



The Bottom Line:

The Financial Impact of Employee Wellbeing Programs on Workforce Productivity

By Human Capital Management Institute (HCMI) in
conjunction with Virgin Pulse Institute

Executive Summary

Overview

This paper outlines the findings of independent research by Human Capital Management Institute (HCMI), linking companies who invest in Virgin Pulse wellbeing programs to significant financial returns in the form of workforce productivity gains, lower attrition rates and fewer days lost to illness.

Objective

To determine whether participation by a selected group of Virgin Pulse client companies in Virgin Pulse's employee wellbeing program was associated with improved workforce productivity at those client companies.

Methods

We combined workforce productivity data from HCMI's database of global companies with program participation data from Virgin Pulse's client list for 49 publicly listed companies. We measured company workforce productivity in years before working with Virgin Pulse and after program launch and correlated overall productivity changes by company versus overall productivity averages and industry-specific peer groups changes.

Results

Virgin Pulse client companies on average saw a 0.22 increase in workforce productivity as measured by Human Capital ROI (table 1 page 5, terminology page 26) in years after working with Virgin Pulse, or an average of 11.7% workforce productivity gains. Higher productivity improvements were correlated with higher employee enrollment ($r=.29$, $n=47$, $p=.023$) and several client-specific and Virgin Pulse-specific factors.

Conclusion

The Virgin Pulse employee wellbeing program is correlated with improved productivity over time, and this relationship has shown to be stronger as more employees get involved in the program.

Introduction

As technology and automation accelerate the rise of the knowledge economy, CEOs publicly extoll their people as their most valuable asset. However, measuring the precise financial return of human capital investments on the bottom line has proved to be an elusive goal. This means that companies often make (and prioritize) workforce spending decisions without clear transparency into Human Capital ROI.

Virgin Pulse, a wellbeing software provider whose stated goal is to change lives for good, provides a way for companies to invest in their employees' health, wellbeing and engagement. The program features a gamified web and mobile application with daily interactions in a variety of holistic wellbeing areas such as activity, sleep, nutrition, biometrics, challenges, friendship and social features. It also integrates with wearable devices and other programs (such as coaching, stress management, financial wellness, activity programs and tracking applications, and a multitude of other connections). The program and applications are based on science, such as behavior change research and design input from behavior scientist BJ Fogg, Ph.D. The program's intent is to build and reinforce positive behaviors that lead to improved health, happiness, and productivity of employees (members) whose companies contract with Virgin Pulse, using a game and points approach that incorporates a variety of technical motivation techniques (e.g., messaging, trophies, points) as well as client-provided motivations such as incentives in many forms.

Virgin Pulse had recently completed its own study called "Client Best Practices: Predictors of Enrollment and Engagement, and Reach" (Ryan 2016). While the study identified multiple factors that increased enrollment and ongoing utilization in the wellbeing program, it did not quantify the impact of increased program usage.

Previous research on exercise, wellness, and corporate programs have had mixed and often incomplete results. It's well established that exercise has verifiable immediate benefits for affect and cognition at the general level (Hogan et al., 2013), and further research has indicated that it improves self-reported work performance (Coulson et al., 2008). Likewise, obesity is predictive of lower productivity (Gates et al.) and a sizeable portion of company health costs are based on "modifiable" health risks (O'Donnell et al., 2015).

When it comes to methods of improving health, targeting health behaviors may be more effective than surrounding body image norms (Haruschka et al., 2011) and an individual's behavioral change is helped or deterred by that of their teammates (Leahey et al).

Regarding programs targeting employee wellness, some studies found that programs that promote health behavior improvements that can be sustained (LeCheminant & Merrill, 2012) reduce productivity loss (Merrill et al., 2012) and lower costs (Mattke et al., 2013). Large literature reviews have found mixed results for the impact of health programs (Orsilla et al., 2012), and one recent study found that there were selection factors at play in many studies of workplace wellness factors. A recent study controlling for this in a test program did not find any impact at one year (Jones et al., 2016).

Despite previous efforts, studies have yet to address the total business impact of wellness initiatives. Virgin Pulse has reported that in its discussions with clients and prospects, C-suite executives have communicated a desire for an even stronger business case for investing in wellbeing. In particular, they wanted a clear, quantitative link to overall business impact.

This need for additional data fits within the larger context seen across organizations in general: Business

leaders are often skeptical of HR metrics initiatives because of the focus on “softer” academic measurements versus “hard” financial and business impact measurements. Virgin Pulse’s hypothesis was, “clients employing Virgin Pulse-identified best practices may also see effects on productive output and HR-related goal areas such as attrition, sick days, medical costs and other gains.” Logically such gains should link to increased productivity and lower costs versus peers over time. Virgin Pulse therefore hoped to measure the impact of its programs on overall business performance through improvements in employee workforce productivity — and identify tangible steps employers might take to substantially expand (and quantify) their respective workforce productivity.

To see if the business impact could be quantified in proven financial terms, Virgin Pulse engaged HCMI, an industry expert in human capital financial measurement. In order to quantify the impact of Virgin Pulse’s programs on company success, HCMI carried out a comprehensive analysis statistically linking client human capital to financial performance with a large anonymized Virgin Pulse dataset spanning different time periods and disparate industries.

Methodology

Data

A selected sample of Virgin Pulse’s client list was compared to HCMI’s workforce productivity database of 7,000 public companies to identify matches for analysis and to identify industry groups for more in-depth comparison. We selected a key group of 49 publicly-listed companies based on data availability for a sufficient number of years and to measure a variety of industries in the analysis.

About the Productivity Database: HCMI’s database used for this study includes global productivity data for 7,000 companies, as well as high-level financial and workforce information for companies going back over 20 years for all industries. Some of the data from this database that was used in the study include:

- **Total Operating Revenue**
- **Operating Expenses**
- **Operating Income**
- **Net Income**
- **Employee Headcount**
- **Total Cost of Workforce (TCOW), (see Terminology section for definition and formula)**
- **Workforce Productivity Metrics (Higgins 2011) (see Table 1 page 5)**

In the sample used in this study, data was used from the years 2006-2015, with 43 companies having productivity data available for all years, and 6 companies having data available for 2011-2015. The broad time frame was chosen in part to control for different market and economic conditions such as GDP growth rate, inflation rate, unemployment rate and more. By including data over 5 to 10 years for most companies, the study was able to include a variety of global and regional economic conditions including rapid growth, recessionary and slow-growth economic impacts in specific years which otherwise could skew or raise questions about the veracity of the analysis. Where individual client data points were missing, additional database and survey-based normative industry and client financial data were used.

We matched this yearly productivity data with Virgin Pulse’s yearly data on client program factors. Virgin

Pulse's client information used in this study included over 30 variables which were evaluated, however, the majority of the study focused on the following variables:

- **Number of eligible employees**
- **Number of employees activated/enrolled in the program**
- **Number of employees engaged (active program usage by year, averaged and discrete)**
- **Wellbeing champions in the company**
- **Percentage of email addresses of eligible employees available to Virgin Pulse**
- **Turnover rate for employees using the Virgin Pulse program**
- **Turnover rate for employees not using the Virgin Pulse program**
- **Employee-reported days lost to illness by years involved in the program**

In addition, the model constructed for analysis included the specific year each client began the Virgin Pulse program, allowing for comparisons of company performance and productivity before and after the program, both individually and as part of an industry comparison group.

Measures

HCMI recommended a different methodology than that used in most studies attempting to quantify a statistical and financial link between specific programs and HR interventions. Some previous studies had focused on linking stock price to changes in wellbeing, engagement and other HR initiatives, including one completed by Virgin Pulse. While useful, public stock price and market valuation are impacted by a long list of external factors (e.g., industry growth rate, global economic growth, USD GDP, inflation rate to name a few) and internal factors. Additional measure, like those used in this study, help to showcase other measures of company success in relation to wellbeing. The HCMI methodology used for this study included a series of metrics which measure workforce productivity in terms of dollar-based outputs such as revenue together with labor costs. These inputs integrate into a series of measures quantifying a cost-based return on workforce costs. Specifically, the recommended measures solve the financial linkage challenge by quantifying overall changes in major expenses such as total labor costs in the selected client's company financial statements compared to outputs such as revenue. The result is an output and input sensitive return on a series of cost-based workforce productivity metrics. A list of the metrics included in the analysis is shown in Table 1.

