



THE RETURN MODEL OF LEARNING

Introduction Speech
by
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ROI INSTITUTE EUROPE

Introduction

In 2011 Gooiconsult Group and Paul Jansen have developed the **Return Model of Learning**. Using existing scientific outlines, analyses were made based on data from Navigator. The main question in this research was: is it possible to **calculate the return of learning in euros?** After having studied and analyzed the data for over a year, we were happy to conclude: yes, this is possible. In his Introduction Speech Paul Jansen explained how to do this. On the following pages you find the transcript of this speech.

Since 1992, Paul works as professor of Industrial Psychology at the Faculty of Economics, Vrije Universiteit Amsterdam. He has shared his knowledge in numerous social positions. Among them, as director of the Limpurg Institute, the Inter-University Institute for Research in Accounting. He was also chairman of the board of the Netherlands Foundation for Management Development (NFMD), a knowledge sharing platform for large Dutch profit organizations (such as Shell, Philips, Unilever, ABN AMRO) and non-profit organizations (government, universities, large municipalities). His research focuses on management development, assessment and performance management. In 2005, he was ranked #3 in the Top 10 list of Dutch P&O scientists.

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The Return Model of Learning

There are two ways to calculate returns. And I will present one of them here. You combine one thing with another and it becomes more valuable as a result. You do this when you make a chair from pieces of wood for example. But you do the same with people you send on a training course. You then calculate the return of the intervention (carpentry, training, etc.). A whole different way of calculating return is by looking at the value on the balance sheet. You see if the value of something on the balance sheet increases. According to accountants, you can only put things on the balance sheet of which you have property rights. Meaning you can't put people on the balance sheet. This can only happen if people have a transfer value and are saleable. Accountants have detailed procedures on how to do this. So how do we calculate this? Value determination, devaluation etc. This movement is known as the Human Resource Accounting but has considerably lost popularity.

We look at the impact of social measures. We look at the financial impact, not directly at the social impact. A (negative) side effect of being unable to place people on the balance sheet is that they will never be considered as an investment, but rather as a cost.

When speaking to managers about the return of training, they often hesitate when they hear how high it is. And the truth of the matter is that 50% is fairly high. The return on selection could be even higher. Leaving that crazy someone out entirely can result in your returns being almost infinite. Managers wonder what the reason is why people don't line up to invest their money there! Is it not wise to speak in terms of cost reduction: How can we reduce costs? How can we enable two people to do the same amount of work as three? By training them better. You can also say: we'll take three so I have more return in terms of market share. So either less people, less costs and more profit, or the same number of people, but a lot more revenue and thus more profit for the same cost. Many managers are inclined to think in terms of costs.

Return, two simple questions:

- When trained, that someone becomes more competent and/or motivated, more engaged. *So what is the direct effect of a training?* In terms of learning, that is to be more competent (knowing and doing) and/or in terms of motivation (willing).
- *What does an organization do with Mr. or Mrs. 'More Competent/Motivated'?* I call the latter benefit, or revenue, or utility.



This distinction is important. Nobody gets worse through training. It doesn't take much to say something about the benefit or use of training. That means the effect of training is often in the second question. My position is that it's not enough for training agencies to simply say, "We only train. So whatever happens to the people after training doesn't concern us." I think you should consider how a more competent and motivated employee can contribute to the company. How he or she can benefit the organization as a result of being trained properly. How the organization should be adjusted to that.

That means there are four themes in my argument: effect size, financial return, all in a broader model, working principles. The basic principle is: this is not rocket science.

At one point in my career I was director of a research institute in the field of accountancy. This is where I learned that accountants are alphas. They have good reasoning rules. There are no laws on how to do a write-off, it's reasoning. And on the basis of those arguments, you convince one another.

It is therefore important to set up meaningful reasoning. Financial revenue from learning as something you can calculate. As HR managers, we tend to assume that it'll be very difficult. That management accounting is very complicated. And that we as HR managers need to make it complicated when calculating why things are useful. No: you need meaningful managerial reasoning as to why training can help! For the effect size, you might undertake some financial masterpieces.

The Return Model of Learning

$$R = B - C$$



$d * u * t (*N)$

d = effect size of the training
 u = 'utility' or of this effect in daily practice
 t = time (in years)
 N = number of participants

The model is simple, $R = B - C$. The core lies in two things. How is the cost accounting done? And what are the benefits of training? The benefits can be divided into two things. The effect size is determined by the 'd' (stands for difference). The difference in competence between someone who is trained and someone who is not trained. And the 'u' in utility, what is the use of the training effect in daily practice.

