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CONSIDERATIONS ON THE USE OF XBRL DURING THE FINANCIAL AUDIT MISSIONS: APPROACH OF A MODEL

Abstract. *The objective of the study was to analyse how XBRL could contribute to the work of financial auditors and in which conditions. Most of the authors agree that XBRL could play an important role in financial audit and continuous audit. We turned our attention to the current state of XBRL implementation in Romania, a provisional jurisdiction which is currently examining ways of implementation for XBRL standard. In this context, we proposed a model for using XBRL interactive data during financial audit missions. The model requires a series of financial reports to be tagged in XBRL format (e.g. traditional financial statements). The instance files are created and validated using an XBRL application and then uploaded securely on a web portal and stored within a XBRL database. Using online analysis tool, financial auditors could perform different tests on XBRL data. The analysis of XBRL data has risks and therefore we proposed a framework of prior conditions in order to implement the model. The paper contributes to the current need of examining how could be implemented XBRL in Romania in order to deliver added value for all users of financial information.*

Keywords: *XBRL, financial audit, business rules, XBRL analysis software, taxonomy.*

1. INTRODUCTION

The study has the objective to analyse how XBRL (Extensible Business Reporting Language) could contribute and improve the work of Romanian financial auditors during the audit missions. The article is part of a broader approach developed by the authors for the doctoral research in the field of audit computer systems. The scope of

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this paper is to examine how auditors could benefit from XBRL technology in Romanian or broader context. Since Romania is currently examining ways of implementation for XBRL standard, this paper tries to cover the need for research in this field. Nowadays auditors face new challenges: the audit trail is mainly electronic and they need to analyse large volume of data dealing with constraints like: time, costs, difficulty to follow data trail and to have access directly to electronic data. Auditing has experienced a change of paradigm in the sense that it becomes automatic and the use of software tools is indispensable.

While the financial information is presented to the public on the Internet usually in a static format such as PDF or HTML, the XBRL technology offers a way to have dynamic financial information. For example, if an auditor wants to compare the assets of a company for a period of 10 years he will need to access 10 files in a static format (the financial statements) and he will seek for each the necessary data and afterwards he will extract the relevant information. With the help of XBRL the burden of opening ten files is practically eliminated. Using software based on XBRL the auditor could analyse and compare the financial information with a few clicks.

In short, the use of XBRL eliminates the need for redundant data, facilitates the comparison, the transfer and the transmission thus improving the process of reporting and collection of financial information. The users of financial information including investors, analysts, auditors, financial institutions and regulators, can receive, browse, compare and analyse data quickly and efficiently whether it is in XBRL format.

How does it work XBRL? Instead of treating financial information as a block of text - as in a standard internet page or a printed document, XBRL provides a "tag" which is computer readable and which is similar to a barcode so that each unit of information taken individually is uniquely identified.

The label of financial information identifies certain characteristics that allow information to be read, understood and managed by a software application that recognizes the tag. XBRL enables automated processing of economic information by a computer application and thus reduce laborious and costly process for reopening and compare. Computers can handle data in an "intelligent" way: they can recognize the information to select, analyse, store, change with other computers and present it automatically in a variety of ways for users. In this way, XBRL significantly increases the speed of handling of financial data, reduces the risk of error and permits automatic checking of information.

The library of labels required for a particular purpose is known to the world as taxonomy and the XBRL individual labels are known as taxonomy elements. Taxonomies are available for all major principles (standards) Generally Accepted Accounting (GAPPs) including International Financial Reporting Standards (IFRSs) and U.S. GAPP. The authors of more recent studies have proposed that the taxonomy

to be seen in the accounting field as a "Dictionary of Accounting Terms" for the special accounting standard rules it represents (Klaus Henselmann, Elisabeth Scherr, 2012, page 7).

In addition to GAAP taxonomies, some taxonomies were developed by regulators and others for accurate reporting purposes. Moreover, a special taxonomy has been developed to support data collation and internal reporting within the organization known as General Ledger Taxonomy.

Two financial statements could not be identical because one business could not be identical with other. It is therefore unlikely that all the various elements of financial reporting taxonomy will be available. "X" in the Extensible Business Reporting Language (XBRL) means "extensible" and therefore XBRL is flexible, enabling the reporting entity to develop specific elements through "extensions" for a given taxonomy.

Extensible Business Reporting Language (XBRL) is a computer language for electronic communication of business data. In addition, XBRL is a freely available, market-driven, open, global standard for exchanging business information. From another point of view, the standard is a global agreement on business information concepts, relationships and business rules (Charles Hoffman and Liv Apneseth Watson, 2010: 12). XBRL is promoted by an international non-profit consortium of companies, organizations and governmental agencies.

2. METHODOLOGY

For preparing this article the author used various research methods. First of all, we have proceeded with the review of the literature, the newest research papers on XBRL as well as the articles published on professional web sites concerning the use of the standard.
Another research method used by author is modelling which has been performed through the following steps: analogy with other models/systems, the analysis of the problem and the auditors` needs, imagining the specific elements of the model for Romanian auditing environment, the conceptualization of the model. The outcome of the paper is a model for using XBRL interactive data during financial audit missions and a framework of preliminary conditions to use XBRL for audit. To explain the model the author used the scientific abstraction meaning that we focused on one element or aspect of the model to analyse it by making abstraction of other elements which are supposed to be known. On the other hand we have also revealed the connections between the elements of the model and how these interact in order to obtain information or knowledge relevant to auditors in their missions.

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The research method most used in this paper is analysis which is done by decomposing a model or a process usually reflected in a diagram in its components and investigating each of these as parts of the whole. Another technique used is logical research which supposed to pass from abstract to concrete and to present only what is essential. Also the author described facts or developments based on the review of various sources of documentation (e.g. web sites).

