Supply Chain Financial Analysis

Program Introduction

LCL Executive Programme | Luxembourg | November 8, 2018

MIT Center for Transportation & Logistics

LCL LUXEMBOURG CENTRE FOR LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Programme Overview

Objective: Provide the basis of your SCFA education

High interaction

- I am your resource – please engage by asking questions, offering your opinion
- Contribute in the case discussions
- Ask questions if something is not clear

Here is our plan…..

Planned Schedule

Thursday, November 8, 2018

- Class 1: SC Financial Analysis Framework & Financial Statements
- Class 2: Cost Systems/ABC
- Class 3: Activity-Based Cost Case (Dakota Office Products)
- Class 4: Introduction to Supply Chain Finance

Planned Schedule

Friday, November 9, 2018

- Class 1: SC Finance Case (SC Finance at P&G)
- Class 2: Working Capital/Cash-to-Cash Cycle
- Class 3: CCC Anaylsis
- Class 4: Working Capital Simulation
- Class 5: Working Capital Simulation Debrief

Programme Agenda

Thursday, November 8

8:30	*Registration*
9:00	***SCFA Framework, Financial Statements*** – Jim Rice, MIT CTL
10:30	*Break*
10:45	***Cost Systems/ABC*** *– Jim Rice, MIT CTL*
12:15	*Lunch*
1:15	***Class Photo***
1:30	***Dakota Office Products Case Discussion*** *– Jim Rice, MIT CTL*
2:45	*Break*
3:00	*Break*
3:15	***Supply Chain Finance Introduction – Prof. Anne Lange, LCL***
4:45	*Adjourn*

Programme Agenda

Friday, November 9

8:30	**SC Finance at Procter & Gamble** – Jim Rice, MIT CTL
9:45	*Break*
10:00	***Working Capital & Cash Conversion Cycle (CCC)*** *– Prof. Anne Lange, LCL*
11:15	***Cash Conversion Cycle Analysis*** *– Jim Rice, MIT CTL*
12:00	*Lunch*
1:00	***Working Capital Simulation*** *– Jim Rice, MIT CTL*
2:00	***Working Capital Simumation Debrief*** *– Jim Rice, MIT CTL*
2:45	***Summary***
3:00	*Adjourn*

Getting the most out of the programme….

- Read the cases in advance of class.
- Bring laptop and power supply Friday
- Build your network, get to know all the other participants
- Gateway Page:
  - https://ctl.mit.edu/supply-chain-financial-analysis-lcl-executive-education
- Share experiences with others …..but
  - This session includes discussions among various stakeholders in global supply chains (e.g. shippers, carriers, forwarders, 3PLs). Our focus is on education.
  - Participants should not sell their services or discuss pricing, costing, rate, tariff or other confidential information here.

MIT Center for Transportation & Logistics 7

Supply Chain Financial Analysis

SCFA Framework and Financial Statements

LCL Executive Programme | Luxembourg | November 8, 2018

MIT Center for Transportation & Logistics

Supply Chain and Financial Performance and Flows

What is the role of the firm/company?

And how can you achieve that?

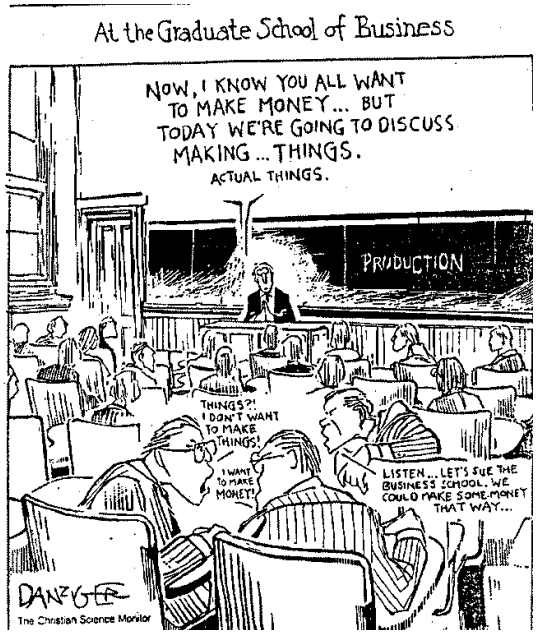
The Role of the Firm

Firm leadership is obligated to create value

Leadership must choose how to create value

- Key options
  - Revenue growth
  - Margin improvement
  - Asset utilization

A few examples to illustrate……



Options for Creating Value

"We have found that companies use three financial themes to achieve their business strategies:

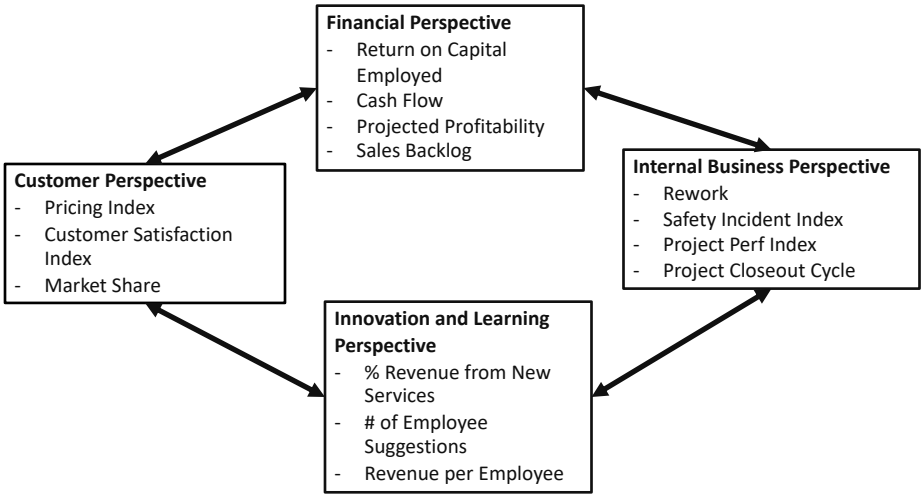
- Revenue Growth and Mix
- Cost Reduction / Productivity Improvement
- Asset Utilization / Investment Strategy"

"Ultimately, causal paths from all the measures on a Scorecard should be linked to financial objectives."