The return is higher the more the training is used, therefore a 't' is included for the number of years. The return is higher when the training is made available to more people, so there is an 'n' representing the number of participants. The last two additions can be expanded further, but that isn't the core. The core is in the benefits (what does the training provide and what happens in terms of usefulness) and cost. You can easily have endless talks about the cost, for example the time lost by going to the training.

Effect size

$$d = (M_1 - M_0) / s_0$$

Effect size: the difference of the mean before training (M_0) and the mean after training (M_1) divided by the standard deviation of the mean before training (s_0).

If scores are normally distributed, d can be converted via z-table into the percentage of people that increased or decreased from pretest to posttest. For instance:

- d = .20 : 8% → small effect
- d = .50 : 19% → average effect
- d = .80 : 29% → large effect

Thus, the percentage of people that has increased or decreased.

During random allocation in a control group and an experimental group: effect size is standardized difference in T1 of the mean in the experimental group (M_{1e}) and the mean in the control group (M_{1c}).

How do you calculate the effect size? You have someone at moment 0 who is not trained (T_0). And then you have someone at moment T_1 who has been trained (T_1). Your score on competency measurement or, for example, a math test, will increase in the period from T_0 to T_1 . The mean is the score of the group. You have the mean at T_0 and T_1 . You deduct the mean at T_0 from the mean at T_1 and then hope that the difference is positive. And to standardize it, you divide it by the standard deviation of the pretest.

We are not too interested in the absolute differences between T0 and T1. We are however interested in terms of how the total distribution of employees moves up. If there is a normal distribution of scores (and this is often the case) 95% of the scores lie between the mean, plus or minus 2 times the standard deviation. Because the total distribution is only composed of 2 standard deviations at the top and two 2 at the bottom. So in the case of 0.20, this is then 1/5 standard deviation. If the difference between T1 and T0 is 0.80, so 4/5 standard deviation, then the effect is that the distribution is shifted by nearly 1 standard deviation. In the normal distribution, you see the treated group shift to the right. Whether this is a great effect or is entirely meaningless is determined by the utility. At 0.80 standard deviation, it's only about the effect score.

So you calculate the mean at the pretest T0. For example through 360° feedback measurement. You then do a training. After this training you measure T1 and see how the mean has shifted. Depending on the shift, you can determine if there is a large, small or average impact. None of this is new. This happens quite a lot in medical effect measurements.



Organization A: effect size T1 – T0

Problem analysis	.89
Formation of judgement	.56
Sensitivity	.89
Customer focus	.78
Sales focus	.78
<u>Quality focus</u>	<u>.67</u>
Mean	.76

The mean shows a large effect of .76 (= 28% increase)

The above score says something about progress on the various dimensions. Here you see that people significantly improved. The ct is large. I derive words like large and small from the shift in the distribution. .76 is almost a whole standard deviation. Nearly a 30% increase. This means that a large section of the distribution shifts.

Organization B: effect size T1 – T0

Formation of judgement	.44
Sociability	.33
<i>Customer focus</i>	1.22
Stress resistance	.22
Results orientated	.44
Persuasiveness	.56
<u>Entrepreneurship</u>	<u>.33</u>
Mean	.51

An average effect of .51 (= 28% increase), but T0-scores are very high (ceiling effect). What's remarkable is the sharp increase in customer focus of 1.22 (= 39%).

We have made numerous similar calculations over the past years. All this indicates that training delivers results. There are also international studies that show that the effect size of training is extraordinarily large. Provided of course that you clearly define your data, such as competencies.

Financial revenue: value-added effect size converted into money

- What does someone more competent contribute to the company results?
- So what is the financial benefit (utility) of a training?

A lot of research has led to rules of thumb. Reasoning:

- Training: average → above average employee
- What is the additional yield of an above average employee?

Financial revenue. How does the company benefit from someone who has become more customer-focused? What is the actual benefit? Here you will find, as in accountancy, rules of thumb. What is the reasoning here? An average employee moves up to an above average employee. For example, in the competence of customer orientation. The question then is, what is the additional yield of an above average employee? In general, managers state that above average employees are 40% better than average employees. Research into this is done in two ways. By asking and by counting. Some functions you can simply count. When scientists can see for example that a large part of the production – inventions – is done by a very small proportion of people. So there you see that above average is really a lot better. You also see it in football. Above average football players are really a lot better than average players.

