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Specifying Human Performance Solutions Through Well-Formed Business Requirements

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Abstract

Looking for a way to communicate the results of gap and cause analyses to your clients and stakeholders clearly, simply, and quickly? Writing business requirements is a method for documenting key human performance accomplishments. Through well-formed business requirements, human performance practitioners are more able to discover creative and effective training and non-training solutions across the six boxes of the behavior engineering model.

When a human performance analyst completes the analysis of a human performance problem or opportunity, the output usually includes a prioritized list of gaps, each with an associated list of causes. It is from these lists that an analyst begins to generate ideas for both training and non-training solutions. However, what if there was a better way to bridge the divide between gap/cause and the selection of appropriate solutions?

Good practice suggests that the best way to specify the nature of solutions is through *requirements* (International Institute for Business Analysis (IIBA), 2015). A requirement is a clear statement of the capability or performance a solution should possess. Requirements are generally structured in a hierarchical, traceable taxonomy, where the highest level of requirements are business requirements, followed by stakeholder (user) requirements, functional requirements, non-functional requirements, system requirements, and so on, based upon the requirements methodology used by the organization. As one moves down through the requirements hierarchy, the requirements get more specific. Here is an example illustrating the hierarchical structure:

- Minimize the amount of noise workers experience in a co-working environment. (Business Requirement)
    - Noise reduction method shall be personal. (Stakeholder Requirement)
        - Noise reduction method shall be rechargeable. (Functional Requirement)
        - Noise reduction method shall be comfortable to wear all day. (Non-functional Requirement)

A human performance analyst who desires to guide the selection of training and non-training solutions should focus on the higher-level requirements in this taxonomy, namely the business requirements. Through business requirements, you can communicate the essence of your gap and cause analyses, in the form of an accomplishment, to your client and team clearly, simply, and quickly. This article teaches you the method for writing well-formed business requirements.

Writing Business Requirements

In his work designing product and service innovations and solutions, Ulwick (2005) developed a simple approach to writing business requirements. It involves describing, in a single sentence, what a customer desires to either increase their pleasure or minimize their pain. Such a sentence has three components:

- Direction
- Measure
- Outcome

The aim of this type of business requirement is to not specify what the "tangible" solution is (such as a training class, software tool, process, compensation technique, and so on), but rather the accomplishment the solution must deliver. Binder (2016) is clear that as human performance practitioners, our focus must be on accomplishments, the "countable nouns that describe the valuable products of behavior" (p. 21). The outcome-orientation of this business requirement is intended to stimulate innovation and creativity that ultimately results in more tangible solution options.

Business Requirement Components

As previously stated, a business requirement has three components: direction, measure, and outcome. Figure 1 provides diagrammed examples of two different business requirements.

Insert Figure 1 About Here

The Three Components

Direction indicates what needs to happen for an improvement to occur. The word *minimize* means that there should be less of something that is painful, while the word *increase* means more of something that is pleasurable. Thus, the examples shown in Figure 1 illustrate the following:

- If the solution *minimizes* the number of review cycles to approve a purchase order, then the solution is favorable.
- If the solution *increases* the percentage of contracts that meet regulatory requirements, then the solution is favorable.

Increase and minimize are the *only* two words you use to indicate direction. Avoid the temptation to use other directional words. Other words cause confusion and destroy the work you've done to train your client and team in the meaning of these two special words.

Measure refers to the unit of measure the requirement manages. Measures ideally should reflect quality, quantity, time, or money. In both the examples above, the measure is quantity. Here is some other terminology you can use for the measures:

- Quality: precision, purity, esthetics, noise, taste, smell, texture
- Quantity: number, percentage, likelihood, amount, frequency
- Time: time, duration, speed
- Money: revenue, costs, resources, compensation

Outcome specifies what the solution must produce. In the first example, an *approved purchase order* is produced. In the second example, a *contract that meets regulatory requirements* is produced. Notice how the outcome reflects Binder's (2016) and Rothwell, Hohne, and King's (2013) prescriptions about the nature of accomplishments, that they must be noun, not verb, based.

