Route2
Value2Society

Human & Intellectual Capital Flow Indicator Descriptions & Calculations

Yorkshire Water

November 2017

Contents

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Indicator Documentation

Apprenticeships	Human Capital // Capital Investment

The economic benefit of training staff through apprentice schemes

Inputs

A. Number of apprentices [#]
B. Total employment cost per apprentice [LCU]
C. Social Return on Investment (SROI) on apprenticeship programmes [557%]
D. The total staff hours spend administering the apprenticeship programme [h]
E. Total direct costs required to run the apprenticeship programme [LCU]
F. Average hourly employment cost per employee [LCU]
G. Profit revenue ratio [LCU]
H. Tax profit ratio [LCU]

Calculation Steps

1. Total company investment in the apprenticeship programme = Staff hours spend administering * Average staff cost per employee + Direct costs for the programme (D * F) + E
2. Total investment in apprentice staff = Number of apprentices * Total employment cost per apprentice A * B
3. Social return on investment = Total company investment in the programme + Total investment in the apprentice staff * SROI (1 + 2) * C
4. Tax paid on the company investment in the apprenticeship programme = Total company investment in the programme + Total investment in apprentice staff * Profit revenue ratio * Tax profit ratio (1 + 2) * G * H

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ Step 1 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ Step 4 Output [100%]
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ Step 3 Output [100%]	Always equals the sum of company, individual and government	

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Indicator Documentation

Apprenticeships	Human Capital // Capital Investment
The economic benefit of training staff through apprentice schemes	
Data Sources & References	
Inputs A – B	Company
Input C	Route2 research compiled from various SROI studies of apprenticeships programs. See Appendix ii for details
Inputs D – H	Company
Notes //	

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Indicator Documentation

Employee Commutes	Human Capital // Capital Depreciation – Internal

The economic cost of average commutes above 20 minutes due to productivity losses

Inputs

A. Average commuting time to work, minutes [min]
B. Total working days per employee per year [days]
C. Profit for the year [LCU]
D. Tax-Profit Ratio [LCU]
E. Number of employees [#]
F. Number of days lost to commuting for over 20 minutes [1.5]

Calculation Steps

1. Attracted productivity loss (%) as a result of commuting > 20 minutes = Number of days lost to commuting for over 20 minutes / Total working days per employee per year F / B
2. Total corporate cost = Attracted productivity loss * Profit for the year 1 * C
3. Government reduced tax revenue = Tax-Profit Ratio * Total corporate cost D * 2

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ Step 2 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ Step 3 Output [100%]	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A	OECD and country-specific research compiled by Route2
Inputs B – E	Company

Notes

Research shows that above a certain threshold, here estimated to be 20 minutes, employees lose on average 1.5 workdays per year for leaving early and arriving late (while logging work time). Additional research on the individual non-financial cost of poor well being and on reduced output due to commuting would enhance the calculation.

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Indicator Documentation

Employee Engagement Score	Human Capital // Capital Appreciation – Internal

The economic benefit of enhanced employee productivity resulting from increased job-environment engagement

Inputs

A. Proportion of employees classified as 'engaged' [%]
B. UK Benchmark of employees classified as 'engaged' (2017) [59%]
C. Avoided days lost to absenteeism and presenteeism due to engagement (2012) [7.5]
D. Number of employees that completed the engagement survey [#]

Calculation Steps

1. Check whether the Company's proportion of employees classified as 'engaged' is above or below the UK Benchmark. If above, then the results from the following calculations are treated as benefits accrued from engagement. If below, it is assumed there is no additional benefit from employee engagement.
2. Avoided days lost = Avoided days lost to absenteeism and presenteeism due to engagement * [Proportion of engaged employees above the UK average 1 – (1 - A) / (1 – B)] * Number of employees that completed the engagement survey C * (1 – (1 – A) / (1 – B)) * D
3. Apply methodology of the Sickness Absence Rate indicator to 'Avoided days lost' due to engagement to calculate the Total Non-Financial Benefit of Engagement.
4. Apply methodology of the Sickness Absence Rate indicator to 'Avoided days lost' due to engagement to calculate the Total Financial Benefit of Engagement.

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 3 Output [100%]	↓ N/A	↑ Step 4 Output [100%]
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Employee Engagement Score	Human Capital // Capital Appreciation – Internal

The economic benefit of enhanced employee productivity resulting from increased job-environment engagement

Data Sources & References

Input A	Company
Input B	Aon Hewitt. 'Trends in Global Employee Engagement' (2017). @ http://www.aon.com/unitedkingdom/attachments/trp/2017-Trends-in-Global-Employee-Engagement.pdf
Input C	Willis Towers Watson. '20212 Global Workforce Study.' (2012) @ https://www.towerswatson.com/Insights/IC-Types/Survey-Research-Results/2012/07/2012-Towers-Watson-Global-Workforce-Study

Notes

When applying the Sickness Absence Rate methodology to this indicator, the costs applied are those of 'Stress' and 'Minor Illness,' as these causes of absence are deemed to best reflect the causes of absence due to lack of engagement.
Additional research on the Non-Financial Individual benefit of being engaged at work would enhance the calculation.

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Indicator Documentation

Employee Volunteer Programmes	Human Capital // External Benefit

The economic benefit of employee (paid) time diverted to local community / societal (non-commercial) initiatives

Inputs

A. Number of employee Volunteer Programme hours undertaken [#]
B. Volunteering hours per employee [h]
C. Employee Volunteer Benefit hours threshold [100 hours]
D. Total employment costs [LCU]
E. Working hours per year [h]
F. Monetary investment in programmes [LCU]
G. Health benefits that result for employees that volunteer (Body) (2014) [£2,357]
H. Health benefits that result for employees that volunteer (Mind) (2014) [£956]
I. Employee volunteer programme Return On Investment (ROI) [412%]

Calculation Steps

1. Number of employee participants = Number of employee Volunteer Programme hours undertaken / Volunteering hours per employee A * B
2. Volunteering benefit factor = Volunteering hours per employee / Employee volunteer benefit hours threshold B * C
3. Employment cost of employee volunteer programme hours undertaken = Number of employee Volunteer Programme hours undertaken * Total employment costs / Working hours per year A * D / E
4. Benefits (Body) = Number of employee participants * Health benefits (Body) * Volunteering benefit factor and correct for inflation, convert to output currency and correct for inflation 1 * G * 2
5. Benefits (Mind) = Number of employee participants * Health benefits (Mind) * Volunteering benefit factor and correct for inflation, convert to output currency and correct for inflation 1 * H * 2
6. Total benefit to the individual = Benefits (Body) + Benefits (Mind) 4 + 5
7. Wider societal benefit = (Employment cost of employee volunteer programme hours undertaken + Monetary investment in programmes) * Employee volunteer programme Return On Investment (3 + F) * I
8. Corporate cost = Employment cost of employee volunteer programme hours undertaken 3

