Hands on XBRL and Industry Analysis

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1. Introduction:

The newest important technology available to accountants and other business executives is eXtensible Business Reporting Language (XBRL). XBRL is a publically shared computer language that allows us to electronically report, access, and gather financial information. XBRL is now used by accountants to report their financial information, and by analysts to access financial information of other publically traded companies. It is critical that our students understand and are able to use XBRL.

In 2009 the SEC began requiring publically trading firms to file their financial (and some-non financial) reports using XBRL. The reason for requiring businesses to report using XBRL is to make corporate information more transparent and easily accessible, by using a universal computer code. Unfortunately Harris and More field (2012) report that only 8% of analysts use XBRL, primarily due to lack of exposure and understanding XBRL, as well as significant errors in early reporting.

This case attempts to address the exposure problem by having students use XBRL in a hand on financial statement analysis case. The main intention of the case is to show students how easy XBRL makes gathering data from the SEC. We therefore set the case up as an industry analysis case, to take the emphasis off of XBRL, showing it as a tool. The industry analysis component allows us to expose students in a wide range of classes to this emerging and powerful tool.

In order to complete the case the students need to use a program for extracting XBRL data from the SEC Edgar database. In this case we use the program XBRL Analyst by Findynamics because it is easy to use, and they provide free use to both students and professors. If you would prefer to use another tool to code or extract XBRL, Wenger et.al. (2013) provide an excellent summary of other tools in "A Tour of 5 XBRL Tools".

We tested the case in two classes and found that the case helped to increase the students' knowledge of XBRL. Furthermore we also found that students more readily understood the XBRL concepts if we also spent time in class discussing the vocabulary and concepts.

This case is organized as follows. In section II we present the case itself. In section III we present the teaching notes and section IV classroom efficacy and conclusion. The steps needed to sign up for XBRL Analyst are presented in Appendix A.

2. Industry Analysis Case:

Consider that you have an internship working on financial statement analysis for an investment firm. You supervisor, Bobby, has asked you to go to the Securities Exchange Commission (SEC) Electronic Data Gathering Analysis and Retrieval system (EDGAR) and do an analysis of the systematic industry driven differences in the following firms:

Bank of America Corp (BAC) Commercial Banks

Coca Cola Co (KO) Beverages

Delta Air Lines Inc (DAL) Air Transportation, Scheduled

Fresh Market, Inc. (TFM) Retail, Grocery Stores

Kemet Corp (KEM) Electronic Components

Mcdonalds Corp (MCD) Eating Places

He would like you to gather the income statement and balance sheet information on all of the firms for the most recent fiscal year. He then wants you to use this information to do ratio analysis. He also wants you to show him your analysis skills by doing a longitudinal study on a company of interest to you, and write up the study in a memo.

You go to the SEC Edgar site (http://www.sec.gov/edgar.shtml) and realize it will take you hours to download all of the documents, and longer still to type all of the required information into a spreadsheet for the analysis. You are eager to impress Bobby, so you want to find a way to complete this project more efficiently. In your Accounting Information Systems class at school, you learned about using XBRL to more easily gather financial data.

For this case you will need to use XBRL downloadable software to download the income statement balance sheet and ticker information for the following companies. Available XBRL software includes XBRL Analyst, XBRL View, SEC Filings XBRL, and THE Brix Project. We have included instructions on downloading and using XBRL Analyst in Appendix A. This software is free to students and academics.

>   *If you choose to use XBRL Analyst, do not wait until the last minute to create an account as it may take several days for XBRL Analyst to verify your status.*

Part 1: Download the 2014 annual income statement, balance sheet, and ticker information for the following companies.

Bank of America Corp (BAC) Commercial Banks

Coca Cola Co (KO) Beverages

Delta Air Lines Inc (DAL) Air Transportation, Scheduled

Fresh Market, Inc. (TFM) Retail, Grocery Stores

Kemet Corp (KEM) Electronic Components

Mcdonalds Corp (MCD) Eating Places

Part 2: Calculate the following ratios.