Source: Kaplan, R. S., & Norton, D. P. (1996). Linking the balanced scorecard to strategy. *California management review*, *39*(1), 53-79.;
Ref: J. Goentzel

Balanced Scorecard

A scorecard to measure performance and set strategy



Ref.: HBR Reprint 93505, R. Kaplan, D. Norton, "Putting the Balanced Scorecard to Work"

Creating Value Through Revenue Growth

Grow (increase) revenue (sales) by

- Selling increased volumes of current product line
- Introducing and selling new, different products
- Offering additional services to support the products
- Sell the products and services at a higher price

Creating Value Through Margin Improvement

Improve margins by

- Lowering supply costs
- Reducing operating costs
- Lowering distribution costs
- Raising prices
- Eliminating redundant activities

MIT Center for Transportation & Logistics

Creating Value Through Asset Utilization

Increase Asset Utilization by

- Operating at higher capacity
- Maintaining demand for maximum capacity
- Reducing the need for assets

MIT Center for Transportation & Logistics

Supply Chain & The Role of the Firm

Firm leadership is obligated to create value

- They choose among different options HOW to create value
  - Revenue growth
  - Margin improvement
  - Asset utilization

How can the supply chain **enable** value creation for the three options?

Value Creation & the Supply Chain

The supply chain plays a key role in each of those options

- Revenue Growth
- Margin Improvement
- Asset Utilization

Let's see…..

Supply Chain Enables Revenue Growth

Grow revenue	The supply chain…
▪ Selling increased volumes of current product line	▪ Produces more product as needed
▪ Introducing and selling new, different products	▪ Launches New Product Introductions (NPI) as needed – in time to satisfy (unknown) market demand
▪ Offering additional services to support the products	▪ Creates a new supply chain to provide the service
▪ Sell the products and services at a higher price	▪ Produces, delivers high quality product on demand

MIT Center for Transportation & Logistics

Supply Chain Enables Margin Improvement

Improve margins by	The supply chain…
▪ Lowering supply costs	▪ Sources for lower cost supply
▪ Reducing operating costs	▪ Improves operations, eliminating redundancy
▪ Lowering distribution costs	▪ Uses different distribution channels, optimizing internal, external resources
▪ Raising prices	▪ Produces, delivers high quality product on demand
▪ Eliminating redundant activities	▪ Redesigns for effective and efficient operation

MIT Center for Transportation & Logistics

Supply Chain Enables Asset Utilization

Improve utilization by

- Operating at higher capacity
- Maintaining demand for maximum capacity
- Reducing the need for assets

The supply chain…

- Runs high reliability system (using data to anticipate breakdowns, disruptions)
- Identify potential users for unused capacity (e.g. backhaul)
- Outsourcing, contracting; financing receivables

MIT Center for Transportation & Logistics

So the company's value creation is directly tied to the supply chain but….

How can we make the connection more clear?

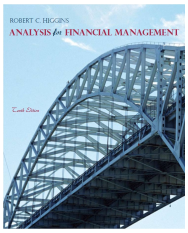
By showing SC impact

on financial performance

MIT Center for Transportation & Logistics

Supply Chain & Financial Performance

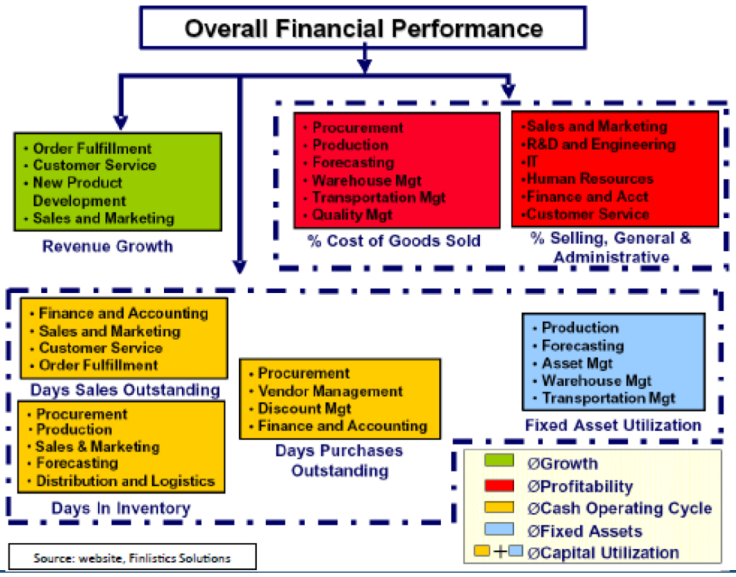
"A company's finances and operations
are
integrally connected."