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Indicator Documentation

Employee Volunteer Programmes		Human Capital // External Benefit	
The economic benefit of employee (paid) time diverted to local community / societal (non-commercial) initiatives			
Impact Matrix (↓ = Cost ↑ = Benefit)			
Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ Step 8 Output [100%]	↑ N/A
Individual // Non-Financial		Individual // Direct Financial	
↓ N/A	↑ Step 6 Output [100%]	↓ N/A	↑ N/A
Government // Non-Financial		Government // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		Wider Society // Direct Financial	
↓ N/A	↑ Step 7 Output [100%]	Always equals the sum of company, individual and government	

Data Sources & References

Inputs A – B	Company
Input C	Corporation for National & Community Service. (2007) "The Health Benefits of Volunteering" @ https://www.nationalservice.gov/pdf/07_0506_hbr.pdf
Input D	Company
Input E	Calculated as 253 working days in 2016 (UK), minus 25 days holiday entitlement * 8 worked hours per day
Input F	Company
Inputs G – H	Bank of England. (2014) "In giving, how much do we receive? The social value of volunteering" @ http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech756.pdf
Input I	Octavia Foundation. 'Placing a value on work. A social return on investment report,' (2011.) @ http://www.octaviafoundation.org.uk/assets/0000/1500/SROI_Report_Guardian_Version.pdf

Notes

Further research on benefit thresholds and programme-specific SROIs could improve the current approach.

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Indicator Documentation

Employee 'Well Being' Programmes	Human Capital // Capital Investment

The economic benefit of improving employee health and well-being (in terms of increased capacity or improved condition)

Inputs

A. Number of staff eligible to benefit from well being programmes [#]
B. Average hourly employment cost [LCU]
C. Total direct investment in defined well being programmes [LCU]
D. Employee uptake of well being programmes [%]
E. Paid hours spent per employee in well being programmes [h]
F. Social Return on Investment (SROI) in well being programmes (2014) [150%]
G. Individual non-financial gain from a well being programme (2014) [£548]

Calculation Steps

1. Total hours of employee participation in defined well being programmes = Number of staff eligible to benefit from well being programmes * Employee uptake of well being programmes * Paid hours spent per employee in well being programmes A * D * E
2. Employment cost of hours spent in defined well being programmes = Total hours of employee participation in defined well being programmes * Average hourly employment cost 1 * B
3. Return on Investment for employee participation in well being programmes = (Total direct investment in defined well being programmes + Employment cost of hours spent in defined well being programmes) * ROI of programme (C + 2) * F
4. Non-financial benefit to individual = Number of staff eligible to benefit from well being programmes * Employee uptake of well being programmes * Individual non-financial gain from a well being programme, convert to output currency and correct for inflation A * D * G

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 3 Output [100%]	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ Step 4 Output [100%]	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Employee 'Well Being' Programmes	Human Capital // Capital Investment

The economic benefit of improving employee health and well-being (in terms of increased capacity or improved condition)

Data Sources & References

Inputs A – E	Company
Input F	Do Workplace Wellness Programs Save Employers money? - Rand Corp. (2014) @ https://www.shrm.org/ResourcesAndTools/hr-topics/benefits/Documents/RAND_RB9744.pdf
Input G	Quantifying and Valuing the Wellbeing Impacts of Culture and Sport. Department for Culture Media & Sport (2014). @ http://www.pdsw.org.uk/assets/Uploads/Breathe-Quantifying-Valuding-Wellbeing-Impacts-of-Sport-Culture-DCMS-2014.pdf

Notes

The non-financial benefit will be split between both the company and the individual.
In the absence of data on the employee uptake of well being programmes, a participation rate of 28% of employees is assumed ('Wellness schemes benefit employers as well as staff,' Financial Times 2017, @ https://www.ft.com/content/86edc1b6-371b-11e7-99bd-13beb0903fa3)

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Health Care Benefits	Human Capital // Capital Investment

The economic benefit of improved employee health and well-being (in terms of increased capacity or improved condition) through health care benefits

Inputs
A. Spending on health care benefits by programme [LCU]
B. Return on investment (ROI) for health care programmes (2010) [141%]
C. Individual non-financial gain as a percentage of the total ROI on health care programmes (2015) [6%]

Calculation Steps
1. Corporate benefit from health care programme = Spend * ROI – (Spend * ROI * Individual non-financial gain as a percentage of the total ROI on health care) A * B – (A * B * C)
2. Non-financial benefit to individual of health care programme = Spend * ROI * Individual non-financial gain as a percentage of the total ROI on health care programmes A * B * C

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 1 Output [100%]	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ Step 2 Output [100%]	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A	Company
Input B	'What's the hard return on employee wellness programmes?' *Harvard Business Review*, Berry, L. L., Mirabito, A. M., Baun, W. B., (2010)
Input C	Malcolm, Kyla. 'Income Protection and rehabilitation - working together' *Zurich* (2015)

Notes
The ROI for health care programmes includes the Non-Financial benefit to the individual. Therefore the Corporate Non-Financial Benefit is the total ROI minus the Non-Financial benefit to the individual.
The ROI used is the minimum from a range of values taken from a variety of sources, chosen as it was a conservative estimate of the return to health care benefits programmes.

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Indicator Documentation

National Service (Army, Civil)	Human Capital // External Benefit

The economic benefit of volunteering for a national service such as the army

Inputs

A. Total employee days in service [days]
B. Employment cost per day per employee [LCU]
C. Social Return on Investment (SROI) of National Service programmes [%]

Calculation Steps

1. Investment in days of service (employment cost) = Total employee days in service * Employment cost per day per employee A * B
2. Societal benefit = SROI of National Service programmes * Investment in days of service (Employment cost) C * 1
3. Total corporate benefit = Investment in days of service (employment cost) 1

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ Step 3 Output [100%]
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ Step 2 Output [100%]	Always equals the sum of company, individual and government	

Data Sources & References

Inputs A – B	Company
Input C	

Notes

Additional research on the SROI of national service is necessary to complete the calculation. The company's financial benefit from National Service is currently assumed to be a return of 1 to 1.

