

CHAPTER 7

RESEARCH RESULTS AND FINDINGS

7.1 INTRODUCTION

Previous chapters have outlined the research problem, literature review, research approach, and the methods that were used to gather, interpret and analyse the data. The elements and concepts that were derived from the literature review, together with the testing described in Chapter 6, were used to develop a root cause analysis process and human performance management model that would be suitable for analysing uncontrolled variations in human performance.

This chapter discusses the phases and steps of this root cause analysis process – the Human Performance Variation Analysis (HPVA) process. It also describes the Human Performance Management Model that was developed as a result of this study.

7.2 AN OVERVIEW OF THE HUMAN PERFORMANCE VARIATION ANALYSIS (HPVA) PROCESS

The HPVA process is a structured root cause analysis process that enables the systematic collection of the valid and reliable information that is required to solve an uncontrolled variation in human performance. In other words, the HPVA process provides a map for working through a human performance problem. It helps to gather all the relevant information that will lead to the root cause of the human performance variation, and ensures that all the relevant information is considered before reaching conclusions and taking corrective action.

Before applying the HPVA process, however, the situation should meet certain criteria, namely:

- the performance, job or situation under investigation must be critical;
- the human performance variation is likely to get worse if no action is taken;
- the level of performance that the performer is expected to achieve must be practical, achievable and realistic – if it is not, then the standard needs to be revisited;
- the supervisor/manager and performer must share the same understanding of the expected/required level of performance (the standard);
- the cause for the human performance variation must be unknown and be difficult to find; and
- the costs and benefits of solving the human performance variation must outweigh the costs and benefits of leaving it alone.

If the above criteria are met, then there is a strong likelihood that the organisation is facing a human performance problem that requires further and deeper analysis. In this case, the HPVA process can be applied to reveal the cause(s) of the uncontrolled variation in human performance.

Elements of different problem-solving tools and techniques were used to develop the HPVA process in this study, including the “is-is not” matrix, the five why’s technique, and the matrix diagram. The HPVA process developed in this study consists of three parts and 11 steps, as depicted in Figure 7.1 (see next page).

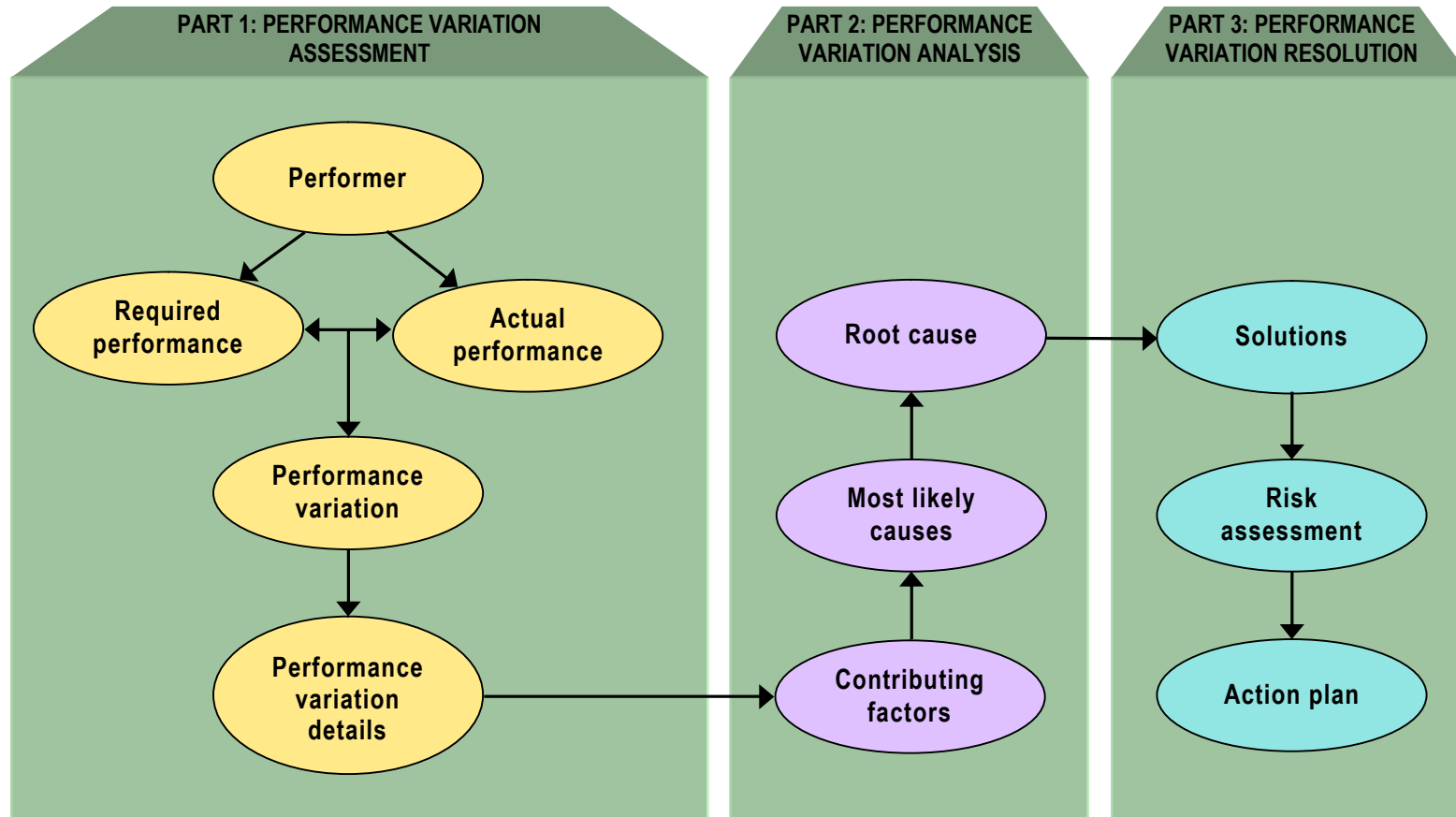


Figure 7.1 The Human Performance Variation Analysis (HPVA) process and steps

7.3 THE HUMAN PERFORMANCE VARIATION ANALYSIS (HPVA) PROCESS AND STEPS

7.3.1 Part 1: Performance variation assessment

The purpose of Part 1 of the HPVA process is to identify, and clearly and specifically define and describe, first, the person whose performance is to be analysed, and, second, the performance variation that needs to be analysed and solved. This ensures that everyone has a shared understanding of the situation and that the analysis is focused.