Higgins is not alone….

Ref.: Higgins, R. Analysis for Financial Management. 11th ed. McGraw-Hill Irwin, 2015

Finlistics Overall Financial Performance



Dupont Analysis

- Performance measurement of ROE developed by Dupont in 1920s
- Identifies 3 components of ROE
  - Margin: Net Income/Sales
  - Asset Turnover (utilization): Sales/Total Assets
  - Financial Leverage: Total Assets/Equity
- ROE = Net Margin x Asset Turnover x Financial Leverage
- Does supply chain affect the three components?
  - If so, how?

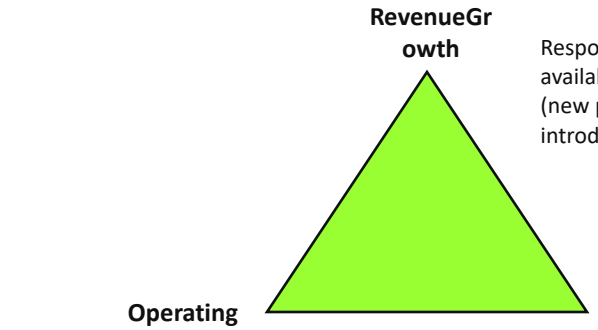
Dupont & Supply Chain Management

- Does supply chain affect the three components?
- If so, how?

	MARGIN		ASSET TURNOVER*		LEVERAGE**
ROE =	Net Income / Sales	X	Sales / Total Assets	X	Total Assets / Equity
	SC efficiency: - Reduces costs SC effectiveness: - Increases service		SC utilization of assets – Plant, equipment - Inventory - Working Capital		SC need for assets - Lower with outsourced supply - Working Capital - Profits to Equity

* Inventory Turnover is more focused and a common supply chain measure
** Some argue that capital structure is not directly affected by SCM practices (Ref.: Fischer, Gaur, Raman "Linking Finance and Operations for Retailing" Working Paper 12-21-02
NOTE: SC affects ROA since ROA = Margin X Asset Turnover

Creating Value & SC Impact on Financial Results

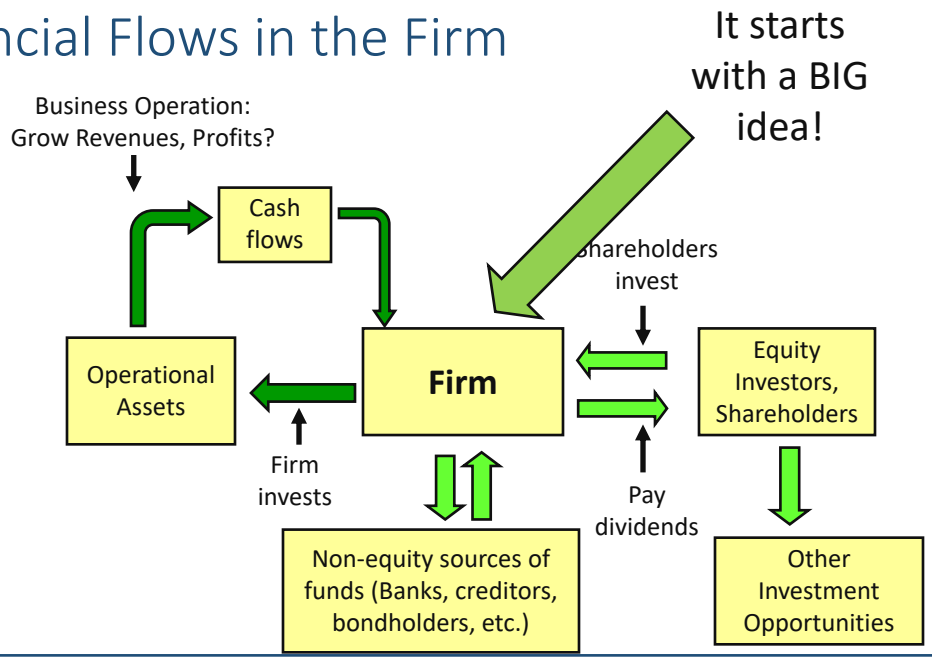


Profit Path ⟷ Turnover Path

Same Destination: ROA

Ref.: Jarrod Goentzel, ESD.251 2016

Financial Flows in the Firm



Value Creation from Finance and SC

The firm invests in operational assets

→ those assets and the operation generate cash flow and profit

Together – finance and operations (supply chain) – create value

→ Finance provides acquires funding and allocates/invests in assets

→ Supply chain uses assets and generates cash flow and profits

The firm must create cash flows and generate profits

→ or there will be no firm

So the supply chain is CENTRAL to the firm's success

MIT Center for Transportation & Logistics

Financial Statements: Income Statement and Balance Sheet

MIT Center for Transportation & Logistics

Many Important Financial Statements

- Income Statement
- Balance Sheet
- 10K
- Annual Report
- Statement of Changes in Financial Position
- Etc.

