Jantsen Roney

IS 520

VBA Project Write-up

Executive Summary

  Nu Skin Enterprises, Inc. is a publicly traded (NYSE: NUS), multi-billion dollar, direct

selling and multi-level marketing (MLM) company that was founded in 1984 in Provo, UT.

Nu Skin sells and "distributes more than 200 premium-quality anti-aging,"[1] beauty, and

nutritional products. Since their founding in 1984, Nu Skin has grown and now operates in

more than 53 international markets and employs close to 4,000 individuals.[2]

  Nu Skin works with hundreds of thousands of distributors who market and sell their

products. Nearly all of Nu Skin's sales revenue comes from these distributors who sell and

market these products directly to potential customers throughout the world.

  Since Nu Skin operates in so many foreign countries, taxes can become complicated,

since more than 40 separate filings must be completed globally. Furthermore, since each

CFC (subsidiary of Nu Skin operating in a foreign country) is a different size and utilizes

different accounts, importing the financials to be used in preparing the US tax returns can

be very difficult.

  I built a tool that greatly simplifies the process of importing the financial

information so that it can be summarized and adjusted for the tax forms. The biggest

problem with importing data is that when one or two accounts are added in a given year,

the links to the cells in the financials will all be displaced by one or two rows. This results

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[1] http://www.nuskin.com/content/corpcom/en_US/company/corporate_press_kit.html
[2] Same as above

in someone manually looking at each link to see that it is properly linked and then manually adjusting the ones that aren't correct. In essence, my tool will do all of that work for you, analyzing the accounts that had balances last year and ensuring that those accounts are linked correctly when the new financials are imported. It will also highlight the rows where new accounts were added so that a user can quickly find what accounts need to be linked. The result is that accountants will now be able to seamlessly import the financials and get to work on making tax adjustments and preparing tax forms instead of getting frustrated with Excel because of the difficulty of manually updating all of the cells.
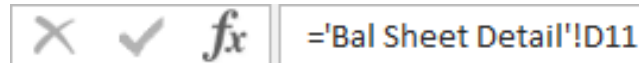
Implementation Documentation

The first thing that I need to explain in order to make this project understandable, is the difference between the "Bal Sheet" tab and the "Bal Sheet Detail" tab. Without understanding the difference, this whole project will seem confusing and pointless.

The Bal Sheet Detail tab is the balance sheet for a CFC (subsidiary of Nu Skin operating in a foreign country) for a given year. Every year, each CFC sends the Bal Sheet Detail as part of their financial reports to Nu Skin headquarters in Provo. Accountants like to be able to trace everything, in order to show that the information reported on tax forms is correct. Therefore, nothing is changed on the Bal Sheet Detail tab after it is sent from each foreign entity. All that is done with it, is that it is copied from the Workbook containing all of the financials, and pasted into the Workbook that is used for all of the tax adjustments.

The Bal Sheet Detail Sheet

<u>The Bal Sheet tab</u> (or balance sheet summary tab) then is used to make all of the necessary adjustments to the balance sheet. Links are placed in the cells on this sheet that correspond to accounts on the Bal Sheet Detail tab, like the following:

$\times$ $\checkmark$ f_x ='Bal Sheet Detail'!D11

Then, other columns are used to make GAAP adjustments (an Accounting thing), translate the currency into USD, and then make tax adjustments to find the taxable balances.

	A B	C	D	E	F G	H	I J	K	L	M	N	O P	Q	R S	T	U V	W	X
1	Tahiti																**A1**	
2	BALANCE SHEET																	
3	12/31/2010										Exchange Rate							
4											12.0000							
5				FC BALANCE		GAAP ADJUSTMENTS		ADJUSTED FC BALANCE			ADJUSTED US$ BALANCE		N/A		Adjusting Entries		US$ CONSOLIDATED BALANCE	
6	ASSETS																	
7	Current Assets																	
8	Cash			543,254				543,254			45,271						45,271	
10	Accounts Receivable			1,898				1,898			158						158	
11	Inventory - Product			535,581				535,581			44,632						44,632	
12	Inventory - Sales Aids			62,780				62,780			5,232						5,232	
13	Inventory - Starter Kits			2,602				2,602			217						217	
18	Prepaid Rent			34,914				34,914			2,910						2,910	
19	Prepaid Insurance			2,981				2,981			248						248	
23	Other Prepayments			5,241				5,241			437						437	
27	Prepaid Duty & Freight			2,240				2,240			187						187	
33																		
34	Fixed Assets																	
37	Furniture & Equipment			21,798				21,798			1,817						1,817	
38	Leasehold Improvements			8,541				8,541			712						712	
39	Computer & Software			27,749				27,749			2,312						2,312	
41	Scanners			128,095				128,095			10,675						10,675	
43	Accumulated Depreciation			(110,151)				(110,151)			(9,179)						(9,179)	
44																		
45	Other Assets																	
46	Asia Distribution Rights			0				0			0						0	
65																		PYF
66	TOTAL ASSETS			1,267,523				1,267,523			105,627			0			105,627	
67																		