Based upon the analysis, the most impactful metrics identified and therefore featured in the study to measure workforce productivity impact on revenue, profit and labor cost include a subset of specific metrics referred to as Primary Productivity Metrics, upon which greater analysis and statistical modeling was conducted as shown in Table 2:

The most critical human capital metrics must, by definition, align to business financial results (*see appendix for definitions on Human Capital ROI and Return on Human Capital Investment*). HCMI's research has further shown that such productivity metrics and the metrics which drive them are also predictive of overall company performance (Higgins and Atwater 2013).

In two separate research studies utilizing regression analysis, one covering thousands of companies from 1996-2011, and a follow up study on the financial services industry from 2012-2014, human capital metrics were found to be predictive of company market performance (Higgins and Atwater 2013). While the strength of the trend varied, the predictors were found to be significant across industries and economic periods.

Table 1:
Workforce Productivity Metrics

1. TCOW per FTE Worker
2. TCOW per Worker FTE Annual Change Rate
3. Revenue per FTE
4. Revenue per FTE Annual Change Rate
5. Profit per FTE
6. Profit per FTE Annual Change Rate
7. TCOW Percent of Operating Expenses
8. TCOW Percent of Expenses Annual Change Rate
9. TCOW Percent of Revenue
10. TCOW Percent of Revenue Annual Change Rate
11. Human Capital ROI Ratio
12. Human Capital ROI Ratio Annual Change Rate
13. Return on Human Capital Investment
14. Return on Human Capital Investment Annual Change Rate
15. Revenue / TCOW
16. Revenue / TCOW Annual Change Rate
17. Operating Profit / TCOW
18. Operating Margin / TCOW Annual Change Rate
19. Revenue aka (Net Sales)
20. Total Cost of Workforce aka Total Labor Cost
21. Operating Profit, EBIT, Operating Margin
22. Total Operating Expenses

*FTE is full time equivalent employees or workers in the case of contingent labor.

**TCOW is the Total Cost or Workforce often referred to as Total Labor Cost.

***Detailed definitions of all workforce productivity metrics included in the study are list in the appendix.

Companies that improved their productivity saw, on average, greater increases in stock price and overall market valuation. The average predicted market impact of improvements in human capital metrics was even larger than that of net income.

Among financial services companies, for example, both studies found that the top 25% performers in Human Capital (HC) metrics saw much higher improvement in market performance than low performers (4.0% annual stock price growth vs -1.1% from 1996-2011, 28.0% vs 14.8% market capitalization improvement from 2012-2014).

This Virgin Pulse client study focuses on Human Capital ROI Ratio, a metric measuring workforce productivity impact on revenue, profit and labor cost. The calculation for this metric starts with Revenue, subtracts non-workforce expenses to get a measure of profit, then divides that metric by workforce expenses.

Simply put, this equation represents the operating profit impact of each dollar invested in human capital or the total cost of workforce. HC ROI Ratio acts as a measure of expected return on \$1.00 invested in the workforce if all other factors remain constant. For example, an organization with a Human Capital ROI Ratio of 1.20 indicates that for every \$1.00 invested in cost of the workforce, \$1.20 is returned as profit or a 20% return on people.

In addition to static yearly Human Capital ROI ratio, we calculated for each company in years before the Virgin Pulse program and after the Virgin Pulse program a simple productivity (Human Capital ROI) average, the increase or decrease in productivity, as well as the percent change by year and the overall compound annual change rate.

For Virgin Pulse program factors, we first checked whether the company was utilizing the program in each year. To achieve more granularity between the selected Virgin Pulse clients we also included the following program metrics:

Percent activation/enrollment: refers to the percentage of total employees in a company activated/enrolled in the program once available, or “launched.”

- Percent engagement – refers to the percentage of those activated/enrolled who used the program during the year
- Reach/active usage – combines activation and engagement, referring to the percent of employees who both registered for and

Table 2:
 Primary Productivity Metrics (see
 Terminology pages 21 to 30)

Total Cost of Workforce (TCOW)
Human Capital ROI per FTE* Employee
Total Cost of Workforce percent of Revenue
Revenue per FTE
Profit per FTE

used the program

- The availability of employee emails to Virgin Pulse (categorized into above and below 90%)
- Whether there were internal champions of Virgin Pulse’s program in the company

Analysis

The analysis consisted of several steps to assess Virgin Pulse’s impact on productivity from multiple angles.

First, a simple before-and-after analysis comparison utilizing all 49 companies was done, in which we averaged each company’s yearly productivity before and after utilizing Virgin Pulse’s program. For example, if a company had data from 2006-2015, and started the program in 2012, it would be a comparison of the average productivity for that company from 2006-2011 vs. 2012-2015.

Model construction, industry and economic condition changes: To account for economic variables and industry changes, we followed up this analysis with an adjustment for each company’s industry productivity changes. Each company’s “launch year” starting the program and industry were taken into account, so that industry change in productivity was removed. For example, if a company saw an average increase of Human Capital ROI ratio of .2, and its industry saw an improvement of .05, that company’s improvement above industry would be .15.

We then performed analyses accounting for program usage within each company in two ways. First, we performed the same before-after analysis, but segmented the companies by program reach/active usage, assessing if those with a reach percent of tier 1 or 2 (defined as 31% or higher) saw greater productivity gains than those with 30% or lower reach. Second, we performed a Pearson correlational analysis comparing percent activation against average year Human Capital ROI ratio improvement to see if increased enrollment impacted results. This correlational analysis was followed up with a linear regression analysis in order to estimate the impact of higher activation on overall productivity improvements. A second regression model added two other program factors, the availability of employee emails to Virgin Pulse and whether there were internal champions of Virgin Pulse’s program at the company, to create a more predictive model of total productivity improvements.

Figure 1:
 Human Capital ROI Ratio
 Calculation

$$\frac{(\text{Total Operating Revenue} - (\text{Total Expenses} - \text{Total Cost of Workforce}))}{\text{Total Cost of Workforce}}$$

Total Cost of Workforce

Finally, we performed an additional cohort analysis, focusing on productivity changes over time for companies with 30% or higher activation vs companies with less than 30% activation. This analysis limited the time for each company to a five-year span (2 years before program launch, the year of launch, and 2 years after), and so the sample was limited to 29 companies with this time frame available (removing any companies that had only been with Virgin Pulse for a year or two). A company that started with Virgin Pulse in 2015, for example, would need data from 2013-2017 in order to be included in the analysis.

The financial impact of productivity improvements was modeled using HCM's financial modeling process in conjunction with the Human Capital ROI Ratio. As Human Capital ROI Ratio refers to the return for every dollar spent on the workforce, taking the improvement in that ratio and multiplying it by a company's workforce spending shows how much that improvement is worth to the bottom line. The improvements identified come from a combination of changes to cost and changes to production (measured in revenues and profits).

In addition to the above, emphasizing productivity, we performed a comparison of turnover rate for those using the program against those who were not, as well as a trending over time of employee days lost to illness over years of using the program. Savings for both reduced turnover and days lost to illness were calculated based on estimated costs of each. These analyses are not the primary subject but provided data behind two of the many ways in which employee wellbeing can help lead to a better workforce and impact productivity.

NOTE: It is possible the correlations and findings are due to either other external factors not tested or from other internal variables across the sample set of companies. Also, the statistical models created did not prove causality. For example, it is possible that more highly successful companies in each industry adopted the Virgin Pulse program, incentivized large proportions of their employee populations to participate (i.e. high reach) while simultaneously implementing other internal or systemic changes that happened to coincide with the timing of the Virgin Pulse program implementation and the vast majority of which resulted in higher employee productivity per dollar of labor costs invested (TCOW).

However, statistical analyses provided evidence against random chance as an alternative hypothesis, and we included analyses that controlled for economic and industry factors. Furthermore, statistical evidence showed that there is a relationship between measurable program factors and productivity, rather than a simple average increase for companies involved with Virgin Pulse. This helps to narrow down the reasons for productivity improvements and guide additional research.

