

SAP Quantifies Relationship Between Learning & KPIs

SAP
Best Advance in Measuring
the Impact of Leadership Development
November 2017



Company Background



Company At-a-Glance	
Headquarters	Walldorf, BW, Germany
Year Founded	1972
Revenue	22.06 billion EUR
Employees	80,000+
Global Scale	SAP operates in six regions around the world: APJ (Asia Pacific Japan), EMEA (Europe Middle East and Africa), MEE (Middle Eastern Europe), NA (North America) and LAC (Latin America and Caribbean). Global.
Customers/Output, etc.	As a global market leader in enterprise application software, SAP is at the center of today's business and technology revolution. Its innovations enable more than 350,000 customers of all sizes and industries worldwide to work together more efficiently and use business insight more effectively.
Industry	Software/Service
Stock Symbol	SAP
Website	http://www.sap.com

Budget and Timeframe

<i>Budget and Timeframe</i>	
Overall budget	\$200,000
Number of employees involved with the implementation?	6
Number of Operations or Subject Matter Expert employees involved with the implementation?	3
Timeframe to implement	8 months to implement initial measurement.
Start date of the program	January 2015

Business Conditions & Business Needs

In response to market shifts, SAP leaders strategically made a series of acquisitions in both the cloud and business-network space, accumulating SaaS assets and aggressively pursuing the cloud market. This new direction required significant leadership and cultural transformation.

CEO Bill McDermott and the Executive Board, recognizing the need for strong leadership trust, made it a priority to build a competitive talent environment (attract, retain, and engage) and empower employees with increased innovation, risk taking, and collaboration accomplished with simplicity, speed, and agility. Leader trust scores, retention of key employees, diversity and inclusion, employee engagement scores are key metrics used to gauge success.

These changes were so critical to SAP's success that McDermott and the board members sponsored and secured funding for leadership development programs at all levels of leaders and committed to a governance model to support accountability.

The value of leadership learning is frequently a contentious and unquantified area. SAP's approach quantifies the relationship between participation in leadership programs and key performance indicators that already had defined monetary values through other research (employee engagement, leadership trust index, retention) and key company priorities (proportion of women in leadership positions).

Historically, leadership programs are measured via reactions and uptake. With SAP's leadership investment in millions of dollars over three years, there was a need to quantify the return on investment through a causal relationship.

Overview

The project set core goals:

- Quantify the relationship between programs and KPIs, including employee engagement, leadership trust Index, employee retention, proportion of women in leadership roles.
- Quantify the value of programs as monetary investments.
- Enable active monitoring/sample more frequently.
- Consistency and governance in measuring and sharing leadership-impact data.

Design

SAP's leadership program includes development roadmaps for multiple levels of leaders. The architecture of each roadmap contains a variety of learning and development experiences, including:

- Performance Support.
- Community/Networking opportunities.
- Virtual Learning on demand.
- In-person Learning (Flagship courses).
- On-the-job Experiences.

Goals/Benefits

- Effects of program impact reaches across multiple levels.
- Leaders build trust with their teams, and such trust increases employee motivation, productivity and retention. Trust is measured via employee surveys.
- Leaders share a common language to drive the enterprise to successful transformation.
- Leaders' cross-functional silos solve complex business problems.

- Leaders develop skills that enable them to drive their teams through digital transformation.
- Leaders feel a greater sense of purpose and connection to the strategy.

Methodology of Data

Use of a time-series analysis allowed not only a statement of correlation but also a definitive statement of causality via Bayesian Structural Testing, a statistical model that represents a set of random variables and their conditional dependencies.

At SAP, the project team created trendlines based on prior performance and several other variables. The difference between the prediction interval (the range of what is expected to happen) and the observed data (what actually happened) is attributed to participation in a given learning program.

Time-series with clustering was chosen as the preferred methodology because it enabled isolation of results through clustering. For example, in the case of middle and upper managers, the time-series allowed for closer examination of potential radiating social effects. The methodology also was chosen because time-series analysis, unlike correlative analysis, can more definitively state causality.

Threshold for reporting was determined as 3σ confidence level (93.3%). Results lower than 3σ may be construed as misleading and, thus, are not reported in this document. Raising the threshold was considered, but all results fell between 3.0 and 3.5 and raising the confidence level beyond that point meant having no reportable results.

