

HARMONIZATION OF FINANCIAL STATEMENTS USING WEB ARCHITECTURE

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Abstract

The objective of this paper is to show that the universal implementation of harmonized standards does not seem plausible in the short term and further to propose various models which would provide multiple GAAP financial statements in a user friendly format. The opportunities of Information Technology (IT) and the need for harmonization of financial statements meld the essence of this study. In this study, we look at the feasibility of employing multiple methods of employing IT to the task of harmonizing financial reports. Using the similarities and differences among GAAP of three major countries belonging to three continents, we formulated IT methodologies and how these methods can enhance the functionality of harmonization of financial statements. We also study IT guidelines of electronic standards for international financial reporting.

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Introduction

The focus of globalization being pursued by the developed countries as well as developing nations has created an increased demand for international financial data. The rapid growth of information technology and electronic communications offer tremendous opportunities to develop guidelines of electronic standards for international financial reporting.

Web functions have reduced the cost of production of information and greatly increased the potential population of users. The web provides instantaneous and simultaneous access to accounting information, which can be either static pages or dynamically drawn from corporate databases. The costs of printing and distributing reports are no longer a serious impediment to the dissemination of information. Nor are these costs relevant in the tailoring of information for different stakeholders and different audiences.

Information technology will bring many changes to the accounting models, accounting communications, the nature of assurance on these communications and finally to the profession itself. The Web may soon take-over the role of primary

medium of reporting from the print medium (Lymer, Debreceny, Gray, Rahman, 1999).

The purpose of this paper is to explore various solutions that would provide transnational investors with International financial data in a timely manner and familiar format. It is also to create further interest among IT companies, by demonstrating how they are uniquely suited to play a bridging role in the present information gap.

A web portal capable of producing comparable international financial data would produce some of the same results that the International Accounting Standards Committee (IASC) had hoped to accomplish through the development of harmonized International Accounting Standards (IAS). The implementation of these standards is still being debated with recent surveys and research showing no congruence or universal acceptance in sight. There is considerable variety in the levels of compliance.

There is considerable variety in the levels of compliance with International Accounting Standards by companies which use IAS's as their reporting standards, according to the recently published FT International Accounting Standards Survey 1999 (Management Accounting, Jan 2000).

Specifically, such software should be capable of producing simultaneously single or multiple financial statements using Accounting principles of one or

several countries (including the IASC), in accordance with their specific set of standards and are accessible through the World Wide Web.

Thus, while implementation of international standards, are being debated, users of financial statements globally could have access to financial information according to the GAAP of their choice and in a format with which they would be familiar. This could help investors make better transnational investment decisions. It would provide a bridge in the current information gap.

What follows is a brief description and history of the work undertaken by the International Accounting Standards Committee in developing a harmonized set of Accounting Standards. While this highlights the urgency and importance of such standards, it also shows that there is limited acceptance by countries in following these standards.

This is followed by a description of the limitations of existing International software. Next, a section on relevant new technologies and methods, which can be combined to produce a software package capable of delivering multiple financial statements, is included. Finally, a model that could form the basis of a software project is proposed for further development. Its possible advantages and disadvantages are outlined.

Harmonization

The roots of International accounting harmonization can be traced back to a series of international congresses beginning in St. Louis in 1904. The harmonization movement essentially culminated in the formation of the International Accounting Standards Committee (IASC) in 1973. (Larson, Robert K, Kenny, Sara 1999)

The goal of the IASC was 'to formulate and publish in the public interest accounting standards to be observed in the presentation of financial statements and to promote their worldwide acceptance and observance'. Implicit in this objective is the assumption that the benefits of standardization (i.e. increased uniformity, enhanced comparability) outweigh the drawbacks (Jones, Mike, 1998).

The IASC has expanded rapidly having been founded in 1973 by Sir Henry Benson with beginning with nine committee members. It had expanded to 128 member bodies in 91 countries in 1998. There are observers from several other countries. The world economy is well represented with members from the developed countries, emerging markets and developing countries.

Representatives come from professional accountancy bodies rather than governments. (Jones, Mike 1998). A board consisting of representatives from 13 countries plus one from the International Association of Financial Analysts prepares the accounting pronouncements of the IASC. At least 11 out of the 13 should agree for the pronouncement to

be issued. (Radig, William J., Loudermilk, Brian, 1998).

The most significant contribution towards harmonization of accounting standards internationally have been associated with the G-4, namely UK, Australia, Canada and USA. Presently this group includes New Zealand making it G4+1. The Anglo-American model has significantly affected the philosophy and objectives of the IASC. (Street, Donna L, Shaughnessy, Kimberley A. 1998).

