crucial for businesses to understand the *decision usefulness* approach and the *economic consequences* associated with it. The entire conceptual framework for standard setting in accounting is rooted in the idea of *decision usefulness*.

With the historical perspective in mind and how revenue recognition has a subjective past, I intend to evaluate how reconciled U.S. GAAP and IFRS are regarding revenue recognition, specifically focusing on the software industry. Because of the increased demand for universal standards, it becomes very important to show just how close U.S. GAAP and IFRS are to having full reconciliation regarding revenue recognition. By indicating how reconciled the two standards are becoming, it can be of much use to software companies by helping them evaluate where they need to be in the future when they start preparing their financial statements.

Literature Review

The scholarly literature concerning how U.S. GAAP and IFRS recognize revenue mostly focuses on the conceptual differences in principles. Along with the actual FASB and the International Accounting Standards Board (IASB) concepts and statements, many scholars in accounting have tried to indicate the major fundamental differences in how each recognizes revenue. Along with these articles that attempt to show the fundamental, conceptual differences in revenue recognition principles, many articles also evaluate the current situation regarding the efforts by the FASB and the IASB to converge the two standards.

These articles that try to specifically describe the fundamental differences between U.S. GAAP and IFRS are very important, but there also are many other scholarly pieces regarding recognizing revenue from a historical perspective. The seminal article that describes how companies should recognize revenue is John H. Myers's *The Critical Event and Recognition of Net Profit*. In his article, Myers (1952) describes profit as being earned during an operating cycle. The cycle of buying inventory with cash to eventually resell makes up the operating cycle. The problem that now faces the company is for that company to decide at what point they recognize revenue. Should revenue be recognized at a specific point in the cycle, or should it be spread over the cycle in some manner? This specific point where a company decides to recognize revenue is what Myers refers to as the *critical event*. Myers states for some companies it is easy to define the *critical event*. For magazine publishers, they recognize revenue in the period the magazines are distributed. The exchange is fairly simple: the sale occurs, and cash is received at the time the subscription is booked (Myers, 1952). For software companies, the *critical event* is not that simple to define. For example, because of bundling of services and multiple-deliverable arrangements, it becomes more difficult to define the *critical event* for software companies when they recognize revenue.

Along with these more historical articles, there are also some articles that describe basic differences in U.S. GAAP and IFRS. The most important of these basic differences is that U.S. GAAP tends to be more rules-based, while IFRS tends to be more principles-based. All of these articles' methodologies vary among comparative analyses, case studies, and descriptive analyses.

In terms of my specific topic of revenue recognition differences in software companies between U.S. GAAP and IFRS, it would be best to start with the historical papers. These historical papers will address the conceptual framework of the FASB, which is based on the very important approach of *decision usefulness*. The next step is under the conceptual framework to evaluate FASB *Concepts Statement* No. 5 regarding recognition and measurement concepts, including revenue recognition. Defining Myers's *critical event* will also be crucial in recognition and measurement, especially in terms of software revenue recognition. Next, the literature will focus on contrasting revenue recognition principles in general between the IASB and FASB, including how the two are trying to converge. Finally, the literature will correlate all of these components to recognizing software revenue for both U.S. GAAP and IFRS.

Conceptual Framework

The first important scholarly papers that evaluate the recognition of revenue involve the institutional efforts to establish a conceptual framework in the field of financial accounting. In *The Evolution of the Conceptual Framework For Business Enterprises in the United States*, Stephen A. Zeff explains that the institutional efforts to establish a conceptual framework in the United States first began with the Paton and Littleton monograph in 1940 and later with the two Accounting Research Studies by Moonitz and Sprouse in 1962-1963. In 1966, the American Accounting Association issued a report that advocated the *decision usefulness* approach to the conceptual framework. The report eventually laid the foundation for the conceptual framework of the FASB, which published six concepts statements from 1978 to 1985 (Zeff, 1999).

Zeff's article described the basic historical development of the conceptual framework. Most importantly, the article described the simultaneous development of the conceptual framework along with the approach of *decision usefulness*. The actual concepts of the FASB conceptual framework are well presented in Paul A. Pacter's (1983) *The Conceptual Framework: Make No Mystique About It*. Pacter's article describes the FASB conceptual framework as not being a mystical image, but an application of accounting concepts to real life scenarios. The first concept the FASB published was called *Concepts Statement* No. 1. This statement concerned the objectives of the financial statements. The statement defined the primary users of general purpose financial statements to be investors, creditors, and other outsiders. The overriding objective of financial reporting is to provide information useful in making investment,

credit and similar decisions. In other words, the statement basically established firmly the approach of *decision usefulness*. *Concepts Statement No. 2* identifies the qualitative characteristics of accounting information. Relevance and reliability are the two primary qualities that make accounting information useful in decision making. *Concepts Statement No. 3* defines the elements of financial statements of business enterprises. The basic elements are: assets, liabilities, owners' equity, revenues, expenses, gains, losses, and comprehensive income. *Concepts Statement No. 4* addresses financial reporting for non-business organizations and finally, *Concepts Statement No. 5* addresses the complicated issue of recognition and measurement (Pacter, 1983). Revenue recognition is discussed under *Concepts Statement No. 5*.

A further evaluation of the FASB conceptual framework reveals that the conceptual framework has much subjectivity and also many imperfections and benefits. These benefits and imperfections of the FASB conceptual framework are described very well in David Solomons's (1986) *The FASB's Conceptual Framework: An Evaluation*. One of the benefits Solomons describes is the FASB conceptual framework makes economizing of effort possible. In other words, in *Concepts Statement No. 3* the definitions of the elements of the financial statements are already formulated; thus, accounting problems should not be thought through again each time the board encounters them. Another benefit in the FASB conceptual framework is there is more consistency among the standards than if the standards were formulated independently of one another. The FASB conceptual framework also aids in communication. For example, the FASB conceptual framework defines words such as *materiality*, which in the past did not always mean the same thing to all accountants. A final benefit the FASB conceptual framework provides is the defense against politicization. The FASB is able to claim that its standards were derived from a coherent body of concepts instead of from a governmental agency (Solomons, 1986).

Despite the benefits, Solomons further describes that there also are many imperfections concerning the FASB conceptual framework. For example, in *Concepts Statement No. 5* the FASB suggests that the 'historical exchange price' is more descriptive of the amounts in the financial statements, while 'transaction-based system' would be a better description of the present accounting system. The question now becomes whether the FASB conceptual framework needs a radical change or just a fine-tuning. Solomons concludes that the FASB has not done enough changing in the

conceptual framework that is necessary, particularly involving *Concepts Statement No. 5*. Solomons describes that the fundamental weakness of *Concepts Statement No. 5* is in its lack of discussion of the choice of attributes to be measured in financial statements, such as historical cost, current cost, or net realizable value (Solomons, 1986). These apparent imperfections in *Concepts Statement No. 5* have led to even further complications. In an article by Colleen Cunningham (2009) called *FASB, IASB Plod Toward Convergence on Revenue*, there are more than 180 rules for revenue recognition, including some that contradict others (Cunningham, 2009).