In this segment we will focus on the Income Statement and the Balance Sheet

Income Statement

- Income Statement presents a summary of income-generating activities
  - Over a stated period of time
  - Comprised of 3 (or 4) components

- Revenues (also know as sales, turnover, proceeds)
- Expenses (variations include cost of goods sold, operating expense, depreciation)
- Profit/Loss (variations include income, gross profit, net profit, EBIT)

Terminology – OpEx and CapEx

Operational Expenses (OpEx):

- "….the costs for a company to run its business operations on a daily basis."***
- Considered a cost for the current period of operation (the current fiscal year)
- In this definition, it does not include the cost of materials, (also known as COGS)

Capital Expenditure (CapEx)

- "Funds used by a company to acquire or upgrade physical assets such as property, buildings or equipment."***
- Considered an investment in the firm's capabilities
- Preferential tax treatment permits depreciating the cost over time rather than incurring the expense in the current period

* Merriam-Webster Dictionary ** M-W Learner's Dictionary ***Investopedia

Costs, or Expenses Incurred by the Firm

- Cost of Goods Sold (COGS)
- Selling, General & Administration (SG&A)
- Depreciation, Amortization
- Other Operating Expenses
- Interest Expense
- Income Taxes

These are non-cash expenses

These are non-operating expenses

Expense Element: COGS

Cost of Goods Sold (or Cost of Sales):

- Includes the direct costs attributable to the production of the products sold by the company; includes the cost of the materials and the direct labor costs used to produce the product
- Does not include indirect expenses, expenses that are not attributable to specific products, such as distribution costs and sales force costs

Ref: Investopedia COGS and Cost of Revenue

Expense Element: COGS Variation

Cost of Revenue: slightly different than COGS

- Includes the direct costs attributable to the production of the product; includes the cost of the materials and the direct labor costs used to produce the product
- AND it includes costs beyond production, such as distribution and marketing

Ref: Investopedia COGS and Cost of Revenue

Operating Expense Elements: SG&A

Sales, General and Administration (SG&A)

- Sales expenses are direct and indirect expenses directly linked to the sale of product
  - Includes cost of sales personnel, advertising, promotion, phone, sales expenses
- General and Administration expenses are those expenses not directly associated with production or sales of the product
  - Includes wages for non-sales personnel, cost for utilities, rent, insurance

Operating Expense Element: Other

Other: found in various locations

- Depreciation – accounting for the reduction in value of a tangible asset, e.g. equipment
- Amortization – accounting for the reduction in value of an intangible asset, e.g. goodwill
  - Goodwill – recorded as an asset on the balance sheet, it is premium paid above book value for an asset usually attributed to band value, IP or reputation
- Research & Development (R&D)

Structure of the Income Statement

Revenue	
	Cost of Goods Sold (COGS)
Gross Margin	
	Sales, General & Administration (SG&A)
	Depreciation
	Other Operating Expenses
Operating Margin	
	Interest Expense
Gross Profit	
	Tax Expense
Net Profit	
Key Measures	
Gross Margin	=Revenue - COGS
EBIT	Earnings before interest and tax
	= Operating Margin
EBITDA	Earnings before interest, tax, depreciation and amortization
	= Operating Margin + Depreciation and Amortization

Kuehne+Nagel Income Statement 2017

Income Statement

CHF million	Note	2017	2016
Net turnover	19	**18,594**	**16,525**
Net expenses for services from third parties		-11,571	-9,975
Gross profit	19	**7,023**	**6,550**
Personnel expenses	20	-4,243	-3,957
Selling, general and administrative expenses	21	-1,643	-1,525
Other operating income/expenses, net	22	13	42
EBITDA		**1,150**	**1,110**
Depreciation of property, plant and equipment	26	-172	-161
Amortisation of other intangibles	27	-41	-31
EBIT		**937**	**918**
Financial income	23	16	12
Financial expenses	23	-4	-3
Result from joint ventures and associates		6	8
Earnings before tax (EBT)		**955**	**935**
Income tax	24	-215	-215
Earnings for the year		**740**	**720**

Huawei Income Statement 2017*

Summary Consolidated Statement of Total Comprehensive Income

(CNY million)	Note	2017	2016
Revenue	8	603,621	521,574
Cost of sales		(365,479)	(311,445)
Gross Profit		238,142	210,129
Research and development expenses		(89,690)	(76,391)
Selling and administrative expenses		(92,681)	(86,442)
Other income, net	9	613	219
Operating profit before financing costs		56,384	47,515
Finance income and expenses	11	(573)	(3,737)
Share of associates' and joint ventures' results (post tax)		317	280
Profit before taxation		56,128	44,058
Income tax	12	(8,673)	(7,006)
Profit after tax		47,455	37,052