Gross margin percentage, return on sales, return on equity, debt to equity, current asset percentage, current liability percentage, inventory percentage, property plant and equipment percentage, asset turnover, profit margin, return on assets.

Part 3: Analyze the ratios for each company. Write down what differentiates a company in one industry from another. Explain why each industry has different ratios from the others. For example, why might a grocery store have a different Gross Margin Percentage from an airline?

Part 4: Examine the ratios for the following companies labeled 1-6 below. Given your observations from parts 2 and 3, match the ratios below to a company/industry in the list labeled A-F below the table. Discuss why you made each match.

	1	2	3	4	5	6
GM %	100%	19%	54%	28%	69%	30%
ROS	19%	9%	10%	9%	8%	2%
ROE	2%	6%	5%	3%	4%	10%
Debt/Equity	850%	16%	239%	18%	155%	40%
CA %	0%	74%	30%	17%	32%	30%
CL%	0%	7%	25%	7%	29%	22%
Inventory %	0%	23%	5%	0%	1%	16%
PPE%	0%	10%	23%	28%	65%	57%
Dep/amort%	0%	0%	0%	1%	1%	0%
Asset turnover	1%	60%	16%	13%	20%	234%
Margin	19%	9%	10%	9%	8%	2%
ROA	0%	5%	2%	1%	2%	5%

A. Alaska Air Group (Air transportation, Scheduled)

B. AVX Corp (Electronic Components)

C. Bank of New York Mellon Corp (State Banks)

D. Harris Teeter Supermarkets (Retail-Grocery Stores)

E. Pepsi (Beverages)

F. Wendy's (Eating and Drinking Places)

Part 5: Choose a company you are interested in. The company should not be one of the companies already analyzed in this case. Calculate the ratios below from all of the years available to you for the company you selected. Write a memo to Bobby commenting on trends you see (both for the company and the data). In this memo also comment on your use of XBRL and why it is useful and valuable.

Gross margin percentage, return on sales, return on equity, debt to equity, current asset percentage, current liability percentage, inventory percentage, property plant and equipment percentage, asset turnover, profit margin, return on assets.

3. Teaching Notes:

In this section we summarize the fundamental concepts underlying XBRL. For those that are interested in delving forward the SEC (http://www.sec.gov) and XBRL US (http://xbrl.us/) provides a wealth of information. For those who would like to assign reading material to their students "XBRL Fundamentals" by Hannon (2005) and "XBRL Capabilities and limitations" by Strader (2007) both provide good summaries of the concepts.

XBRL stands for eXtensible Business Reporting Language. It is a computer language designed to expedite financial reporting needs. XBRL is used to tag financial statement items so that machines can read the items. XBRL is a specification of XML (eXtensible Markup Language). It is important that XML is extensible, since accounting by nature is always changing.

From XBRL.ORG, "In a nutshell, XBRL provides a language in which reporting terms can be authoritatively defined. Those terms can then be used to uniquely represent the contents of financial statements or other kinds of compliance, performance and business reports. XBRL let's reporting information move between organizations rapidly, accurately and digitally."

According to Trevor Harris of Columbia, "XBRL is the key to Democratizing transparency", (PR Newwire 2010). XBRL reduces the cost of obtaining information on publically traded firms since the information is now provided in XBRL documents by the SEC on Edgar, and can be accessed for free.

Terms Associated with XBRL:

Extensible: Means that the language is fluid, it can be extended at need (that is if you have an item that is not currently included in the taxonomy, it can be added)

Taxonomies: Dictionaries that define terms. Taxonomies differ depending on what type of filer you are (US GAAP, IFRS etc) (each taxonomy is located at a web address called a namespace)

Instance Document: Document containing tagged data for a specific company (such as a balance sheet)

Sample tag: Tag includes taxonomy (ifrs-gp), time (J2004) currency (EUR), amount (35996000000), and item(OtherAdministrativeExpenses)<ifrs-gp:OtherAdministrativeExpenses contextRef="J2004" decimals="0" unitRef="EUR">35996000000</ifrs-gp: OtherAdministrativeExpenses>

An instance document would have multiple tagged items, as well as a web reference to the specific namespace used (which dictionary should be used to "translate" the data. Examples of instance documents are items like an income statement, balance sheet, etc.