From the FASB conceptual framework, the foundation for revenue recognition is apparent. The conceptual framework is rooted in the idea of *decision usefulness*; thus, when the FASB was evaluating revenue recognition, it was approaching the area from the standpoint of the external user. Another important revelation about the conceptual framework in terms of revenue recognition is that ever since *Concepts Statement No. 5* was published, there have been discrepancies concerning not only what attributes that are applicable to recognition of revenue, but also when to recognize revenue; thus, that is why the FASB now has over 180 rules for revenue recognition. In order to understand what the FASB says about recognizing revenue, knowing what *Concepts Statement No. 5* states

about recognition and measurement concepts in general, including revenue recognition, is crucial to understand.

FASB *Concepts Statement No. 5* – Recognition and Measurement

In order to better understand some of the discrepancies in *Concepts Statement No. 5* discovered by some of the previous scholars in the field of financial accounting, an examination at the FASB's terminology is crucial. The first crucial definition is how the FASB defines recognition. FASB *Concepts Statement No. 5* (1984) states,

Recognition is the process of formally recording or incorporating an item into the financial statements of an entity as an asset, liability, revenue, expense, or the like. An item and information about it should meet four fundamental recognition criteria to be recognized and should be recognized when the criteria are met. The criteria are: Definitions- the items meet the definition of an element of the financial statements, Measurability- it has a relevant attribute measurable with sufficient reliability, Relevance- the information about it is capable of making a

difference in user decisions, and Reliability- the information is representationally faithful, verifiable, and neutral (FASB, par. 6, 63).

The FASB's definition of recognition seems pretty straightforward, but where it becomes a little more complicated is when the FASB tries to define Measurability and its attributes. *Concepts Statement No. 5* further states,

The asset, liability, or change in equity must have a relevant attribute that can be quantified in monetary units with sufficient reliability. Items currently reported in financial statements are measured by different attributes, depending on the nature of the item and the relevance and reliability of the attribute measured. Five different attributes of assets (and liabilities) are used in present practice: Historical cost, Current cost, Current market value, Net realizable Value, and Present value of future cash flows. The different attributes often have the same amounts, particularly at initial recognition. As a result, there may be agreement about the amount but disagreement about the attribute being used. 'Historical exchange price' is more descriptive of the quantity generally reflected in the financial statements in present practice (and 'transaction-based system would be a better description of the accounting model than 'historical cost system') (FASB, par. 65-69).

Obviously, by having all of these different attributes, some disagreement can exist when it comes to the recognition criteria of Measurability; also, the FASB states an attribute as being more indicative of the financial statements, but instead another attribute is more indicative of our present accounting system. There are simply too many factors that contribute to just one criterion for recognition. Inevitably, these many factors cause revenue recognition to be very complex in nature. Before the FASB, there were scholars in financial accounting who tried to identify the timing of recognition of revenue. One of these scholars, John H. Myers, tried to identify the moment in time, or the *critical event*, when companies should recognize revenue. For example, Myers (1952) in his article *The Critical Event and Recognition of Net Profit*, suggests that profit is earned at the moment of making the most critical decision or performing the most difficult task in the cycle of a complete transaction. One example could be in the merchandising business when merchandisers recognize revenue when they sell the item, because a transfer was made, and there was objectivity. The *critical event* in the merchandising industry would be when the merchandiser sells the item (Myers, 1952). The scenario is not always that

simple since in some cases, there may be a different ‘critical event.’ The FASB tries to define the *critical event* in terms for every entity. When recognizing revenue *Concepts Statement* No. 5 states,

Revenues and gains of an enterprise during a period are generally measured by the exchange values of assets (goods and services) or liabilities involved, and recognition involves consideration of two factors, (a) being realized or realizable and (b) being earned, with sometimes one and sometimes the other being the more important consideration. Revenues and gains generally are not recognized until realized or realizable. Revenues and gains are realized when products, merchandise, or other assets are exchanged for cash or claims to cash. Revenues and gains are realizable when related assets received or held are readily convertible to known amounts of cash or claims to cash. Revenues are not recognized until earned. An entity’s revenue-earning activities involve delivering or producing goods, rendering services, or other activities that constitute its ongoing major or central operations, and revenues are considered to be earned when the entity has substantially accomplished what it must do to be entitled to the benefits represented by the revenues (FASB, par. 83-84).

According to the FASB, the *critical event* is whenever the revenue is realized or realizable and earned. The type of entity will determine when revenue is recognized, or that *critical event*. By reading what the FASB actually says, there are many factors to consider. Many scholars in the field of financial accounting have all struggled in trying to make sense of all of these factors. The factors described in the FASB have developed much differently in the IASB. The specific differences in revenue recognition principles between the FASB and the IASB are well documented by scholars in financial accounting. Much of the focus of the literature today involving revenue recognition involves these specific differences, and how the FASB and IASB are trying to reconcile on revenue recognition principles.

Revenue Recognition – IASB and the FASB

There are many scholarly articles in the field of financial accounting that describe the conceptual, fundamental differences in revenue recognition between U.S. GAAP and IFRS. One article that conducts a comparative analysis of the two very effectively is Hana Bohusova and Danuse Nerudova’s (2009) *U.S. GAAP and IFRS Convergence in the Area of Revenue Recognition*. The background to the article is that in 2001, the IASB was

given a strong mandate to develop a single set of high-quality accounting standards. The efforts of the mandate were to attempt to spread IFRS throughout the world through the FASB – IASB Convergence Program. The areas of revenue recognition where the two standards differ involve revenue recognition criteria, deferred payments, and long-term contracts revenue recognition. Under U.S. GAAP, in order to recognize revenue, revenue must be realized or realizable and must be earned. Under IFRS, if it is probable that future economic benefits will flow to the enterprise, revenue can be measured reliably. Under deferred payments, in U.S. GAAP discounting to present value is not required; while under IFRS, value of revenues to be recognized is determined by discounting. Finally, under long-term contracts U.S. GAAP allows a percentage of completion method; while IFRS allows the percentage of completion method and the zero profit method (Bohusova and Nerudova, 2009).

The Bohusova and Nerudova article evaluates the critical differences between U.S. GAAP and IFRS very well. Many other articles evaluate how the two standards are trying to converge. In terms of the continuing efforts to converge the two standards, Frank E. Ryerson's, (2010) article *Major Changes Proposed to GAAP for Revenue Recognition* details that in September of 2002, FASB and the IASB jointly adopted the Revenue Recognition Project. The goal of the project was to develop one revenue recognition model that would be consistent for both U.S. GAAP and IFRS. Two possible approaches were proposed that could possibly help converge the two standards. One approach would be the asset and liability approach. The asset and liability model would rely on the recognition and measurement of assets and liabilities, not recognize deferred debit and deferred credits, and lead to a faithful and consistent depiction of transactions. The other approach would be the earnings approach. The earnings model would lead to recognition of deferred debit and deferred credits that do not meet the criteria of an asset or liability and would account for revenue directly without consideration of how assets and liabilities fluctuate during exchanges with customers. The earnings model was the model that was eventually adopted by the FASB and the IASB (Ryerson, 2010).