In Part 1 of the HPVA process, it is important, first, to ensure that adequate time is spent on this part of the process, because it will focus the analysis and will later be used to test possible causes against; and, second, to ensure that the information that is used in this part of the process has been obtained from reliable sources, is factual and has been verified.

Part 1 of the HPVA process consists of five steps, as already depicted in Figure 7.1.

Step 1: Identify the performer

Step 1 of the process is to identify the specific person, or persons, whose performance is of concern. Being specific in this step helps to ensure that one is dealing with a human performance problem and not with a technical, machine-related problem.

Different human performance problems have different causes and therefore one should ideally focus on a specific, single performer. However, when one does analyse the performance of a group, the group members should all be performing the exact same job or task and display exactly the same performance variation. If this is not the

case, or if one cannot verify this factually, then each person in the group's performance must be analysed separately.

How to do it:

Write down the name of the person whose performance concerns you.

Step 2: Describe the performance requirement

The performance requirement represents the performance standard and correct behaviour, as well as the performance goals and expectations regarding the performance output. The performance requirement provides a performance baseline or reference point. If one does not know what the desired behaviour and performance is, one is not able to determine whether or not the current level of performance is unusual and undesirable.

How to do it:

Write down what the expected/required level of performance is.

Step 3: Describe the actual performance

In this step, the actual performance must be described in terms of specific details. The purpose of this step is to gain more knowledge about the problem situation under review. One needs to make an extra effort to gather as much information about the performance variation as possible.

The most valid source of information in Step 3 is to *observe* the actual performance oneself. What has been observed must then be put into words as accurately as possible.



How to do it:

Describe exactly what the performer currently does (or not does), or how exactly is the performer currently performs the job/task.

Step 4: Describe the performance variation

To determine the performance variation, the authenticated performance requirement must be compared to the performer's actual performance. The performance variation is the discrepancy between the desired performance and what actually happens. If the discrepancy is undesirable for the specific job or performer, then the situation calls for further action.

The performance variation must not focus on a symptom of the problem, but must describe the real issue at hand – the problem that lies behind the symptom – in specific terms. A specific problem description – one that will sharpen the analysis – must meet the following criteria (Ammerman, 1997:10-11):

- it focuses on the gap between what is and what should be;
- it states the effect – what is wrong, not why it is wrong;
- it is measurable – for example, how often, how much, when – and avoids broad and ambiguous categories like “morale”, “productivity”, and “communication”;
- it is stated in a positive manner and describes the “pain” or problem;
- it avoids “lack of” and “no” statements (these imply solutions);
- it highlights the significance of effects, and may state areas of discomfort, hurt, or annoyance, or how people are affected.

How to do it:

Compare the authenticated human performance requirement with the performer's actual performance and describe the human performance variation in specific terms.

Step 5: Describe the performance variation details

If no information about the performance variation is available, facts tend to be twisted to suit theories, instead of theories created to suit facts.

The purpose of Step 5 is

- to ensure proper data collection about the human performance variation;
- to make the problem details visible to everyone concerned; and
- to ensure that there are no misunderstandings, but that there is a shared understanding about the problem situation instead.

This step focuses on facts about the human performance variation in question, stated in as straightforward and objective a manner as possible. What the observer sees is what he/she records. The problem description must be as free of error and uncertainty as possible. A good point to start with is to determine what is known “for sure”, what the observer believes to be true, and what he/she does not know. Consulting the right people during this step will ensure that validated, factual information is recorded. The best sources of information are people who have first-hand knowledge about and experience of the particular job that is being analysed. When one is approaching other stakeholders or sources of information, the quality of the questions will determine the quality of the answers. Therefore, the questions to the various stakeholders should be kept sharp and concise, to ensure that they will add worthwhile information to the analysis.

To give an exact description of the problem situation, one needs to gather information by asking a series of specific questions. Questions are a key to identifying and describing the details that will lead the analyst to the cause of the human performance variation. In this step, questions are asked against the following dimensions:

- *the performer*, by name, whose performance is of concern;

- *the job or task* in which the undesired performance or behaviour is noticed;
- *the specific performance or behaviour* that does not meet the expectation;
- *the geographic location* in which the undesired performance or behaviour is seen or reported;
- *when in clock or calendar time* the performance variation occurred for the first time (knowing the time will help establish the relationship between the performance variation and other occurrences); and
- *the times or frequencies* at which the performance variation is noticed or reported.

The following types of information are recorded in an “is-is not” matrix for each of the above dimensions:

- information about what the human performance variation *is* (the information recorded must be factual; if the “is” information cannot be recorded for any of the above dimensions, it means that the details about the performance variation are incomplete; and in this instance, one needs to reach out to new sources of information that may potentially have the information that one still seeks); and
- information about what the human performance variation *is not* (this type of information indicates the boundaries or limits of the performance variation – these boundaries separate what the human performance variation *is* and what lies outside and *is not* part of the problem).