The SEC has required XBRL for all publically traded firms in the US since 2011 (accelerated filers since 2009),

Benefits of XBRL:

- Allows you to tag data once for multiple electronic filings
- Eases inter-company transfers of information
- May improve accuracy and reliability of financial data
- Data transferred more quickly and easily
- Allows greater focus on analysis rather than preparation

- Provides greater information availability on the internet
- Reduces time and effort in obtaining and analyzing data

Increased risks with XBRL:

- Tagging errors
- Lack of knowledge about XBRL
- Lack of historical data

Tagging errors particularly in the early years can lead to incorrect information. In their 2012 White Paper, Harris and More fields found that only 8% of Analysts actually used XBRL. The Analysts that did not use it cited a lack of knowledge about XBRL, data accuracy issue, and not enough history of use for longitudinal analysis as the primary reasons for not using XBRL. Early on in particular, Harris (2010) found that 72% of early filers had data accuracy issues (PR Newswire 2010).

The accuracy issues stem from errors in coding due to incorrect positive/negative values, improper relationships between elements, and incorrect dates associated with certain data.

In reaction to the data accuracy issues XBRL US has established quality rules for SEC filers that go into effect 1/1/2016 (Savage 2015).

4. Case Solution:

Before you assign the case to your students ensure they will be able to access the required program. If you are using XBRL Analyst, you will need to sign your university up as an academic user. Once you have done this, your students will be able to sign up. Have them sign up well before the due date since there is usually a two day period between requesting access and being allowed access.

Part 1: Have students use XBRL Analyst to download the income statement, balance sheet and ticker information for the following companies.

Company	Industry
Bank of America Corp (BAC)	Commercial Banks
Coca Cola Co (KO)	Beverages
Delta Air Lines Inc. (DAL)	Air Transportation, Scheduled
Fresh Market, Inc. (TFM)	Retail, Grocery Stores
Kemet Corp (KEM)	Electronic Components
Mcdonalds Corp (MCD)	Eating Places

FY 2014	BAC	KO	DAL	TFM	KEM	MCD
Revenue	22,566,000,000	10,576,000,000	8,916,000,000.	431,002,000.	833,666,000	6,700,300,000.
Cost of Revenue	-	4,083,000,000	2,399,000,000.	282,836,000.	712,925,000	4,184,200,000.
Depreciation & Amortization	239,000,000	-	442,000,000.	14,224,000.	-	-
Net Income	(276,000,000)	1,619,000,000	213,000,000.	16,571,000.	(68,503,000)	1,204,800,000.
Inventory	-	3,357,000,000	348,000,000.	53,128,000.	187,974,000	106,200,000.
Current Assets	151,645,000,000	31,052,000,000	9,746,000,000.	91,718,000.	400,576,000	4,836,300,000.
Net of PP&E	10,351,000,000	14,860,000,000	21,972,000,000.	384,472,000.	292,648,000	25,650,000,000.
Assets	2,149,851,000,000	91,289,000,000	52,167,000,000.	484,907,000.	843,667,000	36,369,100,000.
Total Current Liabilities	51,409,000,000	30,056,000,000	15,010,000,000.	125,396,000.	166,832,000	3,101,200,000.
Total Noncurrent Liabilities	-	28,311,000,000	25,516,000,000.	84,923,000.	449,748,000	-
Stockholders' Equity	231,888,000,000	32,922,000,000	11,641,000,000.	274,588,000.	221,884,000	16,147,700,000.