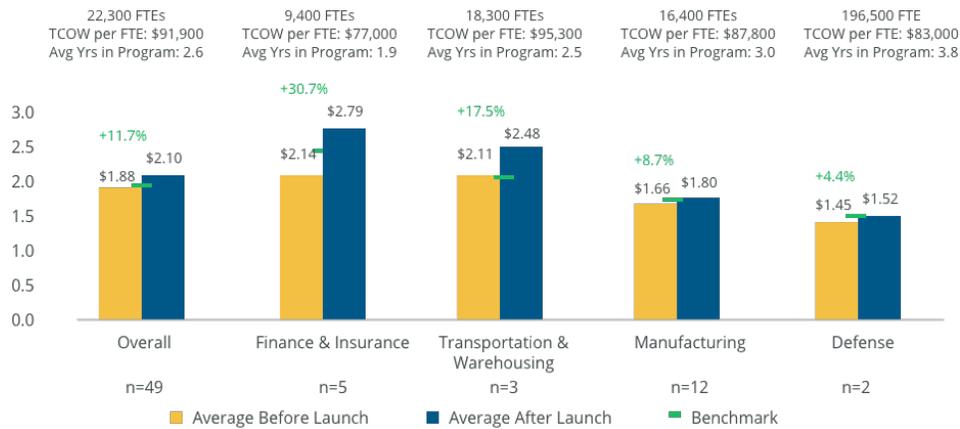
Results

Finding #1: Employee Productivity Gains

Comparing productivity for the 49 companies in years before working with Virgin Pulse (going back to 2006 where data was available) and after (to 2015), companies saw an average 11.7% productivity gain, or \$0.22 for every dollar invested in the workforce. This added value could come in the form of increased revenue or reduced costs, or more likely a combination of the two, but either way the result was an increased production to cost ratio. This is the average annual productivity for each individual company before working with Virgin Pulse compared to the average annual productivity for the same companies in years after working with Virgin Pulse.

Taking a closer look at 4 select industries, productivity increases were found in all 4, but varied significantly

Figure 2:
Workforce Productivity – Before
and After



(+30.7% for Finance and Insurance, +17.5% for Transportation and Warehousing, +8.7% for Manufacturing, +4.4% for Defense)¹. On average, companies saw higher average productivity in the years after adopting the Virgin Pulse program than in the years before.

This sample had an average TCOW of \$91,900 per FTE. The average improvement of Human Capital ROI of .22 per \$1 spent on the workforce, multiplied by that TCOW per FTE, comes out to an average expected annual value of \$7,776 to \$20,217² in increased production, reduced costs or some combination of both. It should be noted that this does not prove that Virgin Pulse's program is the cause of the productivity increase, but the above is how much the overall increase is worth.

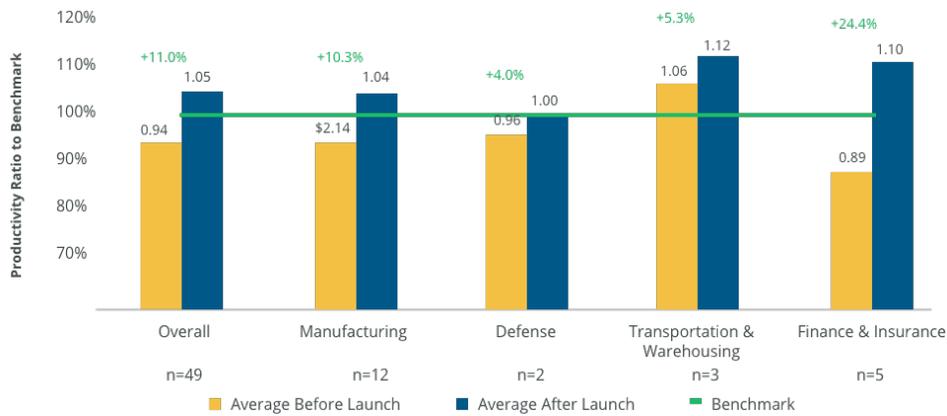
When we accounted for industry and economic changes, measuring productivity for each company as a ratio against its industry in the same year (with 1 or 100% being equal to industry average), the comparison still showed an average improvement after working with Virgin Pulse. This analysis took each individual company's starting year with Virgin Pulse into account when comparing to benchmark productivity, accounting for a wide variety of economic conditions. A company that started in 2014, for example, had its improvement in productivity (as measured before, 2014-2015 compared to 2006-2013) compared to its benchmark productivity in the same years to show whether it improved more or less than peers.

Shown in figure 3, the average Virgin Pulse client was, on average, at 94% productivity in comparison to their industry in years before launching the program, but 105% of industry productivity in the years after. Client productivity started below industry, but outpaced industry productivity after working with Virgin Pulse. Similar results were found for Manufacturing (94% to 104%), Defense, (96% to 100%), Transportation (106% to 112%), and Finance (89% to 110%). While this alone does not prove that Virgin Pulse is solely responsible for the gains, it helps to rule out the hypothesis that these gains were simply based on wider economic and industry gains over time.

¹The sample sizes for these individual industries are small (see Figure 2) and the effects are therefore more prone to individual company results. The overall average has a larger, more reliable sample and should be emphasized.

²This range comes from two different methods of calculating the annual ROI. The upper bound takes the average ROI increase and multiplies it by average TCOW per FTE. The lower bound does the same, but then divides that by the years the companies have been in the program (an average of 2.6).

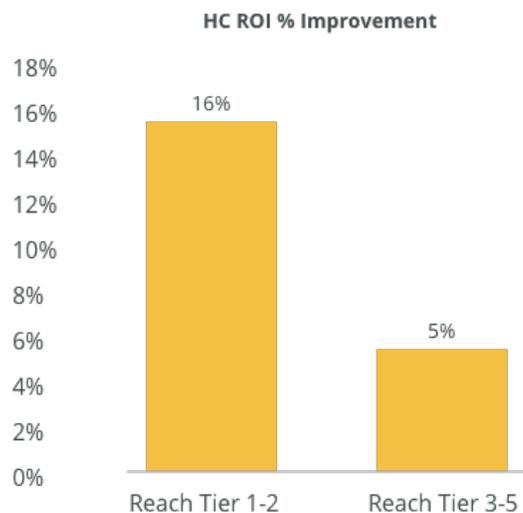
Figure 3:
Workforce Productivity – Industry Adjusted



Finding #2: Higher Program Reach Results in Higher Productivity Gains

Comparing overall productivity improvement of Virgin Pulse clients by program usage, higher program utilization was associated with larger gains. In this analysis, we placed clients into cohorts of reach, or active usage — the percentage of employees actively enrolled and engaged in the program — and then performed the same before-after analysis as was described in Finding #1. Companies whose programs had 31% or more active usage saw higher productivity gains (16% gains, n=28) than companies with less than 30% (5% gains, n=18). Intuitively, one might expect different impacts for companies with workforces that more heavily utilized the program versus those who simply “signed up,” and initial comparisons supported this (see Figure 4).

Figure 4:
Human Capital ROI Improvement by Reach/Active Usage

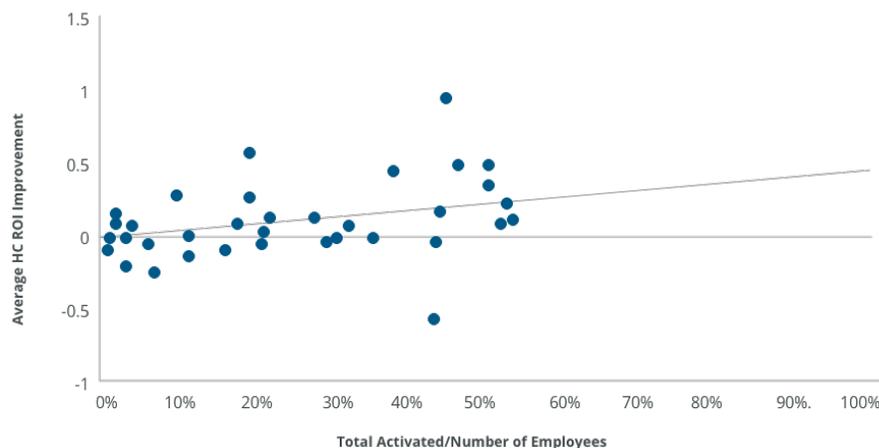


To account for variability in the data and determine if this improvement was due to chance or statistically verifiable, we performed a correlation and linear regression analysis comparing program activation rates to productivity gains. Two outliers were removed, one whose productivity increased more than 3 standard deviations higher than the average improvement and one whose activation percentage was more than 3 standard deviations higher than the average. Both outliers showed high productivity improvement, so removing them made the average increase lower overall. Still, correlational analysis showed that there was a positive relationship between program activation percentage and productivity improvement ($r=.29$, $n=47$, $p=.023$ one tailed). This relationship was statistically significant, meaning it is unlikely to be due to chance, providing evidence that there is a verifiable relationship between productivity and Virgin Pulse program activation. A follow up linear regression produces the same correlation and p-value, along with the following equation to predict a client's productivity gains.