3. BACKGROUND AND LITERATURE REVIEW

Australia, Belgium, Canada, China, Denmark, France, Germany Hong Kong, India, Israel, Italy, Japan, Korea, Netherlands, Singapore, Spain, Sweden, Thailand, USA and the UK are among jurisdictions that require or have forms that allow XBRL and they are in various stages of implementation. In some jurisdictions, forms in XBRL format are required in particular for reporting on the supervision by the central bank. Other jurisdictions have forms in XBRL format for mandatory financial reporting (financial statements of entities) as well as in connection with declarations of taxes to the tax authorities. "A national jurisdiction acts to promote and accompany the development of national XBRL taxonomy. It includes the reporting process to a national framework, referencing a national nomenclature" (Vasile Florescu and Cătălin Georgel Tudor , 2009: 133).

3.1 Current state of XBRL implementation in Romania

The project "XBRL-RO" was launched in December 2009 by CECCAR - The Body of Expert and Licensed Accountants of Romania which is the organization representing the Romanian accountancy profession. CECCAR has 50.000 members and it is an organization autonomous, non-governmental, non-profit and of public interest. CECCAR translated the IFRS to Romanian and it was looking pro-actively for other interested parties, organizations or companies which are interested in adoption of XBRL: National Securities Commission (NSC) - which has the role of Security and Exchange Commission from USA, The Bucharest Stock Exchange, The National Bank of Romania, Sibiu Mercantile Exchange, The Chamber of Financial Auditors of Romania (CAFR), The Romanian Banking Institute, Fiscal Administration (Constanț a), The Accounting National College, Romanian Chamber of Commerce, Ministry of Agriculture, The Alliance of the Owners Confederation of Romania, The National Council of Small & Medium Enterprises etc. (http://xbrlplanet.org, 2012). The main difference is that Romania has a provisional jurisdiction (xbrl.ro) while the other countries mentioned has full jurisdiction. Therefore Romania is in a process of evaluating and examining which are the best ways to implement XBRL. A web-site has been created in order to facilitate the future dissemination of information

concerning XBRL jurisdiction (http://www.xbrl.org, 2012). As regards the adoption of XBRL in Romania, there are few centres of interests:

- The use of IFRS taxonomy by the companies for which is mandatory the reporting of financial statements under IFRS (e.g. listed companies to the stock exchange). In principle, these companies have the financial resources to support the costs for XBRL implementation: software licenses, staff training costs, resources costs etc. In the first instance, it might be necessary to translate in Romanian all the concepts from the existing IFRS taxonomy and afterwards this should be adapted or extended to national and companies` specificities.

- The use of FINREP and COREP taxonomy by the banks for which is mandatory the reporting to National Bank of Romania. The FINREP taxonomy is the financial reporting model expressed in XBRL format, consisting of 40 tables, based on the templates published by the CEBS (The Committee of European Banking Supervisors). The FINREP-Taxonomy provides an XBRL representation of the European Banking Authority`s Financial Reporting Framework, and it is designed for credit institutions that use IAS/IFRS for their published financial statements. The FINREP framework was adopted by the National Bank of Romania Order no.13/30.07.2007 ensuring the compliance of FINREP individual financial statement with the European Directives. COREP (Common Reporting) is based on 18 templates and it is the common solvency ratio reporting framework for credit institutions and investment firms. In Romania, National Bank of Romania adopted the reporting framework for the minimum capital requirements of credit institutions by Order no. 12/2007.

- The use of national taxonomies for fiscal declarations required by tax authorities. The use of interactive data (XBRL) for tax declarations could help the officials to aggregate, validate and analyse the fiscal information. In addition, the exchange of information could be done online between companies and fiscal authorities.

3.2 Literature review

The question, whether auditors could have benefits from XBRL technology, has been preoccupying the experts for some time. XBRL has evolved from a prototype which was called XFRML (Extensible Financial Reporting Markup Language) developed by Charles Hoffman in April 1998 to version 1.0 of XBRL in July 2000 and afterwards in 2005 XBRL International published the XBRL-GL (General Ledger) specification. At the beginning of XBRL, Hannon in 2001 had the opinion that the development of XBRL schema adds nothing new to the duties and responsibilities of auditors except

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tracking tags. However the opinions have changed in time and there are many experts which agree that XBRL could play an important role for continuous auditing.

XBRL is useful for preparing, publishing, exchanging, acquiring and analysing accounting and business data, and provides a standardized method for transferring financial reporting information between software applications (Alles, 2004). XBRL enables continuous auditing by placing financial data in a format which is not proprietary to any specific software application, allowing any future continuous auditing system access to data on any software platform, running any software (which uses XBRL), in any country (Flowerday, 2006). Bizarro & Garcia (2010) draw the attention on the following aspect: another challenge with XBRL is that it requires enhanced general and application controls. A great deal is being written and said about XBRL as a precursor in new types of audit practice and monitoring: continuous auditing, online audit, continuous monitoring and continuous reporting. Many authors have expressed the potential of XBRL General Ledger for continuous auditing nevertheless there is little evidence that XBRL software was really used in continuous auditing.

Bovee, Koogan et al. (2005) propose the use of a Financial Reporting and Auditing Agent with Net Knowledge (FRAANK). FRAANK is an intelligent agent that uses intelligent parsing to extract financial information on the web. The prototype FRAANK was able to automatically convert plain text financial statements on the web into XBRL tagged format and also able to compute financial ratios by obtaining other non-financial information from the web such as stock quotes and forecasted earnings.