5471 OneSource   Temp   **Bal Sheet**   Bal Sheet Detail   ⊕

The Bal Sheet Tab

The process that I have addressed with my sub procedure is the "importing" process where the values from the Bal Sheet detail sheet are copied and pasted into the tax adjustment workbook. Although this process seems simple enough, when new accounts are added to the Bal Sheet Detail tab (the company grows and uses more accounts), all of the links that reference cells at or below the point where the account was added are offset by a row, which in other words makes it so that all of the accounts are incorrectly linked and, in the past, had to be manually changed.

In order to make this as easy to follow as possible, I will explain my code in the order that it runs, addressing each subsidiary procedure separately.

For my solution, I used one main sub procedure (ImportFinacials) that calls many private functions that are each used to help solve the problem. The names of those procedures, in the order that they are used, are the following (top to bottom, left to right):

- accountSaver
- accountChecker
- ignoreThese

- getFile
- accountChecker
- formulaFixer

- ignoreAccounts
- deleteTemp
- stillYellow

accountSaver

The accountSaver function is the first procedure that is called from the main procedure (ImportFinancials) after turning off screen updating. The goal of this procedure is to keep track of all of the accounts that were used in the balance sheet summary tab last year. First, a new worksheet is added to the workpapers (the name that we will use for the workbook that houses the Bal Sheet and Bal Sheet Detail tabs) and is named "Temp". A rather complicated For loop is used to move through all of the accounts on the Bal Sheet summary tab. Using a series of If statements, the procedure checks whether an account formula contains "SUM" (meaning that we are summing the accounts on this tab and that we aren't looking for a cell on the Bal Sheet Detail tab), whether there are "+" signs (meaning that two cells on the Bal Sheet Detail tab are summed and summarized in one account on the summary sheet), and whether the balance is non-zero.

For those accounts that "pass" those conditions, the account name (shown on the Bal Sheet Detail tab), and the account rows (from both the summary and detail tabs) are recorded on the "Temp" worksheet. The loop is robust enough that it can handle multiple accounts from the detail tab summarized in one account on the balance sheet summary tab.

It also records all of the account information without leaving any row gaps. After this procedure has run, the "Temp" worksheet will look like the picture on the right.
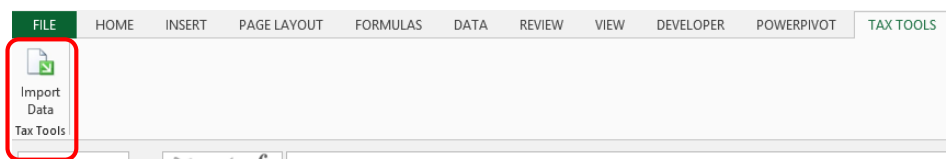
accountChecker

	A	B Summary	C Expected	D Found	E F Changed Addresses
1					
2	Total Cash	8	11		
3	Total Accounts Receivable	10	16		
4	Nu Skin Product Inventory	11	19		
5	Pharmanex Product Inventory	11	20		
6	Nu Skin Sales Aid Inventory	12	22		
7	Pharmanex Sales Aid Inventory	12	23		
8	Nu Skin Starter Kit Inventory	13	25		
9	Pharmanex Starter Kit Inventory	13	26		
10	Prepaid Rent	18	33		
11	Prepaid Insurance	19	34		
12	Other Prepayments (list out above if over 10% of Prepaids)	23	38		
13	Prepaid Duty and Freight	27	45		
14	Fixed Assets - Furniture and Equipment	37	80		
15	Fixed Assets - Leasehold Improvements	38	81		
16	Fixed Assets - Computers and Software	39	82		
17	Fixed Assets - Scanner	41	83		
18	Accumulated Depreciation	43	85		
19	Accrued Commissions - Local	83	123		
20	Advances Received from Distributors	84	124		
21	Total Intercompany Payable	85	150		
22	Capital Stock	100	163		
23	Retained Earnings	102	167		
24	Current Earnings	103	168		
25					
26					
27					