Predicted HC ROI Improvement = $.014 + .347 * \text{Activation percent}$.

The average HC ROI Improvement in the sample is $.1485$. In this equation an additional 10% in employee activation % predicts an additional 23.4% improvement ($+.0347$ in HC ROI Ratio).

Figure 5:
Activation/Enrollment Correlation
With Productivity Improvement



In a follow-up linear regression analysis, we added 2 additional program variables as predictors:

- **Whether VP had at least 90 percent of employee emails**
- **Whether the company had at least one internal champion promoting the Virgin Pulse program. The resulting correlation was even stronger ($r=.44$, $n=47$, $p=.012$ one tailed), meaning even more of average HC ROI Ratio improvement is explained by this model. This model including these three variables gives the resulting equation for predicting overall client productivity improvement.**

Predicted HC ROI Improvement = $-.128 + .249 * \text{Activation \%} + .198 * (\text{Has 90 percent emails? Yes}=1, \text{No} = 0)$,
 $+ .196 * (\text{Has champions? Yes} = 1, \text{No} = 0)$

A company with higher activation percent champions promoting their program and emails provided to Virgin Pulse for eligible employees, will on average see higher productivity gains from Virgin Pulse’s program.

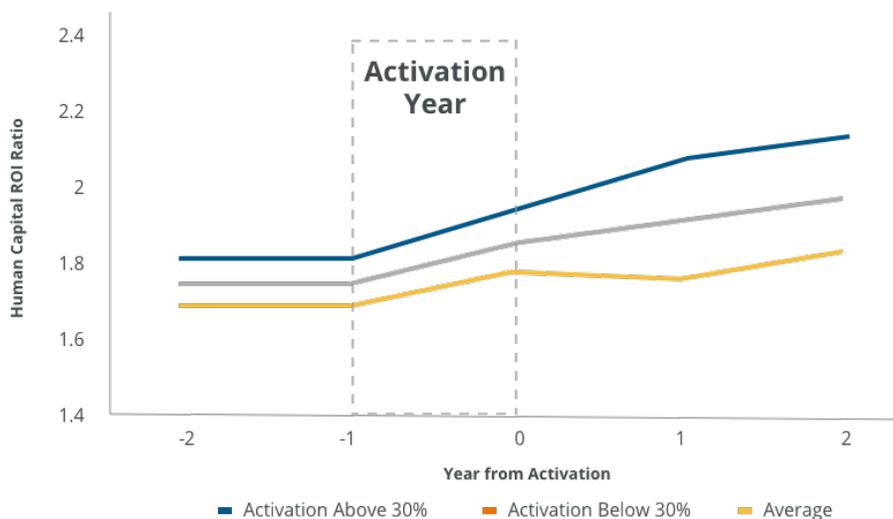
Whether this is relationship is a causal one, bidirectional or the result of additional underlying factors requires further research.

Finding #3: Sustained Long-Term Impact

To further test the consistency of this relationship between productivity and program factors, we checked to see if the findings can be tracked across multiple years before and after program launch. The reason for this was to test a secondary hypothesis: “if employees see health and productivity gains through participation in the Virgin Pulse program, do the gains continue into further years as employee health and productive potential improve?” To test this hypothesis a “deeper dive” analysis was conducted on companies with at least 2 years of data before launch and 2 years after (this requirement limited the sample to a total of 29 companies, after removing an outlier). The sample was analyzed as a whole, as well as split between those that had activated above 30% of their employees and those who activated below 30%.

This sample of Virgin Pulse clients saw on average 0.1% growth in the 2 years preceding the program, but an average 4.5% yearly productivity growth in the year of the program launch and the year following. While the two program activation cohorts were initially fairly similar in productivity, and both saw some amount of productivity gains, those who activated more employees achieved a higher average productivity over time with higher productivity gains year by year (Figure 6, Table 3), essentially a greater compounding effect. High activation clients saw an average yearly growth after the program of 6.9% vs low activation clients, who only saw 2% growth³. In both cases, however, growth in years after program launch was higher than benchmark.

Figure 6:
Productivity Improvement Over
Time by Activation/Enrollment



³These percentage improvements differ from the previously mentioned 11.7% as this analysis include a smaller sample of companies (limited only to companies with 2 years of data before and after the year of program launch) and a smaller set of years

Table 3:
Productivity Improvement Over
Time

Category	Year from Activation					Change rate -2 to -1	Change rate -1 to 1
	-2	-1	0	1	2		
Activation 30% and above (n=14)	1.82	1.82	1.95	2.07	2.13	0.0%	6.9%
Activation 30% and above (n=15)	1.69	1.70	1.78	1.77	1.83	0.2%	2.0%
Average VP Client (n=29)	1.75	1.75	1.86	1.92	1.98	0.1%	4.5%
Benchmark (n=1916)	2.00	2.03	2.07	2.04	2.06	1.7%	0.2%

This finding helped to show consistent productivity improvement in years following the Virgin Pulse program among the sample of companies that had sufficient data. These companies not only improved productivity in years after the program, but their productivity growth rate was noticeably higher in years after the Virgin Pulse program than in years before. This further weakens the hypothesis that these companies merely saw consistent productivity gains in all years based on economic or industry growth.

Finding #4: Lower Attrition and Fewer Days Lost to Illness

Workforce productivity improvements from working with Virgin Pulse come from increased production and/or reduced workforce costs. Both of these can come from a wide variety of potential sources. Supplemental analyses on turnover and days lost to illness highlight two ways in which Virgin Pulse's program reduces workforce costs for clients.

Days Lost to Illness

Survey data in which employees reported their average days lost to illness was utilized for this analysis. Employees who were enrolled and using the program reported fewer days lost to illness on average each year. In the first analysis, all employees surveyed (after removing outliers who reported more than 30 days lost to illness), were used. Employees reported 4.1 days lost to illness at year 1 of the program, while at 6 years employees reported an average of 2.7 days lost to illness. Assuming a range of value for a day of work of \$300 to \$1,000⁴, we gave a conservative estimate that total savings for companies per 1,000 employees activated ranged from \$150k to \$950k annually.

⁴This range is purposefully conservative. Using the average revenue per FTE of the companies in the sample, an average day of work would be worth \$1,397.

Figure 7:
Days Lost to Illness Improvement

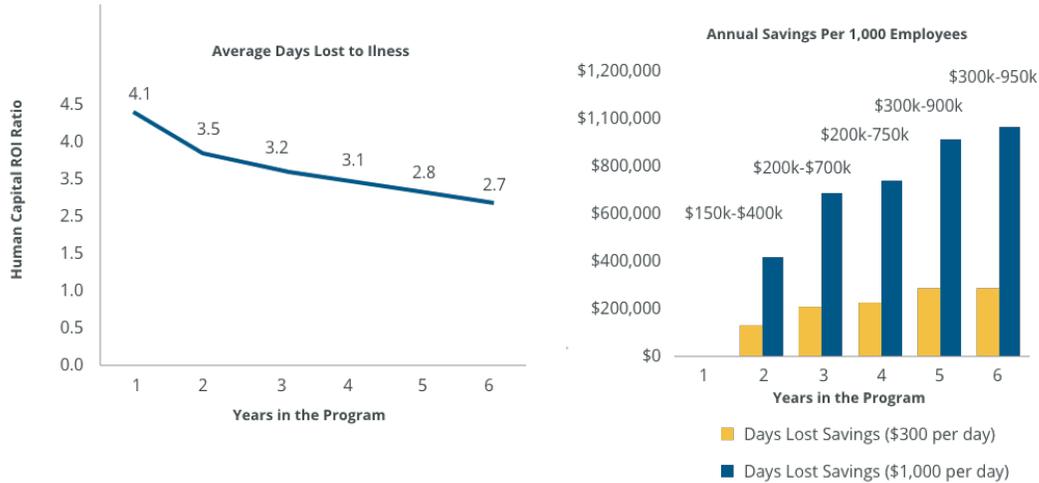


Table 4:
Days Lost to Illness
Improvement Initial Analysis

Category	Year					
	1	2	3	4	5	6
Sample Size	106,666	54,317	32,517	21,126	13,472	8,035
Average Days Lost to Illness	4.1	3.5	3.2	3.1	2.8	2.7

Table 5:
Days Lost to Illness
Improvement Follow Up Analysis

Category	Year					
	1	2	3	4	5	6
Sample Size	7,004	7,004	7,004	7,004	7,004	7,004
Average Days Lost to Illness	3.1	2.5	2.3	2.3	2.1	2.1

To address the risk of differing employee samples being the reason for this reduction in days lost (as one could argue the employees who left the study were on average different than those that stayed for 6 years due to other factors), we took a single sample of employees that had been in the program for 6 years. This sample reported 3.1 days lost to illness in year 1, but 2.1 days lost in year 6 (see Table 5). Further study focusing on groups of employees within individual companies could be particularly valuable here.