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Indicator Documentation

Overtime	Human Capital // Capital Investment

The economic cost of an increased likelihood of work-related injury

Inputs

A. Workforce Extent of Overtime [%]
B. Attracted Future Health Damage(depending on the extent of overtime) [%]
C. Tenure in Years [years]
D. Total Employment Costs [LCU]
E. Administration Cost as % of Base Value (3.13%]
F. Replacement Cost as % of Base Value [10%]
G. Individual Expense [Drugs, etc.) as % of Base Value [2.51%]
H. Reduced Individual Household Output % of Base Value [9%]
I. Government Administration Cost as % of Base Value [10%]
J. Government Medical Treatment Cost as % of Base Value [63%]
K. Profit-Revenue Ratio
L. Tax-Profit Ratio
M. Productivity loss [% of salary) due to overtime per annual hour of overtime [ ]
N. Total number of overtime hours [all employees]
O. Overtime individual salary cost [LCU]

Calculation Steps

1. Annualised Health Damage = Attracted Future Health Damage (depending on the extent of overtime) * Tenure in Years B (depending on A) * C
2. Sick Pay ("Base Value of Sickness") = Annualised Health Damage * Total Employment Costs 1 * D
3. Corporate Administration Cost = Sick Pay * Administration Cost as % of Base Value 2 * E
4. Corporate Replacement Cost = Sick Pay * Replacement Cost as % of Base Value 2 * F
5. Total Corporate Cost = Sick Pay + Corporate Administration Cost + Corporate Replacement Cost 2 + 3 + 4
6. Individual Sickness Cost = Sick Pay * Individual Expense (Drugs, etc.) as % of Base Value 2 * G
7. Government Administrative Cost = Sick Pay * Government Administration Cost as % of Base Value 2 * I
8. Government Medical Treatment Cost = Sick Pay * Government Medical Treatment Cost as % of Base Value 2 * J
9. Government Lower Tax Revenue = Total Corporate Cost * Profit-Revenue Ratio * Tax-Profit Ratio 5 * K * L
10. Total Government Cost = Government Administrative Cost + Government Medical Treatment Cost + Government Lower Tax Revenue 7 + 8 + 9
11. Individual Reduced Output Cost = Sick Pay * Reduced Individual Household Output % of Base Value 2 * H
12. Productivity loss = Total number of annual overtime hours * Productivity loss due to overtime per annual hour of overtime * Overtime individual salary cost N * M * O

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Indicator Documentation

Overtime		Human Capital // Capital Investment	
The economic cost of an increased likelihood of work-related injury			
Impact Matrix (↓ = Cost ↑ = Benefit)			
Company // Non-Financial		Company // Direct Financial	
↓ Step 12 Output [100%]	↑ N/A	↓ Step 5 Output [100%]	↑ N/A
Individual // Non-Financial		Individual // Direct Financial	
↓ Step 11 Output [100%]	↑ N/A	↓ Step 6 Output [100%]	↑ N/A
Government // Non-Financial		Government // Direct Financial	
↓ N/A	↑ N/A	↓ Step 10 Output [100%]	↑ N/A
Wider Society // Non-Financial		Wider Society // Direct Financial	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	
Data Sources & References			
Input A	Company		
Input B	Route2 research		
Input C – D	Company		
Inputs E – J	Route2 research		
Inputs K - L	Company		
Input M	Route2 research		
Inputs N – O	Company		
Notes //			

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Route2

Performance Reviews	Intellectual Capital // Capital Appreciation – Internal

The economic benefit of enhanced employee performance

Inputs
A. Turnover costs (refer to the Turnover indicator) [LCU]
B. Number of employees subject to performance reviews [%]
C. Average employment cost per individual [LCU]
D. Turnover reduction due to performance reviews [14.9%]
E. Increase in productivity due to performance reviews [7.467%]

Calculation Steps
1. Avoided turnover costs = Turnover costs * Turnover reduction due to performance reviews * Number of employees subject to performance reviews A * D * B
2. Avoided productivity costs = Average employment cost per individual * Increase in productivity due to performance reviews * Number of employees subject to performance reviews C * E * B

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Steps 1 & 2 Output [100%]	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A	Route2 research. Turnover costs are calculated as part of the 'Turnover' indicator
Input B – C	Company
Inputs D	Asplund & Blacksmith (2011). 'The Secret of Higher Performance,' Gallup. @ http://news.gallup.com/businessjournal/147383/secret-higher-performance.aspx
Input E	Research gathered from a variety of studies. See Appendix ii for details

Notes
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Indicator Documentation

Promotions	Human Capital // Capital Investment

The economic benefit of promotions

Inputs

A. Average salary before promotion [LCU]
B. Average salary after promotion [LCU]
C. Number of promotions [#]
D. Tax Rate [%]

Calculation Steps

1. Average increase in salary due to promotion = Average salary after promotion – Average salary before promotion A – B
2. Individual benefit of promotion = Average increase in salary due to promotion * Number of promotions 1 * C
3. Government increase in tax revenue = Individual benefit of promotion * Tax Rate 2 * D

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ Step 2 Output [100%]
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ Step 3 Output [100%]
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A	Company

Notes

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Indicator Documentation

Sickness Absence Rate	Human Capital // Capital Depreciation – Internal

The economic cost of sickness absence days (in terms of reduced capacity or worsened condition)

Inputs

A. Average number of days per sickness episode [#]
B. Number of days lost [#]
C. Average daily employment cost per employee [LCU]
D. Medical treatment cost per minor illness (minor) (2016) [£30]
E. Medical treatment cost per Musculoskeletal problem (minor) (2016) [£2,365]
F. Medical treatment cost per 'Other' illness (minor) (2016) [£1,033]
G. Medical treatment cost per episode of Stress, depression, or anxiety (minor) (2004) [$725]
H. Medical treatment cost per episode of Gastrointestinal problem (minor) (2016) [£221]
I. Medical treatment cost per eye/ear/nose/mouth/dental problem (minor) (2016) [£380]
J. Medical treatment cost per respiratory condition (minor) (2016) [£575]
K. Medical treatment cost per headache or migraine (minor) (2016) [£500]
L. Medical treatment cost per genito-urinary problem (minor) (2016) [£810]
M. Medical treatment cost per heart, blood pressure, or circulation problem (major) (2016) [£2,560]
N. Medical treatment cost per episode of a serious mental health problem (major) (2016) [£2,085]
O. UK proportion of sickness absence per malady (2016) [%]
P. Individual Non-Financial Cost (minor illness) (2015) [£320]
Q. Individual Non-Financial Cost (major illness) (2015) [£19,400]
R. Individual Financial Cost (minor illness) (2015) [£90]
S. Individual Financial Cost (major illness) (2015) [£710]

