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The Four Horsemen of the Problem Solving Apocalypse

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Throughout the 1980s and 1990s, problem solving became an industry all its own. A simple search utilizing Yahoo on the Internet reveals over 100 companies and consulting firms offering software packages, personal services and literature to prospective customers for assistance in their problem solving queries. A great majority of the tools offered by these services are very similar. They assist the decision maker in the underlying principle involving problem identification and solution accomplishment in a timely manner. However, in many cases, the advancement of problem solving methodologies has done more harm than good to the decision maker. Cognitive dissonance between competing problems, recidivism in problem solving methodology, linear problem solving approaches, and general fear of decision making all lend themselves to problem solving failure. These Four Horsemen of Problem Solving often lead toward problem solving failure or a problem solving Apocalypse.

In professional industry, it is typical to see executives struggling with management issues involving complex environment pressures that affect the survivability of their organization.¹ In many cases, the problem lies beyond simple identification of the problem. The solution to the problem lies within the organization's ability to break the problem down into incremental events and approach the problem from a systems perspective. These simple components within themselves produce easier problems which can be quickly identified and solved.² In many cases, managers are unable to attack the problem from an incremental perspective. In cases such as these, solutions to the problem or dilemma may fail, will be stalled, or not reach closure at all.³

The thesis of this article revolves around four fundamental issues with traditional problem solving. The first problem is one of Linearization. The second one is of Recidivism coupled with Cognitive Dissonance, the third is one of Problem Solving Creep, and finally, the last problem with problem solving is Avoidance. These Four Horsemen of Problem Solving often result in the Apocalypse of decision making....problem solving failure.

The first Horseman of Problem Solving is Linearization. Typically, most managers in industry learn the fundamentals and techniques involved with traditional problem solving as taught and applied to many sectors in professional organizations. The intent is to further develop an individual's ability to reason and form logical solutions to complex issues and problems. The traditional problem solving process taught to these individuals can be seen in Figure 1.

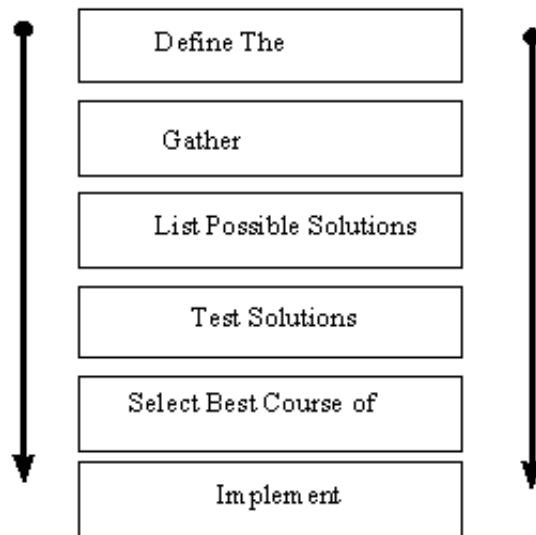


Figure 1. Traditional problem solving process.

The principal flaw with the traditional problem solving process is in its linear approach. According to this theory of problem solving, the systemic approach is always more efficient than other approaches to problem solving. The problem with this methodology is that we are often applying a linear process to multidimensional issues. Solutions to problems often require abandonment of previous research in lieu of the introduction of new information at any step along the way.⁴ According to the traditional problem solving method, meticulously following the incremental steps in the process are essential in discovering the correct solution. Each step must be followed before advancing to the next. Returning to a previous step in the process is reflective of initially not adequately performing the step correctly. Because of this emphasis, personnel are generally unwilling (not unable) to forego a previously flawed course of action even when available information questions its ability to succeed.

The main defect in this philosophy is the unwillingness of management to return to the original problem, or a previous step, when formulating solutions to their dilemmas. When testing possible solutions to new problems it is not uncommon that an entirely unthought of solution might present itself.⁵ Under the traditional problem solving process, this solution cannot be considered because it was not proposed at step three in the process. Additionally, when identifying the root cause of a problem, it may be possible to immediately begin to test possible solutions to a problem as an alternative to gathering new information on the original problem itself.⁶⁻⁸ As an example, William James once wrote, "That to prove all crows are not black, it is not necessary to count all black crows. It is simply necessary to find one white crow." Under the traditional problem solving process, one might suggest the methodology would have one counting "crows," under step one of this process rather than immediately testing the hypothesis itself by looking for crows of a different color.