In today's current accounting standard-setting environment, there are still many problems that face the convergence of U.S. GAAP and IFRS. In an article by Deborah L. Lindberg and Deborah L. Seifert (2010) called *A New Paradigm of Reporting*, they describe one of the main, fundamental differences between U.S. GAAP and IFRS is that U.S. GAAP is more rule-based, while IFRS is more principles-based. The difference

implies that IFRS requires more judgment on the companies' part. The differences in approaches to financial reporting between U.S. GAAP and IFRS have still led to differences in revenue recognition even after the adoption of the earnings model. The major difference that still exists in revenue recognition is that U.S. GAAP requires persuasive evidence of a sale arrangement, reasonable collectability of the revenue, determinable prices, and occurrence of the delivery of goods and services rendered. IFRS requires future economic benefits as well as revenues and costs that can be reliably measured (Lindberg and Seifert, 2010). The two very different approaches of rules-based versus principles-based financial reporting have currently led to a huge gap in revenue recognition between the two standards.

Despite the huge gap between the two standards, there are still efforts being made to try to reconcile the two standards. Steven M. Mintz in the article *Proposed Changes in Revenue Recognition Under U.S. GAAP and IFRS* (2009) describes that in September 2002, the IASB and FASB announced plans to achieve full convergence in a document known as the Norwalk Agreement. The Securities and Exchange Commission (SEC) established a timeline for adoption of the Norwalk Agreement by 2014 for large accelerated filers, and by 2016 for small, non-accelerated filers. If the Norwalk Agreement is adopted, Mintz suggests many changes would take place. One change would be to involve the use of contract-based revenue. The change would be that the company would only recognize revenue during construction only if the customer controls the item as it is constructed. Another change would involve the capitalization of costs. The change that the contract origination costs causes is that the costs would be expensed unless they qualify for capitalization under other standards (Mintz, 2009).

Since the SEC has still not taken action concerning the Norwalk Agreement, steps are being made today. In Matthew G. Lamoreaux's (2012) article *A New System for Recognizing Revenue*, there are current revisions to the 2008 Proposed Accounting Standards update regarding revenue recognition. The new proposal is expected to be implemented no later than January 1, 2015. The steps being taken now to implement the new proposal first involve identifying the contract with the customer. The next step is to identify the separate performance obligations in the contract and then determine and allocate the transaction price. Finally, the proposal will recognize revenue when a performance obligation is satisfied (Lamoreaux, 2012).

The convergence of the FASB and the IASB regarding revenue recognition has been a long and difficult process, and the scholarly literature of accounting standard setting today reflects these complications. There are still major differences in revenue recognition between the two standards, especially regarding software revenue recognition.

Software Revenue Recognition

The actual standards for when to recognize software revenue vary greatly between U.S. GAAP and IFRS. Bohusova and Nerudova in their article *U.S. GAAP and IFRS Converge in the Area of Revenue Recognition* state,

The Accounting Standards Executive Committee (AcSEC) issued Statement of Position – SOP 97-2, Software Revenue Recognition, to provide guidance on when revenue on software arrangements should be recognized and in what amounts. The SOP notes that the rights transferred under the software licenses are substantially the same as those transferred in sales of other kinds of products and that the legal distinction between a license and a sale should not cause revenue recognition on software products to differ from other types of products. The same underlying concept of delivery being the critical event for identifying when revenue was earned was adopted. Because [sic] of the nature of software arrangements, a need for persuasive evidence of arrangement was determined. SOP 98-9 modified income recognition for arrangements with multiple elements. The residual amount of the arrangement fee determined is allocated to the deliverable elements. The portion of the fee allocated to an element should be recognized as revenue when all criteria of SOP 97-2 are met with respect to the element (Bohusova and Nerudova, pgs. 12-13).

Similar to software revenue, IFRS has standards regarding Construction Contracts in International Accounting Standards (IAS) 18 and 11. Bohusova and Nerudova further state,

In IAS 18 revenue is recorded at fair value. The revenue relating to long-time contracts recording is the special area of revenue recording in IAS/IFRS. Revenue and costs associated with construction contracts are determined in IAS 11 Construction Contracts. The nature of activities undertaken in construction contracts is based on the [sic] situation when the date at which the contract activity is entered into and the date when the activity is completed usually fall into

different accounting periods. There are two methods for revenue defining – percentage of completion method and zero profit method. Under the completion method [sic] contract revenue is matched with contract costs incurred in reaching the stage of completion. The zero profit method is used when the outcome of construction contract cannot be estimated reasonably. Revenue should be recognized only to the extent [sic] of contract costs incurred that it is probable will be recoverable and contract costs should be recognized as an expense in the period in which they are incurred (Bohusova and Nerudova, pg. 14).

The *critical event* as described by Myers is different between the two standards. For U.S. GAAP, SOP 97-2 notes that the time of delivery is the *critical event*. For multiple elements, which exist in many software companies, the *critical event* becomes much more complicated to define. Under U.S. GAAP, it would seem that the *critical event* for multiple elements would be when all the criteria of SOP 97-2 are met and the arrangement fee has been allocated to the elements. Under IFRS, the *critical event* is much more subjective, which should come as no surprise since IFRS is more principles-based than U.S. GAAP. The *critical event* under IFRS seems to be whenever a company incurs the costs of completion, and if the costs cannot be reasonably estimated, then the *critical event* would be whatever costs could be reasonably estimated. The differences in the *critical event* for both U.S. GAAP and IFRS are reiterated in Christine Miller's (2009) article *Tech Companies & IFRS*. Miller identifies that if IFRS were adopted for all software companies, it would require much more judgment on the companies' part because of the principles-based approach. Miller argues that a rules-based approach for the software industry is better, because it provides better guidance about recognition of revenue unlike a principles-based approach, which would require weighing of different factors and more pressure on the company (Miller 2009).

The differences in the *critical event* for software recognition are the driving force for my research. The scholarly literature of financial accounting well establishes what the FASB conceptual framework says about recognition and measurement, and also how U.S. GAAP and IFRS recognize revenue and how they are continuing to try to converge. My research will add to the field of financial accounting a continuing exploration of what the *critical event* for software revenue recognition is under U.S. GAAP and IFRS.

Methodology

The primary focus of my research is to evaluate the reconciliation of U.S. GAAP and IFRS in the area of software revenue recognition. My primary research question involves how close U.S. GAAP and IFRS are coming to being fully reconciled in the area of software revenue recognition.

Research Design and Procedures

As mentioned in the scholarly literature of financial accounting, the primary difference between U.S. GAAP and IFRS in the area of software revenue recognition involves the timing of the recognition of revenue or the *critical event*. Most of the research surrounding the *critical event* just describes the fundamental differences between the two standards; in other words, there has not been much quantitative research conducted about the *critical event*. My research is a quantitative study of the differences between U.S. GAAP and IFRS involving the *critical event*.

My independent variable for the study is the type of standard being observed. The two possible standards for observation are either U.S. GAAP or IFRS. My dependent variable is the absolute value of the difference between revenues under U.S. GAAP and revenues under IFRS divided as a quantity by total assets. I hypothesize that in order for U.S. GAAP and IFRS to be considered reconciled, the absolute value of the difference between revenues under U.S. GAAP and revenues under IFRS must not be significantly different from zero. In order to retrieve the data, I searched the Securities and Exchange Commission (SEC) Edgar database. Once I retrieved the data for the revenues under U.S. GAAP and IFRS and total assets, I manipulated the data into an Excel file by which I could calculate the absolute value of the difference between revenues under U.S. GAAP and IFRS divided as a quantity by total assets. After I obtained the percentages I needed in the Excel file, I used inferential statistics to evaluate how closely reconciled U.S. GAAP and IFRS are.