Calculation Steps

1. Number of days lost per malady = Number of days lost * UK proportion of sickness absence per malady B * O
2. Number of sickness episodes per malady = Number of days lost per malady / Average number of days per sickness episode 1 / A
3. Number of minor sickness episodes = Number of days lost per malady in the 'minor' category / Average number of days per sickness episode
4. Number of major sickness episodes = Number of days lost per malady in the 'major' category / Average number of days per sickness episode
5. Cost of lost days productivity = Number of days lost per malady * Average daily employment cost 1 * C
6. Individual non-financial cost of a minor illness = individual non-financial cost (minor illness) * Number of minor sickness episodes, convert to output currency and correct for inflation P * 3
7. Individual non-financial cost of a major illness = individual non-financial cost (major illness) * Number of major sickness episodes, convert to output currency and correct for inflation Q * 4
8. Individual financial cost of a minor illness = individual non-financial cost (minor illness) * Number of minor sickness episodes, convert to output currency and correct for inflation R * 3
9. Individual financial cost of a major illness = individual non-financial cost (major illness) * Number of major sickness episodes, convert to output currency and correct for inflation S * 4
10. Government cost of treatment = Number of sickness episodes per malady * Medical treatment costs, convert to output currency and correct for inflation 2 * [D through N]

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Indicator Documentation

Sickness Absence Rate		Human Capital // Capital Depreciation – Internal	
The economic cost of sickness absence days (in terms of reduced capacity or worsened condition)			
Impact Matrix (↓ = Cost ↑ = Benefit)			
Company // Non-Financial		Company // Direct Financial	
↓ Step 5 Output [100%]	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		Individual // Direct Financial	
↓ Steps 6 & 7 Output [100%]	↑ N/A	↓ Steps 8 & 9 Output [100%]	↑ N/A
Government // Non-Financial		Government // Direct Financial	
↓ N/A	↑ N/A	↓ Step 10 Output [100%]	↑ N/A
Wider Society // Non-Financial		Wider Society // Direct Financial	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Inputs A – C	Company
Inputs D – F	The Guardian (2016). "How much have I cost the NHS?" @ https://www.theguardian.com/society/ng-interactive/2016/feb/08/how-much-have-i-cost-the-nhs
Input G	Marcinko, D.E., (2004). Business of Medical Practice: Advanced Profit Maximization Techniques for Savvy Doctors. Springer Publishing Company
Input H	Lewison, G. and Grant, G., 1997. Gastroenterology in the UK: the burden of disease. London: The Wellcome Trust @ http://www.bsg.org.uk/pdf_word_docs/burden_disease.pdf Tam, C.C., Viviani, L., Adak, G.K., Bolton, F.J., Dodds, J., Cowden, J., Evans, M., Gray, J.J., Hunter, P., Jackson, K. and Letley, L., 2011. The Second Study of Infectious Intestinal Disease in the Community. @ https://www.food.gov.uk/sites/default/files/711-1-1205
Inputs I – N	The Guardian (2016). "How much have I cost the NHS?" @ https://www.theguardian.com/society/ng-interactive/2016/feb/08/how-much-have-i-cost-the-nhs
Input O	ONS Labour Survey, Sickness absence in the labour market (2016) @ https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/sicknessabsenceinthelabourmarket/2016#how-many-days-are-lost-to-sickness-absence
Inputs P – S	UK Health and Safety Executive (2015/16) @ http://www.hse.gov.uk/economics/eauappraisal.htm

Notes

If the number of days per episode is not provided, an average of 4 days per sickness episode is assumed (see Key Reference for Input A).
Types of illnesses are sorted into the categories 'minor' and 'major'.

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Indicator Documentation

Unpaid / Underpaid Overtime	Human Capital // Capital Depreciation – Internal

The economic cost of unpaid or underpaid overtime

Inputs

A. Average Extent of Overtime (UK) (2014) [16.32%]
B. Associated Overtime Output (of normal output) depending on Extent of Overtime (2001) [%]
C. Total employment cost per year per FTE [LCU]
D. Number of employees working overtime [#]

Calculation Steps

1. Output % of employees working overtime = (Average extent of overtime * Associated overtime output (of normal output)) +100% (A * B) + 100%
2. Per employee avoided cost (OT Not Paid) = Total employment cost per year per FTE / Output % of employees working overtime * (Output % of employees working overtime – 100%) C / 1 * (1 – 100%)
3. Total corporate cost = Number of employees working overtime * Per employee avoided cost (OT Not Paid) D * 2

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ Step 3 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Unpaid / Underpaid Overtime	Human Capital // Capital Depreciation – Internal

The economic cost of unpaid or underpaid overtime

Data Sources & References

Input A	UC. Jobs recovery and rising work pressures have led to record levels of unpaid hours. (2014) @ https://www.tuc.org.uk/news/jobs-recovery-and-rising-work-pressures-have-led-record-levels-unpaid-hours
Input B	Revay Report (2001). 'Calculating Loss of Productivity Due to Overtime Using Published Charts – Fact or Fiction.'
Input C – D	Company

Notes

The government 'gain' on corporate tax and 'loss' on individual tax is assumed to even out.
Associated Overtime Output (Input D) depends on the extent of overtime. Productivity reduces to 90% with 25% or less of overtime, to 83% under 26-50% of overtime, and down to 69% for overtime over 50% (Revay Report 2001).
Additional research on the individual cost of overtime to well being would enhance the calculation.

