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UNDERSTANDING RISK: Foundations for Managing the Uncertainties That Matter

Part 2 of 2

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Part 2: Soft Risks
How they Create Risks and Drive Resilient Performance

EXECUTIVE SUMMARY

In Part 1 of this two-part series, we defined the term "risk" and briefly explained its four main types.

To review Part 1, click here.

Here in Part 2 we begin discussing what we mean by the term "soft risks": how they interact with risk, why they are critical to an organization's success, and how and why they should be routinely monitored.

SOFT RISKS

Soft risks are about culture. They are due to the behaviors, beliefs, attitudes, knowledge, and actions that can modify existing risks or expose the organization to new risks. Soft risks are not true risks but instead are risk modifiers and creators; i.e., the presence, frequency and impact of risks are affected to varying degrees by soft risks.

Definition

SOFT RISKS are the effect of culture on Risks.

- An effect is a deviation from the expected – positive or negative (opportunities or threats).
- An effect can modify the presence, likelihood and/or impact of a risk.
- Soft risks may be described as a combination of strength and influence.

The overall **Effect** of a soft risk on the presence, impact and/or likelihood of a risk is a function of the **Strength** of the soft risk and the degree of **Influence** it has on the risk:

Soft Risk Effect = Strength x Influence

Soft risks always act through an existing risk or through a risk it creates itself (i.e., without the presence of risks, soft risks will have no impact). And like risks, soft risks are double sided: they can have either a positive or negative effect.

As soft risks grow stronger and more developed, the likelihood increases that they will have a positive effect on risks. Conversely, the weaker they are the greater the likelihood they will have a negative effect.

This correlation highlights the importance of always ensuring a *strong, positive* soft risk effect – an effect that can minimize and eliminate threats (negative risks) while maximizing and enhancing opportunities (positive risks). Soft risks, therefore, are excellent leading indicators.

Soft risks always act through a risk … otherwise, they have no effect.

Soft Risk Effect Matrix

From the above equation for soft risk effects, an example effect matrix can be created to help visualize the effects soft risks can have on an organization's risk matrix (see Figure 1).

Risk matrices normally utilized in the chemical and petrochemical industries assume standard qualifications, skills, and experience for employees when determining risk levels. These assumptions are represented on the effects matrix (Figure 1) as a standard soft risk strength – meaning at this strength level, the soft risk will have no

appreciable ***Effect*** on the organization's risk matrix regardless of its influence level (e.g., the yellow areas highlighted in Figure 1).

Soft risk strengths below this standard level, however, **will increase** a risk matrix's risk level as the influence level of the soft risk increases. Conversely, soft risk strengths above the standard level will decrease the risk level with increasing influence.

The Soft Risk Effect Matrix illustrates how just accepting the standard soft risk strengths *assumed* in the risk matrix may result in organizations with weaker than the standard soft risk strengths operating at higher risk levels than believed – a dangerous blind spot.[1]

Soft risks are leading indicators … and where possible key ones should be routinely measured and tracked to insure they always have a positive effect on risks.

SOFT RISK BREAKDOWN STRUCTURE

Vast numbers of soft risks exist in any organization. It is helpful to organize soft risks into several main categories.

These soft risk categories include:

- Leadership
- Experience
- Resilience
- Operational Discipline
- Learning from Incidents

Soft risks that significantly contribute to each area (i.e., their component factors) can be included under that category, creating a Soft Risk Breakdown Structure (SRBS, see Table 1) similar to the Risk Breakdown Structure (RBS) utilized for risks.

CRITICAL SOFT RISKS

Leadership – A Critical Soft Risk for Business Success

Because a company's strategy determines the strategic objectives it pursues, it follows from the risk definition that this same strategy will determine the risks the company will face. These risks, however, directly impact safety, reliability and competitiveness, which in turn determine the success or failure of the strategy.

"Strategy drives risk, but risk eats strategy for breakfast." [2]

– Brett Knowles

A company's strategy is, of course, a product of its leadership. Just as strong leadership can create a successful strategy that minimizes the risks and their impact, weak leadership can create a strategy fraught with many high impact risks.

Thus, risk originates with leadership, and the strength of this leadership is a key factor in the success of any company. Because leadership can create and modify risks through the strategy it creates, it is an extremely influential soft risk and a leading indicator of business success.

Experience – A Critical Soft Risk for Safety Success

Our modern energy and petrochemical facilities are very complex with many potential hazards. Maintaining a low-risk operation under these circumstances demands seasoned, highly *experienced* personnel.[1]

By experience we mean the accumulated knowledge, judgement and skill sets available on a shift for recognizing and responding to critical plant circumstances (NOT just years of service). This level of experience is essential to ensure *resilience* in the organization.

According to **Dr. Erik Hollnagel:** "Resilience is an organization's ability to function as required under expected and unexpected conditions alike."

Resilience and its component factors are strengthened as employees develop and gain experience. They are key components of the organization's culture and are critical to the coping ability (and thus safety performance) of an organization. Safety is a developmental game – strengthen the soft risks to strengthen the safety performance.

"... developing and maintaining [proper experience levels] does not mean that an organization will always perform in a resilient manner – but an organization that lacks [proper experience levels] will be incapable of resilient performance." - Dr. Erik Hollnagel[3]

TRACKING SOFT RISKS

While directly measuring soft risks may be difficult, they can be characterized in terms of a number of more specific factors that each soft risk represents - and these can be measured. (The Pilko 8IGHT DRIVERS® tool has been specifically designed to accomplish these measurements)

The strength or weakness of soft risks develop slowly over time. These small changes are difficult to detect as they are *weak signals.*[4,5] Repeated annual or semi-annual assessments, however, allow the organization to track its progress over time, thereby helping to prevent a drift into failure.