Data Source

The primary source for my research design is the SEC Edgar database. The SEC Edgar database contains all of the SEC filings that publicly traded companies must disclose, including the 20-F form. The 20-F form contains a very important schedule for my research known as a reconciliation schedule. The reconciliation schedule reconciles net income under IFRS to net income under U.S. GAAP through a series of

adjustments. These adjustments are the dependent variables in my research, because they are derived from the differences in the *critical event* for both U.S. GAAP and IFRS in the area of software revenue recognition; thus, the computation for the absolute value of the differences between revenues under U.S. GAAP and IFRS is one way I incorporated the *critical event* into my research. The total amount of the adjustments represents the revenues for both U.S. GAAP and IFRS. The 20-F form also contains the differences in balance sheet data both under U.S. GAAP and IFRS. The balance sheet contains total assets, and that is where I obtained my data for total assets. The computation of total assets is an average of year-end total assets under U.S. GAAP and year-end total assets under IFRS.

As of January 2008, the SEC no longer requires foreign companies that have adopted IFRS to disclose a reconciliation schedule. The SEC encouraged the initiative mostly to make the process easier for U.S. companies to track foreign securities. Although the reconciliation schedule is no longer required, the discrepancies in U.S. GAAP and IFRS revenues would still exist today, because the two standards still differ conceptually involving the *critical event*, as described in the scholarly literature of financial accounting. Because of these circumstances, my data from the reconciliation schedule are from the years ended 2005 to 2006. I observed the years 2005 to 2006 to also see how reconciled or less reconciled U.S. GAAP and IFRS are in the area of software revenue recognition during a course of two years.

Participant(s)

The participants in my research are fifteen software companies or companies that provide services similar to software companies such as telecommunications, construction, or computer programming. I specifically looked at their 20-F forms from the years ended 2005 to 2006. The process of random selection for the firms was simply by using the search engine in the SEC Edgar database. In the search engine, I narrowed the search by specifying companies that report using IFRS, and I also specified in the search engine that the years must be 2006 or earlier. The reason why fifteen companies must be observed is that fewer than 15 firms would result in an inadequate sample size for the calculation of the t-statistic. All of the software companies are based in a country that has adopted IFRS. The reason why I only looked at software companies that have adopted IFRS is it shows a stark contrast between IFRS and U.S. GAAP, and they are the only companies that have a reconciliation schedule.

Data Analysis

Once I obtained the information I needed from the fifteen software companies' 20-F forms and manipulated the data into an Excel file, I used inferential statistics in order to answer my primary research question of how closely reconciled are U.S. GAAP and IFRS in the area of software revenue recognition. The particular form of statistic I used was a paired t-test. The absolute value of the differences between revenues under U.S. GAAP and IFRS divided as a quantity by total assets equals zero is my null hypothesis, and the absolute value of the differences between revenues under U.S. GAAP and IFRS divided as a quantity by total assets is greater than zero is my alternative hypothesis. The lower the percentage, the more reconciled the two standards are. The paired t-test will allow me to either reject the null hypothesis, which would mean the absolute value of the differences between revenues under U.S. GAAP and IFRS divided as a quantity by total assets is statistically significantly different from zero, and thus U.S. GAAP and IFRS are not reconciled in the area of software revenue recognition; or fail to reject the null hypothesis, which would mean the absolute value of the differences between revenues under U.S. GAAP and IFRS divided as a quantity by total assets is not statistically significantly different from zero, and provides empirical support that the U.S. GAAP and IFRS are reconciled in the area of software revenue recognition. In other words, if there is less difference, then there is a greater convergence between the *critical event* under U.S. GAAP and the *critical event* under IFRS in the area of software revenue recognition.

The main limitation to my research is that I have to use a software company; also I have to use data from the years ended 2005 to 2006 since the reconciliation schedule is no longer required as of 2008. The discrepancies still exist because the two standards provide different definitions of the *critical event*. The main focus of my methodology is to perform a quantitative study on the different standards' definition of the *critical event*, since not many scholars in the field of financial accounting have done quantitative studies on the *critical event*. I hope to add to the scholarly literature of financial accounting a quantitative perspective on the *critical event*, and in turn show how closely reconciled U.S. GAAP and IFRS are in software revenue recognition quantitatively.

Further Limitations to Research

Besides the limitation imposed by the SEC regarding the reconciliation schedule, there are also further limitations regarding data availability for the reconciliation schedule. Most of the software companies on the SEC Edgar database report for only two years, 2005 and 2006, which means that a trend is not possible to observe. Thus, the research can only show a difference in two years regarding the reconciliation of the two standards, but not a trend regarding the reconciliation of the two standards.

Discussion of Results

As mentioned in the methodology section, my primary focus for research is to evaluate how closely reconciled U.S. GAAP and IFRS are in the area of software revenue recognition. I hypothesize that in order for U.S. GAAP and IFRS to be fully reconciled, the absolute value of the difference between revenues under U.S. GAAP and IFRS divided as a quantity by total assets must be zero.

Sampling Procedures

The sample for research include fifteen software companies, or companies that provide services similar to software such as telecommunications, construction, or computer programming. The participating companies include: Alcatel-Lucent, Inmarsat Holdings Ltd., Telkom SA Ltd., France Telecom, Global Crossing (UK) Finance Plc., *Eircom* Group Plc., Koninklijke Pn., National Telephone Co. of Venezuela, Open Joint Stock Co. Long Distance and Internat Comm. Rostercam, Swisscom AG, TDC A/S, Tele2 AB, Telecom Corp of New Zealand Ltd., Telefonica S A, and Telenor ASA. All of the companies chosen have adopted IFRS; thus, each of the companies has a reconciliation schedule for the years 2005 and 2006. The sample was collected from the SEC Edgar database. The specific financial data observed from each company were their reconciliation schedules. The reconciliation schedule includes the adjustments made to IFRS net income to reconcile to U.S GAAP net income.

The qualifications for each of the companies to be considered for my research are that each had to have adopted IFRS, which eliminated most U.S. companies; they had to be software companies or services similar to software; and they had to have a reconciliation schedule. In order to retrieve these specific data, I put the industry code for software companies in the search engine on the SEC Edgar database. I further narrowed the search by specifying only countries that have adopted IFRS. The SEC Edgar database allows the researcher to only look at specific countries. After I narrowed the search down to the specific countries, I randomly picked fifteen software companies that fit the qualifications. Fifteen companies were chosen to have an adequate sample size in order to calculate the t-statistic.

Statistical Methodology

In order to evaluate the reconciliation of U.S. GAAP and IFRS in the area of software revenue recognition, inferential statistics were used. After the fifteen software

companies were chosen, all of the data from the reconciliation schedules were imported to an Excel file. In the Excel file, I created a table for each of the years 2005 and 2006. The first column included each of the company's name, the second column and third columns included revenues under U.S. GAAP and IFRS. The fourth and final column included the absolute value of the difference between revenues under GAAP and IFRS divided as a quantity by total assets. Excel allows the user to conduct a paired T-test, thus through Excel I conducted a paired T-test. The areas of evaluation for the paired T-test include: comparing the t-statistic to the t-Critical value for a two tailed, assessing the P-value or alpha risk, and comparing the mean of the revenues for each of the two standards.