Challenges facing IASC in implementing International Accounting Standards

The impact of IASC has varied worldwide. The implementation of international accounting standards (IAS) has been more problematic. A differentiation based on country characteristics is possible such as a grouping of less developed countries, European Countries and Capital market countries. A differentiation based on degree of implementation is also possible namely those partially implementing the standards and those fully implementing the standards. Various authors have chosen to categorize them differently.

Implementation is an important element in the harmonization of standards. Reluctance to implement standards, especially by countries with the largest market capitalization or source of the largest FDI funds provides more confusion and complexity to investors. The US continues to have the largest market capitalization and many differences remain between the US SEC and the IASC. International accounting standards continue to be implemented in varying degrees.

Corporate reporting is a complex process that involves the interaction of several groups including corporate staff, oversight groups and external standard setters. Given that national accounting standards are strongly defended, the global need for uniform measures of performance is compromised. (David C. Morris, Gerald M. Ward, 1999)

Proponents of harmonization allude to its role in facilitating cross-border flows of goods, services and capital while opponents of harmonization consider it unnecessary and in certain settings even harmful because of the imposition of accounting concepts and techniques that originate in developed countries but are inappropriate elsewhere.

Advocates of harmonization outline four primary benefits: Cost savings to multinational companies, enhanced comprehensiveness and comparability of cross national financial reports, widespread dissemination of high quality accounting standards and practices, and provision of low cost financial accounting to countries with limited resources. Attaining a global consensus on harmonization is improbable because of differences in functional, transaction cost, cultural and ideological factors (Saudagaran, Diga 1998).

The end user has not always been the focus of national standard setting bodies. The international Accounting Standards Committee (IASC) is particularly challenged to adopt a user focus in developing high-quality international standards. The temptation is high to develop standards based on existing standards in major countries. A focus on user's needs would deliver standards based on user needs pro-actively determined by research and the participation of users. (Jonas GJ, Young, Stephen J., 1998).

The FASB issues a comparative analysis of IASC accounting standards and US standards. In its second edition, it concludes that IASC standards are sometimes vague and ambiguous while it also reveals the cookbook nature of some US standards. (CPA Journal, Jan2000). The SEC has warned against adopting lax international accounting standards. Arthur Levitt, Chairman of the SEC cautioned that they are not going to embrace standard that is not good as our own. (Byrnes, Nanette, 1998). Foreign companies must reconcile any material differences in their earnings and shareholders equity to US GAAP results. Significant differences remain between the IASC's standards and US standards.

Summary Findings

The differences that remain between International Standards and those of the United States as well as other countries, point to the fact that international comparability is not easily done given the different standards companies use worldwide. They also show that harmonization is a project that has limited practical application. Most countries of the world continue to produce financial statements based largely on their national standards. At the most they have some sort of regional standardization as is found to a greater extent in the EU and to lesser degrees in the other regional trade alliances such as ASEAN and NAFTA. With thirty years of slow progress, the IASC still appears far from having its IAS accepted universally.

Limitations of available international accounting software

Many accounting software packages claim to be international, but very few really offer all the facilities an international organization would need. A truly international product would be localized from the source code upwards. International accounting software features include, a single source code, local customization, separate text editors for different languages, currency convertibility feature, different date formats, ability to handle different characters and centralized support (Newing, Rod, 1996). Only a handful of accounting packages are able to process multiple currencies in compliance with IAS 21, FASB statement no. 52 or EC directives 4 (Collins, J

Carlton, 1999

The European Union offers some examples of what is being done to produce software that can handle multiple currencies. A survey by the Business and Software developers Association of its membership, established that by the end of 1998, all major vendors would have shipped euro software utilities capable of changing over base accounting currencies to the euro. (Management accounting: Magazine for chartered Management accountants Oct.1998). This is an example of software developers building utilities to accommodate changes that are being legislated by the EU. It is one method of developing packages of regional or international application.

Accounting application vendors typically have offered customers whole packages with little room for flexibility. Often some of the modules do not meet the customer's unique requirements. The customer then turns to another vendor for the additional module but that requires hiring a programmer to build a bridge between the two that can be problematic (Zarowin, Stanley 1998). One of the purposes of International Accounting software is to provide users with the ability of preparing financial statements according to multiple standards and several currencies in different languages.