Descriptions of Data

For the purposes of analyzing effectiveness of the leadership development programs, the project team used a large volume of line-level data from organization units containing individuals who completed the program prior to September 15, 2016. It is noted that this data has limitations and faults in cases of change in an organizational unit, it was not possible to attribute responses to either the departing leader or to the arriving leader. Thus, organizational changes in a unit, e.g., reporting line or structure, were not included in this analysis.

Organization units. For the purpose of this study, results in organization units are attributed to the leader on the first day of the annual SAP People Survey that measures employee engagement and leadership trust. Results were discarded for organization units that experienced a leader change within 30 days prior to the start of the survey. SAP People Survey data does not report organization-unit responses when too few

respondents answer a survey to keep the data anonymous in keeping with EU data-protection standards. Subsequently, for some smaller organization units, no Employee Engagement or Leadership Trust Index scores were factored for some smaller organization units.

People data. Control variables were added where possible for region, board area, time in current position, time elapsed since first SAP start date, and gender. Note that gender was required in all models and instances as there were statistically-significant variations in employee engagement and leadership trust results by gender in all tested/testable cuts and models.

External data. To better control for prevailing economic conditions, additional variables were added. Those include the WorldBank Global Economic Indicator, PriceWaterhouseCoopers Tech Scorecard, NASDAQ Composite, DAX, and the FTSE 100 in some unique economic conditions. Other indices were tested, but those five worked best when counted as instruments of the “Nation” variable.

Other Data and Methodology

Completions after September 15, 2016, were discarded as it was not knowable whether People Survey Results were a result of prior history or adjusted patterns since completion. Data was discarded when leaders had insufficient data history to establish a trend line within reasonable standards.

Though time-series were used, initial selection of variables was determined by looking at f-critical values with respect to degrees of freedom between treatments and degrees of freedom within treatments for Anova. F-testing is a method of reviewing potential interactions and helped the project team decide what to put into the business impact model. Many other variables and concepts were tested and included potential interactions of courses with each other and other eLearning in SAP’s LMS. There were observable interactions with other courses, particularly “The Trustworthy Leader” that focuses on strengthening leadership trust, but such interactions lacked enough sample size to create separate analysis.

Another methodology was used as a second-pass check to ensure results and outcomes were consistent. These results are not reported but were completed for quality assurance.

All statements of value are entirely derivative of the SAP Integrated Report 2016. Statements of value are pro-rated by date, span of control, and outcomes of time-series analysis. Though value may have been added in 2016 for persons who completed the



- **“Perform.”** Leaders are provided with additional development opportunities that include on-the-job experiences and social learning as they perform in their roles.
- **“Build Excellence.”** Finally, the roadmaps address the needs of leaders as they build excellence, excel in their roles and/or consider their readiness for the next level of leadership.

The “Build Experience” flagship delivers training face-to-face and instructor-led over 2-5 days, depending on the level of leadership. SAP has more than 8,500 leaders and more than 6,000 of them are in the first level. Thus, the project team prioritized both top-down and ground-up approaches to delivery to provide strong coverage at both ends while accelerating the strategic capabilities at the top level and building a large base of strong leaders.

Historically, companies the size of SAP start at the first- and mid-levels, but there is little evidence to support the impact of that approach. At SAP, the imperative was about transforming the business as quickly as possible, and the project team was willing to take a different approach to because the company needed leaders who created and drove the strategy as well as those who motivate and inspire the team members on the ground every day. The analysis started at the first and GET/SET level, but the project team eventually brought in the other levels using both internal and external facilitators.

The approach included an ROI strategy on that decision. Early investment in GET/SET leaders’ results:

- Replacement-cost savings by reducing post-merger integration (PMI) attrition of key talent.
- Reduced impact of regrettable attrition/larger costs savings.
- Setting the example for the importance of leadership development and a culture of learning from SAP’s most influential leaders.

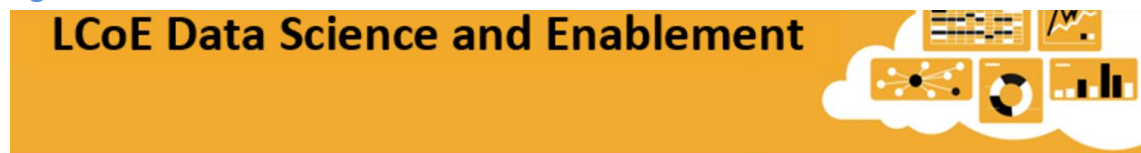
Early investment in first-level leader results:

- Quick impact and influence on ~80% of SAP individual contributors (ICs) overall, in every part of the company.
- Direct reports of successfully-transitioning, first-level leaders were 15% more effective at their jobs than the average and 21% less prone to leave the company.