Generally, people are not used to asking “is not” questions. However, people soon see how these questions clarify the details about the human performance variation and how much more they can find out about the performance variation when they compare the “is” information to the “is not” information.

The information gathered during this step in the HPVA process is also used later during the process to test possible causes against. Testing possible causes on paper is much cheaper than verifying each possible cause in practice. Therefore, this step in the HPVA process also serves as a screening tool later in the analysis.

How to do it:

Record both “is” and “is not” information for each of the following dimensions:

- the performer;
- the job/task;
- the specific performance or behaviour being analysed;
- the geographic location;
- the clock or calendar time; and
- the times or frequencies.

7.3.2 Part 2: Performance Variation Analysis

Part 2 of the HPVA process has been designed to be completed jointly by the manager/supervisor and the performer. The aim is to get the most accurate information about why the human performance variation exists. It is difficult to solve a problem when people have a different understanding about the problem and its causes. Bear in mind that the person performing the job or task is the person most likely to know what is causing the variation in performance. Applying the HPVA process jointly, also, first, helps set a collaborative process in motion between the performer and the manager/supervisor; and, second, clarifies each person’s role in addressing the performance variation.

The ultimate purpose of Part 2 of the HPVA process is to identify the root cause of the human performance variation. This part of the HPVA process consists of three steps (as already depicted in Figure 7.1, above).

Step 1: Identify contributing factors

Step 1 focuses on the factors that could have contributed or caused the performance variation. This step is designed to determine the following:

- Why is there a variation in this person's performance, but not in the performance of others who perform the same or similar jobs or tasks?
- Why is there a performance variation in this task or job of the performer, but not in other jobs or tasks that he/she performs?
- Why has this specific performance variation occurred?
- Why does the performance variation occur at this specific geographic location, but not at other places?
- Why did the performance variation occur for the first time at this time and date, but not at other times or other days when the same task/job was performed?
- Why does the performance variation occur at these times or frequencies, but not at other times or frequencies?

Answers to the above questions are obtained by focusing on, first, the discrepancies between the "is" and the "is not" information; and, second, changes that explain the discrepancies between the "is" and "is not" information.

As was noted in Chapter 2, the factors that affect human performance are numerous and diverse. Therefore, the aim of the first step of this phase is to list all the factors that are either missing or ineffective and that could have caused or contributed to the human performance variation. This step focuses on five categories of human performance factors, namely factors that pertain to

- *the performer*, for example, his/her skills, competency, capacity, motives and suitability for the job or task;
- *the job or task*, for example, the job design, the complexity of the job, workload, workflow, information, policies, procedures and supervision;

- *the performance itself*, for example, the job expectations, consequences and feedback;
- *the geographic location* where the job or task is performed, for example, the physical working conditions, resources, and job aids;
- *the date and time* at which the performance variation occurred for the first time; and
- *the times and frequency* at which the performance variation is noticed.

Both the experience and the intuition of the analyst become useful in this step of the HPVA process. It is important to keep on digging into the problem's details as long as new information or information that has previously been overlooked still remains to be discovered.

In some instances, it might even be necessary to involve more people or seek out ideas and additional information from other people who have special skills and knowledge and to incorporate this information into the analysis. One of the most valuable sources of information is the experience and opinion of those who are the closest to the scene of action. Never rule these people out; instead, encourage their input. They might provide merely an opinion, or something recalled and unconfirmed, but something that really happened. One needs to use everything one knows to understand what could have caused the human performance variation.

An analyst knows that he/she has reached the point of saturation when the same information is repeated and no new information about the performance problem surfaces.



How to do it:

- List everything that is special or unique of the “is” when compared to the “is not”.
- Record all the changes that have taken place.
- List factors that were either missing or ineffective and that could have caused or contributed to the human performance variation:
 - performer: skills, competencies, capacity, motives, suitability;
 - job/task: job design, complexity, workload, workflow, information, policies, procedures, supervision;
 - specific performance or behaviour: expectations, consequences, feedback; and
 - geographic location: physical working conditions, resources, job aids.

Step 2: Crystallize the most likely causes

Usually, various factors come together to constitute a cause. Once all the factors that might have caused or contributed to the human performance variation have been identified, one can start to hypothesize possible causes for the performance variation. This is done by means of the following steps:

- Evaluate all the factors that were listed and identify the ones that have failed or were missing. Describe how each of the failing or missing factors was ineffective and why it was ineffective.
- Describe how each factor, or a combination of factors, could have caused the performance variation, or could have prevented the performer from performing to standard.
- Ask, “how could the performance variation have occurred?”. Asking “how could”, instead of “why” at this stage in the HPVA process ensures that possible causes are identified beyond the ones that are merely the most likely ones. According to Paradies and Unger (2000:36), humans have a negative emotional response to the question “why” if it is asked during a root cause analysis process.

The above process will result in a list of reasons which can be used separately, or in combination, to phrase specific statements or hypotheses that explain why the performance variation occurred.



How to do it:

Consider the list of contributing factors and list all the likely causes for the performance variation, or ones that prevent the performer from performing up to standard.

Step 3: Identify the root cause

This step in the HPVA process aims to achieve the following:

- eliminate apparent and presumptive cause statements that the performance variation details do not support;
- select the most plausible cause that requires further verification; and
- identify the root cause of the performance variation that requires corrective action.

Step 3 in the HPVA process requires the use of information and reasoning skills based on logic to support or eliminate possible causes. There are three stages to pass through before a possible cause can be confirmed to be the root cause of the performance variation:

- *Stage 1: Proving the cause on paper*

Any possible cause is merely speculation, until it has been confirmed or proved. Proving the possible cause on paper first serves as a “screening tool” to screen out the “born losers”, so that the organisation does not spend much time and money on them. Therefore, it reduces the time and cost that it would take to verify each cause statement in real life.