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Indicator Documentation

Route2

Wage Inflation

Human Capital // Capital Depreciation – Internal

The economic cost of increasing wages below the inflation rate

Inputs

A. Last year's employment cost per FTE [LCU]
B. This year's employment cost per FTE [LCU]
C. Inflation (+) or deflation (-) of economy (2015) [%]
D. Total employment costs [LCU]

Calculation Steps

1. Increase or decrease in Employment Cost = (This year's employment cost – Last year's employment cost) / Last year's employment cost (B – A) / A
2. Magnitude of pay below inflation = Increase or decrease in employment cost - Inflation (+) or deflation (-) of Economy, 1 – C
3. If Magnitude of pay below inflation is negative, 2 < 0, pay has increased more than inflation. Then: Cost of below inflation pay is null 3 = 0
4. If Magnitude of pay below inflation is negative, 2 > 0, pay has increased less than inflation. Then: Cost of below inflation pay = Magnitude of pay below inflation * Total employment costs 2 * D

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ Step 4 Output [100%]	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A – B	Company
Input C	The World Bank, (2015). Inflation, consumer prices (annual %). A straight average of trend 1 countries was assumed for "non trend". @ http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG
Input D	Company

Notes

The government "gain" on corporate tax and "loss" on individual tax is assumed to even out. It is assumed that the company pays similar corporate taxes as individuals do on income.

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Indicator Documentation

Workplace Fatalities	Human Capital // Capital Depreciation – Internal

The economic cost of death resulting from workplace incident (in terms of reduced capacity)

Inputs

A. Number of Fatalities [#]
B. Fatality cost to company non-financial unit value [n/a]
C. Fatality cost to human non-financial unit values (2015) [£1,171,000]
D. Fatality cost to government non-financial unit values [n/a]
E. Fatality cost to company financial unit value (2015) [£101,500]
F. Fatality cost to human financial unit values (2015) [£220,100]
G. Fatality cost to government financial unit values (2015) [£103,600]

Calculation Steps

1. Corporate Non-Financial Cost of Fatalities = Number of Fatalities * Fatality cost to company non-financial unit value, convert to output currency and correct for inflation A * B
2. Individual Non-Financial Cost of Fatalities = Number of Fatalities * Fatality cost to human non-financial unit value, convert to output currency and correct for inflation A * C
3. Government Non-Financial Cost of Fatalities = Number of Fatalities * Fatality cost to government non-financial unit value, convert to output currency and correct for inflation A * D
4. Corporate Financial Cost of Fatalities = Number of Fatalities * Fatality cost to company financial unit value, convert to output currency and correct for inflation A * E
5. Individual Financial Cost of Fatalities = Number of Fatalities * Fatality cost to human financial unit value, convert to output currency and correct for inflation A * F
6. Government Financial Cost of Fatalities = Number of Fatalities * Fatality cost to government financial unit value, convert to output currency and correct for inflation A * G

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ Step 1 Output [100%]	↑ N/A	↓ Step 4 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ Step 2 Output [100%]	↑ N/A	↓ Step 5 Output [100%]	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ Step 3 Output [100%]	↑ N/A	↓ Step 6 Output [100%]	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Workplace Fatalities	Human Capital // Capital Depreciation – Internal
The economic cost of death resulting from workplace incident (in terms of reduced capacity)	
Data Sources & References	
Input A	Company
Input B – G	UK Health and Safety Executive (2015/16) @ http://www.hse.gov.uk/economics/eauappraisal.htm
Notes //	

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Indicator Documentation

Workplace Injuries	Human Capital // Capital Depreciation – Internal

The economic cost of reducing employee health and well-being through workplace injury (in terms of reduced capacity or worsened condition)

Inputs

A. Number of Minor Injuries
B. Number of Major Injuries
C. Minor injury cost to company non-financial unit value [n/a]
D. Minor injury cost to individual non-financial unit values (2015) [£330]
E. Minor injury cost to government non-financial unit values [n/a]
F. Minor injury cost to company financial unit value (2015) [£100]
G. Minor injury cost to individual financial unit values (2015) [£50]
H. Minor injury cost to government financial unit values (2015) [£400]
I. Major injury cost to company non-financial unit value [n/a]
J. Major injury cost to individual non-financial unit values (2015) [£18,500]
K. Major injury cost to government non-financial unit values [n/a]
L. Major injury cost to company financial unit value (2015) [£5,000]
M. Major injury cost to individual financial unit values (2015) [£890]
N. Major injury cost to government financial unit values (2015) [£6,000]

Calculation Steps

1. Corporate Non-Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to company non-financial unit value A * C
2. Corporate Non-Financial Cost of Major Injuries = number of major injuries * Major injury cost to company non-financial unit value B * I
3. Individual Non-Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to individual non-financial unit value, convert to output currency and correct for inflation A * D
4. Individual Non-Financial Cost of Major Injuries = number of major injuries * Major injury cost to individual non-financial unit value, convert to output currency and correct for inflation B * J
5. Government Non-Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to government non-financial unit value A * E
6. Government Non-Financial Cost of Major Injuries = number of major injuries * Major injury cost to government non-financial unit value B * K
8. Corporate Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to company financial unit value, convert to output currency and correct for inflation A * F
9. Corporate Financial Cost of Major Injuries = number of major injuries * Major injury cost to company financial unit value, convert to output currency and correct for inflation B * L
10. Individual Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to individual financial unit value, convert to output currency and correct for inflation A * G
11. Individual Financial Cost of Major Injuries = number of major injuries * Major injury cost to individual financial unit value, convert to output currency and correct for inflation B * M
12. Government Financial Cost of Minor Injuries = number of minor injuries * Minor injury cost to government financial unit value, convert to output currency and correct for inflation A * H
13. Government Financial Cost of Major Injuries = number of major injuries * Major injury cost to government financial unit value, convert to output currency and correct for inflation B * N

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Indicator Documentation

Workplace Injuries		Human Capital // Capital Depreciation – Internal	
The economic cost of reducing employee health and well-being through workplace injury (in terms of reduced capacity or worsened condition)			
Impact Matrix (↓ = Cost ↑ = Benefit)			
Company // Non-Financial		Company // Direct Financial	
↓ Steps 1 and 2 Output [100%]	↑ N/A	↓ Steps 8 and 9 Output [100%]	↑ N/A
Individual // Non-Financial		Individual // Direct Financial	
↓ Steps 3 and 4 Output [100%]	↑ N/A	↓ Steps 10 and 11 Output [100%]	↑ N/A
Government // Non-Financial		Government // Direct Financial	
↓ Steps 5 and 6 Output [100%]	↑ N/A	↓ Steps 12 and 13 Output [100%]	↑ N/A
Wider Society // Non-Financial		Wider Society // Direct Financial	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	
Data Sources & References			
Input A	Company		
Input B – N	Inputs C – N // UK Health and Safety Executive (2015/16) @ http://www.hse.gov.uk/economics/eauappraisal.htm		
Notes //			