Here are some additional examples of business requirements for human performance issues that use the direction, measure, and outcome structure:

- Minimize the amount of noise workers experience in a co-working environment. (Quality)
- Increase the likelihood that a customer will accept an offer. (Quantity)
- Minimize the frequency of double-booked conference rooms. (Quantity)
- Increase the speed to service a downrigger. (Time)
- Minimize the cost of wasted raw materials. (Money)

Common Mistakes

There are several common mistakes when one starts to write business requirements. This mistake illustrates specifying a solution rather than a business requirement:

- Increase positive incentives that promote good performance. (Poorly formed)

The specified solution in this business requirement is *positive incentives*. By specifying a solution like this, the analyst essentially puts blinders on anyone to reads this business requirement, limiting one's creativity to brainstorm solution alternatives. Business requirements must specify the *what* (accomplishment) and not the *how* (activity) (Rothwell, Hohne, & King, 2013). Focusing on the what drives innovation. Here is how we fix this mistake, so that positive incentives could be one of many possible solutions:

- Increase the number of employees who meet performance standards. (Well formed)

Here is a related mistake that specifies a solution, and then adds another directional word to create a double direction:

- Increase frequency of refresher training to decrease skill fade. (Poorly formed)

This non-example is easily corrected by removing the solution and changing the direction:

- Minimize the rate of skill fade among sailors. (Well formed)

Another mistake is including multiple measures. Business requirements are a lot like Mager's (1984) instructional objectives, in which there must be only one action verb. This mistake illustrates multiple measures:

- Increase the quality and depth of training subject matter. (Poorly formed)

Notice that there are two measures specified in the business requirement, *quality* and *depth*. A solution to correct this mistake is to create two business requirements, one for each measure. In this process, the analyst may also choose more specific terminology for measures and outcomes:

- Increase the accuracy of content used to build skills. (Well formed)
- Increase the depth of content used to build skills. (Well formed)

So, remember, business requirements must not specify a solution. A business requirement must specify a countable accomplishment, for which there could be numerous possible solutions, alone or in combination, that deliver the accomplishment.

Inputs for Writing Business Requirements

As discussed earlier, the inputs for writing business requirements are gaps and causes. These elements may be represented as a narrative or a list, in writing or in a diagram. Gaps and causes should be aligned with a model, such as the Behavior Engineering Model (BEM) (Gilbert, 1996; Chevalier, 2007), to provide context for the business requirement.

For example, consider this gap:

> **Current Situation**: It takes upwards of five review cycles to approve a purchase order.
>
> **Desired Situation**: It takes three or less review cycles to approve a purchase order.

And the associated causes:

- Reviewers are not aware of the standard for review cycles. (Expectation)
- Reviewers do not receive feedback statistics on the average number of review cycles. (Feedback)
- Reviewers use inefficient email and hand-written log sheets to manage their review workflow. (Tool)
- Nothing good happens to reviewers when they meet the standard. (Consequence)

- Nothing bad happens to reviewers when they don't meet the standard. (Consequence)
- Reviewers are rewarded more for other tasks than they are for approving purchase orders, thus spend less time/effort/attention on reviewing purchase orders. (Consequence)
- Reviewers are not familiar with the procedure for approving/rejecting a purchase order. (Knowledge/Skill)
- Reviewers are not familiar with the rules for approving/rejecting a purchase order. (Knowledge/Skill)

Once you have the inputs of a clear gap and the causes associated with the gap, you can proceed to write business requirements.

Process for Writing Business Requirements

Given gap and cause data, an analyst can begin to think about the characteristics of accomplishments that could address the gap and causes. There won't necessarily be a one-to-one relationship between the gap/causes and requirements. Some gaps/causes might yield numerous business requirements, while other groups of causes might yield just one all-encompassing business requirement. In generating business requirements, the analyst must focus on characteristics that should be increased or minimized to close the gap and/or remove the cause.

