

## The Value of Competence.

### Investing in People: How to Quantify the Value of Competency Development

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#### Abstract

For all the emphasis placed on competency development, training budgets are almost always the first cut during any kind of down turn. For competency management to become more than a Human Resource Management fad, it will have to demonstrate quantified financial return. This abstract outlines one approach to quantify the return on competency development investments.

It's simple, but worth reiterating, that economic value is created when there is a positive net present value (NPV) of an investment's cash flow stream. Keeping track of the net cash flow versus time is the only way to quantify the ultimate value of an investment – a positive NPV means an investment is a winner. The only way to know if a potential investment is likely to be a winner is by predicting, with some level of certainty, cash flow versus time. Investments in production facilities, exploration concessions, well re-completions, new computer systems, etc. – in fact investments in any real business enterprise – are all normally subject to this kind of scrutiny. Of course the certainty and precision of these investment predictions vary, but they are still subject to the same form of analysis: understanding how business choices affect cash flow.

Investments in competency development should be subjected to a similar type of analysis or they cannot really be considered management. Without such scrutiny, such activities cannot be called competency management; instead, they would have to be called competency administration or maybe even competency art. Unless competency management efforts are specifically designed to add value to the organization, they will only succeed through luck.

The following key steps to Building a Competency Management Business Case are covered in the pages to follow:

- Step 1 Estimate the Value of Competency in Key Job Roles**
- Step 2 Quantify As-Is Competency Development Cash Flow Profiles**
- Step 3 Quantify Value of Improved Competency Development**
- Step 4 Implement Program Targeted at Identifying and Closing Most Valuable Competency Gaps**

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# Building a Competency Management Business Case

Creating a business case for competency management is similar to creating a business case for anything – with one subtle difference. Creating a business case for a real estate investment, a factory, a concession, or a petroleum production facility requires an understanding of how physical assets are likely to impact cash flow. What will the plant cost? How much can it make? What will its production be worth? To make a sound decision about investments in competency management we need to understand how competency impacts cash flow. What will it cost to develop competency? How much better will we perform with skills? What will the improved performance be worth? Basically, to make a sound decision about investments in competency management, we need to build a business case that tests how managing competency development will add to the fundamental value-generating activities of your organization. Very briefly, the four steps below outline how to create a competency development business case.

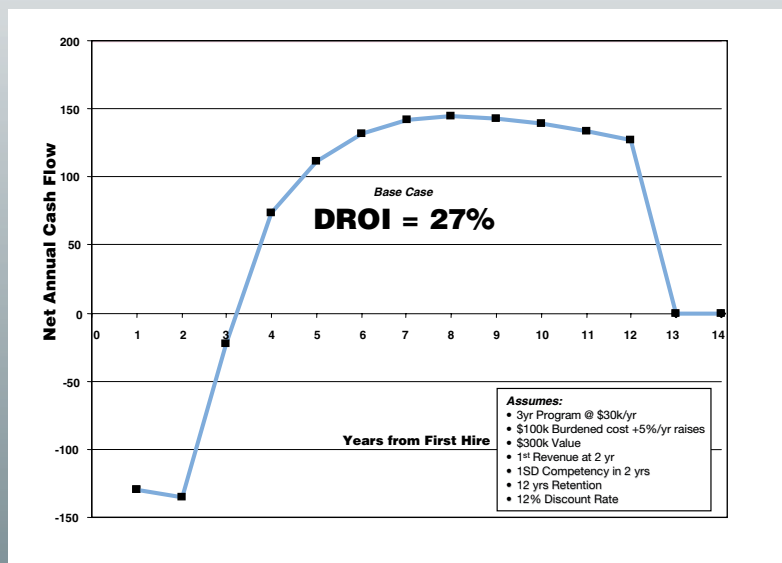
## Step 1 Estimate the Value of Competency in Key Job Roles

First, each of your organization's value producing activities estimate the net annual value a competent employee adds to the process. Several different approaches can be used to develop this estimate. One way is to bound the value by quantifying the net cost of replacing the employee with a fully qualified technical consultant (e.g. Suppose for \$1200/day you could hire a top grade reservoir engineering consultant. That would translate to a cost of about \$300k/year. If the employee's burdened cost was \$120k the net value to the organization would be \$180k/year). A second way is to look at the historical average value of value producing activities and then estimate the percentage of the value an employee contributes (on average) to each iteration of the activity. (e.g. One simplistic example that illustrates the technique: Suppose fully explored wells have an average risked value to the organization of \$2M, and that developing a prospect requires 5 man-years of qualified geophysicists and geologists. The average value of a competent geoscientist is \$400k/yr). In any event, to manage competency development you must first develop an understanding of the value of competent employees.

## Step 2 Quantify As-Is Competency Development Cash Flow Profiles

Second, to quantify how each of these activities yields positive economic return to your organization, you will need to be able to plot the before improvement cash flow versus time for each core job role. Each role will have its own typical cash flow profile. The full-cycle economics would follow a similar pattern to the one shown in Figure 1.