Intellectual Capital

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Indicator Documentation

Knowledge Decay	Intellectual Capital // Capital Depreciation – Internal

The economic cost of technological knowledge obsolescence (i.e. the declining productivity of existing knowhow)

Inputs

A. Number of FTEs classified as technical [#]
B. Annual employment cost of technical FTEs [LCU]
C. Average tenure of technical staff [years]
D. Knowledge decay rate (2006) [13.6%]
E. Cost accruing to the company [65%]
F. Cost accruing to the individual [35%]
G. Years of schooling per FTE [used in annualised human capital stock value] [#]
H. Years of schooling per FTE [used in annualised human capital stock value] [#]

Calculation Steps

1. Annualised human capital stock value [LCU] = The calculation of human capital stock value largely follows the 'income approach' employed by the World Bank, OECD and UK ONS. A difference concerns work years. The Route2 approach deploys average tenure years rather than remaining average work years. See Appendix I for details
2. Corporate non-financial cost = Annualised human capital stock value * Knowledge decay rate * Cost accruing to the company 1 * D * E
3. Individual non-financial cost = Annualised human capital stock value * Knowledge decay rate * Cost accruing to the individual 1 * D * F

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ Step 2 Output [100%]	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ Step 3 Output [100%]	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Knowledge Decay	Intellectual Capital // Capital Depreciation – Internal

The economic cost of technological knowledge obsolescence (i.e. the declining productivity of existing knowhow)

Data Sources & References

Inputs A – C	Company
Input D	Park et al., (2006). Measurement of depreciation rate of technological knowledge: Technology cycle time approach. Journal of Scientific & Industrial Research. 60. pp 121 – 127; de Grip. (2004). Evaluating Human Capital Obsolescence. EC-OECD Seminar On Human Capital & Labour Market Performance; Hall. (2007). Measuring The Returns To R&D: The Depreciation Problem. National Bureau Of Economic Research Working Paper Series; Winfred et al., (1998) Factors That Influence Skill Decay & Retention. Human Performance. 11(1) pp 57 – 101
Inputs E – F	Based on various research, Route2 assumes 65% of the cost of knowledge decay accrues to the company and 35% to the individual
Inputs G – H	Company

Notes

See Appendix i for the human capital stock value equation, which details the aforementioned income approach in mathematical form.
Further research and deployment of more activity-specific decay rates would improve the current approach.

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Indicator Documentation

Knowledge Transfer	Intellectual Capital // Public Benefits – External

The economic benefit of knowledge creation through sharing and facilitating free knowledge transfer with external parties

Inputs

A. Total financial investment in public information products [LCU]
B. Total hours devoted to producing public information products [h]
C. Total employment costs [LCU]
D. Number of employees [#]
E. Working hours per year [h]
F. Social Return on Investment (SROI) for knowledge transfer (2010) [320%]

Calculation Steps

1. Average employment cost per hour = Total employment costs / Working hours per year C * E
2. Employment cost of hours devoted to producing public information products = Average employment cost per hour * Total hours devoted to producing public information products A * B
3. Total investment in knowledge transfer = Total financial investment in public information products + Employment cost of hours devoted to producing public information products A + 1
4. Non-financial benefit to wider society = Total investment in knowledge transfer * SROI for knowledge transfer 2 * F

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ Step 4 Output [100%]	Always equals the sum of company, individual and government	

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Indicator Documentation

Knowledge Transfer	Intellectual Capital // Public Benefits – External

The economic benefit of knowledge creation through sharing and facilitating free knowledge transfer with external parties

Data Sources & References

Inputs A – D	Company
Input E	Calculated as 253 working days in 2016 (UK), minus 25 days holiday entitlement * 8 working hours per day
Input F	Knowledge Transfer Partnerships Strategic Review - Regeneris Consulting (2010) @ http://webarchive.nationalarchives.gov.uk/20130102180151/http://www.innovateuk.org/_assets/pdf/corporate-publications/ktp%20strategic%20review%20feb%202010.pdf

Notes

Different types of public information products have various Social Returns on Investment (SROI). Additional research into the types of public information products and their associated SROIs would improve the calculation.

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Indicator Documentation

Public Information Goods & Services Consumed (e.g. Internet)	Intellectual Capital // External – Public Benefits

The economic cost of information goods and services consumed (for free) (specifically open source software)

Inputs

A. Number of personal computers [#]
B. Economic value of open source software per personal computer [£398]

Calculation Steps

1. Economic cost of the consumption of public information goods = Number of personal computers * the economic value of open source software per personal computer, convert to output currency and correct for inflation A * B

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ Step 1 Output [100%]	↑ N/A	Always equals the sum of company, individual and government	

Data Sources & References

Input A	Company
Input B	Route2 research

Notes

//

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Indicator Documentation

Research & Development	Intellectual Capital // Capital Investment

The economic benefit of enhancing knowhow through research & development (R&D) activities

Inputs

A. Direct spend on research & development (R&D) activities [LCU]
B. Total employee hours dedicated to R&D [h]
C. Average hourly employment cost per member of staff [LCU]
D. Private ROI multiplier of R&D expenditures (2014) [30%]
E. Public / societal ROI multiplier of R&D expenditures (2014) [70%]

Calculation Steps

1. Employment cost of employee hours dedicated to R&D = Average employment cost per hour * Employee hours dedicated to R&D C * B
2. Total base benefit = Employment cost of employee hours dedicated to R&D + Direct spend on R&D activities 1 * A
3. Total corporate benefit = Private ROI multiplier of R&D expenditures * Total base benefit D * 2
4. Total wider society benefit = Public / societal ROI multiplier of R&D expenditures * Total base benefit E * 2

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 3 Output [100%]	↓ N/A	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ Step 4 Output [100%]	Always equals the sum of company, individual and government	

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Indicator Documentation

Research & Development	Intellectual Capital // Capital Investment

The economic benefit of enhancing knowhow through research & development (R&D) activities

Data Sources & References

Inputs A – C	Company
Inputs D – E	Frontier Economics (2014). Rates of return to investment in science and innovation @ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/333006/bis-14-990-rates-of-return-to-investment-in-science-and-innovation-revised-final-report.pdf

Notes

No data provided for hours spend by employees on R&D therefore this component of the benefit has not been calculated
Further research on and employment of activity-specific ROI multipliers would represent significant improvements to the current approach.

