The human factor

Why prioritizing people
is essential to effective
quality management

bsi.

How organizational culture contributes to quality

You can only achieve world class quality management with effective processes. From concept and design right the way through to output and delivery. But what really underpins a world class quality management system is culture, and great culture comes from great leadership.

Organizational culture is often described as "the way we do things around here". It is driven by top management and is the product of individual and group values. Equally important are:

- Attitudes

- Managerial practices

- Perceptions

- Competencies

- Patterns of activities

These define the working environment of an organization and the resulting outputs, products and customer experiences.

Culture is therefore vital to an organization. It determines its success and longevity – sometimes called organizational resilience – and it's what makes your work processes and activities effective and compliant. An organization with a strong, positive culture will always outperform those with a toxic workplace in the long run. John Kotter and James Heskett[1] from Harvard Business School found that organizations where leaders focused on their cultures outperformed those that didn't by a huge margin.

[1] Corporate Culture and performance, 2011

What is a toxic workplace culture?

A toxic workplace culture is commonly understood as a culture where any worker feels physically or mentally unsafe, unsupported, unheard, mistrusted or underappreciated. In all of these cases, their psychological health and safety (h&s) is undermined.

This could be for a number of reasons:

- Blame culture

- Bullying and harassment

- Unethical practices where profit is put before purpose, people or the planet

- A lack of fair, equitable recognition, reward or career development

- A lack of employee communication and engagement

- A lack of employee autonomy or flexibility

- Excessive work hours, unrealistic demands or an undermined work-life balance

A poor culture has direct and indirect impacts on quality. For instance, fatigue from excessive hours can increase errors, directly impacting the quality of a product or service. Or it might cause a latent mistake, which only comes to light later, such as a miscalculation or design error.

Creating trust in your workplace culture

A positive workplace culture starts with creating trust, giving organizations a foundation on which to introduce other measures that build confidence and cohesion among workers. It's also important to focus on delivering:

- Collaborative, communicative and emotionally intelligent leadership

- Work and workplaces that prevent physical and mental harm

- Work and workplaces that promote good physical and psychological health

- Diverse, inclusive and ethical workplace relationships based on respect and fairness

- Opportunities for lifelong learning and employability

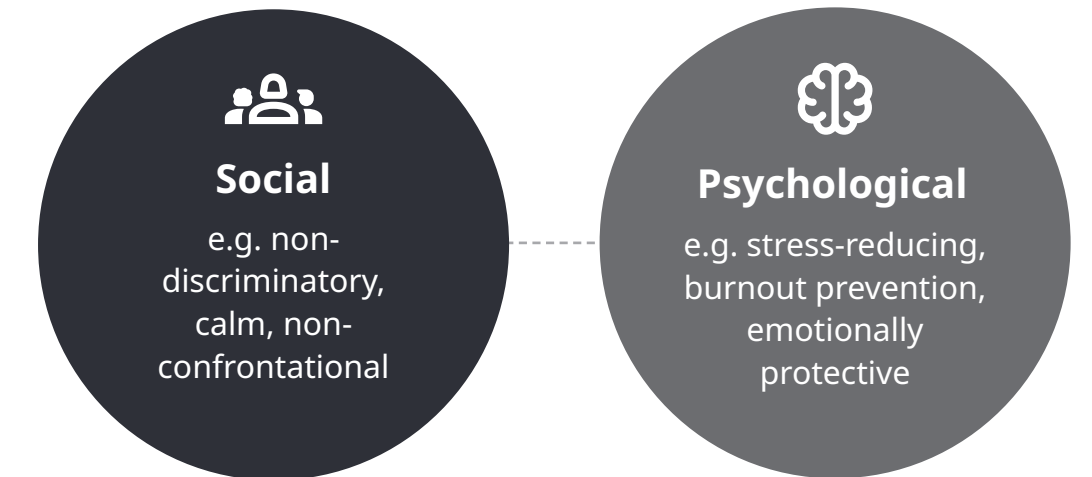- A balanced effort and reward/recognition ratio

In quality management terms, culture is part of the workplace "environment". The international best practice standard on quality management, ISO 9001 (and the equivalent standards in Automotive **IATF 19949** and **Aerospace AS 9100**) has a specific requirement to consider "the environment".