Employee Attrition

Company employee turnover rate was separately recorded for those involved in the Virgin Pulse program as well as those who weren't (members and non-members) using terminations identified in eligibility file data. Company employees in 2015 had 34.8% lower average turnover (22.4% vs 14.6%) if they were members of the Virgin Pulse program (Figure 8, Table 6). Employees utilizing the program were less likely to leave in all years, though there did also seem to be an increase in turnover over time. This may be due to the fact that different years had different samples of companies, external factors such as improving economy and job openings, as well as other internal cultural and organizational factors.

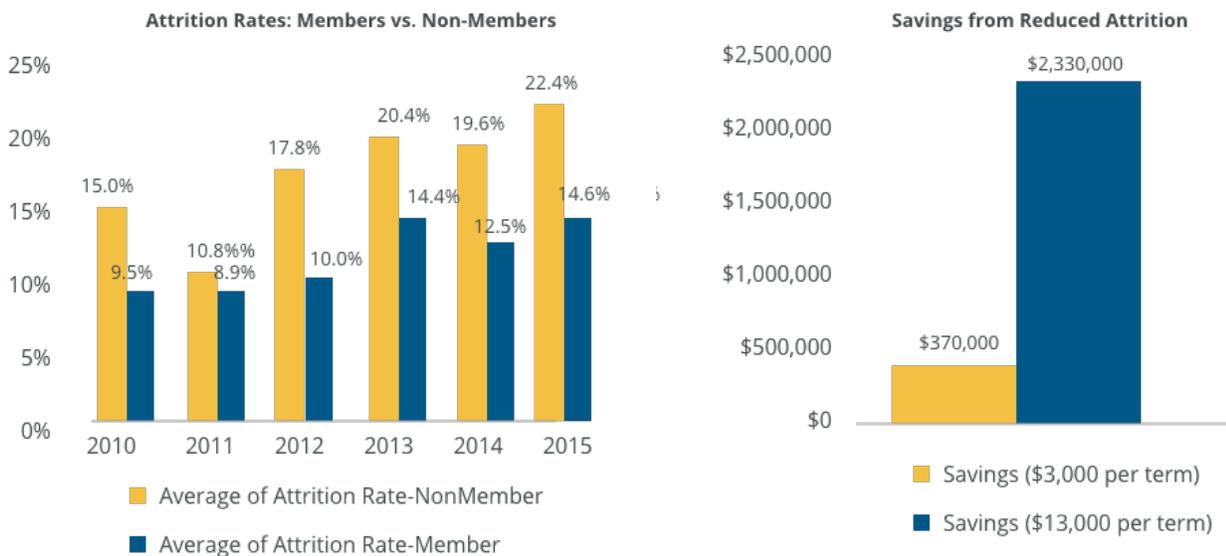
From termination and employee counts, we calculated the members saved by taking the number of terminations they would have had if their nonmember turnover rate was organization wide and subtracting that by the actual number of terminations. Based on an average termination cost of between \$3,000 and \$13,000⁵, the average client organization avoided 122 terminations, saving between \$370,000 and \$2,330,000 in turnover costs

Table 6:
Company Average Attrition —
Members vs Non-Members

Category	Year					
	2010	2011	2012	2013	2014	2015
Sample Size	12	17	30	42	58	58
Average - NonMembers	15.0%	10.8%	17.8%	20.4%	19.6%	22.4%
Attrition Members	9.5%	8.9%	10.0%	14.4%	12.5%	14.6%

⁵Termination cost range is purposefully conservative. The upper range is based on a percentage of typical salary of employees among Virgin Pulse clients, while \$3,000 is an exceptionally low limit created for a very conservative lower bound.

Figure 8:
Company Average Attrition for
Program Members and Non-Members



Discussion and Limitations

The results of this study indicate that there is a positive relationship between the use of Virgin Pulse’s employee wellbeing program and corporate productivity, and that this relationship remains when controlling for industry and economic changes over time. Productivity gains and productivity compared to industry are noticeably different in years after the program was launched compared to the years prior. Additionally, two factors — days lost to illness and attrition — were shown to be lower in companies with more employees using the program, identifying two possible avenues by which companies involved reduce costs for improved productivity.

There are two primary limitations for this study. The first is that this does not prove a causal relationship. The relationship between program factors and productivity could be causal in either direction (unidirectional), bi-directional or both could be the result of underlying factors. While some analyses allowed us to address common alternative hypotheses such as wider industry and economic effects, other variables could be at play. It is difficult to perform randomized controlled trials in for-profit businesses, but additional research can continue to identify, control for and rule out other hypotheses.

The second limitation is data availability. Further research could include a wider range of companies based on additional company- wide data or could instead focus on a smaller selection of companies, but with a greater depth of data for those companies. This study focused on company-wide workforce productivity based on financial results, but company specific and employee category specific measures on productivity could provide additional insight.

Conclusion

There has been great interest on how employee programs can drive business performance through increased productivity. Multiple programs targeting employee performance, engagement and wellbeing have been implemented, with claims of an increase to productivity and performance as a key success measure, but few have proven a positive impact in a statistically rigorous way. Increasingly, business leaders and researchers alike are asking for data-based evidence to back up the claims being made.

Studies such as this one provide additional evidence that there is a relationship between employee wellbeing, engagement and productivity that is worth investigating. While not proving a causal relationship, this study adds to the growing base of support for further research into these topics. It is our hope that this research will motivate others to conduct additional studies and encourage companies to provide the additional human capital data needed to find definitive answers about the value of investing in employee wellbeing.

About Human Capital Management Institute

The Human Capital Management Institute is a pioneer and recognized thought leader in evidence-based workforce intelligence that links people investments to financial and business outcomes.

Founded on the belief that organizations can improve business performance and value creation through measuring and optimizing the financial return on their investments in human capital, HCMI's vision is to transform the strategic business decision-making process by incorporating human capital performance measurement into the standard business performance measurement process.

Serving clients globally, HCMI has created the Human Capital Metrics Handbook of over 600 quantifiable workforce metrics, the Human Capital Financial Statement (HCF\$™), and SOLVE™ predictive workforce intelligence and planning software to support organizations in their efforts to improve business performance through smarter workforce spending.

About Virgin Pulse Institute

Virgin Pulse designs technology that cultivates good lifestyle habits for employees. Configured to complement an organization's culture, Virgin Pulse's technology and the overall wellbeing experience they deliver, drive superior outcomes for people and businesses.