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Indicator Documentation

Succession Programmes	Human Capital // Capital Investmemt

The economic benefit of increased internal hires due to succession programmes

Inputs

A. Number of employees recruited through succession programmes [#]
B. Average salary per employee [LCU]
C. Extra recruitment cost of an external hire (compared to an internal hire) (2012) [£4,263.29]
D. Salary increase for an external hire (% salary) (2012) [18%]
E. Cost of an External Hire (in case of a 'bad hire') (2013) [£50,000]
F. Probability of a 'bad hire' [3%]
G. Productivity loss of an external hire (% salary) (2016) [20.5%]

Calculation Steps

1. Avoided recruitment costs of external hires = Number of employees recruited through succession programmes * Extra recruitment cost of an external hire, convert to output currency and correct for inflation A * C
2. Avoided increased salary cost of external hire = Number of employees recruited through succession programmes * Salary Increase for an External Hire A * D
3. Avoided costs of bad hires = Number of employees recruited through succession programmes * Probability of a 'bad hire' * Cost of a 'bad hire', convert to output currency and correct for inflation A * F * E
4. Avoided productivity cost of an external hire = Productivity loss of an external hire * Average salary per employee G * B

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 4 Output [100%]	↓ N/A	↑ Steps 1, 2, 3 Output [100%]
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Succession Programmes	Human Capital // Capital Investment

The economic benefit of increased internal hires due to succession programmes

Data Sources & References

Inputs A – B	Company
Input C	Saratoga Institute (2012) 'US Human Capital Effectiveness Report'
Input D	Bidwell, M. (2012) 'The Effects of External Hiring versus Internal Mobility' U Penn Wharton. @ http://journals.sagepub.com/doi/abs/10.1177/0001839211433562
Input E	Career Builder. (2013) ' More Than Half of Companies in the Top Ten World Economies Have Been Affected By a Bad Hire, According to CareerBuilder Survey' @ http://www.careerbuilder.com/share/aboutus/pressreleasesdetail.aspx?sd=5%2f8%2f2013&siteid=cbpr&sc_cmp1=cb_pr757_&id=pr757&ed=12%2f31%2f2013
Input F	Route2 research has estimated the probability of a 'bad hire' at 3%.
Input G	Bliss et al. (2016). The Business Cost and Impact of Employee Turnover

Notes

Additional research on the probability of making a "bad hire" would enhance the calculation.

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Indicator Documentation

Training & Development	Intellectual Capital // Capital Investment

The economic benefit of enhancing capabilities through formal and informal training & development programmes

Inputs

A. Direct spend on each type of training and development programme [LCU]
B. Total employee hours per type of programme [h]
C. Average hourly employment cost per member of staff [LCU]
D. Number of participants per programme [#]
E. Return on Investment (ROI) for Efficiency Skills Programmes [283%]
F. Return on Investment (ROI) for Health & Safety Programmes [314%]
G. Return on Investment (ROI) for New Employee / On Boarding Programmes [396%]
H. Return on Investment (ROI) for Professional Skills Programmes [324%]
I. Return on Investment (ROI) for Soft Skills Programmes [375%]
J. Return on Investment (ROI) for Leadership Skills Programmes [128%]
K. Return on Investment (ROI) for Diversity Programmes [397%]
L. Proportion of benefit retained by the company [65%]
M. Proportion of benefit retained by the individual [35%]

Calculation Steps

1. Employment Cost of Staff attending each type of programme = Average hourly employment cost per member of staff * Total Staff Hours per Type of Programme C * B
2. Total Investment in each Type of Training Programme = Direct spend on type of training programme + Employment cost of Staff attending each type of programme A * 1
3. Total benefit of investment in Training Programme = Total Investment in each Type of Training Programme * ROI per type of Programme: 2 * E through K
    - Total benefit of investment in Efficiency Skills Programmes = Total Investment in Efficiency Skills Programmes * ROI for Efficiency Skills Programmes 2 * E
    - Total benefit of investment in Health & Safety Programmes = Total Investment in Health & Safety Programmes * ROI for Health & Safety Programmes 2 * F
    - Total benefit of investment in New Employee / On Boarding Programmes = Total Investment in New Employee / On Boarding Programme * ROI for New Employee / On Boarding Programme 2 * G
    - Total benefit of investment in Professional Skills Programmes = Total Investment in Professional Skills Programmes * ROI for Professional Skills Programmes 2 * H
    - Total benefit of investment in Soft Skills Programmes = Total Investment in Soft Skills Programmes * ROI for Soft Skills Programmes 2 * I
    - Total benefit of investment in Leadership Skills Programmes = Total Investment in Leadership Skills Programmes * ROI for Leadership Skills Programmes 2 * J
    - Total benefit of investment in Diversity Programmes = Total Investment in Diversity Programmes * ROI for Diversity Programmes 2 * K
4. Total non-financial benefit of training for companies = Total benefit * Proportion of benefit retained by the company 3 * L
5. Total non-financial benefit of training for individuals = Total benefit * Proportion of benefit retained by the individual 3 * M

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Indicator Documentation

Training & Development		Intellectual Capital // Capital Investment	
The economic benefit of enhancing capabilities through formal and informal training & development programmes			
Impact Matrix (↓ = Cost ↑ = Benefit)			
Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ Step 4 Output [100%]	↓ N/A	↑ N/A
Individual // Non-Financial		Individual // Direct Financial	
↓ N/A	↑ Step 5 Output [100%]	↓ N/A	↑ N/A
Government // Non-Financial		Government // Direct Financial	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Wider Society // Non-Financial		Wider Society // Direct Financial	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	
Data Sources & References			
Input A – D	Company		
Input E – K	Route2 research compiling multiple studies from various sources. See Appendix ii for details		
Input L – M	Almeida (2006). "The Return to Firm Investment in Human Capital," Word Bank.		
Notes //			

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Indicator Documentation

Turnover	Intellectual Capital // Capital Depreciation - Internal

The economic cost of deteriorating aggregate knowhow via excessive or stagnant employee voluntary turnover levels

Inputs

A. Number of leavers [#]
B. Percentage of leavers that were voluntary [%]
C. Average recruitment time [#]
D. Direct replacement cost (% of annual salary) (2016) [20.5%]
E. Lost productivity cost (% of annual salary) (2016) [20.5%]
F. Profit-revenue ratio [LCU]
G. Tax-profit ratio [LCU]
H. Average annual employment cost per FTE [LCU]