Hammer and Champy offer a solution to this dilemma. These authors suggest that the problem solving process become delinearized. Delinearization refers to a fast paced process whereby many jobs are done simultaneously, the time between jobs is substantially reduced, processes have multiple versions/inflexibility, and unresponsiveness is reduced. Figure 2 is suggestive of this process.

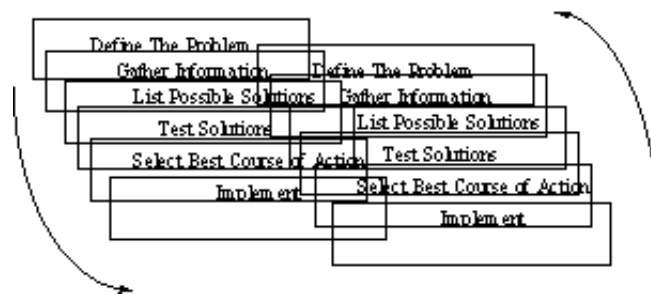


Figure 2. Delinearization.

Utilizing this methodology, the problem is constantly redefined, new information is constantly being gathered on the strengths, weakness, opportunities and threats that effect the decision outcome, and new information is valued rather than discarded.⁹ As an example of this philosophy, General Schwarzkopf changed his final operation plan several times during Operation Desert Storm. "We must ensure that our forces remain flexible enough to handle unforeseen contingencies. The future is not always easy to predict" Schwarzkopf said.⁶ Unfortunately, according to the U.S. Army Research and Material Command, when it comes to making decisions, for any number of reasons, people do not do what they are told to do....instead they only do what they know how to do the way they know how to do it."¹⁰ Linear thinkers attack problems from a linear perspective. As a result, failure may often be a probable outcome.

The second Horseman of Problem Solving is Recidivism and Cognitive Dissonance. This is similar to what Peter Senge calls a Balancing Process with Delay Archetype. In this model, one of several problem solving methodologies may be initiated, however, the decision maker faces cognitive dissonance at each stage along the decision making ordeal. Cognitive dissonance refers to the dilemma facing the executive when more than one solution for a problem presents itself for opportunity in implementation. When this happens, the decision maker has difficulty in selecting a course of action. Ultimately, a course of action is selected that immediately produces anxiety (cognitive dissonance) for the individual. This causes the decision maker to reevaluate the steps initially taken to derive the original course of action and in many cases, may cause the decision maker to abandon the original course of action in favor of an alternative one.^{1,3,4,11} This process is repeated at each and every step along the decision making process, resulting in absolutely nothing having been accomplished and the problem still unidentified. This destructive process is profiled in Figure 3.

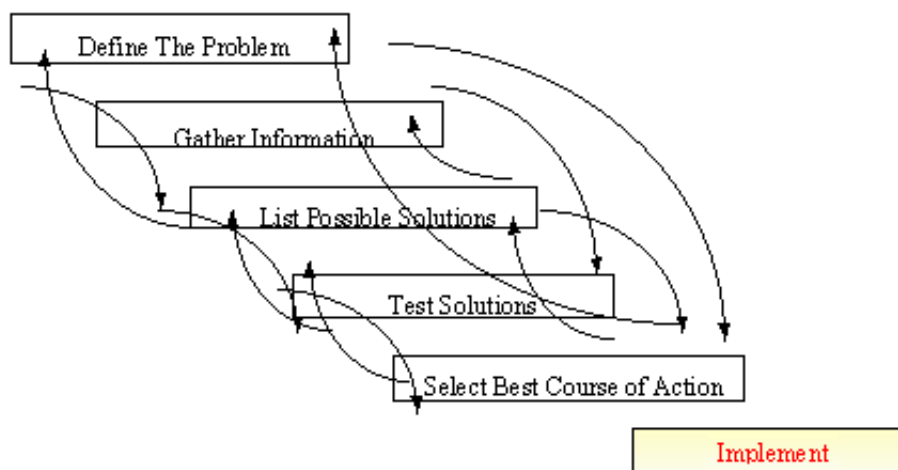


Figure 3. Recidivism and cognitive dissonance.