Part 2: Selected Financial Information from companies' financial downloads:

Ratio Calculations:

$$GM\% = \frac{Revenue - Cost\ of\ Revenue}{Revenue}$$

$$ROS = \frac{Net\ Income}{Revenue}$$

$$ROE = \frac{Net\ Income}{Stockholders'\ Equity}$$

$$Debt/Equity = \frac{Total\ Liabilities}{Stockholders'\ Equity}$$

$$CA\% = \frac{Current\ Assets}{Assets}$$

$$CL\% = \frac{Total\ Current\ Liabilities}{Assets}$$

$$\text{Inventory \%} = \frac{\text{Inventory}}{\text{Assets}}$$

$$\text{PPE \%} = \frac{\text{Net of PPE}}{\text{Assets}}$$

$$\text{Depreciation/Amortization\%} = \frac{\text{Depreciation \& Amortization}}{\text{Assets}}$$

$$\text{Asset Turnover} = \frac{\text{Revenue}}{\text{Assets}}$$

$$\text{Margin} = \frac{\text{Net Income}}{\text{Revenue}}$$

$$\text{ROA} = \frac{\text{Net Income}}{\text{Assets}}$$

Solution to Ratio Calculations by Company:

FY 2014	BAC	KO	DAL	TFM	KEM	MCD
GM %	100%	61%	73%	34%	14%	38%
ROS	-1%	15%	2%	4%	-8%	18%
ROE	0%	5%	2%	6%	-31%	7%
Debt/Equity	827%	177%	348%	77%	278%	19%
CA %	7%	34%	19%	19%	47%	13%
CL%	2%	33%	29%	26%	20%	9%
Inventory %	0%	4%	1%	11%	22%	0%
PPE%	0%	16%	42%	79%	35%	71%
Dep/amort%	0%	0%	1%	3%	0%	0%
Asset turnover	1%	12%	17%	89%	99%	18%
Margin	-1%	15%	2%	4%	-8%	18%
ROA	0%	2%	0%	3%	-8%	3%

Part 3: Differentiation of company in one industry from another:

Bank of America Corp (BAC) Commercial Banks-the most significant factor is the very high debt to equity ratio as well as a zero percent inventory percentage.

Coca Cola Co (KO) Beverages-The significant factors in the beverage industry are the large gross margin percentage while generating a low margin (above 61% GM% to 15% actual margin). The company also has a fairly high debt to equity ratio although not the highest of all the industries. Current assets and current liabilities are approximately 30%.

Delta Air Lines Inc. (DAL) Air Transportation, Scheduled-Delta Air Lines has a strong GM% but a very low return on sales. Asset turnover is approximately 20%.Delta Air also has a very low inventory percentage yet a very high PP&E percentage.

Fresh Market, Inc. (TFM) Retail, Grocery Stores-The Fresh Market has a high PP&E% as well as a high asset turnover.   The Fresh Market has an approximate 34% GM% but a low margin at approximately 4%.

Kemet Corp (KEM) Electronic Components-Kemet has a very low gross margin percentage. Of the industries we are looking at, Kemet has the highest inventory percentage as well as a very high asset turnover.

Mcdonalds Corp (MCD) Eating Places-The most significant factor regarding Mcdonalds is the zero percent inventory as well as the high property plant and equipment percentages.

Part 4-Identification of the Industries:

	1	2	3	4	5	6
GM %	100%	19%	54%	28%	69%	30%
ROS	19%	9%	10%	9%	8%	2%
ROE	2%	6%	5%	3%	4%	10%
Debt/Equity	850%	16%	239%	18%	155%	40%
CA %	0%	74%	30%	17%	32%	30%
CL%	0%	7%	25%	7%	29%	22%
Inventory %	0%	23%	5%	0%	1%	16%
PPE%	0%	10%	23%	28%	65%	57%
Dep/amort%	0%	0%	0%	1%	1%	0%
Asset turnover	1%	60%	16%	13%	20%	234%
Margin	19%	9%	10%	9%	8%	2%
ROA	0%	5%	2%	1%	2%	5%

<u>Question</u>   <u>Matches Company Number</u>

A. Alaska Air Group (Air transportation, Scheduled) ……………………………………………5

B. AVX Corp (Electronic Components)…………………………………………………………..2

C. Bank of New York Mellon Corp (State Banks)…………………………………………….1

D. Harris Teeter Supermarkets (Retail-Grocery Stores)………………………………………….6

E. Pepsi (Beverages)……………………………………………………………………...3

F. Wendy's (Eating and Drinking Places)……………………………………………………..4

Part 5: Memo

Part 5 consists of a two part memo. The first part is dependent on individual company information and will vary by student. It is likely though that almost all students will encounter data issues in the early years of the analysis, and a discussion of these issues should be included in the memo.