Web based solutions

What effect does the delay in implementing International Standards have on the comparability of financial statements and the free flow of funds? What alternative options exist for the production of comparative measures? Is something more practical possible? Twenty years ago asking these questions may have produced answers with dimensions as gigantic as the harmonization project itself. However, with today's rapid growth in information technology, the proliferation of networks and the development of the Internet, it is an idea that may be worth exploring.

If a practical solution existed, would countries be more willing to implement it? There have been appeals made to far eastern developing countries to adopt international accounting standards in order to increase their foreign direct investment. (Padmaja Padman, 1998). Adopting International Accounting standards could help mitigate risk for emerging market investors. The World Bank was in a dialogue with the big five auditing firms in 1997 and 1998. (Emerging Markets Week, 1998).

Interestingly such calls are being made directly to companies and not to standard setting bodies. In the end, it is the companies, investors, creditors and other stakeholders who must use this financial data. They might be open to the idea of acquiring software as an alternative with the view of better providing their financial information to users worldwide.

Accounting Software traditionally has been nationally oriented because accounting and tax rules

differ from country to country. A new breed of accounting software addresses the diversity that remains (Lebow & Adhikari, 1995). Accounting software can now produce financial statements in different languages and handle currency conversion as well. There are enterprise wide systems that tie in the operations of Multinationals with operations in several countries. However, these are expensive and often have to be custom built.

SOLUTION 1: Web Portal

A web portal offering the following features can provide a starting point for development of a site for display of such information. Figure 1 illustrates a web portal solution. Web users select various options and enter the portal after passing certain authentication and security procedures. A company can download universal input tables, get data using a repository of financial statements from various countries and using various conversion engines, these financial statements may then be converted to the user's country, currency, language, etc.

This solution provides firms with the ability to download universal input tables from web, input data and upload to site for conversion and display, and generate Multi GAAP, Financial Statements in any language or currency.

The solution provides users with the ability to access to web portal and viewing/download of financial statements according to standards, currency, and language of their choice, and perform comparisons as well.

SOLUTION 2: Knowledge Based Systems

A knowledge-based system is derived from a branch of computer science research called *Artificial Intelligence* (AI). AI's scientific goal is to understand intelligence by building computer programs that exhibit intelligent behavior. It is concerned with the concepts and methods of symbolic inference, or

reasoning, by a computer, and how the knowledge used to make those inferences will be represented inside the machine. AI programs that achieve expert-level competence in solving problems in task areas by bringing to bear a body of knowledge about specific tasks are called *knowledge-based* or *expert systems*.

The area of human intellectual endeavor to be captured in an expert system is called the *task domain*. *Task* refers to some goal-oriented, problem-solving activity. *Domain* refers to the area within which the task is being performed. Typical tasks are diagnosis, planning, scheduling, configuration and design. Every expert system consists of two principal parts: the knowledge base; and the reasoning, or inference, engine.

The *knowledge base* of expert systems contains both factual and heuristic knowledge. *Factual knowledge* is that knowledge of the task domain that is widely shared, typically found in textbooks or journals, and commonly agreed upon by those knowledgeable in the particular field. *Heuristic knowledge* is the less rigorous, more experiential, more judgmental knowledge of performance. In contrast to factual knowledge, heuristic knowledge is rarely discussed, and is largely individualistic. It is the knowledge of good practice, good judgment, and plausible reasoning in the field. It is the knowledge that underlies the "art of good guessing."