In the paper "XBRL: Benefits for FR and Auditing" Bizarro & Garcia mention the benefits of XBRL for auditors: improving data analysis, better risk assessment, accelerated implementation of continuous auditing, improved internal controls, reducing spread sheet proliferation and enhanced audit trails.

Klaus Henselmann and Elisabeth Scherr found a significant correlation between the content analysis of XBRL fillings and the bankruptcy prediction. Since the financial auditors are interested on the continuation of activity of audited entity they could take into account the use of XBRL fillings to assess this issue. In addition, Roger Debreceny emphasizes in a study that the use of analytical ratios is feasible in most cases for XBRL filings to the SEC. For some of the ratios selected in Debreceny`s study, the availability of the ratios comes at the cost of potential loss of information quality. Most contemporary specialists demonstrate in research papers the benefits of XBRL technology for financial analysis. As financial analysis is also used in auditing we can draw the conclusion that XBRL could be also useful within financial auditing.

On 21 May 2008 a resolution of European Parliament (EP) made a call for the EC to encourage Member States to harmonize the classification of financial information and promote the use of new technology, such as XBRL. Besides the resolution, there are

also European legislative proposals which intend to address to the weaknesses in the EU`s supervisory framework proved by the financial crises. Practically, the proposals want to create a European Systemic Risk Board (ESRB) in order to assess risks to the stability of the financial system as a whole, provide early warning of system risks and, where necessary, recommendations for action to deal with these risks (http://www.slideshare.net, 2012). It becomes clear that XBRL technology could help the supervision at European level thanks to the comparability benefits of the standard.

4. THE POTENTIAL OF XBRL FOR FINANCIAL AUDITORS

Auditors are consumers of financial information as much as other participants in the supply chain reporting. With the help of XBRL is possible to search and extract specific data from financial documents in XBRL format. XBRL applications could assist auditors with some of the meticulous aspects of their work, such as research, processing and analysing large amounts of information. These applications could be fit for certain types of analysis, such as comparing data from industry and trends. More importantly the current procedures for data mining analysis can be replaced by several analyses more timely, accurate and complete. For example, auditors` efforts for filling checklists may be replaced by validation routines 100%, or deeper analysis of data from registers (Ian Ball, 2006). Since the validation routines and business rules can automate the verifications performed, the auditors can focus more on efforts to ensure accuracy, reliability and credibility of the financial statements, thus helping to protect the public interest.

The term business rule refers to a policy, procedure or standard that an organization has adopted. Business rules are important because they dictate controls that should be placed upon the data. Financial reports contain large number of business rules, or formulae, that are very important to the accuracy and validity of the data that is being reported. An example of an XBRL business rule is the Assets= Liability + Equity the fundamental accounting equation of the Balance Sheet. The business rules are defined in XBRL taxonomies and XBRL applications can check whether these are being followed. Also XBRL formula enables users to programmatically generate XBRL instances based on a set of rules. The ability to express business rules is probably one of the most powerful features of XBRL benefiting from the fact that the information is in a structured format.

There are different types of business rules used in financial reporting: definitions ("Assets equals Liabilities plus Equity"), computations ("Total property, plant and equipment = Land + Buildings + Fixtures + IT Equipment + Other"), process oriented,

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regulations, instructions or documentation. Also, business rules can be grouped into different categories including (www.wikispaces.com, 2012):

- Roll forward - A fact at a point in time plus changes reconciles to a balance at some future point in time (the calendar period axis changes).
- Dimensional aggregation (flat) - A set of facts that aggregate to a total across an axis.
- Exists - A fact exists.
- Equality - A fact is equal to another fact.
- Adjustment - An originally stated balance of a fact plus adjustments reconciles to a restated balance of that same fact (the report date axis changes).
- Roll up - A set of facts roll up into some total fact.
- Fact greater than another - A fact is greater than or equal to another fact.
- Fact greater than zero - A fact is greater than or equal to zero.
- Dimensional aggregation (nested) - A set of facts aggregates to a total across an axis whose members have a hierarchy.