For example, consider the cause: *Reviewers use email and hand-written log sheets to manage their review workflow.* This cause reflects the Tools, Resources, and Information box of Gilbert's (1996) BEM. The suggestion associated with this cause is that such tools are inefficient and potentially introduce more errors, negatively impacting the number of review cycles. Given this analysis, one could elicit the following business requirements:

- Minimize the number of hours reviewers spend managing the purchase order review workflow. (Time)
- Increase the speed at which reviewers identify their next review task. (Time)
- Minimize the number of review errors requiring rework and re-review. (Quantity)

As the analyst continues reviewing the other gaps/causes, a similar analysis process might elicit these additional business requirements:

- Minimize the number of review cycles to approve a purchase order. (Quantity, Time)
- Increase reviewer awareness of the number of cycles the reviewer is taking to approve a purchase order. (Quality)
- Increase real-time visibility into the purchase order review workflow among all reviewers. (Quality)
- Increase the honesty of positive recognition for reviewers meeting the purchase order review cycle standard. (Quality)
- Increase the speed at which reviewers find errors in purchase orders. (Time)

Outputs from Written Business Requirements

Once an analyst has generated a set of business requirements, the analyst (individually or with a group) can then brainstorm solutions that fit the requirements. Imagine an analyst who walks into a conference room of stakeholders, writes on the whiteboard, *Minimize the number of review cycles to approve a purchase order*, and then asks the stakeholders for solution ideas that would satisfy the business requirement. That would be a very cool meeting to facilitate, and to keep on task.

Yet, it is more common that through the process of reviewing the gaps/causes and eliciting business requirements that an analyst will already have good ideas for possible solutions. This is especially true when an analyst has correctly classified causes based upon the BEM.

Let's revisit the three business requirements associated that share a tools-oriented cause:

- Minimize the number of hours reviewers spend managing the purchase order review workflow. (Time)
- Increase the speed at which reviewers can identify their next review task. (Time)
- Minimize the number of review errors requiring rework and re-review. (Quantity)

Based upon these requirements, the analyst can facilitate the brainstorming of possible solutions, such as these:

- Email and hand-written logs (incumbent solution, against which all others must be evaluated)
- Cloud-based workflow system such as Everteam BPM or Clarizen
- Custom-created purchase order workflow module added to the Enterprise Finance system
- Expert system that automatically reviews purchas
- e orders, reducing the number of manually-reviewed purchase orders by 80%
- Creating a single team whose sole job is reviewing purchase orders
- Training (or re-training) reviewers in the process and principles for purchase order review

Most of these solutions focus on changing the tool used to manage the purchase order review workflow. One solution suggests an organizational change, and another suggests retraining in process and principles. All are candidates, some individually and others in combination. The one (or ones) that best fit the business requirements will ultimately be selected as the solution of choice.

When solution ideas begin to emerge, *traceability* is a common practice to document the relationship between business requirement and solutions. Through traceability, the analyst knows the *what* that begat the *how*.

A common traceability method is to uniquely number each created element. For example, a business requirement is designated BR.01. A solution is designated S.01. With these designations, an analyst can construct a simple system that illustrates the one-to-one or one-to-many relationship between solution and requirement(s). The following example illustrates that solution S.01 satisfies three requirements:

- S.01 Custom-created purchase order workflow module added to the Enterprise Finance system (BR.01, BR.02, BR.03)

Linking Business Requirements to Evaluation

Since business requirements are specifications of needs, they are aligned with Level 4 evaluations and are focused on assessing the results (accomplishment) a solution ultimately delivers. Figure 2 uses a V-model to illustrate the relationship between the various types of specifications (need, goals, objectives, and expectations), and the means to evaluate whether the specification was met (Level 1 (reactions), Level 2 (learning), Level 3 (transfer/performance), and Level 4 (results). The method used to write business requirements, *direction*, *measure*, and *outcome*, creates very clear and observable specifications for what the results must be.

Insert Figure X About Here

For example, the business requirement, *minimize the number of review cycles to approve a purchase order*, becomes the observable criteria for a component of a Level 4 evaluation, represented as a pass or fail test case that represents the accomplishment, the countable noun. For example:

- Review cycles to approve purchase order <= 3

To conduct the evaluation, an evaluator, guided by the test case, collects data on the number of review cycles after solution implementation to determine if the business requirement was met.