Proof of a possible cause needs to be based on fact. In the HPVA process, each possible cause statement is checked against what is known about the performance variation, as recorded in the “is-is not” matrix. If a cause statement is true for the specific performance variation, then it must first account for all the performance variation details (“this explains that”) for both the problem (the “is”) and comparable (“is not”) situations. Then it must make logical and

practical sense. In other words, a cause statement is proven if it explains all the performance variation details in the “is-is not” matrix, without exception and without many assumptions.

- *Stage 2: Confirming the cause in real life*

A manager or supervisor who must resolve a performance problem carries a large responsibility for getting it right. Therefore, questioning his/her own conclusions and confirming it in real life is an essential step in the HPVA process.

Having a likely explanation does not yet guarantee that it is the precise cause of the human performance variation. This can only be determined when evidence or hard data have been collected that confirm the likely cause in real life. This is done by conducting an independent experiment in which the cause produces exactly the same human performance variation that is of concern, or if independent evidence confirms the link between the cause and the effect.

The truth is available and can be confirmed by gathering additional information from sources that have some knowledge of the situation; this usually involves people who are in a position to observe and see what is really happening. The aim with this step is to deliberately seek evidence to prove that the supposed cause for the human performance variation is the correct one.

The method of confirmation depends on the nature of the cause. The following are examples of methods of confirmation:

- Gather all relevant evidence or hard data that would confirm the possible cause as fact.
- Check and verify all assumptions that have been made.
- In certain situations, implement corrective action(s) on a trial basis, provided that it is practical and inexpensive to do so.

- *Stage 3: Determining the root cause*

Knowing *what* has happened and being able to prove and confirm it is essential in preventing the cause from recurring. However, knowing *why* it has happened is also a vital part of managing human performance in future.

The basic principle of cause and effect is that every action has at least one conditional cause that existed in time before the action set in motion a chain of events that caused the undesirable effect (see Figure 4.1). Therefore, the aim of this stage is to identify the conditional cause(s) that existed in time when the performance variation occurred. The conditional cause(s) is the true root cause(s) for the performance variation. Therefore, the only way to prevent a recurrence of the same human performance variation due to the same root cause(s) is to address the conditional cause(s).

W. Edward Deming (cited in Paradies & Unger, 2000:6) said that “[m]anagement’s job is to improve the system”. Improving the system is the key to improving performance. This includes improving equipment, procedures, tools, communication techniques, training, human factors design, supervisory techniques, resources, policies, rules and anything else that may have an impact on people’s ability to achieve their goals.

At this stage, the HPVA process switches from determining “how could” to “what happened”. The focus changes to discovering why the performer behaved in the manner that he/she did. To find the root cause for the human performance variation, one needs to understand the reason for the performer’s behaviour.

The following criteria help to establish whether or not the identified cause is the true root cause (Ammerman, 1997:68-69):

- the human performance variation would not have occurred if the root cause had not been present;

- the human performance variation will not recur due to the same causal factor if the root cause is corrected or eliminated; and
- correction or elimination of the root cause will prevent recurrence of similar conditions.

How to do it:

- Prove the cause on paper by checking it against the “is” and “is not” information.
- Gather additional information to prove the most plausible cause in real life.
- Determine what has caused the cause, or why the event happened.

7.3.3 Part 3: Performance variation resolution

Like Part 2 of the HPVA process, Part 3 of the HPVA process was designed to be completed jointly by the responding manager/supervisor and the performer. Involving the performer in this part of the process is important, because he/she is the person who will be responsible for implementing the solution and making it successful. The advantage of making the performer responsible is that he/she knows the situation the best and knows what the solution entails; and he/she is the person who will work with the solution and be responsible for its implementation. Management would, however, need to take responsibility for any corrective actions that are related to management issues.

The aim of Part 3 of the HPVA process is to develop an action plan that would rectify the human performance variation and set things right again. This part of the HPVA process consists of the following three steps, as depicted in Figure 7.1 (above):

Step 1: Select the most workable solution

“The only difference between a problem and a solution is that people understand the solution” (Kettering, cited in Paradies & Unger, 2000:281).

The purpose of the first step in Part 3 of the HPVA process is to identify all the corrective actions required to prevent the human performance variation from recurring, or greatly reduce the probability that the human performance variation will recur due to the same root cause. Corrective actions are the countermeasures taken against the root or contributing causes (Ammerman, 1997:71).

The goal is, first, to draw on the experience, knowledge and judgement of the best information sources to create a pool of ideas, and, second, to select the best actions from the possibilities available that would correct the causes that created the specific human performance variation. The following requirements need to be considered when selecting actions:

- The action must add value – it must prevent the human performance variation from recurring, by eliminating or reducing the root cause.
- It must be viable to implement the action with current or readily obtainable resources – consider the time, costs and resources that the action will require for successful implementation and its continued effectiveness. The action must be less expensive than allowing the performance problem to continue.
- The organisation must be capable of implementing the action; and the action must be compatible with its other commitments.
- The action must be acceptable to others in the organisation; and it must be free, or relatively free, from negative effects on other areas and people in the organisation.

Finally, when selecting a solution, one must put oneself in the performer's position and ask oneself whether the proposed action steps are realistic in view of the performance situation.



How to do it:

- List all the possible solutions that will address the root cause of the performance variation.
- Evaluate each possible solution for the following:
 - cost;
 - value-adding;
 - ease of implementation; and
 - level of acceptability.
- List all the actions that will – individually or collectively – meet the above criteria the best and will correct the performance variation.
- List all the actions that will – individually or collectively – prevent the cause(s) from recurring.