The second part of the memo addresses why XBRL is important and relevant. Answers will also vary by student but should address most of the following concepts.

 XBRL is the Extensible Business Reporting Language that utilizes XML technologies. Historically, financial statement information obtained from the Edgar database was produced in a pdf format which did not allow users to easily extract and compare information. When users manually put together reports from pdf documents they would potentially be inconsistent since companies classify information differently. The XBRL utilizes markers or tags which work together to consistently classify information.

XBRL allows its users to extract financial statement information across all software technologies including the internet. This allows its users to automatically obtain and exchange financial statement information of publicly held companies.

XBRL's development could not have been timed well as investors and financial statement users are demanding more timely, accurate, transparent and consistent information than the traditional report models allowed.

5. Conclusion and Classroom Efficacy:

XBRL is possibly the most important new technology available to accountants and financial analysts. It makes previously expensive and/or hard to gather information almost costless. It is important that we teach our students to use and understand the technology so they will be productive in both the classroom and in their careers.

We used the XBRL Industry Analysis case in two classes. The quiz is located in Appendix B. In both classes, we gave a quiz on XBRL both before and after the students completed the case. In the first class we gave the students the quiz, presented the case, and also gave a short lecture on XBRL (see teaching notes), then gave the quiz again. In this class, students increased their scores by 35%. Using a paired t-test, the scores for the students after completing the case were significantly higher at more than a 99% probability (t-value = 13.5).

In the second class, we followed the same procedure, but just gave the students the case with just a bare bones description what XBRL would do for them (5 minutes). In this class the students only increased their scores by 7%, the t-value was only 1.2 and was not significant at any reasonable level (p-value was .13). These findings suggest that while the case on its own is mildly helpful in learning about XBRL, it works much better partnered with instruction.
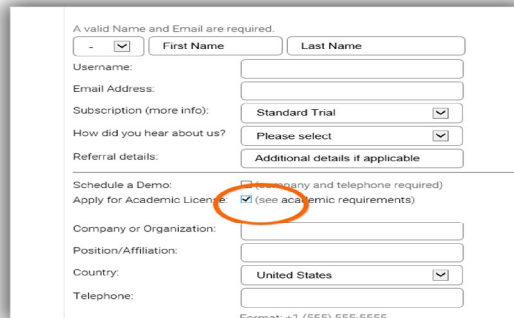
In this case we present hands on experience using real world data gathered electronically from the SEC. Having students complete the case, along with a short amount of classroom instruction was an effective means of helping students learn about XBRL.

Appendix A
Directions to Download XBRL Analyst
Step 1: Register (it may take up to two days to get your password so register early)

Please go to the following site. http://findynamics.com/

Register for the site (write down your user name and password). Use your student email to register. Make sure you click on the box; apply for an academic license (see below).

Note: Your instructor (or another instructor at your institution) must have already registered your institution before they will give you an academic license.

Step 2: Download

Once you have received the email with your password you can download XBRL Analyst. Start by going back to https://findynamics.com/ and click on my account. Sign in using your username and password from the email Findynamics sent you.

Download the appropriate XBRL analyst program from your computer (32 bit or 64 bit). There should now appear a new tab in Excel

From the next page, near the bottom right, click on the 32 bit or 64 bit version that is appropriate for your computer.