To do comparisons across different periods or across different audited organizations, auditors need combined XBRL instances. In order to add information such as ratios, additional computed values, auditors have two solutions: increasing the number of items in the XBRL taxonomy or they add the information in the XBRL instance.
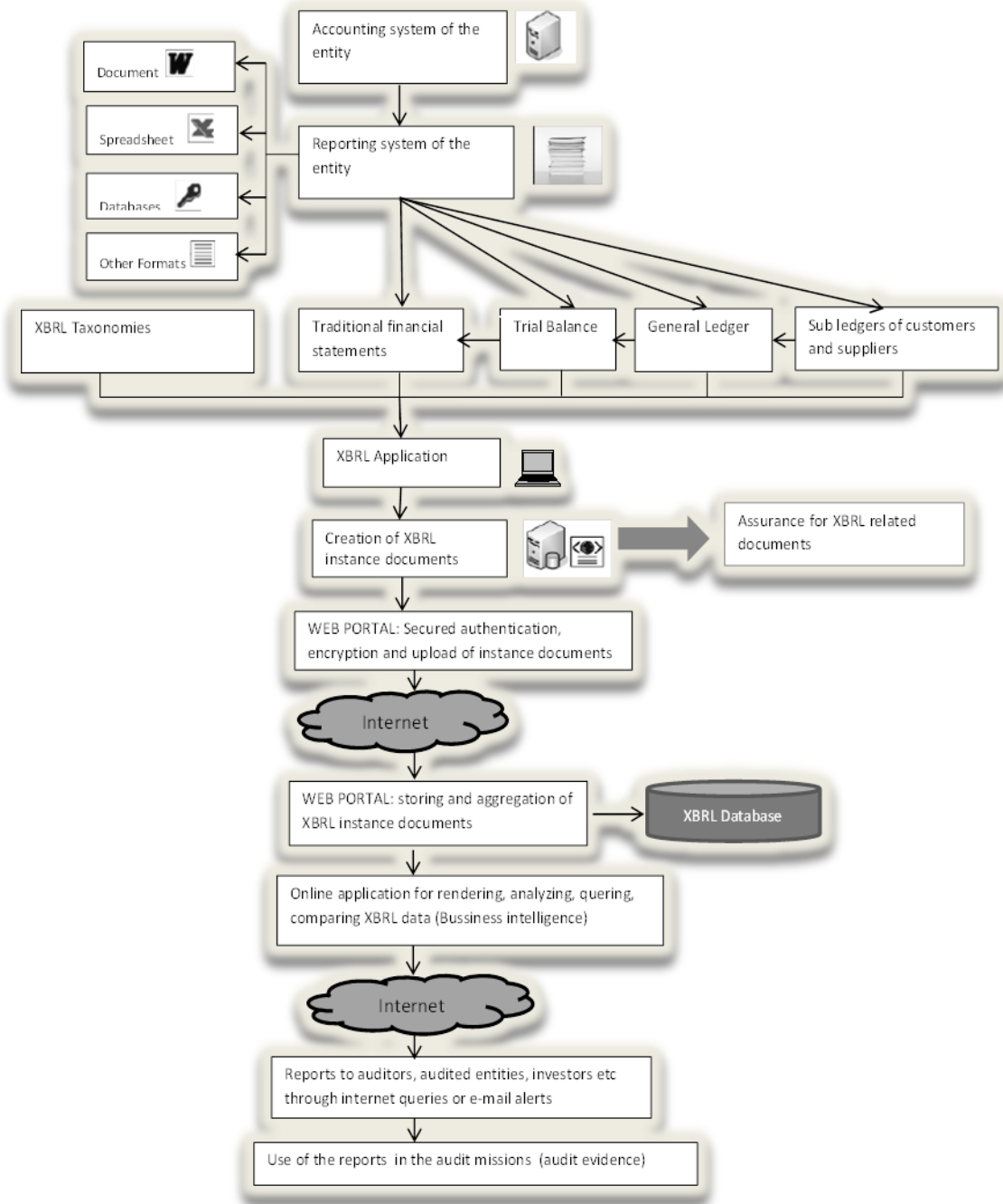
XBRL application could effective analyse the data for anomalies, could access easily data from ledgers at lower costs, and enable effective analysis of large data concerning breaches of fraud, compliance and other audit assessments. In addition, XBRL analysis software considerably reduces the efforts and costs of analysis and data collection and also facilitates the simplification and automation of the audit, control and other important tasks. To summarize the business rules could play an important role for financial auditors when they intend to use financial reports in XBRL format.

Figure 1 shows a model for using XBRL during financial audit missions in Romania. The premise is that all entities which have the obligation to prepare financial statements will provide the system with several financial reports in XBRL format. The financial reports are obtained/extracted directly from the accounting system or from the reporting system of the entity or manually prepared by the accountants based on the information provided by other reports. For example, in some cases the financial statements could be manually prepared based on the data provided by trial balance.

The reporting system of the entity could deliver the financial reports in different formats: word documents, spread sheets, databases files, other formats (e.g. html).

Figure 1 **Model for using XBRL interactive data during financial audit missions**

Accounting system of the entity

Document

Spreadsheet

Databases

Other Formats

Reporting system of the entity

XBRL Taxonomies

Traditional financial statements

Trial Balance

General Ledger

Sub ledgers of customers and suppliers

XBRL Application

Creation of XBRL instance documents

Assurance for XBRL related documents

WEB PORTAL: Secured authentication, encryption and upload of instance documents

Internet

WEB PORTAL: storing and aggregation of XBRL instance documents

XBRL Database

Online application for rendering, analyzing, quering, comparing XBRL data (Bussiness intelligence)

Internet

Reports to auditors, audited entities, investors etc through internet queries or e-mail alerts

Use of the reports in the audit missions (audit evidence)

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The scope of this model is to provide external or internal auditors and other users with financial data that could be easily examined through online XBRL analysis software. In this sense, the model requires the following financial reports to be tagged: sub ledgers of customers and suppliers, general ledger, trial balance and traditional financial statements.

Why we have chosen these reports for XBRL tagging? In the first instance, the financial reports create an audit trail that can be easily automated using software. Concretely, the audit trail is supported by the following facts:

- total amounts representing commercial receivables and payables included within the sub ledgers of customers and suppliers should be equal with the amounts contained in general ledger (suppliers account, customers account);
- the opening, closing and turnover balances in the general ledger should be equal with the corresponding amounts in the trial balance;
- The aggregation of several accounts in the trial balance should be equal with an element of the balance sheets (e.g. assets).

Secondly, nowadays all these checks are performed manually by the auditor and most probably with the help of a checklist. The system will allow automatic checks based on XBRL software.

Thirdly, since the system will contain all sub ledgers of customers and suppliers from all Romanian entities the software will be easily programmed in order to perform periodically cross-checks of closing balances between companies. Concretely, the online system will eliminate the need of auditors or companies to send external confirmations of balances since this information will be already available within the system for all Romanian entities. Moreover, the online system will provide each entity and each financial auditor with an exceptions report that contains the partners and the corresponding amounts for which the external confirmations do not match. The drawback is that the cross-checking system will not be available for external customers or suppliers which are located in other countries. The benefit of auditors and companies is the elimination of postal costs for sending external confirmations.

Finally, these financial reports contain information that could be used by auditors to perform analytical procedures with the help of online analytical software or these reports could be downloaded and analysed with the help of offline analytical software.