**If you can estimate how competency affects cash flow, it is relatively simple to value competency development.**



**FIGURE 1:**  
Effect of cycle time and performance improvement on Professional Development

**Investment.** Burdened salary while employee is “coming up to speed,” and the cost to hire, train, and mentor for the average employee.

**Time to Positive Net Benefit.** Time required before the average employee more than covers his cost to the organization.

**Time to Mastery.** Time before the average employee adds significant value to the organization.

**Net Value of Competency.** Total incremental value the average employee adds to the organization after being fully up to speed.

### Step 3 Quantify Value of Improved Competency Development

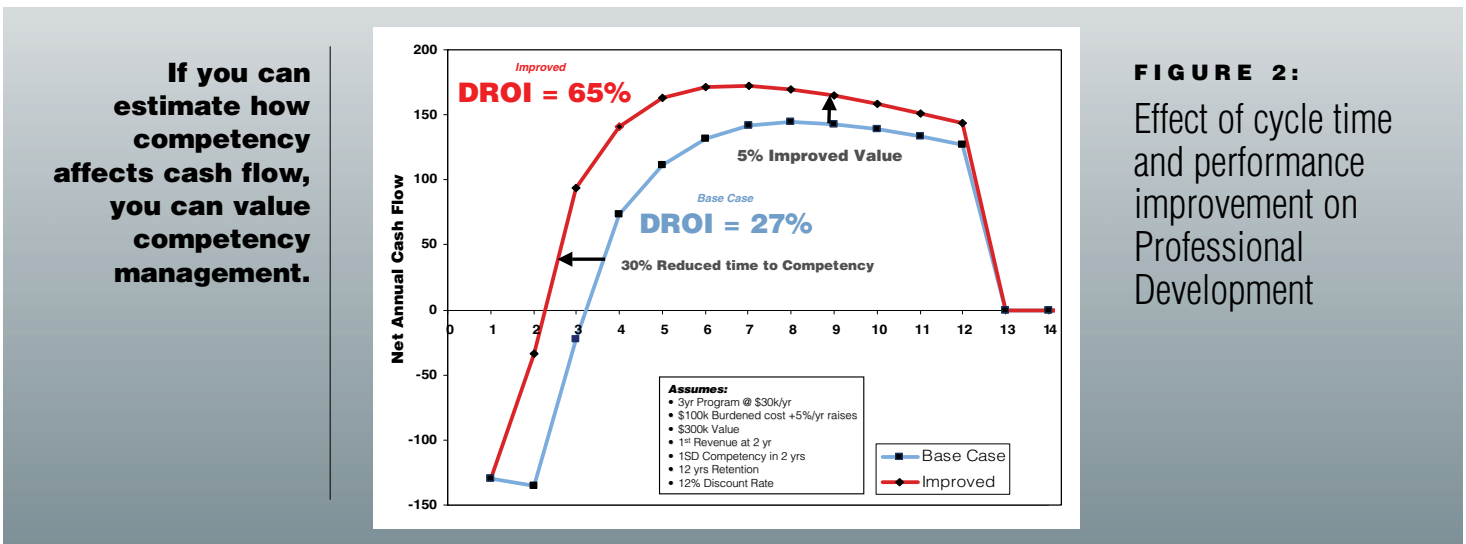
Third, develop an understanding of how improving competency development could increase key activity value. Based on experience or reasoned estimates, quantify how improved competency development would likely reduce the investment, shorten cycle time, or produce higher return of key job roles. Answer the question: "If we focused our efforts on developing competency in a reliable way, how quickly could we bring employees up to speed? How much would it cost?" Calculate, with reasonable certainty, how knowledge management would improve each activity's cash flow profile. Competency development investments should be evaluated using these same full-cycle economic criteria. Investment, time lag, and ultimate value should all be considered. For example, one should consider the impact that their competency development efforts will have on each of the following:

**Investment.** How will an up-to-date online product reduce the cost of new sales associate training?

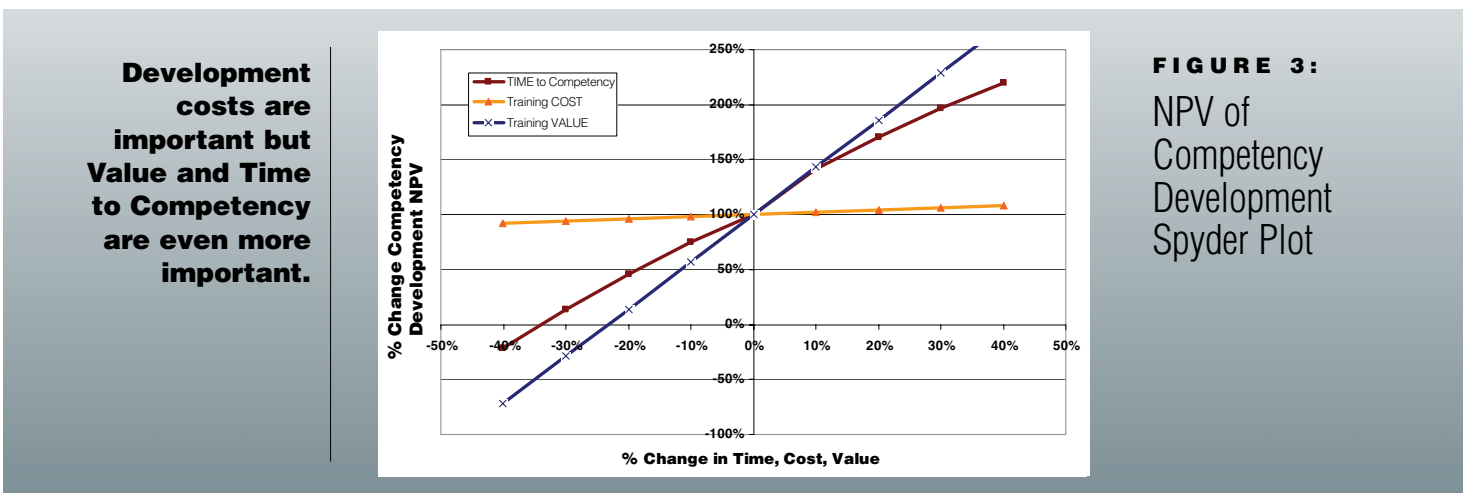
**Time Lag.** How can explicit definition of competency speed development of the skills and behaviors that add value?

**Positive Return.** How will faster dissemination of the latest technology make wells more productive?

Figure 2 shows an example of a baseline and improved cash flow profile, and how modest improvements in the way competencies are developed can more than double the Discounted Rate of Return on Investment of training a new hire.



The examples shown in Figures 1 and 2 are meant to be a representative case. Of course, real situations will be unique for each company and job role. In an attempt to scope the sensitivity of the various factors, Figure 3 presents a 'spider plot' of the change in NPV as the key factors change.



The spider plot shown in Figure 3 is specifically for the base case from Figure 2. But the main point in this, and most other examples, is that while the cost of development is an important factor, the ultimate value of the development (e.g. the quality of the training) and the time to competency are even more important factors.

**Step 4 Implement program targeted at identifying and closing most valuable competency gaps**

With an understanding of current economics, and reasoned estimates of how better competency development could improve the value of core value-producing processes, it is possible to create estimates of the value of improved competency development. If the analysis in Step 3 shows that the value of full competency is most important, then ensure that you've completely defined the set of competencies that deliver that value, and implement a competency management approach to develop those specific skills. If the analysis shows time to competency is most important, then develop an approach to identify and close competency gaps in the least number of calendar days. The point is the analysis approach suggested in steps 1 to 3 above can help focus your efforts on those activities that will truly add value.

These steps described above will let you value competency management activities.

Junior Reservoir Engineer - Required Status				
Reservoir Engineering Competency Map				
Geoscience				
Fluid Properties				
Skill	Awareness	Fundamental Application	Skilled Application	Mastery
<b>Oil, Gas and Water Fluid Properties (1)</b>	Describe the basic fluid properties of oil, gas and water.	Determine fluid properties from physical measurements and industry standard correlations and understand the	Identify inconsistencies in the fluid properties data and use and modify standard correlations to agree with field measured data.	Develop or enhance PVT correlations for distribution to others and use fluid property analysis to differentiate the origin of various hydrocarbons.
<b>Oil, Gas and Water Fluid Properties (2)</b>	Understand the concepts of flash and differential liberation	Describe various reservoir fluid separation processes, such as flash and differential liberation and specify the correct	Determine impact of the major parameters of hydrocarbon phase behavior on the production process.	Use compositional approach to verify and extend fluid property values obtained from laboratory tests.
<b>Oil, Gas and Water Fluid Properties (3)</b>	Understand the phase behavior of oil, gas, and water as it is produced to the well, up the well and through facilities.	Design fluid separation process to maximize product revenues.	Develop separation procedures designed to maximize liquid production or other desired production targets. Integrate	Use compositional approach to incorporate facility processing into values for oil and gas formation volume
<b>Fluid Sampling and Laboratory Testing of Fluids</b>	Describe various fluid sampling methods, tools, and techniques.	Specify methods and tool characteristics for sampling hydrocarbons; both downhole and recombined	Design sampling programs for various reservoir conditions and fluid types. Review	Design and carry out numerous fluid sampling programs. Critique data quality and advise others

**FIGURE 4:** Screen print of the PetroSkills Competency Analysis Tool

One competency management approach involves using an individual skills inventory to identify needs. The PetroSkills Competency Analysis Tool (CAT) shown in Figure 4 is a software application that makes this easy. The user-friendly CAT facilitates the process of identifying and analyzing skill gaps, and assists the user in developing a plan for filling those gaps. For more information, contact [training@petroskills.com](mailto:training@petroskills.com).