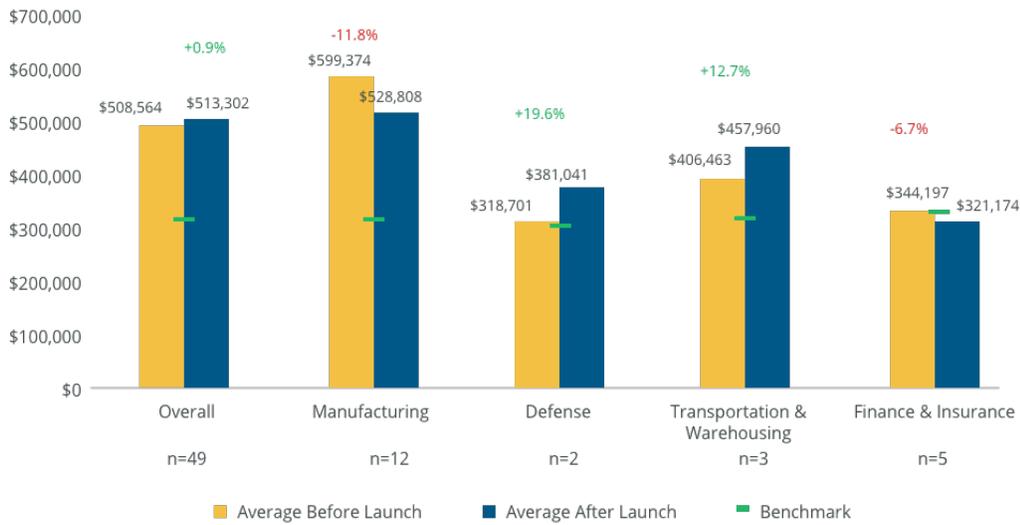
Founded in 2014, the **Virgin Pulse Institute** is an evidence-based organization that conducts research and advances knowledge on workforce topics like health, wellbeing and employee engagement.

Reaching everything it can about wellbeing, The Institute collaborates with leading researchers and other organizations to identify scalable, data-driven, consumer-centric solutions to the top workplace issues facing companies today.

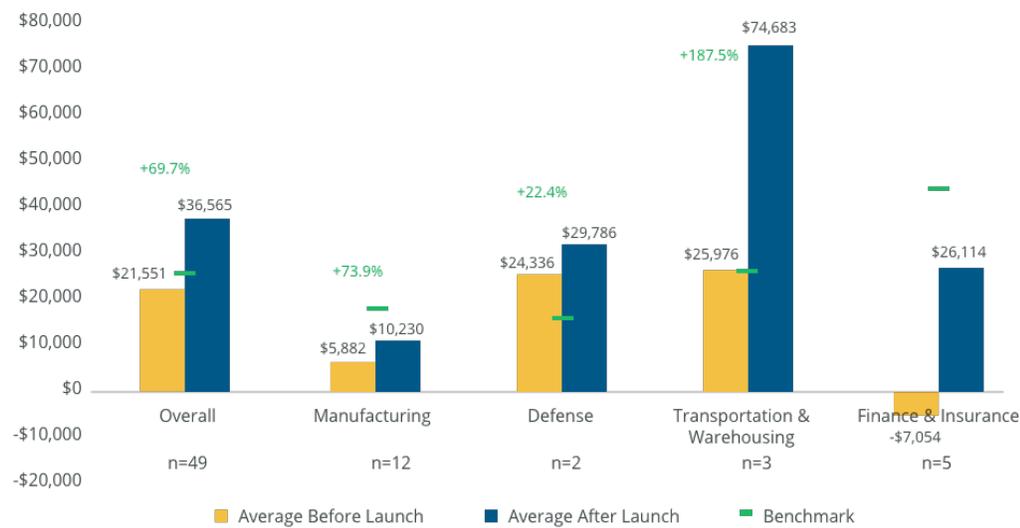
Appendix

The research in this study looked at additional variables before and after program launch, shown below.

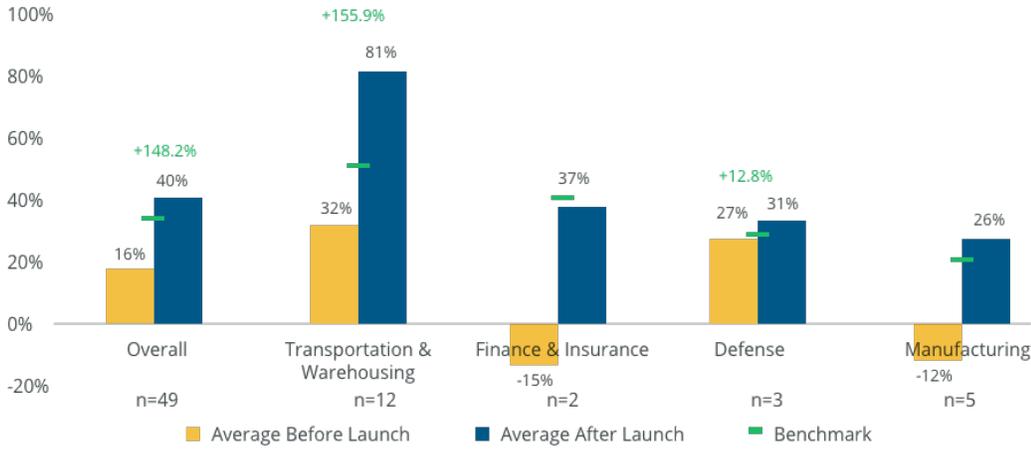
Revenue per FTE



Profit per FTE

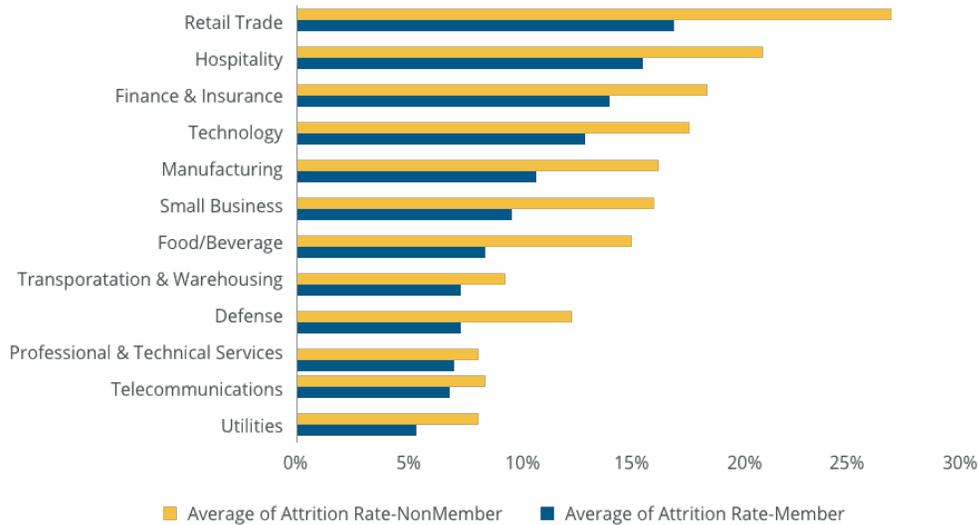


Return on HCI



Further research into the relationship between Virgin Pulse's program and attrition, we found that positive results were found across all industries included in the sample.

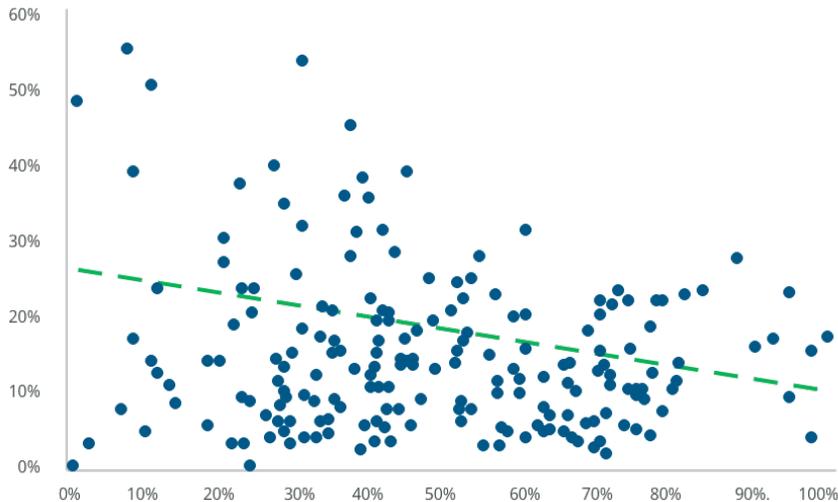
Attrition by Industry



- ✓ **Higher activation among companies is correlated with lower attrition**
- ✓ **This correlation is statistically significant ($p < .001$)**

Correlational analysis further confirmed that program activation % was related to lower attrition at companies overall.

Attrition Correlated with Program Activation



Terminology

Champions

Individuals within client organizations that advocated for the Virgin Pulse program to other employees and stakeholders.