The whole point of conducting the paired T-test is to provide a way to either reject the null hypothesis, which is the difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is zero, or fail to reject the null hypothesis. If I reject the null hypothesis, that means the differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets are statistically significant from zero, and the two standards are not completely reconciled in the area of software revenue recognition. If I fail to reject the null hypothesis, that means the differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets are not statistically significant from zero, and the two standards are more reconciled in the area of software revenue recognition.

Analysis of the Companies and Results from Paired T-test

Before I begin analyzing the individual companies and the paired T-test, an outline for analysis would be appropriate. First, I will begin by analyzing the year 2005. I will insert a table for 2005 with all of the data from the Excel file which will include: revenues under U.S. GAAP and IFRS for each company, the differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets for each company, and the mean of the differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets. For each company, I will assess their differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets by comparing it to zero. The closer the differences are to zero compared to the other companies, the closer reconciled that particular company is in the area of software revenue recognition. None of the companies has a difference of zero, so this analysis is only for comparative purposes.

I will repeat the same process for the year 2006. After analyzing 2006, I will then compare both years and see if 2006 is more reconciled than 2005.

After analyzing each of the individual companies, I will then conduct an overall analysis by assessing the paired T-test. I will analyze the year 2005 first. For the year 2005, I will either reject the null hypothesis or fail to reject the null hypothesis. I will do the same for 2006, and I will then compare both years to once again see if 2006 is more reconciled than 2005. This is the overall analysis of the companies, as opposed to before where it was only comparing the companies to each other.

1. Analysis for 2005

The following table refers to the year 2005. I have simply labeled the table: Table 1.

Differences in Revenue Table 2005
Table 1

Company	Rev for GAAP (in millions)	Rev for IFRS (in millions)	ABS (Rev GAAP-Rev IFRS/Total Assets)	Mean of the differences
Alcatel-Lucent	1,007	1,227	0.0074	0.0406
Inmarsat Holdings Ltd.	98.3	64.3	0.0011	
Telkom SA Ltd.	6,191	6,834	0.0215	
France Telecom	7,518	8,393	0.0293	
Global Crossing (UK)	11,558	26,781	.5093	
<i>Eircom</i> Group Plc.	33	99	.0022	
Koninklijke Pn	1,393	1,437	0.0015	
National Telephone Co.	114	112	0.0001	

of Venezuela				
Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam	131	37	0.0031	
Swisscom AG	2,901	2,519	0.0128	
TDC A/S	1,575	1,574	0.00003	
Tele2 AB	408	432	0.0008	
Telecom Corp of New Zealand Ltd.	634	627	0.0002	
Telefonica S A	3,071	3,577	0.0169	
Telenor ASA	836	903	0.0022	

The first company, Alcatel Lucent, has revenues under U.S. GAAP of about 1,007,000,000 and revenues under IFRS of about 1,227,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0074 or .74%. Compared to the mean of the differences for all companies, which is .0406 or 4.06%, Alcatel Lucent's difference appears to be much lower. Their difference is slightly higher to slightly lower when compared to some of the other companies. Compared to Inmarsat Holdings Ltd., *Eircom* Group Plc., Koninklijke Pn, National Telephone Co. of Venezuela, Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam, TDC A/S, Tele2 AB, Telecom Corp of New Zealand, and Telenor ASA, Alcatel Lucent has a slightly higher difference. Compared to Telkom SA Ltd., France Telecom, Global Crossing (UK), Swisscom AG, and Telefonica S A, Alcatel Lucent has a slightly lower difference. Although Alcatel Lucent has a slightly higher difference than most of the

companies sampled, their difference is much lower than the mean of the differences. The reason for this occurrence is mostly that one of the companies had a difference of 50.93%, and thus the mean was slightly skewed. Overall, Alcatel Lucent is less reconciled than most of the companies, and the only companies that are less reconciled than Alcatel Lucent have a much higher difference than a majority of the companies. I conclude that Alcatel Lucent is somewhat less reconciled when compared to the other companies individually.

The second company, Inmarsat Holdings Ltd., has revenues under U.S. GAAP of about 98,300,000 and revenues under IFRS of about 64,300,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0011 or .11%, which is much lower than Alcatel Lucent. Compared to the mean of the differences for all companies, Inmarsat Holdings Ltd. difference appears to be much lower. Their difference is much lower to just slightly higher when compared to other companies. Compared to the National Telephone Co. of Venezuela, TDC A/S, Tele2 AB, and Telecom Corp of New Zealand, Inmarsat Holdings Ltd. has a slightly higher difference. Compared to Telkom SA Ltd., France Telecom, Global Crossing (UK), *Eircom* Group Plc., Koninklijke, Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam, Swisscom AG, Telefonica S A, and Telenor ASA, Inmarsat Holdings Ltd. has a much lower difference. Obviously, Inmarsat Holdings Ltd. is much more reconciled than Alcatel Lucent and many other companies. Thus, I conclude that Inmarsat Holdings Ltd. is more reconciled when compared to the other companies individually.

The third company, Telkom SA Ltd., has revenues under U.S. GAAP of about 6,191,000,000 and revenues under IFRS of about 6,834,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0215 or 2.15%, which is much higher than Alcatel Lucent, and much higher than Inmarsat Holdings Ltd. Compared to the mean of the differences for all companies, their difference is lower. Telkom SA Ltd. difference is much higher to slightly lower when compared to some of the other companies. The only companies that have a slightly higher difference than Telkom SA Ltd. are France Telecom and Global Crossing (UK). When compared to all other companies, Telkom SA Ltd. difference is much higher. Although their difference is lower than the mean, it is once again because the mean is slightly skewed. Obviously, Telkom SA Ltd. is less reconciled than a majority of the companies. Thus, I

conclude that Telkom SA Ltd. is less reconciled when compared to other companies individually.

The fourth company, France Telecom, has revenues under U.S. GAAP of about 7,518,000,000 and revenues under IFRS of about 8,393,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0293 or 2.93%, which is much higher than Alcatel Lucent, Inmarsat Holdings Ltd., and Telkom SA Ltd. Compared to the mean of the differences for all companies, their difference is lower. France Telecom's difference is much higher than all of the companies but one. The only company that France Telecom is more reconciled than is Global Crossing (UK). Much like the scenario for Alcatel Lucent and Telkom SA Ltd., their difference is only lower than the mean since the mean is skewed. Obviously, France Telecom is less reconciled than a majority of the companies. Thus, I conclude that France Telecom is less reconciled when compared to the other companies individually.

The fifth company, Global Crossing (UK), has revenues under U.S. GAAP of about 11,558,000,000 and revenues under IFRS of about 26,781,000,000. Notice the discrepancy in revenues for Global Crossing (UK) when compared to the other companies. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is .5093 or 50.93%. Global Crossing (UK) is by far the less reconciled out of all the companies. They are the only company that has a difference larger than the mean, which is why the mean is skewed. I can automatically conclude that Global Crossing (UK) is less reconciled when compared to the other companies individually.