Step 2: Do a risk assessment

The initial action plan that contains the corrective actions needs to go through a process of inspection and improvement before it can be considered adequate. The aim of Step 2 is to ensure that the implementation of the action plan is practical, by anticipating and avoiding or minimizing any adverse effects, risks or negative consequences as a result of the corrective actions to be taken.

The following sequence is followed in this step of the HPVA process:

- Examine the the plan, as well as other areas and activities in the organisation and the external environment and anticipate any potential risks that may result from the corrective actions.
- Identify ways to prevent these risks.
- Examine the the plan, as well as other areas and activities in the organisation and the external environment, and anticipate potential negative side effects that may result from the corrective actions.
- Identify ways to minimize these potential negative side effects if they do occur.
- Reach agreement on the most effective and viable preventive and contingent actions.
- Update the action plan by incorporating the selected preventive and contingent actions.



How to do it:

- Consider any potential negative side effects or risks as a result of the action steps.
- List any actions that would avoid or minimize these potential negative side effects or risks.

Step 3: Finalize the action plan

The final action plan must be practical, workable and realistic and must include the following:

- cost-effective actions that will correct the conditional causes and will prevent the performance problem from recurring, or greatly reduce the probability that the human performance variation will recur due to the same root cause;
- cost-effective actions that will avoid or minimize any adverse effects, risks or negative consequences as a result of the corrective actions;
- the sequence of events that must be carried out;
- the name of the responsible person that is accountable for each action;
- information on when each action needs to be implemented; and
- a list of the costs involved in implementing the plan (optional).

It is important also to decide the following before finalizing and implementing the action plan:

- Consider ways to simplify and streamline the plan and to avoid any potential misunderstanding.
- Decide who will monitor and how the results and effectiveness of the action plan will be monitored.
- Decide who will give feedback and communicate the results of the action plan to those who are affected by the performance problem, as well as those who are involved in the implementation of the plan.

- If the action plan will affect others in the organisation or management issues, determine what management participation and approval are necessary prior to implementing the plan.

How to do it:

Complete the action plan by adding the following:

- the name of the person responsible for each action step;
- details about by when each action step must be completed; and
- the name of the person responsible for monitoring the plan and giving feedback.

7.4 INTRODUCING THE HPVA PROCESS INTO THE ORGANISATION

The HPVA process can be a great tool, but like many other things, it is not likely to succeed without the necessary support. The following sequence is suggested, on the basis of experience of the researcher, to introduce the HPVA process into the organisation:

- Start with a pilot to demonstrate the value of the HPVA process. This requires at least one motivated manager who “buys into” the process, learns about and applies the HPVA process to a human performance problem where the implementation of the process would produce rapid improvements.
- Publicize the successes that have been achieved with the HPVA process.
- Spread the process throughout the organisation and train other managers and supervisors to apply the HPVA process successfully.
- Finally, incorporate the HPVA process into the organisation’s policies, procedures and systems to ensure that the process is used.

Based on the findings in this study, the following elements are regarded as important to ensure that the HPVA process is successfully introduced into the organisation:

- Top management must give its consent and show its support for the HPVA process.

- Top management must attend an overview session of the HPVA process, to show everyone in the organisation that management has also learned the process and endorses it.
- Top management must outline its expectations and the purpose of the HPVA process in the organisation.
- Top management must help advocate the benefits of the HPVA process to everyone in the organisation.
- Top management must communicate the implementation process and outline how management will assist to ensure that the objectives are achieved.
- Policies, procedures and systems must be updated to include the HPVA process.
- Everyone in the organisation must be trained in the HPVA process and must have a thorough understanding of the requirements for success.
- Human Resources practitioners must support and drive the implementation process and must remove any potential obstacles.
- Human Resources practitioners must provide training to ensure that all managers and supervisors are able to apply the HPVA process.
- Human Resources practitioners must ensure that all support structures are in place and are working as they should.
- Human Resources practitioners must ensure that the HPVA process is conducted fairly and consistently throughout the entire organisation.

It is clear from the above information that the HPVA process is a joint effort and needs an integrative mindset. Management, Human Resources practitioners and employees must all work in partnership to ensure that the HPVA is successfully introduced into the organisation.

7.5 THE HUMAN PERFORMANCE MANAGEMENT MODEL

The primary purpose of the HPVA process is to get human performance back on standard after uncontrolled variation in performance has been noticed. However, to make real progress and optimize the HPVA process's full potential, one not only needs to address individual incidents of uncontrolled variations, but also continually needs to manage the situation to detect and address any occurrence (or recurrence) of a human performance variation. To achieve this and manage human performance effectively, the HPVA process must form part of a human performance management model. The HPVA should not be viewed as just another intervention; instead, the link between the HPVA and human performance management must be understood.

To incorporate the HPVA process into a human performance management model successfully requires the following within the organisation:

- *Senior management* needs to commit itself to the human performance management process and give managers/supervisors the support they need.
- *Managers/supervisors* must accept the responsibility, first, to manage human performance in their own departments on an ongoing basis, and, second, to ensure that the human performance management process maintains its momentum.
- *Adequate resources* must be devoted to and be available during the human performance management process.
- *Everybody involved* in the HPVA process must be *trained* on the process and other skills to ensure success and consistency.
- *Policies and guiding procedures* that will ensure consistency in the manner in which the human performance management model is applied must be developed and instituted.
- *A database* is needed to capture, first, organisational learning and, second, information about human performance management to enable reporting and trending.

The human performance management model developed in this study consists of the following ten steps:

- *Step 1: List all uncontrolled human performance problems.*
- *Step 2: Identify significant/priority problems.*
- *Step 3: Check the standard.*
- *Step 4: Determine whether the cause is known.*
- *Step 5: Apply the HPVA process (three phases and eleven steps).*
- *Step 6: Implement the solution.*
- *Step 7: Evaluate the results.*
- *Step 8: Monitor and sustain the improvement.*
- *Step 9: Capture organisational learning.*
- *Step 10: Extend the solution into the future.*

These ten steps are discussed in more detail below, and they are also depicted in the researcher's diagram in Figure 7.2 (next page).