Sheet tabs: 5471 OneSource | **Temp** | Bal Sheet | Bal Sheet Detail | +

READY

The accountChecker is run two times as part of the process. The first time that it runs, it is used to analyze the accounts that were used last year on the Bal Sheet Detail tab. We already populated a list of accounts that were used and linked to the summary tab using the accountSaver procedure. Now however, we are checking to find the other accounts on the Bal Sheet Detail tab that had balances, but which weren't referenced by any cells on the Bal Sheet summary tab. For example, Cash and Total Cash are listed on the Bal Sheet Detail tab, but only Total Cash was referenced to the Cash account on the Bal Sheet summary tab. The problem is that there are duplicate accounts on the detail tab that shouldn't be linked to the summary tab.

The accountChecker procedure starts off by highlighting all of the accounts on the Bal Sheet Detail tab. Then two For loops are used to cycle through all of the accounts. The first loop looks for accounts that had a balance of either 0 or a zero-length string. All of these accounts can then be unhighlighted. The next loop looks through the remaining highlighted cells to find the accounts that we recorded on the "Temp" worksheet. We are then left with a bunch of highlighted cells that we can ignore when we import this year's financials (because to this point, we haven't imported the new financials and we are

looking at last year's accounts).   When this procedure has finished, the Bal Sheet Detail tab will look something like the picture below. You can also see the ribbon button I made.

ignoreThese

The ignoreThese procedure picks us where the accountChecker procedure left off. We now have a bunch of highlighted accounts on the Bal Sheet Detail tab. Now, in order to keep track of these accounts, so that we can igno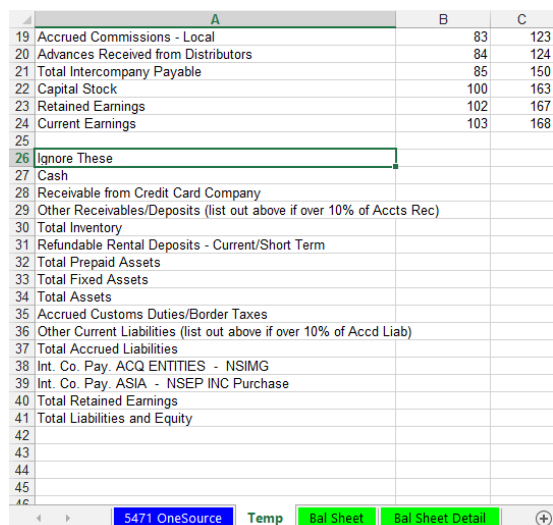re them later (kind of sounds like an oxymoron doesn't it?) the ignoreThese procedure records the names of all of these accounts on the Temp tab. When it is done running, none of the accounts on the Bal Sheet Detail tab will be highlighted and all of the names will be recorded
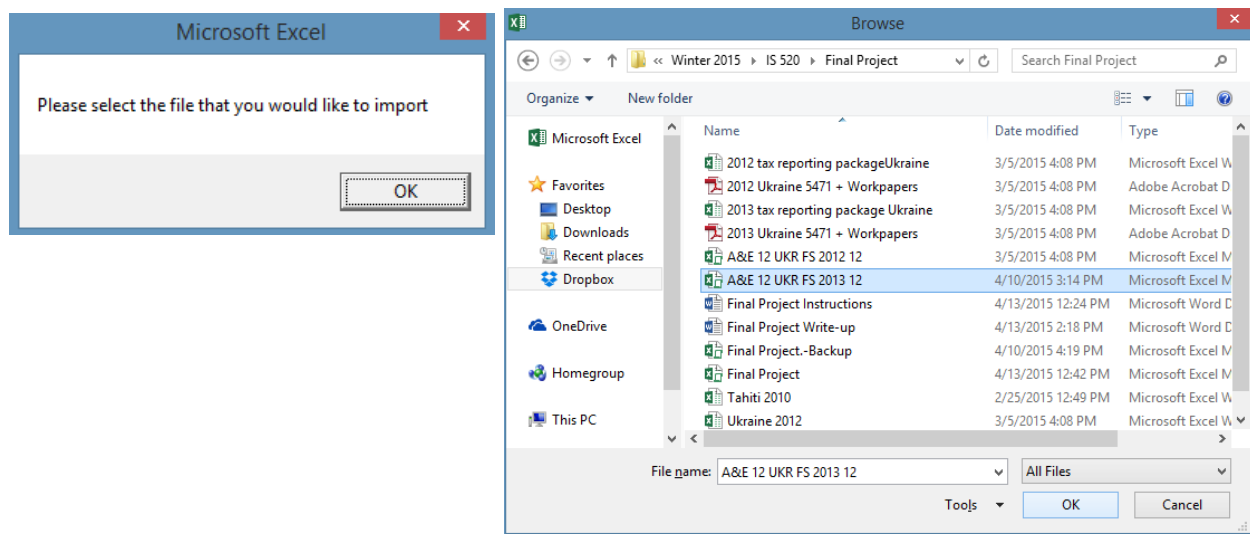
on the Temp worksheet under the descriptive heading "Ignore These" so that it will look like the picture above.

