



How do Organizations Drive Human Performance?

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Background

- Industrial catastrophes of modern times have led to increased attention on many human performance components
- Safety statistics still attribute between 50 and 90 percent of the causes of industrial accidents to human performance
- Human errors associated with industrial accidents are varied in origin BUT are generally part of larger organizational behaviors



Shift from Individual to Organizational Focus

- History of focusing on individual behavior and performance to strengthen organizational performance.
- While this has yielded positive results, individuals can not over the long term perform better than the organization that supports them.
- Reliability depends on the performance of the individuals AND the organization.




The Greatest Improvements to Human Performance Come from...

Anticipating, preventing, catching, and recovering from human errors

and

Identifying and eliminating organizational weaknesses that that set personnel up for failure



“Events are not so much the result of error-prone workers as they are the outcome of error-prone tasks and error-prone work environments, which are controlled by the Organization.”

James Reason, Managing the Risks of Organizational Accidents



Characteristics of High Reliability Organizations (Roberts & Bea, 2001)

- Experience fewer than normal accidents through organizational culture focus.
- Seek to know what they do not know.
- Design systems to make knowledge available.
- Learn in a quick and efficient manner.
- Aggressively avoid organizational hubris.
- Train staff to recognize and respond to system abnormalities.
- Empower staff to act.
- Design redundant systems to catch problems early.



Organizational Behaviors that Influence Human Performance

- Attention to Safety
- Coordination of Work
- Decision-making
- Formalization
- Goal Setting/Prioritization
- Intradepartmental, Interdepartmental, External Communication
- Organizational Culture
- Organizational Learning
- Organizational Knowledge
- Performance Evaluation
- Performance Quality
- Personnel Selection
- Problem Identification
- Resource Allocation
- Roles & Responsibilities
- Time Urgency
- Training



How Organizational Behaviors Influence Human Performance

- Individual performance reflects the *perceptions* and *attitudes* organizational members hold about what is valued within the organization.
- These perceptions and attitudes result from the manner in which the organization engages in the various organizational behaviors.
- Therefore, changing human performance requires a focus on both the organizational behaviors as well as the way those behaviors are perceived by organizational members.



Active versus Latent Failures

- Active failures refer to the specific action or event that directly led to the accident.
- Latent failures are the set of circumstances that contributed to but did not directly cause the event. These circumstances may have been present but undetected over a period of time.
- Latent failures are where organizational issues are manifested while active failures are where individual performance issues are evident.



Case Study – Three Mile Island

Active Failure

- Operators failure to diagnose stuck open valve.

Latent Failures

- Poor control panel design (*Organizational Learning*)
- Inadequate operator training (*Training*)
- Valves closed for routine maintenance should have resulted in plant shut-down (*Organizational Knowledge*)



Case Study – Herald of Free Enterprise

Active Failure

- Failure to close bow doors before leaving port

Latent Failures

- No effective reporting system in place to ensure bow doors closed (*Formalization*).
 - Captain could not see the bow doors and relied on negative information (*Communications*).
 - Management refuses request for bow door indicator light on bridge despite repeated requests (*Resource Allocation*).
 - No subdividing bulkheads present to prevent flooding (*Organizational Learning*).
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Case Study – Space Shuttle Challenger

Active Failure

- O-Ring Seal Failure

Latent Failures

- Inadequate response to internal warnings about faulty seal design (*Problem Identification & Resolution*)
- Decision to launch in cold temperature despite faulty seal because of conflicting scheduling and safety goals (*Decision Making*).
- Fatigue (*Performance Quality*).



Case Study – Northeast Blackout 2003

Active Failure

- Software bug

Latent Failures

- Assessing and identifying vulnerability of system with respect to voltage criteria (*Problem Identification*)
- Lack of recognition of deterioration of system (*Performance Quality*)
- Overgrown foliage on lines (*Resource Allocation*)
- Impact of interconnectivity on grid (*Organizational Knowledge; Organizational Learning*)



When to Understand Latent Failures?

- After an event.....
- Function of performance metrics.....
- Identification of near misses.....
- Seeking to continuously improve.....



How to Identify Latent Organizational Weaknesses

- Reliable and valid methods are available to assess organizational behaviors.
- Standardization of methods across organizations and industries allows for comparison.
- Use of convergent validity among methods critical with increased external stakeholder involvement and oversight.



Multiple Methods for Organizational Behavioral Measurement

- Functional Analysis
- Structured Interviews and Focus Groups
- Behavioral Anchored Rating Scales (BARS)
- Behavioral Observations
- Organizational and Safety Culture Survey

Multiple methods are used to assess each organizational behavior evaluated and provide *convergent validity* to the results.



Scope of Assessments

- Conducted in 60 different organizations
- Implemented across different industries including:
 - Energy
 - Health care
 - Chemical reprocessing
 - Research
 - Defense Facilities
 - Mining
- Assessments used effectively in 5 different countries
- Assessments discriminate between organizations



Proactive Organizations

Actions

- Longer-term investments
- Way of doing business
- Behaviors in parallel with process

Solutions

- More focused strategies on key behaviors

Results

- Long term cost reductions and better return on investment
 - Performance and process based culture
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Reactive Organizations

Actions

- Short-term investments
- Driven by outcome measures
- Behaviors follow process

Solutions

- Require significant behavioral change

Results

- Longer term costs and poorer return on investment
- Compliance based culture





Summary

- Key to improving human performance is focusing on organizational issues that could have a negative influence.
- This requires proactive self-assessment to continually monitor the organization and mitigate latent conditions.
- Near misses and errors should be examined to identify the underlying organizational and latent issues.
- To be successful organizations must promote an environment that encourages open reporting without reprisal.