7.5.1 List all uncontrolled human performance problems

The expected level of performance is usually measured in terms of business objectives, such as quality, quantity, time, cost and customer satisfaction. A performance problem occurs when there is a negative deviation from the expected level of performance.

In the first step of the model, all human performance problems due to uncontrolled variations are identified and listed by defining the performer and the human performance variation.

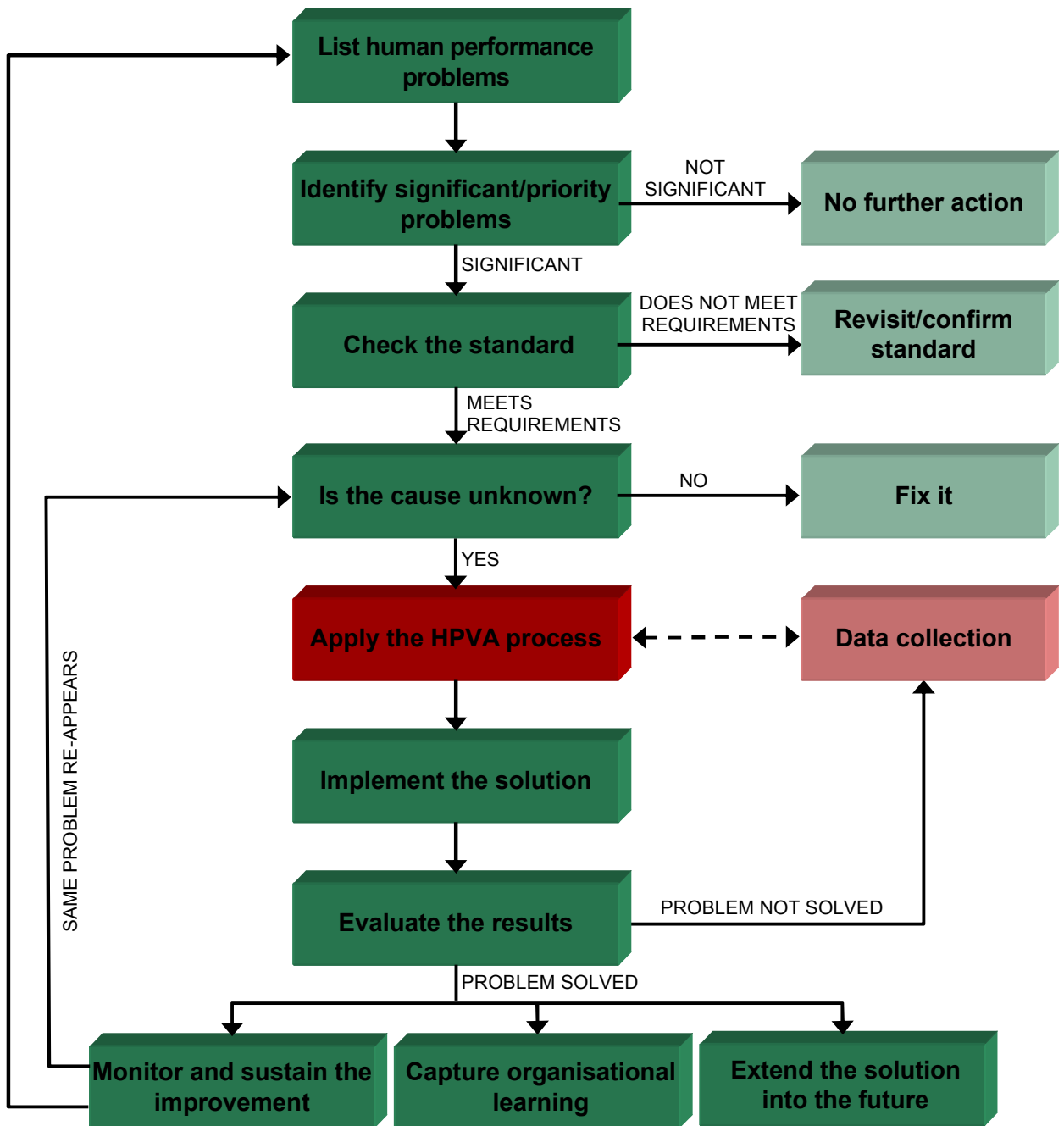


Figure 7.2 The Human Performance Management Model

7.5.2 Identify significant/priority problems

Step 2 is a screening process used to distinguish between significant problems and the less significant ones, or the ones that are likely to go away by themselves given time. The following criteria help determine how significant a human performance problem is:

- How often does the performance problem occur?
- What is (are) the impact, result(s) or consequence(s) of the human performance problem?
- Will the human performance problem get worse, if it is left alone? It is important to note that even though the problem might be small now, it may grow into a large problem as conditions change.
- Do the costs and benefits of solving the human performance problem outweigh the benefits of leaving it alone?

Human performance problems that have little significance, or a low priority, should not be the focus of the organisation's attention, efforts and resources.

7.5.3 Check the standard

The standard usually represents the output level of an average but experienced performer. It therefore serves as a benchmark of the output. Human performance problems may often be solved simply by establishing, communicating or updating the standard. Therefore, the following needs to be checked in terms of the standard:

- Has the standard been clearly stated and communicated?
- Do the manager/supervisor and performer have a shared understanding of the standard?
- Is the standard practical, measurable, achievable and realistic?
- Has the standard been updated according to changing work methods and/or conditions?