Ultimately, the flagship program was delivered to more than 85% of SAP leaders in the first year it was introduced.

Business impact results are communicated directly to key stakeholders and business leaders on a quarterly basis and business impact updates are shared on a community learning site.

Figure 2: LCoE Data Science and Enablement



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What Did We Learn?



Intake Request Form



Source: SAP 2017

Measurable Benefits

Figure 3: Executive Summary

SAP Learning **Simply Brilliant**

Quantitative Impact of Leadership Flagship Programs & The Trustworthy Leader

Executive Summary:

With respect to the following chart, the term “impact” should be understood to mean that there is direct causal relationship. This means an impact of +X% should be read as “Participation in this program caused participants scores/retention/etc. to increase by an average of X% over what they were predicted to be, had the person not participated.” For more information about the methodology and how we determined a causal relationship, not just a correlative relationship, please see the methodology section of this document.

Grey Shaded Boxes indicate results were not statistically significant. This may be due to either sample size or wide prediction margins. It does not mean the program had no impact, but does mean that the impact is not yet measurable.

	Impact- Employee Engagement	Impact- Leadership Trust Index	Impact- Retention Rates	Impact- Women In Leadership	Estimated 2016 Financial Impact*
Lead SAP Teams to Great Results (First-Level Leaders)	+3.11%	+0.51%			Redacted €
Lead SAP's Leaders and Business (Mid-Level Leaders)	+2.27%		+0.31%		Redacted €
Lead SAP's Growth (Executives)	+1.89%	+0.27%	+0.14%		Redacted €
GET/SET-ILT & Lead SAP into the Future Composite (Global and Senior Executives)	+0.31%	+0.62%			Redacted €
The Trustworthy Leader (All Leaders)		+2.87%			***
Cumulative Impact of all above programs through 2016.**	+2.87%	+1.57%	+0.10%		Redacted €

*Estimated financial impacts are based on ranges as stated in the SAP Integrated Report multiplied by actual deviations from prediction intervals and proportions of SAP employees managed by those who have participated in programs, pro-rated for timing of completion. These estimate actual impact in 2016, not what impact would have been with 100% completion.

**Cumulative Impact statement is a result of running results of all impacts on all participants and employees managed by participants in named programs throughout SAP, including multi-level clustering to minimize potential over-count. This represents the results when considering the Leadership Flagship Programs and The Trustworthy Leader program as a single packaged bundle. Some program impact ranges may overlap with each other, resulting in a lower cumulative scoring than the summation of above.

***No value was attributed to leadership trust because the valuation information could not be located in time for production of this document.]

Source: SAP 2017

Overall

Lessons Learned

- Using combined datasets of HR data and learning data, the project team was able to quantitatively define HR outcomes at the program level once sufficient data volume was achieved.
- With combined datasets of learning data and quantifiable outcomes, the team was able to quantitatively define non-HR outcomes at the program level once sufficient data volume was achieved.
- Quantitative causal relationships cannot be confirmed when classes are small or occur only at one or two points in the year.
- Research prior to analysis showed that many learning organizations try to measure impact through surveys instead of outcome-oriented datasets that informed the selection of methodology for SAP.
- Research also showed that some learning organizations try to measure impact, but are accidentally measuring correlation. That information informed the selection of methodology for SAP.
- Strong governance and data maintenance is necessary to form meaningful impact metrics.

Next Steps

- The decision tree for predictive analytics will be automated using machine-learning techniques to create on-the-fly, learning-impact analytics automatically once the data set supports a statistically significant outcome.
- Integrate additional datasets (including CRM) to add potential KPIs and outcomes will help answer the question “What did participating in the learning experience do?” instead of “Did the learning experience do what it was supposed to?”
- Tying the impact analytics into a recommender system will give an employee the ability to search for training related to a specific KPI and automatically be directed to training that will be most impactful.
- Impact analysis will be combined with competency gap analysis to provide more impactful- and meaningful-learning experiences for employees.



About Brandon Hall Group

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