Utilizing diagnostic questions, various soft risks can be assessed to determine the organization's capability for safe and resilient performance. As mentioned previously, such analysis provides excellent leading indicators for the organization.

SUMMARY

The following points provide a short summary of our discussion on risks and soft risks:

- Risks are the Effect of uncertainties upon objectives.
- Soft Risks are the Effect of culture on Risks.
- Risks can be described as a combination of likelihood and consequences.
- Soft Risks can be described as a combination of strength and influence.
- Risks and Soft Risks can have either a positive or negative effect.
- Soft Risks affect the presence, likelihood and impact of Risks.
- Soft Risks always act through a Risk (otherwise they have no effect).
- Soft Risks are weak signals that must be routinely tracked to detect a drift into failure.
- Soft Risks are leading indicators.
- *Leadership* drives strategy and creates risks. *Resilience* drives safety and organizational performance.

From our discussion on risks and soft risks, we can see that resilient business and safety performance is a developmental game. It requires that the skills, knowledge, capabilities, and judgement (i.e., experience) underpinning key soft risks are well developed and exercised.

Because soft risks are weak signals that develop or degrade slowly, they should be monitored routinely to ensure the organization always has the capability for resilient performance.

REFERENCES: 1. Colwell, Arthur R., Protecting the Safety Culture in an Operating Facility, Pilko Greypaper, March 2020. **2.**Knowles, Brett, Strategy Drives Risk, YouTube, 30 July 2013.**3**.Hollnagel, Erik, Safety-II in Practice – Developing the Resilience Potentials, Routledge, New York, New York, 2018.**4.**Hollnagel, Erik, Leonhardt, Jorg, and Licu, Tony, The Systemic Potentials Management: Building a Basis for Resilient Performance – a White Paper, Eurocontrol, 2021.**5.**Hollnagel, Erik, The Secret of Safety, Task Force Zero - YouTube, 2021.

DIAGRAMS

Figure 1. Soft Risk Effect Matrix
A sample Soft Risk Effect Matrix can help visualize the various types of Effects a Soft Risk can have on Negative and Positive Risks

Soft Risk Effect Matrix (example)

Soft Risk *Effect* = *Strength* x *Influence*

Strength \ Influence	Slight	Minor	Moderate	Major	Extreme
Outstanding	Positive	Positive	Strong Positive	Strong Positive	Strong Positive
Strong	Neutral	Positive	Positive	Positive	Strong Positive
Standard	Neutral	Neutral	Neutral	Neutral	Neutral
Weak	Neutral	Negative	Negative	Negative	High Negative
Poor	Negative	Negative	High Negative	High Negative	High Negative

Soft Risk Effects on Risks
Positive Numbers in the Effect Matrix Decrease Negative Risks and Increase Positive Risks

Table 1. Sample Soft Risk Categories (Soft Risk Breakdown Structure)

Leadership	Experience	Resilience	Ops Discipline	Learning from Incidents	Workload	Maintenance	Hierarchy of Controls
authority	training	monitor	procedures	investigations	Staffing	deferred MTCE	alarm management
accountability	competency	respond	rules	human error	fatigue/OT	vessel inspections	engineering controls
character	on-boarding	anticipate	complacency	corrective actions	non-production work	backlog	
integrity	hiring	learn	permit system	reporting		schedule breaks	
duty	promotions		COO	near-miss rept.		MTBF	
honor	judgement		MOC	accident projection		reliability	
setting the example	maturity					TAR	
walk the talk	abnormal operations					RCM	
vision	drills					availability	
strategy	years of service						
enabler							
encourage the heart							

- High Negative
- Negative
- Standard
- Positive
- High Positive

Improvement efforts should focus on those soft risks having the weakest strength and the greatest influence.

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ABOUT THE AUTHOR

Art Colwell has over 30 years of experience in the chemical industry and now leverages that expertise at Pilko & Associates to advise senior executives on EHS risk assessment, mitigation and governance.

Before retiring in 2010, he led BASF's largest North American manufacturing facility in Freeport, Texas, overseeing 24 plants producing 23 products and earning multiple top safety and environmental awards from the Texas Chemical Council. He also chaired BASF's North American Manufacturing Community (2005–2008), driving operational excellence across all regional sites, and served nine years on the Texas Chemical Council's Board, culminating as Chairman in 2009–2010.

Earlier roles included leadership in production operations at BASF facilities in Texas, Louisiana, and the UK. A native of Huntsville, Alabama, Art holds bachelor's and master's degrees in Chemistry from the University of Alabama in Huntsville and resides in Magnolia,Texas, with his wife, Nita.

ABOUT PILKO & ASSOCIATES

Pilko is the Leading Advisor to Corporate Officers and Boards on Operational and EHS Risks in the energy, chemical and related industries, with a vision of transforming operations to be the safest, most reliable, and sustainable.

We help Clients solve their toughest challenges by identifying and mitigating Operational and EHS risk. We advise Clients on Driving Rapid, Dramatic and Sustainable improvement in Operational and EHS performance, as well as advise on mergers, acquisitions, divestitures, and major projects. Pilko Advisors are always brutally honest but respectful.

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