If any of the above questions receive a "no" response, then the standard needs to be revisited or reconfirmed before continuing with the process as outlined by the Human Performance Management Model. As stated before, correcting the standard may in itself solve the human performance problem.

7.5.4 Determine whether the cause is known

It is important that a human performance problem is addressed systematically by applying the HPVA process to ensure that the root cause is found and the performance problem is corrected. However, it is not productive to apply the HPVA process to a problem of which the cause is already *factually* known. If this is the case, one should not fall in the “analysis paralysis” trap, but should rather just implement what is necessary to fix the problem. A word of caution though – the cause must be *factually* true. If it is not, it would be worth analysing the human performance problem by applying the HPVA process.

7.5.5 Apply the Human Performance Variation Analysis (HPVA) process

The main aim of the HPVA process is to find the root cause for the human performance variation. The HPVA process with its phases and steps has been discussed in detail earlier in this chapter. Cognisance should, however, be taken of the following **guidelines** when applying the HPVA process:

- The manager/supervisor must be comfortable with the HPVA process as an approach to analyse uncontrolled variations in human performance.
- The manager/supervisor must not try to take shortcuts in an attempt to speed up the HPVA process.
- The manager/supervisor must search for facts vigorously and must under no circumstances settle for or accept hearsay as fact.
- The manager/supervisor must be disciplined and willing to spend the necessary time to gather all information that is required by the HPVA process.

In addition to the above guidelines, Mager and Pipe (1997:166-168) also offer the following **general guidelines** to those who conduct any type of cause analysis:

- *Control your face and words*, especially if your understanding of the situation allows you to see solutions invisible to the performer.
- *Expect and look for hidden agendas*. Keep asking questions and observing until you are confident that you have learned how things are and why they are the way they are.
- *Respect the person whose performance you are analysing*. There are reasons why things are being done the way they are and, therefore, the performer may not take kindly to an implication that his/her way is not the best way or to the thought that for years he/she has been doing things wrong.
- *Respect the performer's values*. People are not necessarily wrong because their values, habits and practices differ from yours. Your purpose is to solve a specific performance problem, not to solve all the problems.
- *Allow the performer to save face*. Do not offer solutions until you have walked through the analysis with the performer and understand the environment in which the problem lives.
- *Allow the performer to solve the problem*; then you do not have to "sell" the solution or work as hard to get it implemented. By doing the analysis aloud, asking questions and reflecting answers, the performer might be able to make the connection between the problem and solution him/herself.

The application of the HPVA process and data collection go hand-in-hand. Data can be obtained either through the organisation's data system, or alternatively, by conducting interviews with people that are closest to the work. Other data collection methods include live observations, simulated demonstrations and document reviews.

In the HPVA process, as mentioned previously in this chapter, data are collected around the following elements:

- the *performer*;

- the *job/task* in which the undesired performance or behaviour is noticed;
- the *performance event* that does not meet the expectation;
- the *geographic location* in which the undesired performance or behaviour is seen or reported; and
- the *time and frequency* when the performance variation occurs.

7.5.6 Implement the solution

The purpose of this step in the Human Performance Management Model is to implement the corrective actions in a way that would solve the human performance variation. An implementation plan should – at least – include the following elements:

- *the corrective actions* as identified during the HPVA application that need to be implemented;
- *the name of the person* who is responsible for carrying out each activity, as well as that of the person who will be monitoring the progress of each activity; and
- *a schedule* of when each activity must be carried out.

Always involve the performer in the implementation plan and ensure that the performer has given his/her full support and is committed to the plan.

If the implementation plan is going to require a change, then acceptance of the suggested changes and a favourable climate for its implementation are important. To minimize any form of resistance, as much information as possible needs to be communicated to everyone who might be affected or who might present any obstacles to an effective implementation.

Finally, regular feedback must be provided to the performer about the results of the implementation and whether the targets are achieved. If

the targets are not being achieved, then the implementation plan needs to be adapted by incorporating additional interventions.

7.5.7 Evaluate the results

Once the corrective actions have been implemented, their results need to be evaluated continually. Evaluation is important for the following reasons:

- to determine if the corrective actions are effective;
- to determine if the performance problem has been rectified;
- to determine if the solution meets its objectives;
- to show that the investment has added value; and
- to give feedback on the effectiveness and success of the action plan.

Evaluation can occur at any time during the implementation process and with any frequency. The effectiveness of the corrective actions can be evaluated in any of the following ways:

- Measure the outcomes achieved.
- Verify with stakeholders whether the desired results have been achieved.
- Create a tracking system whereby the human performance output can be measured.
- Compare the performer's performance to that of an exemplar.
- Draw a trend line that compares the performance before the corrective actions were implemented to the performance afterwards.

Stakeholders of the evaluation process include all those who have been affected by the human performance variation and the implementation of the action plan. Different stakeholders would be interested in different elements of the evaluation process and therefore it is important to develop a sound and rigorous data collection plan that integrates the data into the objectives that have been set.

If the evaluation process proves that the corrective actions have not been successful, then one needs to go back to the HPVA application and search for new, additional information that might have been overlooked previously. If the problem cannot be solved with the existing information, then it means that a piece of the puzzle remains missing. In such a case, the manager/supervisor needs to reach out to new sources of information and keep on searching for new facts about the human performance variation.

7.5.8 Monitor and sustain the improvement

If the corrective actions prove to be successful, then the new, improved performance level needs to be monitored and sustained. If not, performance might very well slip and the performance variation might recur.

The following will assist management when monitoring and sustaining the performance improvement:

- Continuously monitor the performance level to prevent its dropping to the previous level of poor performance.
- Establish open communication between the manager/supervisor and the performer and give the performer regular feedback on his/her performance.
- Analyse and correct the human performance as soon as the variation falls outside the performance limits. Whenever the human performance variation recurs, then one of the following actions needs to be taken:
 - If the cause for the variation is factually known, then the appropriate action needs to be taken to rectify the variation.
 - If the cause for the variation is unknown, then the new variation needs to be analysed using the HPVA process.
- Update or create processes and standards to include the corrective actions in the performer's daily work.