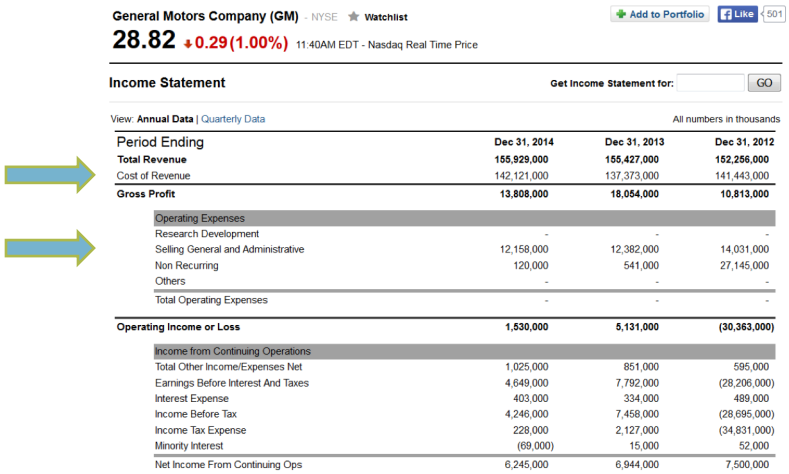
Income Statement: Intel 2014

INTEL CORPORATION
CONSOLIDATED STATEMENTS OF INCOME

Three Years Ended December 27, 2014 (In Millions, Except Per Share Amounts)	2014	2013	2012
Net revenue	$ 55,870	$ 52,708	$ 53,341
Cost of sales	20,261	21,187	20,190
Gross margin	35,609	31,521	33,151
Research and development	11,537	10,611	10,148
Marketing, general and administrative	8,136	8,088	8,057
Restructuring and asset impairment charges	295	240	—
Amortization of acquisition-related intangibles	294	291	308
Operating expenses	20,262	19,230	18,513
Operating income	15,347	12,291	14,638
Gains (losses) on equity investments, net	411	471	141
Interest and other, net	43	(151)	94
Income before taxes	15,801	12,611	14,873
Provision for taxes	4,097	2,991	3,868
Net income	$ 11,704	$ 9,620	$ 11,005

Ref.: Intel 2014 Annual Report, p 50

Income Statement: General Motors 2014



General Motors Company (GM) - NYSE Watchlist

Add to Portfolio | Like 501

28.82 ↓0.29 (1.00%) 11:40AM EDT - Nasdaq Real Time Price

Income Statement

Get Income Statement for: GO

View: **Annual Data** | Quarterly Data

All numbers in thousands

Period Ending	Dec 31, 2014	Dec 31, 2013	Dec 31, 2012
Total Revenue	**155,929,000**	**155,427,000**	**152,256,000**
Cost of Revenue	142,121,000	137,373,000	141,443,000
Gross Profit	**13,808,000**	**18,054,000**	**10,813,000**
Operating Expenses			
Research Development	-	-	-
Selling General and Administrative	12,158,000	12,382,000	14,031,000
Non Recurring	120,000	541,000	27,145,000
Others	-	-	-
Total Operating Expenses	-	-	-
Operating Income or Loss	**1,530,000**	**5,131,000**	**(30,363,000)**
Income from Continuing Operations			
Total Other Income/Expenses Net	1,025,000	851,000	595,000
Earnings Before Interest And Taxes	4,649,000	7,792,000	(28,206,000)
Interest Expense	403,000	334,000	489,000
Income Before Tax	4,246,000	7,458,000	(28,695,000)
Income Tax Expense	228,000	2,127,000	(34,831,000)
Minority Interest	(69,000)	15,000	52,000
Net Income From Continuing Ops	6,245,000	6,944,000	7,500,000

Ref.: https://finance.yahoo.com/q/is?s=GM+Income+Statement&annual

Balance Sheet

Reports the financial condition of the business <u>at ONE point in time</u>

- Assets (something owned of measured value...but not always material)
- Liabilities (a claim against the assets)

Balance Sheet

- Balance Sheet presents the financial condition of the business:
  - At one point in time
  - Comprised of 2 'sides' that must be in balance:
    - 1. Assets (something owned of measure value……but not always material)
    - 2. Liabilities and Equity (a claim against the assets)
- Assets always equals Liabilities and Equity
  - Assets are recorded at the transaction (or book) value, not market value
    - There are different methods of valuing inventory (LIFO, FIFO)

Assets

Current Assets - short-term in nature, liquid assets, can be converted into cash in the next accounting period

- Accounts Receivable
- Inventory
- Marketable securities
- Prepaid expenses

Long-term Assets

- Plant, property, equipment
- Other fixed assets
- 'Goodwill'

Liabilities

Current Liabilities: obligations to be paid in the next accounting period

- Accounts Payable
- Accrued Expenses – an expense before it is paid (wages, interest in loans, taxes)
- Notes Payable, Short-term Bank Debt (line of credit)

Long-term Liabilities

- Debt (bonds, mortgage)

Equity (Owner's Equity): capital, funding for the firm from sources other than liabilities

- Paid-in-capital (from initial investments)
- Retained Earnings (company income)

Kuehne+Nagel Balance Sheet Assets 2017

Balance Sheet

CHF million	Note	Dec. 31, 2017	Dec. 31, 2016
Assets			
Property, plant and equipment	26	1,249	1,127
Goodwill	27	849	758
Other intangibles	27	96	82
Investments in joint ventures	28	31	27
Deferred tax assets	24	220	215
Non-current assets		**2,445**	**2,209**
Assets held for sale	26	–	66
Prepayments		128	106
Work in progress	29	418	300
Trade receivables	30	3,537	2,605
Other receivables	31	132	140
Income tax receivables	31	77	64
Cash and cash equivalents	32/33	720	841
Current assets		**5,012**	**4,122**
Total assets		**7,457**	**6,331**

Kuehne+Nagel Balance Sheet Liabilities & Equity 2017

CHF million	Note	Dec. 31, 2017	Dec. 31, 2016
Liabilities and equity			
Share capital		120	120
Reserves and retained earnings		1,464	1,322
Earnings for the year		737	718
Equity attributable to the equity holders of the parent company		**2,321**	**2,160**
Non-controlling interests		6	5
Equity	34	**2,327**	**2,165**
Provisions for pension plans and severance payments	35	430	407
Deferred tax liabilities	24	128	165
Finance lease obligations	38	4	7
Non-current provisions	40	58	60
Non-current liabilities		**620**	**639**
Bank and other interest-bearing liabilities	37/38	14	8
Trade payables	39	1,890	1,544
Accrued trade expenses/deferred income	39	1,493	968
Income tax liabilities		133	108
Current provisions	40	66	75
Other liabilities	41	914	824
Current liabilities		**4,510**	**3,527**
Total liabilities and equity		**7,457**	**6,331**