Clause 7.1.4 The organization shall determine, provide and maintain the environment necessary for the operation of its processes and to achieve conformity of products and services.

The standard then goes on to clarify what is meant by "environment".

A suitable environment can be a combination of human and physical factors, as depicted by our graphic:

Impacts culture

Social
e.g. non-discriminatory, calm, non-confrontational

Psychological
e.g. stress-reducing, burnout prevention, emotionally protective

Impacts Environment

Physical
e.g. temperature, heat, humidity, light, airflow, hygiene, noise

You'll notice that there is a clear relationship between creating a culture of trust and the right "environment" for quality management:

Social = Collaborative, communicative and emotionally intelligent leadership. Alongside diverse, inclusive and ethical workplace relationships based on respect and fairness

Psychological = Work and workplaces that prevent physical and mental harm. Alongside work and workplaces that promote good physical and psychological health

Physical = Work and workplaces that prevent physical and mental harm. Alongside work and workplaces that promote good physical and psychological health

These social, psychological and physical factors are also part of your occupational health and safety (OH&S) management system, so you start to see a relationship between quality management and OH&S management. In fact, the automotive standard, **IATF 16949**, makes this relationship clear, stating that ISO 45001, the international best practice standard on OH&S management, can be used as direct evidence of conformance to Clause 7.1.4.

Whereas the relationship between culture and quality is implicit in ISO 9001 (and related industry standards); the relationship between culture and OH&S is made explicit in ISO 45001 (the international standard on occupational health and safety management) starting with "top management developing, leading and promoting a [positive] culture" and then going on to ensure that there is a process for continual improvement that continues to promote that [positive] culture.

Factoring in human error

So why is culture so important in quality management and OH&S management? Mainly because the culture of an organization has a direct impact on performance and outcomes. **One of the biggest risks that poor culture creates is an increase in human error (also known as human failure).**

Human error is not random, or something that happens "by chance". The errors that humans make can be predicted, as can the situations that make those errors more likely. Evidence-based research has proven a direct link between culture, environment and human error.

Honda Canada implemented the SafeStart[2] programme to reduce injuries associated with human error. The programme resulted in 60-67% decrease in recordable injuries AND over $2.3 million CAD in savings from quality and performance. While GH Metal solutions saw a 73% decrease in recordable injuries AND a 48% decrease in defects per million - perfectly demonstrating the link between OH&S and quality.

It is possible for you to incorporate this knowledge into your risk management process – both for quality and OH&S. This relationship is so well known that it has its own field of study known as "human factors" or "Performance Influencing Factors" (PIFs). Human performance and error is impacted by the job, the individual and the organization.

The table on the next page[3] gives an overview of the factors that lead to human error. You'll see from this table that these encompass the 'social', 'psychological' and 'physical' factors we see in Clause 7.1.4 of quality management systems.

[2]SafeStart: https://safestart.com/

Job Factors

- Clarity of signs, signals, instructions
- System/equipment interface (labelling, alarms, error avoidance/ tolerance)
- Difficulty/complexity of task
- Routine or unusual
- Divided attention
- Procedures inadequate or inappropriate
- Preparation for task (e.g. permits, risk assessments, checking)
- Time available/required
- Tools appropriate for task
- Communication, with colleagues, supervision, contractor, other
- Working environment (noise, heat, space, lighting, ventilation)

Person Factors

- Physical capability and condition
- Fatigue (acute from temporary situation, or chronic)
- Stress/morale
- Work overload/underload
- Competence to deal with circumstances
- Motivation vs. other priorities