It would also be noticed in Figure 7.2 that this step in the Human Performance Management Model (Monitor and sustain the improvement) links back to the first step. This implies that the human performance management process is a continuous one, because work environments are hardly ever problem-free and, therefore, new performance problems need to continuously be identified and added to the list of human performance problems. Also, the list of human performance problems needs to be reprioritized every time, so that a new significant/priority problem can be identified and resolved through the process, as outlined in the Human Performance Management Model.

The above process leads to a situation whereby human performance problems are continuously identified and resolved. Ultimately, this then results in an environment and culture of continuous human performance improvement.

7.5.9 Capture organisational learning

As a second last step in the human performance management process, it is important to capture what has been learned through experience in a database. The database needs to contain information about the type of problem, the causes, the corrective actions taken and the results. The benefits of keeping a knowledge database of this nature are the following:

- When a similar problem arises, one does not always need to analyse it from scratch.
- One is able to answer any future questions about the incident.
- Although memories of the incident may fade over time, the database would preserve the details of the incident.
- It would prevent the organisation from losing information and knowledge when people leave the organisation, or when they are promoted to other departments or projects.

- It preserves a body of knowledge and experience that can be referred to and used in future.

7.5.10 Extend the solution into the future

“An ounce of prevention is worth a pound of cure” (Benjamin Franklin in Paradies & Unger, 2000:101).

Once the root cause of a human performance problem is known and understood, one can identify measures to prevent the same problem or a similar problem in other areas of the organisation. In other words, the solution can be extended into a search for potential problems of a like or similar nature. Doing this takes what the organisation has learned about the cause and effect into the future in an active way.

7.6 REFLECTION BY THE RESEARCHER

As researcher, I had to be very careful not to selectively notice only the results that are consistent with what I wanted or expected to find. One strategy to avoid this is called *reflexivity*, which is the self-reflection of the researcher on his/her biases and predispositions. The purpose of reflexivity is to see and attempt to minimize the influence of my personal biases during the study. My reflections are presented in the box below.

Greenwood and González (in Greenwood, 1999:123) report that “the professional action researcher operates in various roles: consultant, teacher, researcher, and team member”. With my experience as Business Consultant and Trainer and my experience in product research and development, I felt very comfortable in all these roles during the study.

The iterative process followed during action research is very similar to the process that we follow in our organisation during new product development and, therefore, I also felt very comfortable with the action research process of



problem identification and *wondering*, followed by periods of collecting data, measuring evidence, reporting conclusions, and reflecting and revision.

Areas of concern for me were the small sample sizes during testing and not always having direct contact with all participants who tested the HPVA process. It was, however, reassuring that the participants were either master's degree students, or were very knowledgeable in the field of root cause analysis and could therefore make a valuable contribution to the study.

The most challenging aspects of the study were the following:

- Human performance could be influenced by a vast number of factors and it was difficult to incorporate *all* of them into the HPVA process as factors that could have potentially caused or contributed to the performance problem. I did, however, overcome this challenge by grouping the various factors into different categories, namely factors that related to the performer, the job/task, the undesired performance/behaviour, and the geographic location. These categories were then incorporated into the HPVA process.
- Very few root cause analysis techniques include an objective base against which a comparison can be made. This is essential for testing possible causes. If not present in the root cause analysis process, it leads to a trial-and-error approach, which becomes time-consuming and costly. I managed to overcome this challenge by incorporating an “is-is not” matrix into the HPVA process. This way, the HPVA process demonstrates (on paper) how well each possible cause fits the human performance variation.

7.7 CONCLUSION

This chapter gives a detailed discussion of the root cause analysis process, namely the Human Performance Variation Analysis (HPVA) process, as developed by this study. Although the HPVA process can form part of any performance management model that includes cause analysis, the chapter also discusses a Human Performance Management Model that has been

developed on the basis of the findings of this study. The following conclusions can be drawn regarding the HPVA process and the Human Performance Management Model discussed in this chapter:

- The HPVA process provides a systematic way of analysing and finding the root cause of an uncontrolled variation in human performance.
- With a realistic standard as anchor, and a valid, observed human performance variation, the HPVA process can help an organisation to find the cause for the variance, as well as devise a plan that would bring together the standard and the observed performance.
- The HPVA process allows the best thinking from everyone involved in the situation, by using both rational thinking and intuitive thinking as valid sources of information. Rational thinking follows a “show me the evidence” approach, while intuitive thinking allows the reasonable use of experience, informed judgement, “gut feelings”, and accumulated wisdom.
- The HPVA process is transparent and highly participative – it involves all stakeholders and data is collected directly and indirectly from everyone who is involved in the human performance problem.
- The HPVA process should only be applied to uncontrolled performance variations. Less intensive approaches and less effort would be applied to day-to-day human performance variations. Trying to apply the HPVA process to every human performance variation every day would be overkill and management often does not have the time or resources to do it effectively.
- The Human Performance Management Model assists in the identification of which problems are worth spending time on, evaluating the results, and sustaining the performance improvement.
- The Human Performance Management Model also shows what should be done if the corrective actions do not solve the problem, or if the same problem recurs.
- The Human Performance Management Model can be used to create an environment and a culture of continuous human performance improvement.



- The Human Performance Management Model can be used to encourage problem preventive thinking, by constructing measures that would prevent similar problems in future or in other areas of the organisation.

In the last chapter, the study's final conclusions in terms of realising the research objectives set in Chapter 1 and recommendations are presented.