If you run in to trouble, you may find the tutorial on downloading and installing XBRL analyst helpful. That tutorial and other short tutorials can be found at: http://findynamics.com/tutorials/
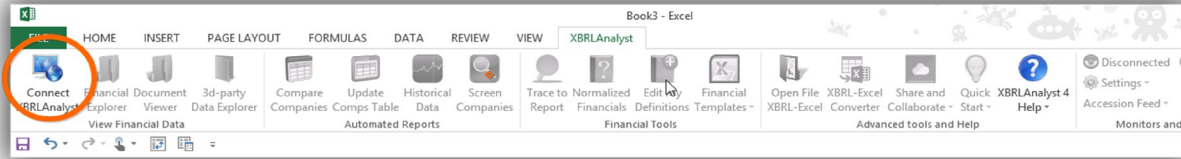
Step 3: USE XBRL Analyst

Click on the XBRL Analyst tab in Excel
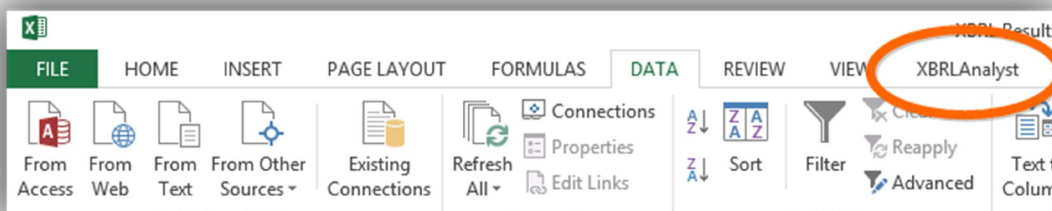
Your screen should appear as below.
Click on connect to database. You will need your user name and password provided when you registered.

    a.   Note that until you click on "connect to data base" you will only be able to connect to database or get help.


    b.   Note that after you have connected to the database, all the icons are now available.

VI.   Determine the type of data you would like to look at.

    a.   If you want to look at multiple companies over a short time period go to Compare Companies.

    b. If you want to look at one or more years of a single (or multiple) companies use Historical Data. If you do not know the exact name or CIK of the company you are interested go to Find Company.
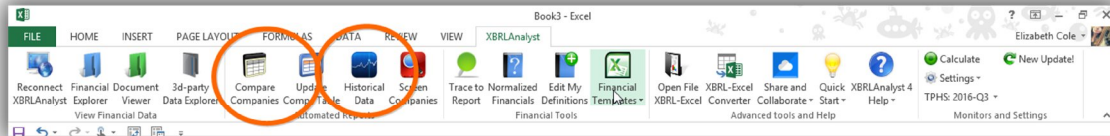

For example if you wanted to compare multiple companies using the comps table, you first click on the comps table tab, and you should get a screen like this:
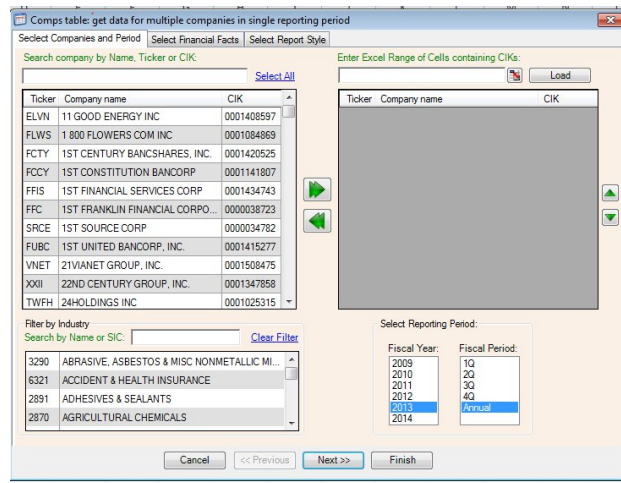