The sixth company, *Eircom* Group Plc., has revenues under U.S. GAAP of about 33,000,000 and revenues under IFRS of about 99,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0022 or .22%, which is lower than Alcatel Lucent, Telkom SA Ltd., France Telecom, and Global Crossing (UK), but higher than Inmarsat Holdings Ltd. Compared to the mean of the differences, their difference is much lower. Compared to the other companies in the industry, *Eircom* Group Plc. has a slightly higher to slightly lower difference. When compared to Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam, Swisscom AG and Telefonica S A, *Eircom* Group Plc. has a slightly lower difference. When compared to Koninklijke Pn, National Telephone Co. of Venezuela, TDC A/S, Tele2 AB, and Telecom Corp of New Zealand Ltd., *Eircom* Group Plc. has a slightly

higher difference. They have an equivalent difference with Telenor ASA. *Eircom* Group has a lower difference with about the same amount of companies that have a higher difference. Since *Eircom* Group Plc. has a difference well below the mean, I conclude that *Eircom* Group Plc. is more reconciled when compared to the other companies individually.

The seventh company, Koninklijke Pn, has revenues under U.S. GAAP of about 1,393,000,000 and revenues under IFRS of about 1,437,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0015 or .15%, which is lower than Alcatel Lucent, Telkom SA Ltd., France Telecom, Global Crossing (UK), and *Eircom* Group Plc, but higher than Inmarsat Holdings. Compared to the mean of the differences, their difference is much lower. Compared to the other companies in the industry, Koninklijke Pn, has a slightly higher to slightly lower difference. When compared to Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam, Swisscom AG, Telefonica S A, and Telenor ASA, Koninklijke Pn has a slightly lower difference. When compared to National Telephone Co. of Venezuela, TDC A/S, Tele2 AB, and Telecom Corp of New Zealand Ltd., Koninklijke Pn has a slightly higher difference. Much like *Eircom* Group Plc., Koninklijke Pn has a slightly lower difference with about the same amount of companies that have a higher difference. Since Koninklijke Pn has a difference well below the mean, I conclude that Koninklijke Pn is more reconciled when compared to the other companies individually.

The eighth company, National Telephone Company of Venezuela, has revenues under U.S. GAAP of about 114,000,000 and revenues under IFRS of about 112,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0001 or .01%, which is obviously well below the mean of the differences. The only company that has a lower difference is TDC A/S. Every other company has a higher difference than the National Telephone Company of Venezuela. Obviously, I conclude that the National Telephone Company of Venezuela is more reconciled when compared to the other companies individually.

The ninth company, Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam, has revenues under U.S. GAAP of about 131,000,000 and revenues under IFRS of about 37,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0031 or .31%, which is higher than Inmarsat Holdings Ltd., *Eircom* Group Plc, Koninklijke Pn, and the National Telephone Co. of

Venezuela, but lower than Alcatel Lucent, Telkom SA Ltd., France Telecom, and Global Crossing (UK). Compared to the mean of the differences, their difference is much lower. When compared to the other companies in the industry, like many of the other companies, Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam has a slightly higher to slightly lower difference. When compared to Swisscom AG and Telefonica S A, they have a slightly lower difference. When compared to TDC A/S, Tele2 AB, Telecom Corp of New Zealand Ltd., and Telenor ASA, they have a slightly higher difference. Much like *Eircom* Group Plc and Koninklijke Pn, Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam has a lower difference with about the same amount of companies that have larger differences. Once again, because of the mean being much higher, I conclude that Open Joint Stock Co. Long Distance and Internat Comm. Rosterdam is more reconciled when compared to the other companies individually.

The tenth company, Swisscom AG, has revenues under U.S. GAAP of about 2,901,000,000 and revenues under IFRS of about 2,519,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0128 or 1.28%. Compared to the mean of the differences, it has a smaller difference. The only companies that have a higher difference are Telkom SA Ltd, France Telecom, Global Crossing (UK), and Telfonica S A. Every other company has a smaller difference. Similar to some of the other companies, although Swisscom AG has a smaller difference compared to the mean, they are still less reconciled when compared to the other companies because of the mean being skewed. Thus, I conclude that Swisscom AG is less reconciled when compared to the other companies individually.

The eleventh company, TDC A/S, has revenues under U.S. GAAP of about 1,575,000,000 and revenues under IFRS of about 1,574,000,000. Their difference in revenues under U.S. GAAP and IFRS is virtually zero at about .00003 or .003%. Obviously, TDC A/S has a lower difference than the mean and they are the most reconciled out of all the companies. Thus, I conclude that TDC A/S is more reconciled when compared to the other companies individually.

The twelfth company, Tele2 AB, has revenues under U.S. GAAP of about 408,000,000 and revenues under IFRS of about 432,000,000. Their difference in revenues under U.S. GAAP and IFRS is about .0008 or .08%. Their difference is much smaller than the mean of the differences. The only companies that have a smaller

difference are The National Telephone Co. of Venezuela, TDC A/S, and Telecom Corp of New Zealand. All other companies have a larger difference. Thus, I can conclude that Tele2 AB is more reconciled when compared to the other companies individually.

The thirteenth company, Telecom Corp of New Zealand, has revenues under U.S. GAAP of about 634,000,000 and revenues under IFRS of about 627,000,000. Their difference in revenues under U.S. GAAP and IFRS is about .0002 or .02%, which is much lower than the mean of the differences. The only companies that have a smaller difference are the National Telephone Co. of Venezuela and TDC A/S. All other companies have a larger difference. Thus, I can conclude that Telecom Corp of New Zealand is more reconciled when compared to the other companies individually.

The fourteenth company, Telefonica S A, has revenues under U.S. GAAP of about 3,071,000,000 and revenues under IFRS of about 3,577,000,000. Their difference in revenues under U.S. GAAP and IFRS divided as a quantity by total assets is about .0169 or 1.69%, which is still lower than the mean. The only companies that have a higher difference are Telkom SA Ltd. France Telecom, and Global Crossing (UK). Much like Swisscom AG, Telefonica S A only has a smaller difference to mean because the mean is skewed. Thus, I conclude that Telfonica S A is less reconciled when compared to the other companies individually.

The fifteenth and final company, Telenor ASA, has revenues under U.S. GAAP of about 836,000,000 and revenues under IFRS of about 903,000,000. Their difference in revenues under U.S. GAAP and IFRS is about .0022 or .22%, which is identical to *Eircom* Group Plc. difference. The analysis for Telenor ASA would be the same as the analysis for *Eircom* Group Plc., thus I will not reiterate that analysis. As for *Eircom* Group Plc., Telenor ASA is more reconciled when compared to the other companies individually.

For the year 2005, six companies were considered less reconciled, while nine companies were considered more reconciled in the area of software revenue recognition. An important observation to the analysis was that out of the six companies considered less reconciled, five had the highest revenue totals as compared to all companies under both U.S. GAAP and IFRS. From that point, the higher amount of revenue a company has in the software industry, the more likely there will be a larger discrepancy in revenue totals between the two standards. Thus, the *critical event* seems much harder to define when a company has much more revenue compared to the other

companies. Overall, there were more companies that were considered more reconciled in the area of software revenue recognition; thus, for 2005 the two standards seem fairly reconciled when the companies are compared against one another.