The table below shows examples of offline analysis software and the web-sites where their features are described in detail:

Table 1. Analysis software using XBRL technology

Software Name	Web-site
Altova MapForce	www.altova.com/products/mapforce/xbrl_ mapping.html
Fujitsu Instance Dashboard	www.fujitsu.com/global/services/software/interstage/xbrltools/ xbrldashboard.html
Edgar-Online I-Metrix Professional	www.edgr.com
Microsoft FRx:	www.microsoft.com/frx/using/XBRL.mspx
Quantrix Modeler	www.quantrix.com/QuantrixandXBRL.pdf
Rivet Crossfire Analyst	www.rivetsoftware.com/Products/ Crossfire/Default.aspx
SavaNet Analyst	www.savanet.com/AboutAnalyst.aspx

Within the model, the role of XBRL application is to create, edit, view and validate the instance files. The edit function is necessary in order to extend an existent XBRL taxonomy if required. The view function allows users to read XBRL taxonomy and use it. The validation function has the role to discover errors of instance file against the business rules used for validation. The auditor may intervene and express an opinion on the fairness of financial statements standardized with the help of XBRL technology. From this point of view there is another technology called XARL (Extensible Assurance Reporting Language) used by the auditor to give such assurance. As we shall see, we provide a framework of prior conditions to use XBRL instance files during financial audit missions.

As argued before, the process of tagging will be done automatically by companies using an XBRL application for creating, editing, validating and viewing instance files. In other words, the process will be as simple as possible and the financial auditors will benefit from the reports encoded in XBRL format as the other users in the information chain: financial analysts, investors, bankers etc. The XBRL application could be designed as a separate tool or it could be attached to a targeted system: reporting system, accounting system of audited entity in order to create automatically and periodically instance files.

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Since this model is designed for Romania it should contain different taxonomies: IFRS taxonomy for those companies which use as reporting standard IFRS, taxonomy based on local GAAP or Order 3055/2009 (updated) for approval of accounting regulations with European Directives and special taxonomies for trial balance, general ledger and sub ledgers of customers and suppliers.

The next step is to transfer online, through Internet, the instance files within XBRL database which aggregates the financial data at national level. The transfer is done through an uploading process to a web portal which supports content facilities. The web portal can be accessed by various authenticated users: entities` employees (e.g.: financial manager, sales manager, purchase manager), internal auditors, external auditors, accountants, investors, analysts, bankers etc. The XBRL database has the role of a permanent repository system implemented using relational databases and the most advanced technologies in order to allow the storage of document level information like XBRL reports, XBRL Taxonomies and XBRL Linkbases along with granular level information as XBRL Fact items, XBRL concept definitions, XBRL Labels, XBRL Resources, XBRL Relationships (http://www.reportingstandard.com, 2012). During this step, a multi instance processing model could be implemented in order to validate the facts at aggregate level. We will see more details about multi-instance processing models in the framework of pre-conditions (figure 2).

As we could observe from the figure the online application has the role to analyse, query and compare the interactive data in XBRL format for different users and information needs. Financial auditors could also benefit from the reports created using the online application in various ways:

a) use of software functions to analyse accounting interactive data: sorting, join multiple instance files, correlation analysis, vertical or horizontal ratio analysis, stratification of numbers (e.g. to identify excessive large amounts), calculation of statistical parameters (e.g. mean values, standard deviation, high/small values) to identify those exceptional values, graphs, red flag analysis etc.

b) use of business rules in order to analyse accounting data and create exception or monitoring reports which could be sent also by e-mail to financial auditors (e.g. testing the totals of reports).

As regards the use of software functions to analyse data the online application could perform comparisons between various financial statements` elements of the same audited entity for different periods of time or perform comparisons between different entities for the same elements of the financial statements. An analysis of ratios using XBRL data could help auditors to identify potentially misstated financial statements. Changes in these ratios from one year to the next and over a period of time could indicate fraud or error. Auditors usually expect that the ratios to be similar to industry average unless there is a logical explanation for why they are not. The XBRL tool

could allow easily the comparison between industry average and entity`s ratios. The online tool is modelled as a common monitoring system where all financial auditors in Romania can have access to financial data provided that they have the permission rights to view or edit data. Also, the tool will have the facility to render the XBRL data into a conventional format which is more familiar to users (e.g. Excel). Of course the premise for the implementation of the system in Romania is to have all the financial reports mentioned before (sub ledgers of customers and suppliers, general ledger, trial balance and traditional financial statements) for all Romanian companies tagged in XBRL format and afterwards made available on the web portal. In view of the above, it is clear that XBRL technology could create information added value for Romanian financial auditors as for the other users of the system.

The central question then becomes: What are the prior conditions in order to use XBRL data during financial audit missions? Prior conditions are needed because errors or misstatement of XBRL data could affect negatively the quality and the results of financial audit missions. In order to prevent this issue, we designed a framework of prior conditions to implement the model described in Figure 1 (Model for using XBRL interactive data during financial audit missions) by benefiting from recent research of Rajendra Srivastava and Alexander Kogan. In general, this framework could form the ground base for using XBRL data in financial audit missions. The framework proposes a set of prior conditions that addresses to the risks that financial auditors could face when use XBRL data in financial audit missions. In this case, we should stress that data in XBRL format is not only subject of auditing but also helps auditors to gather and analyse evidence regarding financial statements. The framework is not exhaustive and it could be extended by including other prior conditions or to detail current preliminary conditions. To form a better view on the framework, we will examine below each prior condition for using XBRL data within financial audit missions.