getFile

Now we are finally ready to import the new financials, namely the balance sheet detail. First, a message box is displayed, prompting the user to select the Excel file that they would like to import, followed by a dialog box where the user will select the file.

After the user selects the file, it is opened, the Bal Sheet Detail tab (financials workbook) is activated, and all of the values are selected, copied, and then pasted onto the Bal Sheet Detail tab in the workpapers. This may be a good time to mention again that screen updating is disabled for basically the entire procedure so that the user only sees the message box and dialog box.

accountChecker

The accountChecker procedure now runs for the second time. This time though, it is dealing with the new financials which have just been imported. Again, all of the accounts on the balance sheet detail tab are highlighted yellow. Then the procedure checks for

accounts with no balance and unhighlights those. It then takes the list of accounts that has been made on the "Temp" sheet and loops through the balance sheet detail tab to unhighlight those as well.

As it does this, it checks to see if the row where the account was found is the same as it was on last year's Bal Sheet Detail. If so, the procedure continues running to find the other accounts. If the account is on a different row than last year though, the formulaFixer procedure is called.

The formulaFixer procedure is used to find the cell address of the account on this year's Bal Sheet Detail. If an account was found on a different row than the year before, the procedure looks for it on the Bal Sheet Detail tab and then stores the address on the "Temp" worksheet.

The accountChecker procedure then continues to run in its loop and fixes the formula of the cells on the Bal Sheet tab by removing the old cell reference (while keeping the reference to the Bal Sheet Detaili tab) and concatenating on the new cell address. After this procedure has finished running, all of the accounts that were used last year should be properly linked on the Bal Sheet tab and the "Temp" worksheet should look like the picture to the right (notice the cell references in column E).

	A	B	C	D	E
1		Summary Row	Expected	Found	Changed Address
2	Total Cash	8	11	11	
3	Total Accounts Receivable	10	16	16	
4	Nu Skin Product Inventory	11	19	19	
5	Pharmanex Product Inventory	11	20	20	
6	Nu Skin Sales Aid Inventory	12	22	22	
7	Pharmanex Sales Aid Inventory	12	23	23	
8	Nu Skin Starter Kit Inventory	13	25	25	
9	Pharmanex Starter Kit Inventory	13	26	26	
10	Prepaid Rent	18	34	33	D33
11	Prepaid Insurance	19	35	34	D34
12	Other Prepayments (list out above if over 10% of Prepaids)	23	39	38	D38
13	Prepaid Duty and Freight	27	46	45	D45
14	Fixed Assets - Furniture and Equipment	37	81	80	D80
15	Fixed Assets - Leasehold Improvements	38	82	81	D81
16	Fixed Assets - Computers and Software	39	83	82	D82
17	Fixed Assets - Scanner	41	84	83	D83
18	Accumulated Depreciation	43	86	85	D85
19	Accrued Commissions - Local	83	124	123	D123
20	Advances Received from Distributors	84	125	124	D124
21	Total Intercompany Payable	85	151	150	D150
22	Capital Stock	100	164	163	D163
23	Retained Earnings	102	168	167	D167
24	Current Earnings	103	169	168	D168
25					
26	Ignore These				
27	Cash				
28	Receivable from Credit Card Company				

5471 OneSource   **Temp**   Bal Sheet   Bal Sheet Detail   +

<u>ignoreAccounts</u>

Next, the ignoreAccounts procedure is called. It loops through the new financials and unhighlights all of the account names that were found and added to the "ignore" list on the "Temp" worksheet. As a reminder, these accounts should be ignored, because nothing was linked to them last year on the Bal Sheet tab, which means that they have non-zero balances, but are likely sums of the accounts that are already linked to the Bal Sheet.