You can make it even more extreme. There are positions where the difference between an average and above average is infinitely large. These are positions that are so difficult, that only very skilled people can handle them. Meaning that these people are infinitely more valuable. Every CEO uses this to explain his or her salary. Almost no one can do this, so...

Benefit of the training

Determined by: d: effect size (say .64)

u: added value in gross annual salary of employees who score 1 SD above the mean (say 40% * € 40,000 = € 16,000)

t: number of years the training has effect (say 1 year)

N: total number of participants (say 390)

$$\text{Benefit} = d * u * t * N = .64 * 16,000 * 1 * 390 = \text{€ 3.993.600}$$

Correction for:

- *Direct costs:* material, instructor, accommodation, travel and administration
- *Indirect costs:* opportunity costs =
gross daily salary trainee * course sessions * number of trainees

This is where the calculation happens, where you can sense huge profits. This seems *too good to be true*. This is primarily due to the large number of trainees. This keeps adding up. As well as in the salary-effect. Though you should still deduct the costs. But I won't go into detail here.

How do you calculate the utility? You want to be able to measure the fact that someone is better trained (the effect size) and their impact on the organization (utility)? That's relatively simple. As stated earlier, managers state that above average employees are 40% better than average employees, i.e. he/she has become 40% more productive. So instead of an above average employee working 100%, he/she works 140%. You can also say, 5 trained above average people (T1) do the work of 7 untrained people (T0), because $5 \times 140\% = 7 \times 100\%$. But you can also keep on checking this in a business. As above average is equivalent to 1 standard deviation above the mean, 40% corresponds to an effect size of 1.00.

The utility can then quickly be calculated. A training with an effect size of 1.00 increases productivity by 40%, so I can do with fewer people (5 instead of 7). Saving 40% on salary.

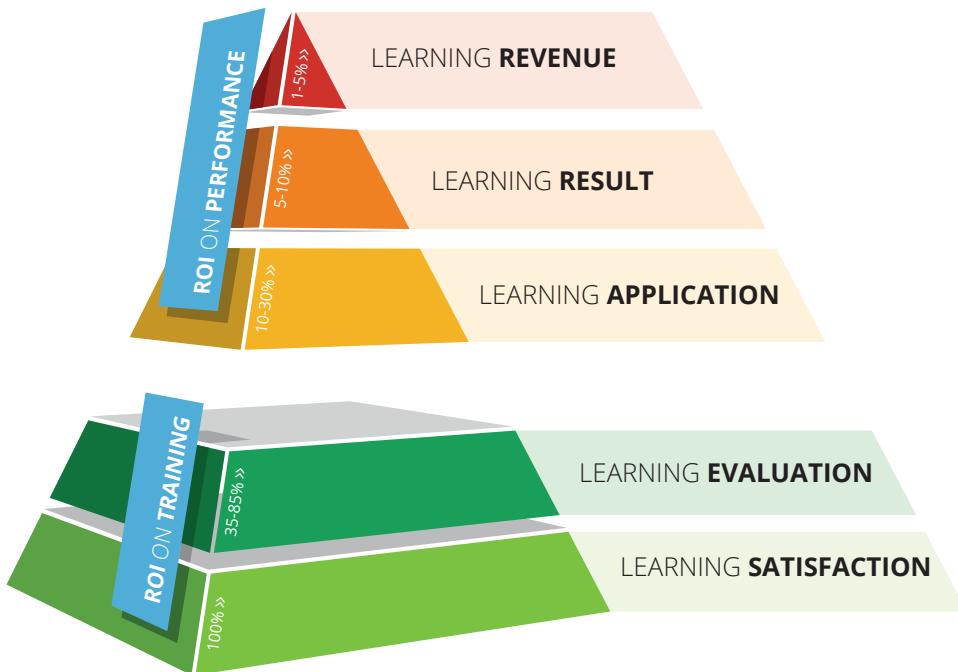
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by Paul Jansen.*