In the cognitive dissonance archetype, decision makers often become more involved in the process and science of decision making rather than the art and science of making a decision.^{1,12} This is, in part, due to the overwhelming number of tools, options, and philosophies available to the executive during the decision-making phase. In many cases, it has become too easy for the decision maker to become involved in the process of the decision-making process steps. Additionally, although absolutely nothing was accomplished, changed, or recommended after a lengthy problem solving operation, the amount of paper, statistics, memoranda, and work hours suggest that something was accomplished; when in fact, nothing was accomplished at all.^{1,3,5,8} During Patton's famous march into the Battle of the Ardennes in 1944, he said, "It is better to execute an 85% plan now than to execute a 100% plan 2 days late." Patton was skilled in training his subordinate leaders in avoidance of recidivism and cognitive dissonance. His plan and tactics, often executed "on the move," allowed him to capture more ground and engage more enemy soldiers than any other commander during World War II. Similarly, Napoleon once said to a group of young Field Artillery Officers that, "It is not as important that the round hit its mark, as it is that the projectile accomplishes its objective."¹³

Napoleon was one of the first combat leaders of his time to realize that artillery pieces (cannon) used by ground soldiers could be different than those artillery pieces used by forces in the Navy. Until his time, cannons were all very similar in bore and trigger and differed only in mounting and carriage. Artillery used at sea were carefully sculptured to allow extreme accuracy. An opportunity to overcome a threatening sea vessel was only achievable if the round could hit its mark. However, cannon of the time were difficult to manufacture and many months would pass from design to final construction. Napoleon realized that field cannon could be less accurate and still accomplish the same violent objective against forces advancing in mass. Additionally, these cannon could be produced rapidly in great quantity by the organic industrial capability of the time. Napoleon sacrificed accuracy and range for immediacy in production and mass.

Similarly, decision makers today are faced with decisions not only dealing with objective and intent, but also one of accuracy and detail. Microsoft Incorporated released Windows 95 in August 1995 despite numerous defects in the operating system.¹⁴ In this instance, detail was sacrificed for immediate implementation and strategic release. Software patches for the product continue to be released to correct old and newly discovered errors with the operating system. Additionally, few users would have elected to wait over a year for the product to become more perfected. Despite the implementation and widespread acceptance of Deming's Total Quality Management (TQM) principles, there are still many instances where an acceptable level of inefficiency can be admitted and the decision maker should move forward with available information.¹⁵ Occasionally, even with all the decision-making resources available to executive groups today, statistical recommendations cannot replace the confidence, visceral instincts, and heuristic forecasting techniques used by experienced leaders to implement immediate and effective decisions.^{10,16-18} By contrast, some decision makers may entangle themselves in a death spiral of asphyxiation with Pareto Analysis, Ishikawa Diagrams, and complex theory.

The third problem with problem solving is Problem Solving Creep. The concept of mission creep was coined in the military community and is generally associated with operations other than war in military mobilization deployments during peacekeeping operations. Mission creep

can be defined as the rapid and constant change to an archaic plan or substantive absence of mission statement.¹⁹ Casper Weinberger noted after America's embarrassment in Somalia that "future missions need to have a clear policy, defined mission and a visible and noticeable end to mission completion." This same concept can be applied to the problem solving process.

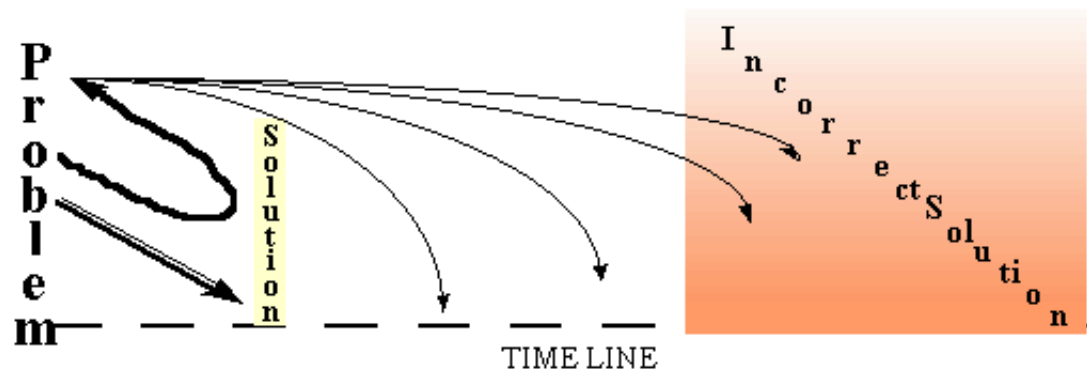
Too often in problem solving, decision makers may arrive at a solution to a problem; however, due to the ease in problem accomplishment, the lack of resistance from subordinates or coworkers, or the fact that a deadline was reached prior to the 11th hour, decision makers may attempt to continue to improve on the solution. In doing so, the solution may actually deviate from correcting the original problem it was designed to rectify.^{18,20,21}