<u>deleteTemp</u>

The deleteTemp procedure simply displays a message box to the user, asking them if they want to delete the "Temp" sheet that was used as part of the solution, but which is no longer needed. If the user clicks "Yes", the "Temp" sheet is deleted. If the user clicks "No", the "Temp" sheet is not delted and the data is formatted into tables so that it looks much nicer, which you can see in the picture below.

	A	B	C	D	E
1	Account Name	Summary Row	Expected	Found	Changed Addresses
2	Total Cash	8	11	11	
3	Total Accounts Receivable	10	16	16	
4	Nu Skin Product Inventory	11	19	19	
5	Pharmanex Product Inventory	11	20	20	
6	Nu Skin Sales Aid Inventory	12	22	22	
7	Pharmanex Sales Aid Inventory	12	23	23	
8	Nu Skin Starter Kit Inventory	13	25	25	
9	Pharmanex Starter Kit Inventory	13	26	26	
10	Prepaid Rent	18	33	34	D34
11	Prepaid Insurance	19	34	35	D35
12	Other Prepayments (list out above if over 10% of Prepaids)	23	38	39	D39
13	Prepaid Duty and Freight	27	45	46	D46
14	Fixed Assets - Furniture and Equipment	37	80	81	D81
15	Fixed Assets - Leasehold Improvements	38	81	82	D82
16	Fixed Assets - Computers and Software	39	82	83	D83
17	Fixed Assets - Scanner	41	83	84	D84
18	Accumulated Depreciation	43	85	86	D86
19	Accrued Commissions - Local	83	123	124	D124
20	Advances Received from Distributors	84	124	125	D125
21	Total Intercompany Payable	85	150	151	D151
22	Capital Stock	100	163	164	D164
23	Retained Earnings	102	167	168	D168
24	Current Earnings	103	168	169	D169
25					
26	Ignore These				
27	Cash				
28	Receivable from Credit Card Company				

5471 OneSource   **Temp**   Bal Sheet   Bal Sheet Detail   ⊕

<u>stillYellow</u>

The last procedure that runs is stillYellow. It just checks to see if any account names are still highlighted yellow on the Bal Sheet Detail tab. If so, a message box is displayed, letting the user know that one or more accounts were added. It would be very, very difficult to be able to automate the classifying process, meaning assigning accounts from the Bal Sheet Detail tab to account on the Bal Sheet tab. But by fixing all of the other links and leaving the accounts that aren't yet linked highlighted, the accountant or user can easily locate those accounts and link them quickly. Here is what the message box looks like.

Learning and Conceptual Difficulties

I learned quite a bit through this project. One of the main things that I learned were better problem sovling skills. When we did our projects in class, we always had very clear instructions of what we needed to do to solve the problem and we were often given hints about what tools we should use. On this project, however, I knew what I wanted the end result to be, but I had to think and experiment many different ways before I was actually able to solve the problem. As I went along, I was able to solve most of the problems that came up on my own.

I did encounter one conceptual difficulty that I was unable tto solve on my own. When I finished the accountChecker procedure and ran it, I was hoping that I would see that none of the accounts would still be highlighted yellow. However, I instead found that there were about 10 accounts that were highlighted. These cells were highlighted because they had account balances, but they hadn't been unhighlighted by a separate algorithm because they were not referenced by any cells on the Bal Sheet tab. I was stumped and couldn't figure out how to solve the problem.

I then went and saw Professor Allen. In order to understand what the problem was, Professor Allenn needed to underrstand the process my code went through and so it took us nearly a half-hour to find a conceptual solution to my problem. I then built the ignoreThese and ignoreAccounts procedures which eliminate the problem.

Assistance

The only assistance I received on the project was that mentioned above from Professor Allen, except of course some help online. I have commented in my code the web site sources that I used. And no, I didn't copy and paste someone else's code anywhere in my project. I used the websites for conceptual help.