Huawei Balance Sheet - Assets 2017*

Summary Consolidated Statement of Financial Position

(CNY million)	Note	December 31, 2017	December 31, 2016
Assets			
Goodwill and intangible assets	14	5,327	4,795
Property, plant and equipment	15	56,089	49,307
Long-term leasehold prepayments	16	5,152	4,112
Interests in associates and joint ventures	17	750	484
Other investments, including derivatives	18	5,965	3,003
Deferred tax assets	19	18,565	16,933
Trade receivables	21	2,451	3,776
Other assets	22	5,665	5,722
Non-current assets		99,964	88,132
Inventories	20	72,352	73,976
Trade and bills receivable	21	107,595	107,957
Other assets	22	25,371	27,916
Other investments, including derivatives	18	24,596	22,606
Cash and cash equivalents	23	175,347	123,047
Current assets		405,261	355,502
Total assets		505,225	443,634

Huawei Balance Sheet - Equity 2017

Equity			
Equity attributable to equity holders of the Company		175,585	140,094
Non-controlling interests		31	39
Total equity		175,616	140,133
Liabilities			
Loans and borrowings	24	38,338	40,867
Long-term employee benefits		19,073	19,652
Deferred government grants		1,340	1,534
Deferred tax liabilities	19	1,471	1,104
Other liabilities	26	1,702	1,073
Non-current liabilities		61,924	64,230
Loans and borrowings	24	1,587	3,932
Income tax payable		4,390	4,100
Trade and bills payable	25	72,866	71,134
Other liabilities	26	168,609	145,448
Provisions	27	20,233	14,657
Current liabilities		267,685	239,271
Total liabilities		329,609	303,501
Total equity and liabilities		505,225	443,634

Balance Sheet: Intel 2014

INTEL CORPORATION
CONSOLIDATED BALANCE SHEETS

December 27, 2014, and December 28, 2013 (In Millions, Except Par Value)	2014	2013
Assets		
Current assets:		
Cash and cash equivalents	$ 2,561	$ 5,674
Short-term investments	2,430	5,972
Trading assets	9,063	8,441
Accounts receivable, net of allowance for doubtful accounts of $38 ($38 in 2013)	4,427	3,582
Inventories	4,273	4,172
Deferred tax assets	1,958	2,594
Other current assets	3,018	1,649
Total current assets	27,730	32,084
Property, plant and equipment, net	33,238	31,428
Marketable equity securities	7,097	6,221
Other long-term investments	2,823	1,473
Goodwill	10,861	10,513
Identified intangible assets, net	4,446	5,159
Other long-term assets	6,561	5,489
Total assets	$ 91,956	$ 92,358
Liabilities, temporary equity, and stockholders' equity		
Current liabilities:		
Short-term debt	$ 1,604	$ 281
Accounts payable	2,748	2,969
Accrued compensation and benefits	3,475	3,123
Accrued advertising	1,092	1,021
Deferred income	2,205	2,096
Other accrued liabilities	4,895	4,078
Total current liabilities	16,019	13,568
Long-term debt	12,107	13,165
Long-term deferred tax liabilities	3,775	4,397
Other long-term liabilities	3,278	2,972
Commitments and contingencies (Notes 17 and 25)		
Temporary equity	912	—
Stockholders' equity:		
Preferred stock, $0.001 par value, 50 shares authorized; none issued	—	—
Common stock, $0.001 par value, 10,000 shares authorized; 4,752 shares issued and 4,748 shares outstanding (4,967 issued and outstanding in 2013) and capital in excess of par value	21,781	21,536
Accumulated other comprehensive income (loss)	666	1,243
Retained earnings	33,418	35,477
Total stockholders' equity	55,865	58,256
Total liabilities, temporary equity, and stockholders' equity	$ 91,956	$ 92,358

Ref.: Intel 2014 Annual Report, p 52

Connecting Income Statement and Balance Sheet

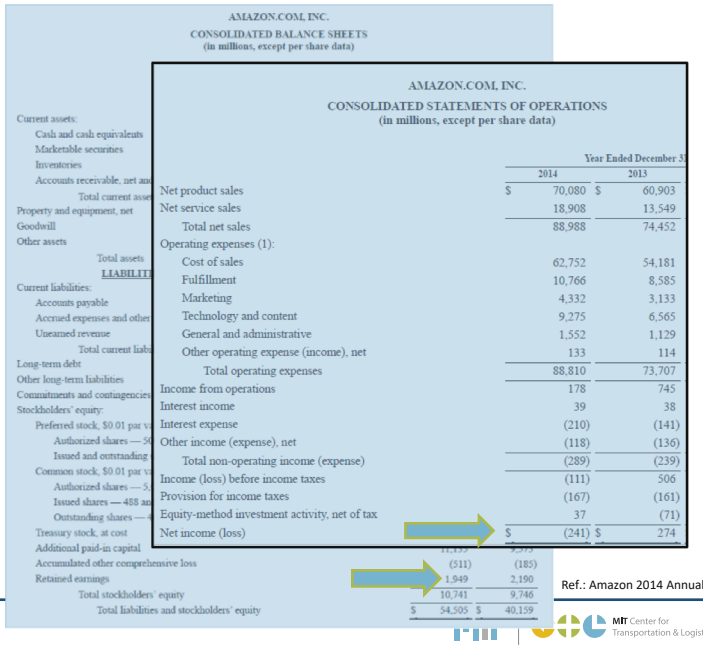
Net income (from Income Statement)

=

Change in Retained Earnings (from Balance Sheet)

This shows a direct connection between the two reports.