In his recently published book, *Restructuring Healthcare*, Philip Lathrop discusses the dilemma with structural idle time. Structural idle time can be a leading indicator with problem solving creep. Lathrop, like Hammer and Champy, discusses structural idle time from a reengineering standpoint. From this perspective, the decision maker must not only ask what is being done, but why are we doing it? Often, members of a collaborative team lack the shared vision, values, and goals of an objective to make a decision.^{5,8} However, even in cases where this vision is shared by members of a team, structural idle time can lead toward serious problem solving creep if unattended. Such was the case with military operations in Haiti in 1994.

According to Kitfield, the U.S. seemed to have learned from lessons in both Somalia and Grenada during operations in Haiti. The operation in Haiti started out as a highly supported and detailed logistical effort to conduct a forced entry onto the tiny island. However, negotiation efforts in Haiti involving arbitrators on the ground (Jimmy Carter and Colin Powell), rapidly changed not only the mission of the soldiers in the air, but also circumvented some White House decisions. "Every element of this complex algorithm seemed to have been calculated except to control the people who had actually been making the decision-making policy."²²

Furthermore, often when dynamic groups are engaged in formulating solutions to problems, they often become more interested with the organizational dynamics rather than directing a solution to the problem.²³ Similar to recidivism and cognitive dissonance, the team members continually redefine their problem and course of action. However, rather than becoming caught in a never-ending loop of problem solving decision making, the team actually designs a solution to a problem that was never a problem to begin with. Weaver, in his book, *TQM, A Step-by-Step Process*, identifies this problem as one of cycle-time. Utilizing his methodology, a team will set out tasks necessary for accomplishment of the plan rather than random dates or time sequences. Weaver profiles that random dates are traditionally used haphazardly in common milestone charts.

Taking advantage of cycle-time allows the team to become process oriented toward a flow of events necessary to accomplish the mission rather than a calendar and clock. An example of problem solving creep is profiled in Figure 4.



Managers arrive at a solution to a problem ahead of schedule. Due to time and a lack of predetermined cycle-flow, managers continue to return to the original problem resulting in a continued withdrawal from the correct

Figure 4. Problem solving creep.

The last Horseman of Problem Solving is one of Avoidance. Managers must ensure they maintain an effective balance between empowering individuals to make decisions, making too many decisions themselves, and avoiding the issue all together.¹⁷ Executives cannot be afraid to fail or make mistakes. Occasionally, a recon by fire (a tactic used to identify the position of the enemy by firing in their probable location and causing them to give away their position by firing back) is the best method of discovering solutions to reoccurring or older problems, despite the stochastic nature of the problem solving style. Another method might be to advocate the words of the great philosopher, Nike, and "Just Do It!" Getting started is often the most difficult part of making a decision.

In today's zero defects society, many managers and leaders feel that they have been rightsized, outsourced, and reengineered to near exhaustion. Decision making involves risks which many organizations are unwilling to take.^{9,24} However, it will be the competent and confident leader who looks toward decision making failure as a learning tool in itself, and improve upon their own decision making experience in doing so.

What are the recommendations to avoid the Four Horsemen of The Problem Solving Apocalypse? One of the key issues with problem solving is that decision makers do not view problem solving as a continuous process. Often the successes of the past are the cause of our current failures.⁸ Problem solving methodologies must continually be reinvented and parallel, but not replace techniques of the past. Decision makers must also realize that there is an unequal distribution of time and resources that may go into each and every step in their problem solving methodologies.

Defining the problem may be quite easy to a decision maker and require no time at all to discover. However, as often is the case in healthcare, defining the problem requires additional time and effort. Decision makers must also be cognizant of the fact that some problems may require high amounts of resources to evaluate, but very few to implement and test. The same may not be said of recently discovered problems, where recognizing and evaluating the cause may be as easy, however, formulating solutions may prove to be so difficult, management may rush to judgment on a solution.