Eligible emails

Emails of employees eligible for the Virgin Pulse program provided to Virgin Pulse for the purpose of supporting and promoting the program.

Activation/enrollment

The percent of employees who register with the Virgin Pulse program. Can be a percentage of the total “eligible” employees or total employees in the company. For the models in this study, total employees was used.

❖ **Formula:** Activated Employees/Total Employees

Engagement

The percentage of activated employees who used the program at least monthly during the entire measurement year.

❖ **Formula:** Engaged Employees/Activated Employees

Reach/ participation/ active usage

The percentage of eligible employees who both sign up for and continue to use the program on a monthly basis or more. Combines both activation and engagement to get a measure.

❖ **Formula:** Activation % * Engagement %

Net Operating Revenue also known as “revenue”

Net Operating Revenue is the primary measure or factor representing sales performance for the organization and is a key growth or change variable that the organization must compare and contrast with the workforce. Common practice in financial analysis has been that many costs are compared and measured as a percentage of total revenue or total operating revenue in order to gauge their relative size and impact in terms of revenue or sales coming into the organization. Net sales plus other regular income sources related to the normal business operations. Specifically excludes revenue from extraordinary items such as asset sales, business divestitures, sales of investments or revenue recognition due to accounting policy changes.

❖ **Formula:** Sum of net operating revenue from all individual lines of business net of returns and losses, and excluding extraordinary items.

❖ **Description:** Net operating revenue also referred to as net sales includes regular operational revenue, sales or in the case of governments and non-profits the total allocated budget income sources related to the normal organization or business operations. Specifically excludes revenue from extraordinary items such as asset sales, business divestitures, sales of investments, or revenue recognition due to accounting policy changes.

Total headcount (FTE)

Total Headcount (FTE) or full time equivalent workers, is the measure of the total size of the workforce at a specific period of time and is used as a measuring point in calculating various workforce measures such as revenue per FTE and profit per FTE. Total Headcount FTE includes all contingent workers.

❖ **Formula:** Total Employee FTE Period End + Total Contingent FTE Period End

❖ **Description:** The total employee and contingent FTE for a given period defined as all regular employees and contingent workers on a full time equivalent basis at the end of the reporting period.

Revenue per FTE

Revenue per FTE is a commonly used high level average productivity and performance metric which can be used by organizations as a simple measure that compares two critical variables for most organizations, which are total operating revenue and total workforce FTE. When total revenue is growing faster than total workforce FTE, the average Revenue per FTE will increase indicating that the organization is achieving its revenue growth without a corresponding equal level of growth in the size of the workforce. This metric does not, however, take into account outsourced labor or other work done by suppliers which may include considerable labor costs. This metric also does not include the impact of the total costs of the workforce which may change at different rates than the size of the overall workforce FTE (see Total Cost of Workforce).

❖ **Formula:** Total Net Revenue / Average Employee FTE or Average Workforce FTE

❖ **Description:** Average amount of net revenue generated for each full time equivalent employee (FTE) as measured either for all employee FTE or total workforce FTE which includes employees, temporary workers and contractors.

Total Operating Expenses or Total Operational Expenses

Total Operating Expense is the total of all accounting classified expenses in running and operating the organization or business. Such expenses incurred in providing specific work in support of the business. Examples of operating expenses include cost of services provided, cost of goods sold, sales force and sales

organization costs, marketing, research and development (non-capitalized), finance and accounting, human resources, legal, information technology and administrative costs or expenses. Such costs represent the total cost of operating the organization's business for a given period of time. It is useful to measure and compare total workforce costs or expenses to the total level of operating expenses for the organization as a means of understanding the relative size, impact and importance of workforce costs to total expenses for the organization. Total operating expenses vary considerably versus total costs of the workforce based on industry, geography, business model and organizational structure.

❖ **Formula:** Cost of Goods or Services Provided + Total G&A Expenses + Total R&D Expenses + Total Selling & Marketing Expenses + Other Operating Expenses.

❖ **Description:** Total Operating Expense is the sum of business operating expense for a period of time, and a subset of Total Expenses, as operating expenses do not include organization expenses classified as cost of goods sold (COGS) or cost of services (COS). Operating Expenses typically include selling, marketing, research and development, general and administrative expenses which includes legal, accounting and finance, human resources (HR), information technology (IT) as well as other operating expenses.

NOTE - Certain industries may exclude material and inventory costs normally reflected in Total Cost of Goods sold in the calculation of Total Operating Expenses (i.e. Retail, Manufacturing).

Total Cost of Workforce (TCOW)

Total Cost of Workforce (TCOW) links directly the total costs of employing all elements of the workforce and is a particularly useful measure when compared as a percentage of total operating revenue, total operating expenses or total expenses. Expressed as a percentage in such a form, TCOW can be trended as a metric specifically focused on the workforce. For example, in any organization where the total cost of workforce grows faster than revenue, over time the organization will lose profitability in addition to efficiency and be forced to retrench, restructure or layoff some of its workforce.

Total cost of workforce is defined as the total costs of all salaries, wages direct and indirect cash or equity compensation for all employees. TCOW includes all costs for contingent temporary or contract workers whenever the organization primarily directs the work of such labor. For example, offshore employees who work in a separate legal entity that is 50% or greater controlled by the organization should be included in the total cost of workforce. TCOW includes all company provided or paid employee benefits, perks and rewards. Such costs also include all company retirement related costs for both current and former employees. TCOW includes all enterprise HR costs such as training costs provided to employees and or contingent labor. All recruiting costs not already included incurred as workforce acquisition costs. All employee relations, severance and legal settlements paid to current and former employees or contingent labor.

❖ **Formula:** (Total Employee Compensation Costs + Contingent Workforce Costs + Benefits Costs + HR Costs + Other Workforce Costs)

❖ **Description:** The sum of the total costs of the workforce includes all compensation costs, benefits costs and other employee costs. Total cost of employees includes all employee- related costs for the organization for a given period of time. Workforce is defined as employees plus contingent (contract and temporary) workers.

Total Cost of Workforce is optimized when analyzed by relative position value add, performance level,

profitability, productivity, employee engagement, tenure and mobility. When used with such measures, Total Cost of Workforce is a predictor of increasing or decreasing trends in employee performance and productivity, turnover and engagement correlated between certain job roles and workforce groups.

Total Cost of Workforce (TCOW) per FTE

Total Cost of Workforce (TCOW) calculated is the same as the previously defined TCOW divided by Total Headcount (FTE) previously calculated to arrive at the Total Cost of Workforce Expressed on an FTE worker basis for the organization or division being measured. Such a measure links directly the total costs of employing all elements of the workforce on a per worker basis and is a particularly useful when trended over time and compared to the workforce mix as well as revenue, inflation rate, and total cost changes to name a few comparative options. For example, in any organization where the total cost of workforce grows faster than revenues, over time the organization will lose profitability in addition to efficiency and be forced to eventually retrench, restructure or layoff some of its workforce.

❖ **Formula:** Total Cost of Workforce / Total Headcount FTE

❖ **Description:** Total cost of the workforce expressed on a per FTE or Full Time Equivalent worker basis. The workforce is defined as employees plus contingent (contract and temporary) workers. Total cost of workforce is defined as the total costs of all salaries, wages direct and indirect cash or equity compensation for all employees. TCOW includes all costs for contingent temporary or contract workers whenever the organization primarily directs the work of such labor. For example, offshore employees who work in a separate legal entity that is 50% or greater controlled by the organization should be included in the total cost of workforce. TCOW includes all company provided or paid employee benefits, perks and rewards. Such costs also include all company retirement related costs for both current employees. TCOW includes all enterprise HR costs such as training costs provided to employees and or contingent labor. It also includes all recruiting costs not already included incurred as workforce acquisition costs and all employee relations, severance and legal settlements paid to current and former employees or contingent labor.

Total Cost of Workforce (TCOW) Percent of Revenue

Total Cost of Workforce (TCOW) calculated is the same as the previously defined TCOW divided by Total Headcount (FTE) previously calculated to arrive at the Total Cost of Workforce Expressed on an FTE worker basis for the organization or division being measured. Such a measure links directly the total costs of employing all elements of the workforce on a per worker basis and is a particularly useful when trended over time and compared to the workforce mix as well as revenue, inflation rate, and total cost changes to name a few comparative options. For example, in any organization where the total cost of workforce grows faster than revenues, over time the organization will lose profitability in addition to efficiency and be forced to eventually retrench, restructure or layoff some of its workforce.