2. Analysis for 2006 and Comparison Between Years

The following table is for the year 2006. I have simply labeled the table: Table 2.

Differences in Revenue Table 2006

Table 2

Company	Rev. for GAAP (in millions)	Rev. for IFRS (in millions)	ABS (Rev. for GAAP – Rev. for IFRS/Total Assets)	Mean of the Differences
Alcatel-Lucent	-780	-232	0.0095	0.03
Inmarsat Holdings Ltd.	141.6	127.6	0.0002	
Telkom SA Ltd.	1,442	1,516	0.0013	
France Telecom	6,970	6,292	0.0118	
Global Crossing (UK)	-4,472	15,912	0.3550	
Eircom Group Plc.	106	103	0.0001	
Koninklijke Pn.	1,569	1,583	0.0002	
National Telephone Co. of Venezuela	588	589	0.00002	
Open Joint Stock Co. Long	10	55	0.0008	

Distance and Internat Comm. Rostercom				
Swisscom AG	1,979	1,992	0.0002	
TDC A/S	1,148	1,187	0.0007	
Tele2 AB	295	295	-	
Telecom Corp of New Zealand Ltd.	-40	-282	0.0042	
Telefonica S A	4,699	4,876	0.0031	
Telenor ASA	1,101	1,134	0.0006	

The first company, Alcatel Lucent, has revenues under U.S. GAAP of about 780,000,000 and revenues under IFRS of about 232,000,000. The difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0095 or .95%, which is lower than the mean of the differences or about .03 or 3%. When compared to the other companies, Alcatel Lucent has a somewhat higher difference. The only companies that have a higher difference are France Telecom and Global Crossing (UK). All of the other companies have a lower difference. Similar to the case in 2005, although Alcatel Lucent has a lower difference than the mean, the mean is slightly skewed since one of the companies had a difference of .3550 or 35.5%. Thus, I can conclude that Alcatel Lucent is less reconciled in the area of software revenue recognition when compared to the other companies individually for 2006.

The second company, Inmarsat Holding Ltd., has revenues under U.S. GAAP of about 141,600,000 and revenues under IFRS of about 127,600,000. The difference in revenue divided as a quantity by total assets is about .0002 or .02%, which is much lower than the mean of the differences. The only companies that have a lower difference are *Eircom* Group Plc., National Telephone Co. of Venezuela, and Tele2 AB. Koninklijke Pn and Swisscom AG have equivalent differences. All other companies have a higher difference. Thus, I can conclude that Inmarsat Holdings Ltd. is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The third company, Telkom SA Ltd., has revenues under U.S. GAAP of about 1,442,000,000 and revenues under IFRS of about 1,516,000,000. The difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0013 or .13%, which is lower than the mean. The only companies with a higher difference are Alcatel Lucent, France Telecom, Global Crossing (UK), Telecom Corp of New Zealand, and Telefonica S A. All other companies have a lower difference. Thus, I conclude that Telkom SA Ltd. is less reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The fourth company, France Telecom, has revenues under U.S. GAAP of about 6,970,000,000 and revenues under IFRS of about 6,292,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0118 or 1.18%, which is lower than the mean of the differences. The only company with a higher difference is Global Crossing (UK). All the other companies have a lower difference. Thus, I conclude that France Telecom is less reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The fifth company, Global Crossing (UK) has revenues under U.S. GAAP of about 4,472,000,000 and revenues under IFRS of about 15,912,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .3550 or 35.5%. Obviously, their difference is well above the mean. Much like 2005, Global Crossing (UK) is the only company with a difference larger than the mean, and is the reason for the mean being skewed. Thus, Global Crossing (UK) is less reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The sixth company, *Eircom* Group Plc., has revenues under U.S. GAAP of about 106,000,000 and revenues under IFRS of about 103,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0001 or .01%, which is much lower than the mean of the differences. The only companies with a lower difference are National Telephone Co. of Venezuela and Tele2 AB. All the other companies have a higher difference. Thus, I conclude that *Eircom* Group Plc. is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The seventh company, Koninklijke Pn, has revenues under U.S. GAAP of about 1,569,000,000 and revenues under IFRS of about 1,583,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0002 or .02%, which is the same difference for Inmarsat Holdings Ltd. The same analysis for Inmarsat Holdings Ltd. applies to Koninklijke Pn. Thus, Koninklijke Pn is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The eighth company, National Telephone Co. of Venezuela, has revenues under U.S. GAAP of about 588,000,000 and revenues under IFRS of about 589,000,000. Their

difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is virtually zero at about .00002 or .002%. The only other company with a lower difference is Tele2 AB, which is fully reconciled. Thus, National Telephone Co. of Venezuela is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The ninth company, Open Joint Stock Co. Long Distance and Internat Comm. Rostercom, has revenues under U.S. GAAP of about 10,000,000 and revenues under IFRS of about 55,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0008 or .08%, which is much lower than the mean. Their difference is slightly lower to slightly higher than the other companies. Alcatel Lucent, Telkom SA Ltd. France Telecom, Global Crossing (UK), Telecom Corp of New Zealand, and Telfonica S A all have higher differences. The rest of the companies have lower differences. There are almost as many companies with a higher difference than a lower difference. Since their difference is much lower than the mean, I conclude that Open Joint Stock Co. Long Distance and Internat Comm. Rostercom is more reconciled in the area of software revenue recognition when compared to the other companies individually in the year 2006.

The tenth company, Swisscom AG, has revenues under U.S. GAAP of about 1,979,000,000 and revenues under IFRS of about 1,992,000,000. The difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0002 or .02%, which is much lower than the mean of the differences. Their difference is equivalent to Koninklijke Pn and Inmarsat Holdings Ltd. The same analysis for those companies applies to Swisscom AG; thus, I conclude that Swisscom AG is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The eleventh company, TDC A/S, has revenues under U.S. GAAP of about 1,148,000,000 and revenues under IFRS of about 1,187,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0007 or .07%, which is much lower than the mean of the differences. The companies with a higher difference are Alcatel Lucent, Telkom SA Ltd., France Telecom, Global Crossing (UK), Open Joint Stock Co. Long Distance and Internat Comm. Rostercom, Telecom Corp of New Zealand Ltd., and Telefonica S A. All the other companies have a lower difference. There are about as many companies with a lower difference than a higher difference, which is similar to Open Joint Stock Co. Long Distance and Internat Comm. Rostercom, Since their difference is much lower than the mean, I conclude that TDC A/S is more reconciled when compared to the other companies individually for the year 2006.