The first ramification of the tree is in fact the framework proposed by Rajendra Srivastava and Alexander Kogan for assertions of XBRL instance document. In order that XBRL instance document to be a true representation of the electronic document the following assertions should be true (Rajendra P. Srivastava and Alexander Kogan,2010: 267):

- Business facts in XBRL instance documents are reliable which suppose that all business facts and concepts respect the assertions of completeness, existence and accuracy. This means that we have all relevant business facts tagged (completeness), only business facts from the source document are tagged (existence) and the business facts in the XBRL instance document accurately represent the facts in the traditional format document (accuracy).

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- Metadata in XBRL instance are reliable presuming that the XBRL instance document complies with all XML syntax rules, all rules of XBRL and referenced XBRL taxonomies and the tagged business fact in XBRL instance document properly represents the facts in the traditional format document.

- Metadata External to XBRL Instance Documents are reliable which suppose that we use proper taxonomies, valid taxonomy extensions, proper taxonomy extension elements and proper linkbases.

Figure 2 **. Framework of prior conditions in order to implement the model of XBRL interactive data during financial audit missions**
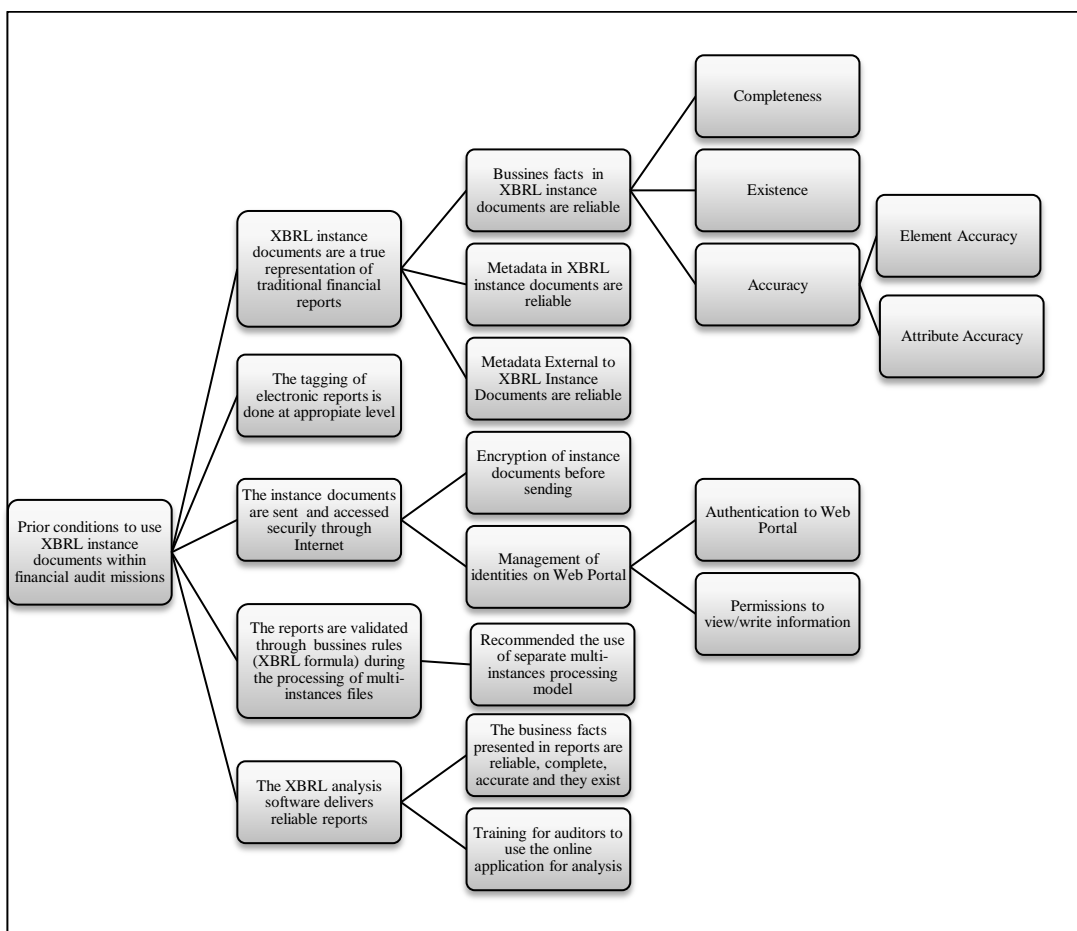
Source: partially based on "*Assurance on XBRL instance document: A conceptual framework of assertions"* Rajendra P. Srivastava and Alexander Kogan, 2010: 267

As we can see from above, the use of XBRL interactive data in financial audit missions has numerous risks which could affect the quality of audit. In fact, the experience shows that XBRL data quality is a common problem. In approximately 18,347 submissions through 8 November 2011, XBRL US has identified approx. 219,669 data quality issues (number of occurrences in submissions): negative value reported, should have been positive (76,267); invalid axis member combination (52,224); incorrect calculation weight used (31,677); value reported for concept that should have been zero (9,868) etc. (http://xbrl.us, 2012).

Another aspect that we should take into account is the level of tagging of the electronic reports in traditional format (e.g.: excel, html, word etc.). It is clear that level 1 of tagging where each complete footnote is tagged as a single block of text will not help auditors to analyse the details of financial statements. Therefore, in order that auditors to benefit from XBRL interactive data the reports should be tagged at least level 4 where, within each note, any monetary value, percentage or number will have an XBRL tag applied (deeply tagging).