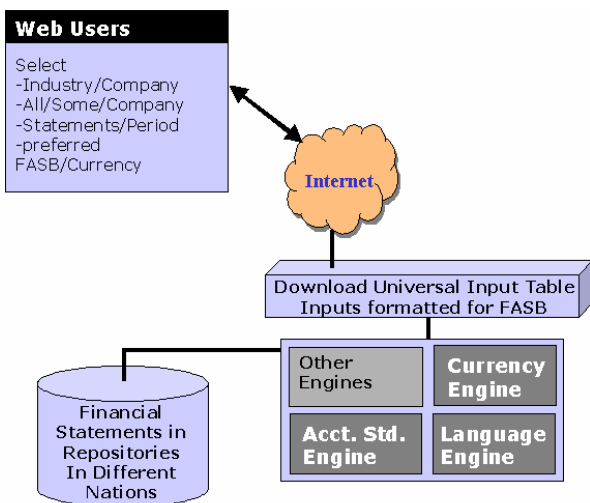


Figure 1. Web Portal Solution

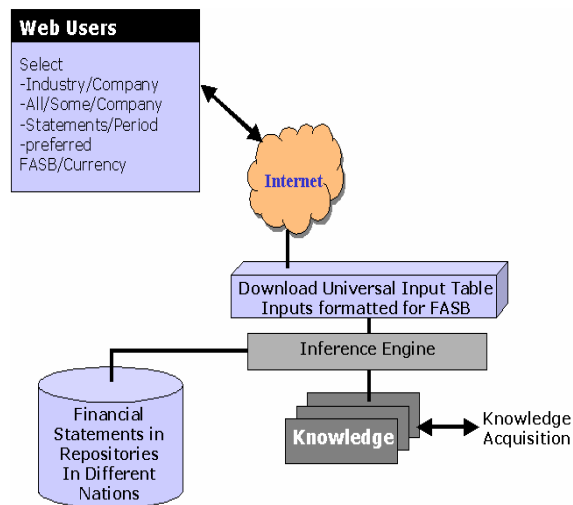


Figure 2. KBS Solution

The *knowledge base* an expert uses in this case will be the knowledge of various GAAP issues, harmonization in particular. Knowledge is usually incomplete and uncertain. To deal with uncertain knowledge, a rule may have associated with it a *confidence factor* or a weight. The set of methods for using uncertain knowledge in combination with uncertain data in the reasoning process is called *reasoning with uncertainty*. An important subclass of methods for reasoning with uncertainty is called "fuzzy logic," and the systems that use them are known as "fuzzy systems." Because of the importance

of knowledge in expert systems and because the current knowledge acquisition method is slow and tedious, much of the future of expert systems depends on breaking the knowledge acquisition bottleneck and in codifying and representing a large knowledge infrastructure. Figure 2 illustrates a web solution using a harmonization knowledge-based system.

The solution in Figure 2 illustrates the knowledge acquisition from the FASB and GAAP regulations of various countries to be inputted by the knowledge engineers of a company. The inference engine will reason with this knowledge and the financial statements from the repositories. The company can download universal input tables and financial statements may then be converted to the user's country, currency, language, etc.

SOLUTION 3: Enterprise Resource Planning Systems

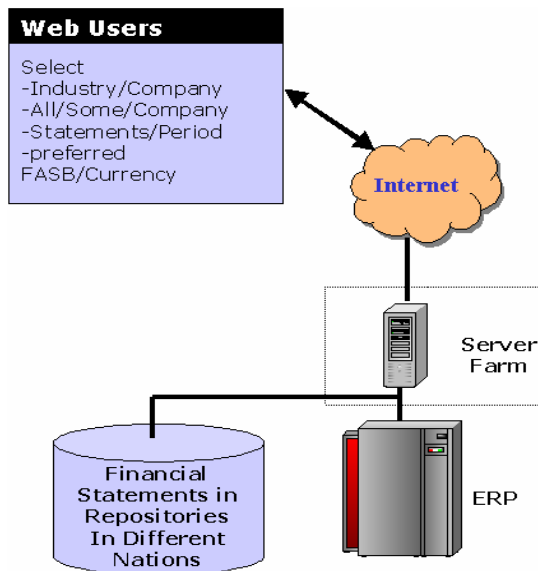


Figure 3. ERP Solution

Enterprise resource planning software or ERP attempts to integrate all departments and functions across a company onto a single computer system that can serve all those different departments' particular needs.

ERP systems integrate the needs of people in finance as well as the needs of people in human resources and needs of all other departments in an enterprise. Each of those departments typically has its own computer system optimized for the particular ways that the department does its work. However, ERP combines them all together into a single, integrated software program that runs off a single database so that the various departments can more easily share information and communicate with each other. That integrated approach can have a tremendous payback if companies install the software correctly.

ERP vanquishes the old standalone computer

systems and replaces them with a single unified software program divided into software modules that roughly approximate the old standalone systems. Finance, manufacturing and the warehouse all still get their own software, except now the software is linked together so that someone in finance can look into the warehouse software to see if an order has been shipped. Most vendors' ERP software is flexible enough that you can install some modules without buying the whole package. Many companies, for example, will just install an ERP finance or HR module and leave the rest of the functions for another day.

A company with an ERP system rolls up its financial statements from individual business units around the globe. SAP, the most popular ERP package has financial statements that can be harmonized across many countries. This harmonized view of the SAP system can be then made available to users through the company's security policies. This data may then be made available through the web to users across the world. This kind of ERP based web solution may be installed by individual companies. Web users select various options and enter the web sites after passing certain authentication and security procedures. A company can download universal input tables, get data using a repository of financial statements from various countries and using the data from the ERP system, financial statements may then be converted to the user's country, currency, language, etc.