VII. Select the companies you are interested in by:

    a.   searching for them
    b.   highlighting them
    c.   then clicking the green button to move them to the selected table to the right.
    d.   You will also need to highlight the appropriate year.
    e.   When you are done click next. You should see the following screen for selecting data:
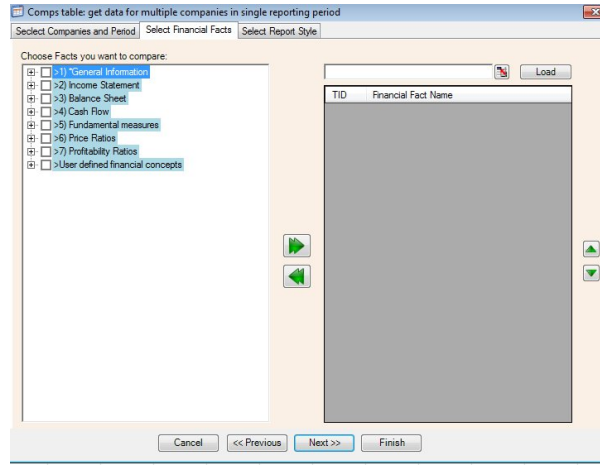
VIII. You can select all of the information for any of the listed items (such as income statement or balance sheet)

    a. you can expand any of the listed items if you wanted to choose a specific account such as revenues.

    b. After you have selected all of the items click next and the following screen will appear:
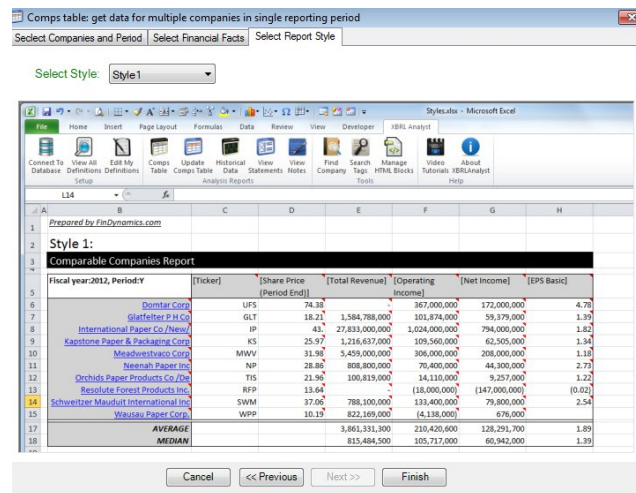
XI. Choose report type: This screen allows you to decide what your report will look like.
    a. Style 1 has the company's names in rows, and the data in columns.
    b. Style 2 has the company names in columns and the data in rows.
    c. Style 3 is similar to style 2 with different formatting.
    d. After clicking a style, click on finish. The following report should appear (except for the data should be for the companies and data you have chosen)

Fiscal year:2012, Period:Y	[Revenue]	[Net Income]	[EPS Basic]
1St Constitution Bancorp		5,060,504	0.92
1St Financial Services Corp		2,965,000	0.05
1St Franklin Financial Corporation		32,748,715	
1St Source Corp		49,633,000	2.02
1St United Bancorp, Inc.		4,728,000	0.14
21Vianet Group, Inc.	1,524,158,000	56,324,000	0.03
22Nd Century Group, Inc.	18,775	(6,736,737)	
24Holdings Inc	-	(36,559)	
AVERAGE	508,058,925	18,085,740	0.63
MEDIAN	18,775	4,894,252	0.14

Once you have downloaded the data you are looking for you can use any of the excel functions for your analysis.

Appendix B
Sample Quiz

6. References:

Hannon, Neal. 2005. "XBRL Fundamentals". *Strategic Finance.* April. Pgs. 57-58.

Harris T. and S. Morefield. 2012. "*An Evaluation of the Current State and Future of XBRL and Interactive Data for Investors and Analysts*" Center for Excellence and security Analysis, Columbia Business School. White Paper Number 3.

PR Newswire. 2010. "XBRL US National Conference to Feature Keynotes from Citi, PIMCO, Columbia University, FAF/FASB and NIEM" *PR Newswire*: Washington. October 10.

Savage, M. 2015 "Initial Set of XBRL US Data Quality Rules for SEC Filers Now Freely Available for Use" *Business Wire*: New York. Nov. 20.

Strader, T. 2007. "XBRL Capabilities and Limitations".*The CPA Journal.* December. Pg 68-71.

Wenger, M., Elam R. and K. Williams. 2013. "A Tour of Five XBRL Tools", *Journal of Accountancy,* April.pg. 48.