Unfortunately, the transfer of XBRL data over the Internet is vulnerable to interceptions and attacks and therefore necessary security measures should be taken. In order to protect the integrity of data, the instance documents should be encrypted before sending over Internet. Moreover, another security measure should be taken: only authenticated users will have access to XBRL data made available on web portal. In this respect, the online system will allow the management of identities and the users could have specific permissions to create, read, update or delete XBRL data (CRUD operations) stored in XBRL database. The users interested in financial analysis like external and internal auditors, financial managers of audited entities, bankers, financial analysts, investors etc. could execute only READ operations through the user interface of the web portal while financial managers of audited entities will have full permissions for all operations (CRUD).

Furthermore the instance documents should be validated through business rules in order to evaluate the existence, the value and the consistency of the facts. There are two models for multi-instance processing: an instance merging processing model and a separate multi-instances processing model. The first model merges the instance documents to a neutral taxonomy and consolidate instance before processing while the second loads each instance to the formula processor with its own Discoverable Taxonomy Set (DTS) intact. The separate multi-instances processing model is recommended because the first model has a number of difficulties arising from merging process (e.g. different taxonomies per year which is a frequent situation create compatibility problems).

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As a rule, the XBRL analysis software should deliver reliable reports. Consequently, the business facts included in these reports should exist and they should be reliable, complete and accurate. Facts which are missing or incorrect could have a negative impact on audit quality and therefore an IT audit of the XBRL application should be performed before the system will be implemented.

In addition, we should emphasize the auditors` need for training in order to analyse XBRL data with the help of an online or offline application. To help tagging process, the auditors need to have appropriate level of knowledge of the XBRL system. This type of knowledge could be acquired through training courses which represents a necessity because the quality of auditing through computer depends considerably on human resources qualities.

In conclusion, there are many risks when auditors want to use XBRL interactive data during the financial audit missions nevertheless when these risks are mitigated and addressed this type of data could be a valuable and complementary source of financial information for auditors.

5. CONCLUSIONS

This paper describes a model for using XBRL interactive data during financial audit missions. To tackle this issue, we developed a framework of prior conditions to implement the model for using XBRL interactive data during financial audit missions. The outcome of the model and the author`s contributions are a series of steps to use XBRL interactive data in Romanian financial audit:

1. Extracting from the reporting system of the entity of the following financial reports: traditional financial statements, trial balance, general ledger, sub ledgers of customers and suppliers;

2. Tagging of the financial reports using XBRL application and different taxonomies: IFRS taxonomy, taxonomy based on local GAAP or Order 3055/2009 (updated) and special taxonomies for trial balance, general ledger and sub ledgers of customers and suppliers;

3. Creation and validation of the XBRL instance documents and sending them securely to the web portal

4. Storing, merging and validating the instance documents on XBRL database

5. Using of online or offline XBRL analysis software in order to perform audit tests and procedures.

As long as the framework of prior conditions is put in practice auditors should not have difficulties in performing tests and procedures using XBRL interactive data. XBRL analysis software could be seen as a complementary solution to other audit tests and

procedures or as a standalone solution on condition that the information provided by XBRL reports is completely reliable and trusted. In this regard, the framework of prior conditions provides a series of criteria for which auditors could evaluate the reliability of XBRL reports: instance documents is a true representation of traditional financial reports, the tagging is done at appropriate level, there is no security issues with XBRL interactive data and the instance files are validated through business rules.

Using the online analytical software, auditors might compare financial data across companies, reporting periods and industries. It is clear that the benefits for implementing such a tool will not be restricted to auditors but will be extended also to investors, bankers, shareholders, business analysts, financial managers and other users of financial reports who will have access to the web portal. The tool could be integrated in other online or network audit systems developed at national level. My doctoral thesis explores the implementation of an online audit system at national level. The research shows that the XBRL tool could be easily integrated in a web portal which could have other components such as: electronic archive or online databases at national level. To implement the model, we should take into account the design of online software based on the example offered by the existent online analytical applications such as Edgar-Online I-Metrix Professional. Furthermore, a standard software application for creation, viewing, editing and validation of instance files operating with Romanian taxonomies of the model, needs to be designed.

It is clear that the automation of tagging process will eliminate most of the burden put on companies. If the analysis of the system prior to implementation will reveal that the process will be too harsh for small and medium sized enterprises, it could be taken into consideration a pilot programme designed only for public interest entities. However, the implementation of a pilot programme will not benefit from the advantages of tagging particular accounting reports such as sub ledgers of customers and suppliers since the automated system for external confirmations of accounts will not work (it will be irrelevant to have confirmations only for public interest entities within the system).

The model proposed in this paper could be relevant not only to Romanian researchers but also to foreign researchers by adapting the taxonomies to specificities of their country. We could state that the model presented in this paper and the framework of prior conditions are valid no matter the country where is implemented. Naturally, in case the framework is applied in other country the specific taxonomies needs to be adapted accordingly but the reports to be tagged, in principle, remain the same. This paper comes in the context of analysing the best ways of implementing XBRL in Romania. It should be remembered that Romania has not yet adopted the XBRL standard nevertheless it is a provisional jurisdiction and therefore it is in a process of

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evaluating the best ways to implement XBRL. Our research is mainly based on modelling and analogy by presenting the stages of the XBRL process and its details.

One limit of the research is that it does not provide the tools described in this paper but rather offers the framework in which XBRL can be used by the financial auditors. As we mentioned in the paper the framework of prior conditions is not exhaustive and therefore this could be another limit of the research.

Future research could design and develop the tools proposed in this paper or investigate other means of implementing XBRL technology in Romania. We consider that our research enhances academic understanding of XBRL and the important role that it could play for the financial audit.