$1949-$2190=-$241



AMAZON.COM, INC.
CONSOLIDATED BALANCE SHEETS
(in millions, except per share data)

Current assets:
Cash and cash equivalents
Marketable securities
Inventories
Accounts receivable, net and
Total current asset
Property and equipment, net
Goodwill
Other assets
Total assets
LIABILIT
Current liabilities:
Accounts payable
Accrued expenses and other
Unearned revenue
Total current liabi
Long-term debt
Other long-term liabilities
Commitments and contingencies
Stockholders' equity:
Preferred stock, $0.01 par v
Authorized shares — 5
Issued and outstanding
Common stock, $0.01 par v
Authorized shares — 5,
Issued shares — 488 an
Outstanding shares —
Treasury stock, at cost
Additional paid-in capital
Accumulated other comprehensive loss (511) (185)
Retained earnings 1,949 2,190
Total stockholders' equity 10,741 9,746
Total liabilities and stockholders' equity $ 54,505 $ 40,159

AMAZON.COM, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in millions, except per share data)

	Year Ended December 3	
	2014	2013
Net product sales	$ 70,080	$ 60,903
Net service sales	18,908	13,549
Total net sales	88,988	74,452
Operating expenses (1):		
Cost of sales	62,752	54,181
Fulfillment	10,766	8,585
Marketing	4,332	3,133
Technology and content	9,275	6,565
General and administrative	1,552	1,129
Other operating expense (income), net	133	114
Total operating expenses	88,810	73,707
Income from operations	178	745
Interest income	39	38
Interest expense	(210)	(141)
Other income (expense), net	(118)	(136)
Total non-operating income (expense)	(289)	(239)
Income (loss) before income taxes	(111)	506
Provision for income taxes	(167)	(161)
Equity-method investment activity, net of tax	37	(71)
Net income (loss)	$ (241)	$ 274

Ref.: Amazon 2014 Annual Report

Gross Margin versus Operating Margin

Gross Margin: Measures the ability of the firm to produce a product at a cost in comparison to the revenue derived from selling that product.

$$\frac{\text{Total sales revenue - Cost of goods sold (COGS)}}{\text{Total sales revenue}}$$

Gross Margin compares production efficiency

Operating Margin: Measures the ability of the firm to produce, market, sell and deliver a product at a cost in comparison to the revenue derived from selling that product. (How much is left over after paying for materials and direct wages to make the product?)

$$\frac{\text{Total sales revenue – Total Material and Operating Costs}}{\text{Total sales revenue}}$$

Operating Margin compares pricing and operational efficiency

Key Points

- The Income Statement provides a summary of the flows in (revenue) and out (expenses) of the firm over a period of time; the net difference between the revenue and expense being the profit or loss of the firm.
- The Balance Sheet gives a snapshot of the assets and obligations of the firm at a single moment in time.
- Together, the Income Statement and Balance Sheet provide a basic – but not complete – understanding of the performance of the firm.

Connecting SC Transactions to Financial Statements

Connecting Supply Chain Transactions to the Financial Statements

Two basic important financial statements – the income statement and balance sheet

Consider financial, tax and managerial accounting, core accounting principles, and inventory valuation methods (LIFO and FIFO)

These set the foundation for the next step – identifying the specific balance sheet and income statement impact of transactions that involve the supply chain.

- Let's start with one fundamental transaction that involves the supply chain: Sale of finished goods

MIT Center for Transportation & Logistics

Ex.: Sale of Finished Goods

Case: A company sells a printer system for $10,000 cash; the product cost $2,000 to produce.

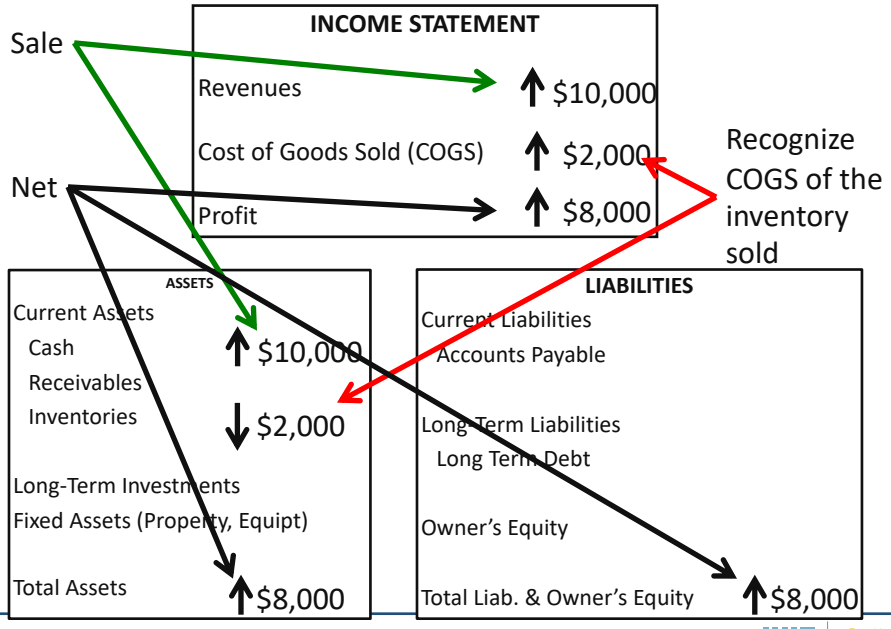
What is the impact on the income statement?