One recommended course of action for decision makers to follow is represented in Figure 5. Utilizing this philosophy, problem solving is not viewed as an annoyance or intrusion upon daily activities of business. Rather it is looked upon as a way of life and as a systemic part of business activities in a systems oriented approach to integrated decision making.

In this methodology, the internal and external environment are not accepted as static. As pressures from the internal environment redefine the resources available to solve the problem-archetype, the methodology for interaction changes and resources are redistributed appropriately. Likewise, as forces from the external environment impact on the matrix, the solution increments are constantly revisited and reevaluated for their effectiveness with one another. This cyclic process ensures the problem is developed incrementally over time to maintain consistency with the external and internal environment. Metrics for determining the validity and reliability of the entities continuous problem solving methodology for a given unit may be derived from satisfaction surveys, test scores, personnel turnover rates, safety records, mission accomplishment, decline of complaints, and unit health status.

An example of this philosophy is demonstrated in the educational process. Students in elementary school have different learning capabilities, have varying attention spans, and are treated very differently from graduate students. However, the transition from elementary student to graduate student is an incremental one taking place over several years. As the student's internal biological resources improve, the external educational system matches resources and inputs to maintain a constant learning curve.

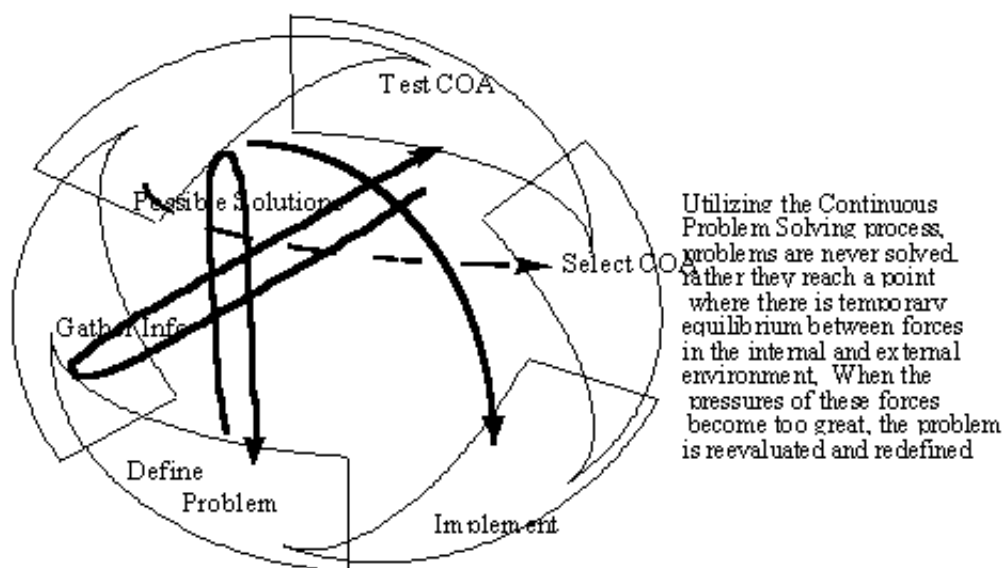


Figure 5. Continuous process.

A second methodology similar in theory and principle to the Continuous Problem Solving Process is one of Problem Transcription. In the human organism, deoxyribonucleic acid (DNA) continually replicates itself through a process of transcription. One strand of DNA unzips and replicates itself into two new strains capable of developing into more DNA strands. The resources available for this transcription are available in the cellular environment. The premise of Problem Transcription is similar in principle. Utilizing this methodology, organizations need to sense when it is time to discontinue those practices which have held the corporation together for so long, and now prevent it from being competitive in the future. After doing so, the organization adapts to the new environment by incorporating resources from within the internal and external surroundings. By doing so, the corporation satisfies its continuing objectives for survivability in the future.

Advocates release those parts of the decision making model which no longer achieve the intended effect of management (Figure 6). Those resources, skills and abilities which are still functional, remain and interact accordingly within the corporate environment. The result is a team which seemingly functions the same; however, has undergone constant and dramatic

transformation internally and externally. The key for success within this philosophy is to determine when change is healthy and necessary for the organization and simply not for change itself. A radical change in the successful tempo of an organization for no reason other than to satisfy the thumbprint of a new leader or manager can often be harmful and detrimental to the group. Conceptually, the latter result causes organizational mutations in the decision-making environment which causes individual workers to be incapable of performing the very job they were so successful in performing before the unnecessary changes were implemented. This problem may often occur during military changes of command when the new leader has yet to understand the environment and capabilities of the unit and where changes are required.