Advantages of web solutions

Software packages can offer standardized output. Clients would have incentive to follow formats offered by the vendor for sake of providing uniformity. Clients typically have a user focus and would look favorably at including software that makes their companies statements more understandable globally.

New International Accounting Software would use existing technologies. Through a combination of new technology and methods vendors would be able to offer a product that would deliver to the maximum number of users their company's financial data in an easy to understand form.

Costs are an important factor both in the development of the product and the subsequent saleability of the International Multi-GAAP software package. Modules could be developed in third countries that have an abundance of high quality programming talent as well as competitive costs. Companies in India are a good example of ones that possess a large highly talented programmer pool. Many of these companies have already undertaken sophisticated programming work for companies in the USA and other G-8 countries at reasonable costs. Software package such as one based on the proposed model should be universally available and affordable.

Centralized databases that house the GAAP modules could be updated in real time as the standards are adopted. Financial statements are prepared according to different GAAP's and companies can instantaneously post these on the World Wide Web.

Disadvantages of web solutions

Availability of such software may lead some to equate availability of International financial information obtained in this manner with that of financial statements produced using International Accounting Standards. While it delivers a tool for producing statements in a format facilitating comparison, which is an effect produced by harmonization of standards, it is not a substitute for statements prepared using IAS.

The standard format for the output could be influenced by software vendors and interested third parties. This would affect the credibility of financial information produced by the software. Control of the process of producing financial information might have to be shared with non-accountants.

There is an increase in the demand for global accounting software. Businesses that have never dealt with any currency other than the US dollar are finding that they must contend with pounds, rubles, yen, and euros and for the first time they must consider the need for accounting software, that supports foreign currency transactions and reporting.

New technologies and methods

In an interesting development, IBM global services used Value added resellers (VARs) to sell to small and medium size business, a combination of hardware and software to meet their needs. VARs fine-tuned the products and are able to offer creative pricing including leasing with monthly payments. The software offerings were to be installed on servers maintained by IBM global services and leased to customers by the VARs. (Burke, Steven 1999). This allowed specific modules to be leased to customers.

The proliferation of the Internet and web commerce has not gone unnoticed by accounting software developers, users and standard setters. Recognizing the trend, many software vendors have added features designed to accommodate the Internet. They include

Producing reports in Web format and allowing users accounting data across the Internet. (Collins, J Carlton 1999).

The electronic reporting of financial data has increased in importance and the AICPA has made available for comment in April of this year, a new extensible financial reporting markup language (XFRML, recently changed to XBML). Developed by leading software firms and the Big 5 accounting Firms, the new software will be licensed free and is platform independent. The steering committee has an

international focus and will facilitate the development of specifications for other industries and other countries versions of GAAP (Journal of Accountancy, 2000).

All these new developments lead informally to de-facto standardization. There is a need for uniformity and standardization to make the financial output reliable. The IASC has published guidelines for future Web Business Reporting in chapter 4 of its report titled Business Reporting on the Internet (Nov 1999). Future developers of Software can utilize these guidelines especially those on Multiple GAAP reports.

Why develop new international accounting software

Truly International accounting software capable of producing Multiple GAAP financial statements is not universally available. Limitations outlined in the preceding section demonstrate some of the inadequacies of present day International Accounting Software.

Harmonization of accounting standards will take additional time to implement globally.

IASC reports on electronic commerce and guidelines for standardization of electronic reporting of financial data reveals the availability of tools to develop software to bridge the information gap while countries debate on using international standards.

A new breed of International accounting software can incorporate new technologies and new methods such as vendor maintained dynamic databases, a modular design, networks and web technology. With the growth of International commerce and the web, there is an increased need for user-focused software. In the absence of any real means of comparing International Accounting Data, users can have access to financial statements prepared in using a GAAP with which they are familiar.

Conclusion

International accounting standards and harmonization are influenced by national priorities and politics in addition to the market forces. Users of international accounting data namely the institutional and individual investors, Insurance companies and transnational corporations are public and private companies not regulators or governments. While mandating international accounting standards may not find immediate acceptance, software that meets their needs to raise capital as well as make efficient investment decisions may seem more attractive in the immediate future. With the rapid development of the Internet and guidelines for electronic reporting, developing international accounting software containing features outlined in the proposed model could offer a more practical, timely and affordable solution for users and firms alike.

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