- Revenue would increase by $10,000
- Cost would increase by $2,000
- Net income would increase by $8,000

- What is the impact on the balance sheet?
  - Current Asset Cash account would increase by $10,000
  - Current Asset Inventory account would decrease by $2,000
  - Retained Earnings would increase by $8,000

Note: This is a simplification of the accounting transactions which are not complete; this is for general illustration purposes only.

MIT Center for Transportation & Logistics



Connecting Supply Chain Transactions to the Financial Statements*

How do other, non-sales transactions or activities affect the income statement and balance sheet?

Let's examine one example

What is the impact of operational performance changes that result in "Improving cycle time"?

Break out discussion

Connect the Dots: Improving Cycle Time#

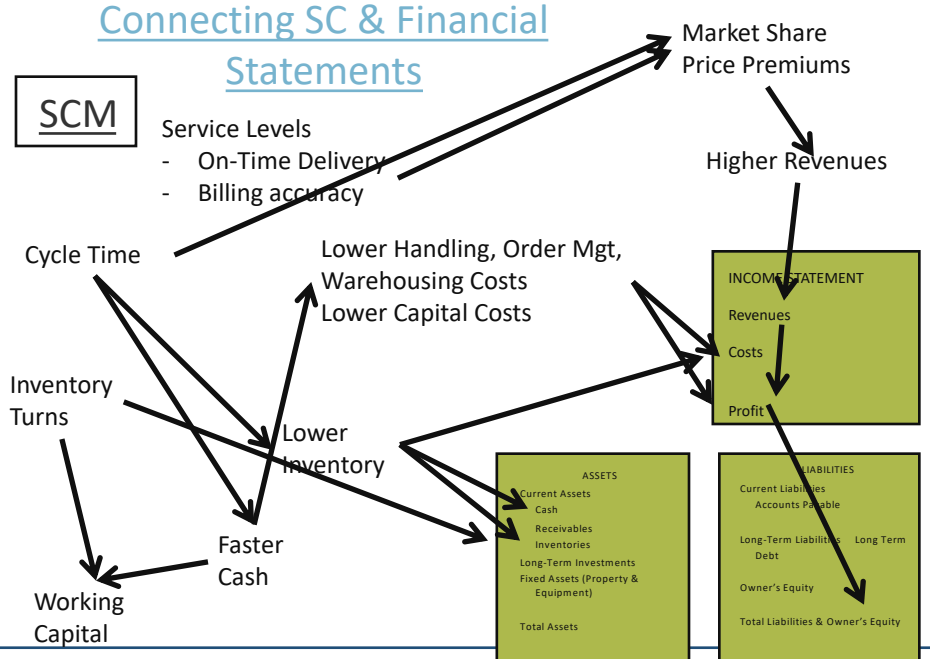
Improving cycle time: Product is produced/delivered faster

- Can fulfill order earlier → better service→ marketplace advantage → more sales or higher price → higher revenue
  - Can bill earlier → Get paid sooner→ lower working capital → Cash sooner, Accounts Receivable lower
    - Cash sooner → lower working capital → lower financing cost
- Could increase operational capacity (produce more in the same amount of time)→ sell more→ increase revenue, maybe margin
  - Can sell additional capacity for higher revenue, more margin
- Need for shorter period of time → fewer resources → lower cost (if resources are reduced or redeployed)
- Less work in process
  - Lower WIP inventory → lower working capital requirement
  - Detect problems faster → higher quality → lower cost (less waste)
- Possible cost increase to achieve faster cycle time
    - How was the cycle time improvement achieved?

SCM Hits the Financial Reports

SCM Impact	Linkage	Linkage	Financial Report
Order Cycle Time	Faster Cash Cycle		Cash, Accts Receivable
	Lower Invty Req't	Lower Capital Costs	Costs
		Lower Assets	Current Assets
	Less Handling	Lower Warehouse Costs	Costs
	Competitive Advtg.	Higher Market Share Revenue	
		Price Premiums	Revenue
On-Time Orders	Higher Cust. Sat.	Competitive Advantage	Revenue
	Reduce Delays	Lower Transportation Costs	Costs
As-ordered Orders	Higher Fill Rate	Faster Cash (no deductions)	Cash, Accts Receivable
Accurate Billing	Red Invoice Errors	Lower Order Mgt. Costs	Costs
Inventory Turns	Lower Assets		Assets
	Lower Invty Req't	Lower Capital Costs	Costs
		Lower Assets	Current Assets
	Less Handling	Lower Warehouse Costs	Costs
	Fewer DCs Req'd	Lower PPE	LT Assets

Connecting SC & Financial Statements



Key Points

One can connect supply chain transactions directly to the income statement and the balance sheet

These enable the supply chain leader to communicate with company leaders in the language of business – finance

There is great power in developing the ability to communicate with business leaders in their language – and this is based on a solid understanding of the fundamental accounting concepts, principles and practical application in the supply chain

Questions, Comments, Suggestions?