The twelfth company, Tele2 AB, has revenues under U.S. GAAP of about 295,000,000 and revenues under IFRS of about 295,000,000. Notice that the revenues are identical, thus Tele2 AB is fully reconciled in the area of software revenue recognition for the year 2006. Thus, I conclude that Tele2 AB is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The thirteenth company, Telecom Corp of New Zealand Ltd., has revenues under U.S. GAAP of about 40,000,000 and revenues under IFRS of about 282,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0042 or .42%, which is lower than the mean. The only companies with a higher difference are Alcatel Lucent, France Telecom, and Global Crossing (UK). All of the other companies have a lower difference. Thus, I conclude that Telecom Corp of New

Zealand Ltd. is less reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The fourteenth company, Telefonica S A, has revenues under U.S. GAAP of about 4,699,000,000 and revenues under IFRS of about 4,876,000,000. Their difference in revenue between U.S. GAAP and IFRS divided as a quantity by total assets is about .0031 or .31%, which is lower than the mean. The only companies with a higher difference are Alcatel Lucent, France Telecom, Global Crossing (UK), and Telecom Corp of New Zealand. Thus, I conclude that Telefonica S A is less reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

The fifteenth and final company, Telenor ASA, has revenues under U.S. GAAP of about 1,101,000,000 and revenues under IFRS of about 1,134,000,000. Their difference in revenue between U.S. GAAP and IFRS is about .0006 or .06%, which is lower than the mean. The companies with a higher difference are Alcatel Lucent, Telkom SA Ltd., France Telecom, Global Crossing (UK), Open Joint Stock Co. Long Distance and Internat Comm. Rostercom, Swisscom AG, Telecom Corp of New Zealand, and Telefoncia S A. All of the other companies have a lower difference. A majority of the companies have a higher difference and their difference is well below the mean, thus I conclude that Telenor ASA is more reconciled in the area of software revenue recognition when compared to the other companies individually for the year 2006.

For the year 2006, there were about six companies that were considered less reconciled in the area of software revenue recognition when compared to the other companies individually. The other nine companies were considered more reconciled in the area of software revenue recognition. The two companies that were the least reconciled had the highest revenue totals, so that observation continued into the following

year. Overall in 2006, many companies were close to full reconciliation. One company was fully reconciled.

In 2005 and 2006, similarities exist regarding reconciling software revenue recognition. Six companies were considered less reconciled, and nine companies were considered more reconciled. The years 2005 and 2006 had a skewed mean, because of Global Crossing (UK). In 2005 and 2006, the companies that were the least reconciled were the companies with the highest revenue totals. The overall mean of the differences decreased more than a whole percentage point from 4.06% in 2005 to 3.00% in 2006. Fourteen of the fifteen companies became more reconciled from the 2005 to 2006. From these results, when the companies are compared individually, the two standards have become more reconciled from the 2005 to 2006. Because of the adjustments made to net income and asset valuation differences between U.S. GAAP and IFRS, it is complicated to determine whether the revenue of U.S. GAAP and revenue for IFRS divided as a quantity by total assets ratio is sufficient enough evidence to indicate that the standards are becoming more reconciled. However, the ratio entails that the percentage of the differences in revenue between the standards that comprises the company's total assets is decreasing from 2005 to 2006. In other words, the ratio is one way to show quantitatively that the differences between the two standards are comprising less and less of a company's total assets, and thus becoming more reconciled. After keeping all of the complicated components to the ratio in mind, it would be appropriate to state that the standards have become more reconciled from the years 2005 to 2006 in the area of software revenue recognition when the companies are compared against each other individually.

3. Analysis for the Paired T-test 2005

The following table entails the results from the paired T-test in the year 2005. I have simply labeled the table: Table 3

Paired T-test results 2005
Table 3

	<i>Rev for GAAP (in millions)</i>	<i>Rev for IFRS (in millions)</i>
Mean	2,497.89	3,641.09
Variance	11,388,199.42	47,294,039.91
Observations	15	15
Pearson Correlation	0.94	
Hypothesized Mean Difference	0	
df	14	
t Stat	-1.13	
P(T<=t) one-tail	0.14	
t Critical one-tail	1.76	
P(T<=t) two-tail	0.28	

For the year 2005, the mean of revenues under U.S. GAAP was 2,497,890,000. The mean of revenues under IFRS was 3,641,090,000. There is a sizable difference in the mean of the two standards. In order to either reject or fail to reject the null hypothesis, the absolute value of the t stat, 1.13, is compared to the t Critical two-tail, 2.14. In this case

the t stat is smaller than the t Critical two-tail, which means that we fail to reject the null hypothesis. The P one-tail value of .14 supports the indication of failing to reject the null hypothesis, since it is greater than the assessed alpha risk of .10. Thus, I conclude that the revenues under U.S. GAAP and IFRS divided as a quantity by total assets is not statistically significant from zero; thus, the two standards are more reconciled in the area of software revenue recognition.

4. Analysis for the Paired T-test 2006 and Comparison between years

The following table entails the results from the paired T-test in the year 2005. I have simply labeled the table: Table 4.

Paired T-test results 2006
Table 4

	<i>Rev for GAAP (in millions)</i>	<i>Rev for IFRS (in millions)</i>
Mean	983.77	2,343.17
Variance	6,300,354.43	17,590,272.05
Observations	15	15
Pearson Correlation	-0.18	
Hypothesized Mean Difference	0	
Df	14	
t Stat	-1	
P(T<=t) one-tail	0.17	
t Critical one-tail	1.76	

P(T<=t) two-tail	0.33	
t Critical two-tail	2.14	

For the year 2006, the mean of the revenues for U.S. GAAP was 983,770,000,000, and the mean of revenues for IFRS was 2,343,170,000. As in 2005, there is a sizable difference between the means. The absolute value of the t stat, 1.00, is smaller than the t Critical two-tail, 2.14. Thus, we can fail to reject the null hypothesis. Once again, the P one-tail value of .17 is greater than the assessed alpha risk of .10; thus, we can fail to reject the null hypothesis. I conclude for 2006 that the difference in revenue between U.S. GAAP and IFRS is not statistically significant from zero, and thus the two standards are more reconciled in the area of software revenue recognition.

Regarding the paired T-test, the same conclusion was reached for both 2005 and 2006. The results from the paired T-test support the results from comparing the companies individually, which is the standards seem to be more reconciled from year to year. When comparing the companies individually by assessing the ratio of the differences in revenue between U.S. GAAP and IFRS divided as a quantity by total assets, there are many other complicated factors that determine the actual amounts of the revenue and total assets. Through inferential statistics, it was concluded that the two standards are becoming more reconciled.

Possible Policy Implications

To summarize the results from the analysis of the companies, when the companies are compared individually, the two standards are becoming more reconciled from the years 2005 to 2006. When the companies are compared as a whole and all of the complexities are considered, the two standards also seem to be becoming more

reconciled. The officials for the FASB and the IASB should put more stock regarding the results of the paired T-test, since it does take all of the complexities into account. The results suggest that the two standard setting boards are making significant strides in reconciling software revenue recognition.

Obviously, the possible policy alternatives are that the FASB and the IASB continue to increase their efforts towards complete reconciliation of the two standards or remain stagnant. As mentioned previously, the SEC no longer requires a reconciliation schedule from companies who have adopted IFRS. According to the scholarly literature of financial accounting, there are continuing efforts from the FASB and the IASB to have full reconciliation in the area of software revenue recognition by January 1, 2015. The FASB and the IASB have not remained stagnant, and they both still believe that software revenue recognition still is not completely reconciled. A study of this nature cannot be performed today, since the reconciliation schedule is no longer required. It can still provide a framework for the FASB and the IASB when they are evaluating how far they have come in reconciling the two standards and where they should go in the future. The suggestion from my study is that if the two boards still believe the two standards are still not reconciled, they should focus on defining the *critical event* for the two standards. If there are deficiencies in the study, it would involve the *critical event* since the study was focused on defining the discrepancies in the *critical event* for software revenue recognition.

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