Summary

A human performance analyst will ultimately need to specify solutions that address a performance problem or opportunity. After analyzing gaps and their associated causes, the analyst should avoid leaping to a solution. Instead, the analyst should first describe the characteristics of the desired accomplishment by eliciting business requirements from the gaps and causes. A business requirement has three parts, direction, measure, and outcome, and an analyst can elicit multiple business requirements for gaps and causes. Once an analyst has business requirements in hand, the analyst can start the process of brainstorming and prioritizing tangible solutions, as well as constructing the test cases that demonstrate the business requirement was met.

References

Binder, C. (2016). What it means to be accomplishment based. *Performance Improvement, 56*(1), 20-25.

Chevalier, R. (2003). Updating the behavior engineering model. *Performance Improvement, 42*(5), 8-14.

Gilbert, T. (1996). *Human competence: Engineering worthy performance*. Amherst, MA: HRD Press.

International Institute of Business Analysis (IIBA) (2015). *BABOK v3: A Guide to the Business Analysis Body of Knowledge*. Toronto: IIBA.

Mager, R. F. (1984). *Preparing instructional objectives*. Belmont, CA: Lake.

Rothwell, W. J., Hohne, C. K., & King, S. B. (2013). *Human performance improvement: Building practitioner performance*. London: Routledge.

Ulwick, A. W. (2005). *What customers want*. New York: McGraw-Hill.

Biography

Peter C. Honebein, Ph.D., focuses his career on helping organizations analyze, design, and successfully launch customer and employee innovations. As an adjunct professor at Indiana University and Boise State University, he teaches others to do the same thing. Dr. Honebein is also the editor-in-chief of *Performance Improvement*. phonebei@indiana.edu

Figures and Tables

Figure 1

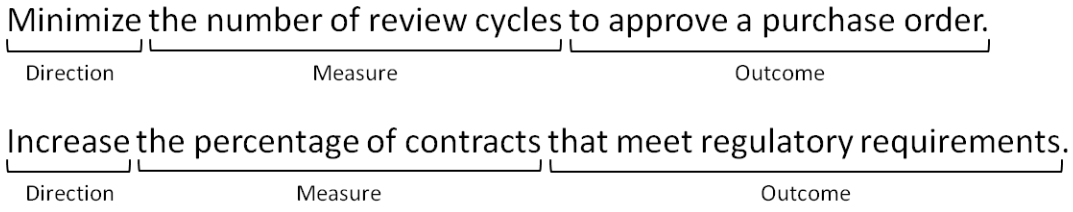

Figure 1: Two diagrammed business requirements with labeled parts

Figure 2

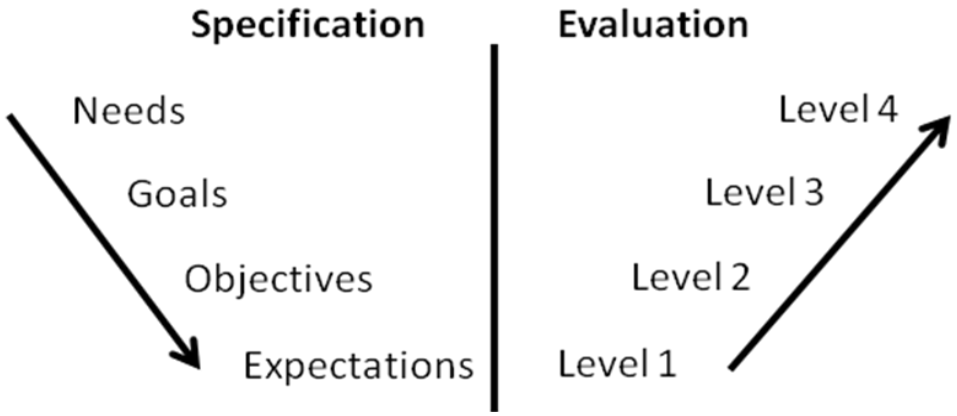

Figure 2: V-Model for the relationship between specification and evaluation