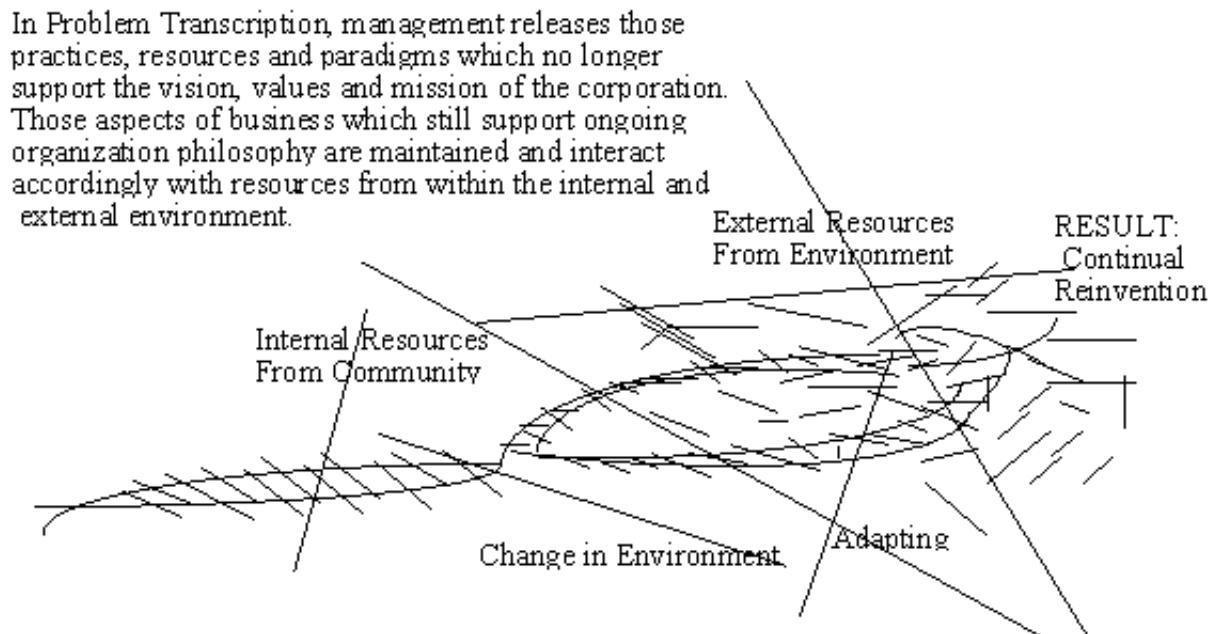


Figure 6. Problem transcription.

An example of this philosophy can be seen in the transformation from the strict, hierarchical management techniques of the Ross Perot EDS Corporation of the 1970s and 1980s to the reengineered Perot Systems of the 1990s. In Perot Systems, Euclidean management philosophies were replaced with more interactive Delphi techniques to accommodate the paradigm shift in employee base.²¹ Perot Systems discovered workers in the 1990s are inclined to question management, offer solutions to problems, and have increased interests in family and extracurricular activities than a generation before them had. Employees today are less willing to be miserable to achieve success. Accordingly, outdated management styles were abandoned and new human resources paradigms adopted in Perot Systems. However, the sound principles of recruiting qualified personnel, financial accountability, and strategic management remained to interact and grow with a changing employee workforce and dynamic customer base.

There are numerous externalities which may effect the outcome, process, and dynamics of the problem solving process. The Four Horsemen of the Problem Solving Apocalypse are offered as one of the theories involving problem solving failure and decision making. The keystone for executives will be to achieve a balance between an instinctive decision making style and the tools available in the internal and external environment. Managers must ensure these pressures are equally weighed against available resources and capabilities within the organization. Additionally, decision making cannot be viewed as a static process. In our rapid transformational times of change, issues and concerns affecting our organization must

continually be reevaluated for their overall impact on available resources. Problem solving and decision making must be viewed as a continuous process and not as a linear or stationary experience. Decision makers must remember that solutions to yesterdays' problems may no longer be applicable to today's issues.

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