References

- Aragón-Sánchez, A., Barba-Aragón, I., Sanz-Valle, R. (2003). Effects of training on business results. *International Journal of Human Resource Management*, 14, 956-980.
- Arthur, W.J., Bennett, W.J., Edens, P., & Bell, S.T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *Journal of Applied Psychology*, 88, 234-245.
- Becker, B.E., & Huselid, M.A. (1992). Direct estimates of SDy and the implications for utility analysis. *Journal of Applied Psychology*, 77, 227-233.
- Bommer, W. H., Johnson, J. L., Rich, G. A., Podsakoff, P. M., & MacKenzie, S. B. (1995). On the interchangeability of objective and subjective measures of employee performance: A meta-analysis. *Personnel Psychology*, 48, 587-605.
- Burke, M.J. & Day, R.R. (1986). A cumulative study of the effectiveness of managerial training. *Journal of Applied Psychology*, 71, 232-245.
- Cascio, W.F. (1987). *Costing human resources. The financial impact of behavior in organizations* (2nd Ed.). Boston: PWS-Kent Pu.Co.
- Cohen, J., (1992). A power primer. *American Psychologist*, 112, 155-159.
- Collins, D.B., & Holton, E.F. (2004). The effectiveness of managerial leadership development programs: A meta-analysis of studies from 1982-2001. *Human Resource Development Quarterly*, 15, 217-248.
- Conway, J.M., & Huffcutt, A.I. (1997). Psychometric properties of multisource performance ratings: a meta-analysis of subordinate, supervisor, peer, and self-ratings. *Human Performance*, 10, 331-360.
- Glass, G.V. (1976). Primary, secondary, and meta-analysis research. *Educational Researcher*, 5 (No.3), 3-8.
- Haan, E. de & Y. Burger (2004). *Coaching with colleagues*. Houndsills, Basingstoke: Palgrave MacMillan.
- Hall, D., Otazo, K., & Hollenbeck, G. (1999). Behind closed doors: what really happens in executive coaching. *Organizational Dynamics*, 27 (No.3), 39-58.
- Kirkpatrick, D.L. (1976). Evaluation of training. In: R.L. Craig (Ed.). *Training and development handbook: A guide to human resource development*. New York: McGraw-Hill, 301-319.
- Klein, D.F. (1996). Preventing hung juries about therapy studies. *Journal of Consulting and Clinical Psychology*, 64, 81-87.
- Kluger, A.N. & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback theory. *Psychological Bulletin*, 119, 254-284.
- Maesen de Sombreff, P.E.A.M., van der, & Veer, J., de (1999). De waarde van assessment centers. In: Jansen, P.G.W. & Jongh, F., de (Red.). *Het assessment center: een open boek* (3e druk). Utrecht: Het Spectrum, 168-184.
- Mincer, J. (1989). *Job training: costs, returns, and wage profiles*. Working Paper no. 3208. Cambridge, MA: National Bureau of Economic Research.
- Raju, N.S., Burke, M.J., & Normand, J. (1990). A new approach for utility analysis. *Journal of Applied Psychology*, 75, 3-12.
- Roe, R.A. (2008). Time in applied psychology. The study of "What happens" rather than "what is". *European Psychologist*, 13, 37-52.
- Schmidt, F.L., & Hunter, J.E. (1982). Assessing the economic impact of personnel programs on workforce productivity. *Personnel Psychology*, 35, 333-347.
- Schmidt, F.L. & Hunter, J.E. (1983). Individual differences in productivity: an empirical test of estimates derived from studies of selection procedure utility. *Journal of Applied Psychology*, 68, 407-414.
- Saleem, N. (2007). *Onderzoek interventie methodiek training/interventietrainen* (doctoraalscriptie). Faculteit der economische wetenschappen en bedrijfskunde, Vrije Universiteit Amsterdam
- Sturman, M.C., Cheramie, R.A., & Cashen, L.H. (2005). The impact of job complexity and performance measurement on the temporal consistency, stability, and test-retest reliability of employee performance ratings. *Journal of Applied Psychology*, 90, 269-283.
- Taylor, P.J., Russ-Eft, D.F., & Taylor, H. (2009). Transfer of management training from alternative perspectives. *Journal of Applied Psychology*, 94, 104-121.
- Sandick, A.S., van, & Schaap-Neuteboom, A.M. (1993). *Rendement van een bedrijfsopleiding*. Akademisch Proefschrift, Rijksuniversiteit Groningen.
- Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., et al. (2004). On the validity of subjective measures of company performance. *Personnel Psychology*, 57, 95-118.

The Pyramid of Learning and Performing

We use of the Pyramid of Learning and Performing to map out the effect of learning programs on employees, teams and organizations. This tool (pyramid) shows the four levels of result measurement as set out by Donald Kirkpatrick with the additional fifth level of learning revenue as developed by Jack Phillips. On each level we ask a basic question we can answer by deploying our advanced online measuring instruments.



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