Calculation Steps

1. Number of voluntary leavers (and number of additional staff recruited) = Number of leavers * Percentage of leavers that were voluntary A * B
2. Lost productivity cost (during recruitment) = 12 / Average recruitment time * Average annual employment cost per FTE * Number of voluntary leavers C * H * 1
3. Lost productivity cost (new staff getting up to speed) = Number of voluntary leavers * Average annual employment cost per FTE * Lost productivity cost A * H * E
4. Hiring & training cost for replacement staff (direct replacement cost) = Number of additional staff recruited * Average annual employment cost per FTE * Direct replacement cost 1 * H * D
5. Lost tax revenue = (Lost productivity costs (during recruitment) + Lost productivity costs (new staff getting up to speed)) * Profit-revenue ratio * Tax-profit ratio (2 + 3) * F * G

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ Steps 2 & 3 Output [100%]	↑ N/A	↓ Step 4 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ Step 5 Output [100%]	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Turnover	Intellectual Capital // Capital Depreciation - Internal

The economic cost of deteriorating aggregate knowhow via excessive or stagnant employee voluntary turnover levels

Data Sources & References

Input A – C	Company
Input D – E	Bliss et al. (2016). The Business Cost and Impact of Employee Turnover
Input F – H	Company

Notes

Calculation only undertaken for direct employees.
Calculation assumes all leavers are replaced.
Further research into industry specific optimal turnover ranges and methods for estimating economic cost of sub-optimal rates could improve the current approach.
Further research into the "knowledge loss" costs associated with too-high turnover, and the "deadweight" costs of too-low turnover, could enhance the calculation.

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Indicator Documentation

Turnover: Regrettable Leavers	Intellectual Capital // Capital Depreciation – Internal

The economic cost of deteriorating aggregate know-how via turnover of "regrettable leavers"

Inputs

A. Total number of FTE's [#]
B. Total number of managers (included in "FTEs" count) [#]
C. Turnover rate of the company [%]
D. Average annual employment cost per FTE [LCU]
E. Additional replacement and lost output cost (% of annual salary) for regrettable leavers (in addition to basic turnover cost) - entry-level employee [9%]
F. Additional replacement and lost output cost (% of annual salary) for regrettable leavers (in addition to basic turnover cost) - normal technical specialist [25%]
G. Additional replacement and lost output cost (% of annual salary) for regrettable leavers (in addition to basic turnover cost) - normal middle or top manager [66%]
H. Profit-revenue ratio [LCU]
I. Tax-profit ratio [LCU]

Calculation Steps

1. Number of FTEs who left = Total number of FTEs * Turnover rate of the company A * C
2. "Regrettable" FTEs Left = (Total number of managers / Total number of FTEs) * Number of FTEs who left B / A * 1
3. Total corporate cost = 'Regrettable' FTEs left * Average annual employment cost per FTE * Additional replacement and lost output cost (% of annual salary) 2 * D * E or F or G
4. Total government cost = Total corporate cost [3] * Profit-revenue ratio [H] * Tax-profit ratio [I]

Impact Matrix (↓ = Cost ↑ = Benefit)

Company // Non-Financial		Company // Direct Financial	
↓ N/A	↑ N/A	↓ Step 3 Output [100%]	↑ N/A
Individual // Non-Financial		**Individual // Direct Financial**	
↓ N/A	↑ N/A	↓ N/A	↑ N/A
Government // Non-Financial		**Government // Direct Financial**	
↓ N/A	↑ N/A	↓ Step 4 Output [100%]	↑ N/A
Wider Society // Non-Financial		**Wider Society // Direct Financial**	
↓ N/A	↑ N/A	Always equals the sum of company, individual and government	

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Indicator Documentation

Turnover: Regrettable Leavers	Intellectual Capital // Capital Depreciation – Internal

The economic cost of deteriorating aggregate know-how via turnover of "regrettable leavers"

Data Sources & References

Inputs A – D	Company
Input E – G	Route2 research
Input H – I	Company

Notes

The manager percentage (of total workforce) is estimated to be the percentage of regrettable leavers.
The basic cost of turnover is already calculated in "Sub-Optimal / Optimal Turnover" calculations: the calculation [3] only measures the "additional" cost of regrettable leavers.
In the absence of disclosure about company positions, 9% (the additional cost for entry-level "regrettable" leavers [E]) is used as the additional turnover cost, as % of annual salary.

Appendices

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Appendix i

Human Capital Stock Calculation	Appendix i

Lifetime Income Economic Value Equation (Adapted)

$$K_{h\&i} = \sum_{t=1}^{T} L\ w\ (h - 1)\ (1 + r)^{-t}$$

Where:
$K_{h\&i}$ = Human & Intellectual Capital
$h = Ae^{\phi n}$
L = Number of Full Time Employees [FTEs]
w = Wge Rate
A = Health Status per FTE = e^{pv}
v = Adult Survival Rate
p = Proportional Effect of Survival Rate On Human Capital Years of Schooling Per FTE
n = Years of Schooling per FTE
ϕ = Rate of Return to Years of Education
r = Discount Rate
t = Time Horizon

With reference to the schooling and health components of the equation: (i) *schooling* - data on average years of schooling per working-aged person are obtained from Barro and Lee for 144 countries from 1970 to 2010 by five-year age groups[1]; (ii) *returns to education* – a uniform rate of 8.5 per cent is used[2] ; (iii) *survival rate* - is formulated as one minus the Adult Mortality Rate [AMR], where AMR is the probability that the average 15-year-old will dies before the age of 60. Currently experience is omitted from the formulation; and (iv) *returns to health* - a benchmark value of 0.65 is taken meaning that an increase of 10 percentage points in the survival rate is associated with a 6.5 percent increase in human capital. The time-period employed for the present value calculation is the average years a worker is expected to remain in employment (i.e. average tenure). Consistent with Route2's Natural Capital economic valuation the social discount rate of 4 per cent rate is used. Finally, to account for volatility in 'rental prices' for labour (i.e. wage rates), where possible annual wage rates are taken as a five-year lagged average.

Key References

[1] // http://www.barrolee.com/data/dataexp.htm
[2] // http://documents.worldbank.org/curated/en/2012/08/16603648/heterogeneous-returns- education-labor-market

Notes

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Appendix ii

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Appendix ii

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