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company retirement related costs for both current employees. TCOW includes all enterprise HR costs such as training costs provided to employees and or contingent labor. It also includes all recruiting costs not already included incurred as workforce acquisition costs and all employee relations, severance and legal settlements paid to current and former employees or contingent labor.

Total Operating Expense

Total Operating Expense is the total of all accounting classified operating expenses or expenses incurred in providing specific functional work in support of the business. Examples of operating expenses include sales force and sales organization costs, as well as marketing, research and development (non-capitalized), finance and accounting, human resources, legal, information technology and administration. Such costs represent the cost operating the organization's business for a given period of time excluding the specific costs of products and services rendered which are typically included in accounting lines called cost of goods sold and cost of services provided. It is useful to measure and compare total workforce costs or expenses to the total level of operating expenses for the organization as a means of understanding the relative size, impact and importance of workforce costs to total expenses for the organization. Total operating expense varies considerably versus total costs of the workforce based on industry, geography, business model and organizational structure.

❖ **Formula:** Total G&A Expenses + Total R&D Expenses + Total Selling & Marketing Expenses + Other Operating Expenses

❖ **Description:** Total Operating Expense is the sum of business operating expense for a period of time, and a subset of Total Expenses, as operating expenses do not include organization expenses classified as cost of goods sold (COGS) or cost of services (COS). Operating Expenses typically include selling, marketing, research and development, general and administrative expenses which includes legal, accounting and finance, human resources (HR), information technology (IT) as well as other operating expenses.

Total Cost of Workforce Percent of Expenses

total Cost of Workforce (TCOW) Percent of Expenses is the same as the previously defined TCOW divided by the total expenses of the organization or division being measured. Such a measure links directly the total costs of employing all elements of the workforce and is a particularly useful measure when compared as a percentage of total operating revenue, total operating expenses or total expenses. Expressed as a percentage in such a form, TCOW can be trended as a metric specifically focused on the workforce. For example, in any organization where the total cost of workforce grows faster than revenues, over time the organization will lose profitability in addition to efficiency and be forced to retrench, restructure or layoff some of its workforce.

❖ **Formula:** (Total Compensation Costs + Benefits Costs + HR Costs + Other Workforce Costs) / Total Expenses

❖ **Description:** Total cost of the workforce expressed as a percentage of total expenses. The workforce is defined as employees plus contingent (contract and temporary) workers. Total cost of workforce is defined as the total costs of all salaries, wages direct and indirect cash or equity compensation for all employees. TCOW includes all costs for contingent temporary or contract workers whenever the organization primarily directs the work of such labor. For example, offshore employees who work in a separate legal entity that is 50% or greater controlled by the organization should be included in the total cost of workforce. TCOW includes all company provided or paid employee benefits, perks and rewards. Such costs also include all

company retirement related costs for both current and former employees. TCOW includes all enterprise HR costs such as training costs provided to employees and or contingent labor. It also includes all recruiting costs not already included incurred as workforce acquisition costs and all employee relations, severance and legal settlements paid to current and former employees or contingent labor.

Operating Profit, or EBIT

Operating Profit is a measure of a company's earning power from ongoing operations, equal to earnings before deduction of interest payments and income taxes, not also called EBIT (earnings before interest and taxes) or operating income. Therefore Net Operating Profit is a commonly used financial profitability performance measure that differs from Operating Profit in that it includes the impact of taxes, attempting to measure to level of profit contribution from business operational activities on an after-tax basis and to align organizational profit performance to the organizational bottom line.

Simply put, Operating Profit is a measure for the organization that measures pretax and or post tax bottom line operational performance and thereby when blended or contrasted with workforce metrics, provides a representative comparison with which to judge the alignment, impact and performance of such workforce metrics that may compare against it. Such a metric as used in the human capital impact statement is a preferred profit measurement or comparison metric upon which to compare workforce and other performance metrics.

❖ **Formula:** Total Operating Revenue - Total Operating Expenses - Total Taxes – Interest Expenses

❖ **Note:** EBIT equal Operating Profit with Taxes and Interest Expenses added back

❖ **Description:** Total earnings after costs of goods and services, expenses, interest and taxes. See your organization's accounting or finance department for a more detailed calculation of your organization's applicable Net Operating Profit

Profit per FTE

Profit per FTE or full time equivalent employee is a measure or ratio that compares the profit generated by an organization with the total number of employees or the total number of the workforce. The workforce is defined as employees plus contingent (contract and temporary) workers. This metric is commonly used as a high level productivity measure which is trended over time or benchmarked with peers in the same industry or region. It is also used a simple relative measure of the profit contribution potential and result from a single employee or worker at the organization. Profit per FTE is a measure for the organization that measures bottom line operational performance compared against the total size of the employee or workforce base. Such a measure provides a representative comparison with which to judge the alignment, impact and performance of the workforce. Such a metric as used in the human capital impact statement is a preferred profit measurement or comparison metric upon which to compare workforce and other performance metrics.

❖ **Formula:** Total Net Operating Profit / Average Employee FTE or Average Workforce FTE

❖ **Description:** Net operating profit generated for each full time equivalent employee (FTE) as well as workforce FTE which includes employees, temporary workers and contractors

Human Capital ROI Ratio

Human Capital ROI Ratio is often used as a definitive profit or productivity contribution by the workforce that

essentially shows the return, expressed as a ratio, that one dollar invested in the organization's workforce provides as a return on investment. For example, an organization with a calculated Human Capital ROI Ratio of 1.2, indicates that for every \$1.00 dollar invested in the cost of the workforce, that \$1.20 dollars will be returned by the organization.

❖ **Formula:** $[\text{Total Operating Revenue} - (\text{Total Operating Expenses} - \text{Total Cost of Workforce})] / \text{Total Cost of Workforce}$

❖ **Description:** Net operating profit impact of each dollar invested in human capital or the total cost of workforce.

NOTE - It is recommended that the metric Total Cost of Workforce, which includes the total costs of employees plus all contingent headcount (contract and temporary workers), be used in calculating Human Capital ROI Ratio. If Total Cost of Workforce detailed information is not available, this metric may also be calculated using the total costs of employees as an alternate

NOTE - This metric is optimally used for long term strategic predictions rather than short term measurement since organizational market values can fluctuate dramatically due to uncontrollable events as well as industry and market changes

Return on Human Capital Investment

Return on Human Capital Investment is a measure of the calculated return to the organization of an additional unit or dollar invested in the workforce. For profitable organizations in which human capital is a significant part of the value creation process, it is generally a number greater than 1.00. Assuming that operating profit is a result of a company's workforce, this metric shows the returns brought about by the workforce. This metric trended over time can show the effectiveness of using workforce measures such as total cost of workforce TCOW on returns. This analysis provides more clarity when TCOW is tracked by high performers in critical roles vs all others to show the segmented returns

❖ **Formula:** $\text{Total Operating Profit} / \text{Total Cost of Workforce}$

❖ **Description:** Return on investment in terms of net operating profit, expressed as a percentage of the total dollar amount invested in human capital workforce costs

Human Capital ROI per FTE

The Human Capital ROI per FTE metric is simply the human capital ROI for the workforce for a given period expressed on a per FTE basis. The metric clearly shows the value add or productivity contribution over and above cost made by the workforce on an average basis for a given period. This metric shows in a clear, easily comparable way the level of value creation, productivity gain, cost efficiency and profit enhancement that can be generated from a typical worker in the organization. An organization's actual quantifiable workforce productivity impact as calculated by other methods such as return on human capital investment (profit driven productivity) may differ. The Human Capital ROI per FTE metric is defined and calculated as follows:

❖ **Formula:** $(\text{Human Capital ROI Ratio} - 1) * \text{Total Cost of Workforce} / \text{Total Headcount FTE}$

❖ **Description:** The Human Capital ROI per FTE is the overall average productive contribution or value add over and above Total Cost of Workforce (TCOW) for a given organization for a given period. The metric can be readily benchmarked and trended over time and has the added advantage of being reported on an average

FTE basis, making it relatively easy to understand. This metric is a variation of Human Capital ROI ratio and show the overall productivity, return on people, value add contribution made by an average worker. See definition of Total Headcount FTE for more information on headcount included.

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