REFERENCES

[1] **Bizarro, P.A. & Garcia, A. (2010) , *XBRL- Beyond the Basics: Benefit for Financial Reporting and Auditing***. *The CPA Journal*, p.62-71;

[2] **Bovee, M. et al. (2005) , *Financial Reporting and Auditing Agent with Net Knowledge (FRAANK) and eXtensible Business Reporting Language (XBRL).*** *Journal of Information Systems* , Vol.19, No.1: 19-41;

[3] **Charles Hoffman, Liv Apneseth Watson (2010) *, XBRL for Dummies***. Wiley Publishing;

[4] **Eric E. Cohen (2005) ,Power Point Presentation - *Improving Audit with and Auditing XBRL GL***. XBRL International Conference Tokyo;

[5] **Flowerday,S. et al. (2006), *Continuous Auditing Technologies and Models.*** Computers & Security 25, p.325-331;

[6] **Grover S. Kearns, Kathrine J. Barker (2011), *Developing a Forensic Continuous Audit Model.*** ADFSL Conference on Digital Forensics, Security and Law;

[7] **Hannon N. (2001) , *XBRL: What it is and what it isn't***. Strateg Financ; 82(9):69 –70;

[8] **K.B.Khargi (2011) , *The Internal Use of XBRL for Continuous Auditing Purpose ; Is XBRL an Accelerator for CA in practice in The Netherlands?***

[9] **Klaus Henselmann and Elisabeth Scherr (2012), *Working papers in Accounting Valuation Auditing No. 2012-2, Content analysis of XBRL Filings as an Efficient Supplement of Bankruptcy Prediction? Empirical Evidence Based on US GAAP Annual Reports.***   Available online at: http://www.pw.wiso.uni-erlangen.de/forschung/Arbeitspapiere/wp%202012-2.pdf (date of consultation 13.12.2012);

[10] **Miklos Vasarhelyi,David Chan, J. P. Krahel (201?),** *XBRL: Consequences to Financial Reporting, Data Analysis, Decision Support and others***;**

[11] **Rajendra P. Srivastava, Alexander Kogan (2010) ,** *Assurance on XBRL Instance Document: A Conceptual Framework of Assertions*. *International Journal of Accounting Information Systems;*

[12] **Roger Debreceny (2010) ,** *Feeding the Information Value Chain: Deriving Analytical Ratios from XBRL filings to the SEC;*

[13] **Ronald J.Doigle, James C.Lampe (2004),** *The Impact of the Risk of Consequence on the Relative Demand for Continuous online Assurance* . *International Journal of Accounting Information Systems;*

[14] **Vasile Florescu, Cătălin Georgel Tudor (2009),** *The Optimization of the Internal and External Reporting in Financial Accounting: Adopting XBRL International Standard* . *Annales Universitatis Apulensis* Series Oeconomica 11 (1);

[15] **Ian Ball (2006) ,** **XBRL,** *Automation and Enhancing the Credibility of Financial Reporting and Auditing* ; available online at http://www.ifac.org/news-events/xbrl-automation-and-enhancing-credibility-financial-reporting-and-auditing (date of consultation 13.12.2012);

[16] **Bob Schneider (2008) ,** *How Continuous Auditing and XBRL- GL Work together to Provide Improved Business Value*; available online at http://hitachidatainteractive.com/2008/05/19/how-continuous-auditing-and-xbrl-gl-work-together-to-provide-improved-business-value/(date of consultation 13.12.2012);

[17] **Roland Hommes et al. (2011) ,** *XBRL Abstract Model 2.0;* available online at http://xbrl.org/Specification/abstractmodel-primary/PWD-2012-06-06/abstractmodel-primary-pwd-2012-06-06.html#sec-model-xbrl-formula (date of consultation 14.12.2012);

[18] **Victor Morilla et al. (2011) ,** *XBRL Formula Overview 1.0*; available online at http://xbrl.org/WGN/XBRL-formula-overview/PWD-2011-12-21/XBRL-formula-overview-WGN-PWD-2011-12-21.html#section-formula (date of consultation 13.12.2012);

[19] **Tangient LLC (2012)**, *Business Rule*, available online at http://secxbrlglossary.wikispaces.com/Business+Rule (date of consultation 13.12.2012);

_____

[20] **Deloitte (2011),** *Essential Features of XBRL Reporting Software*, available online at http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/XBRL_-_Essential_features.pdf (date of consultation 14.12.2012);

[21] **Fujitsu (2012) ,** *XBRL Solutions*, available online at http://www.fujitsu.com/downloads/AU/Fujitsu-Interstage-XWand-V12-Datasheet.pdf (date of consultation 14.12.2012);

[22] **Neoclarus (2012) ,** *i-Audit Self Service Solution*, available online at http://www.neoclarus.com/iaudit.html (date of consultation 14.12.2012);

[23] **Reporting standard XBRL (2012), XBRL Database ,** available online at http://www.reportingstandard.com/wiki/index.php/XBRL_Database (date of consultation 14.12.2012);

[24] **Christine Hellar, Andrew Lymer, Rania Mousa (2009) , XBRL: The Views of Stakeholders ,** available online at http://www.accaglobal.com/content/dam/acca/global/PDF-technical/technology-publications/rr-111-002.pdf (date of consultation 15.12.2012);

[25] **XBRL (2012)** http://www.xbrl.org/ro/ (date of consultation 16.12.2012);

[26] **XBRL (2012) ,** *XBRL Consistency Suite*, available online at http://xbrl.us/research/pages/Csuite.aspx (date of consultation 14.12.2012);

[27] **Conor O`Kelly (2010) ,** *XBRL Adoption Update April 2010;* available online at http://www.slideshare.net/xbrlplanet/xbrl-world-wide-adoption-survey-april-2010#btnNext (date of consultation 17.12.2012);

[28] **XBRL Planet (2012),** http://xbrlplanet.org/wp/?page_id=439 (date of consultation 13.12.2012).