Organization Factors

- Work pressures
  e.g. production vs. safety
- Level and nature of supervision/ leadership
- Communication
- Manning levels
- Peer pressure
- Clarity of roles and responsibilities
- Consequences of failure to follow rules/procedures
- Effectiveness of organizational learning (learning from experiences)
- Organizational or safety culture, e.g. everyone breaks the rules
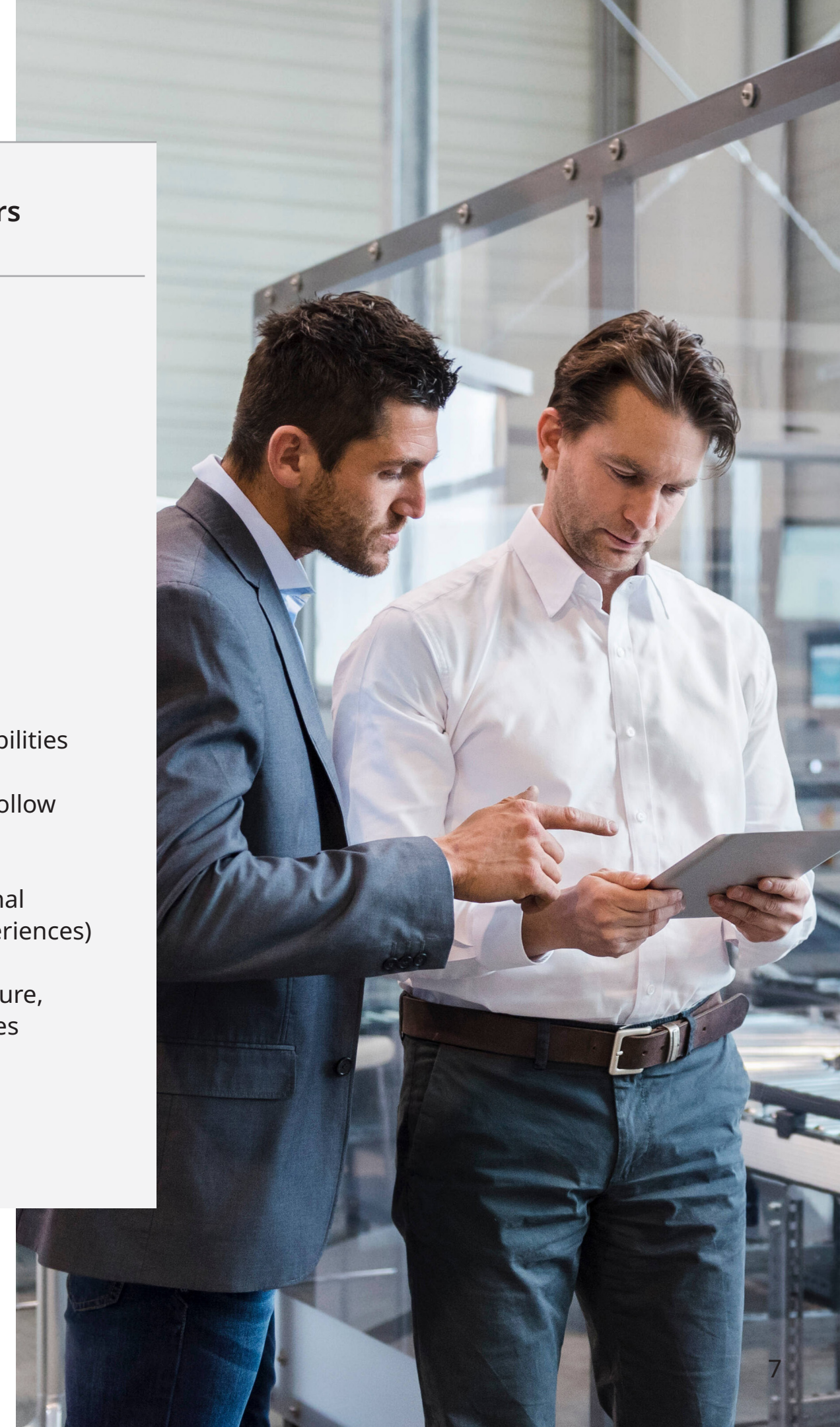
"The dirty dozen" the most common performance influencers

A lot of the evidence of the relationship between environment and human performance has come from high hazard industries, where failure in either quality or safety can have devastating effects. In fact, in aerospace, the 12 most common PIFs are nicknamed "the dirty dozen". They are:

- Lack of communication
- Complacency
- Lack of knowledge
- Distraction
- Lack of teamwork
- Fatigue
- Lack of resources
- Pressure
- Lack of assertiveness
- Stress
- Lack of awareness
- Workplace 'norms'

Although the evidence for this relationship has come from high hazard industries, these PIFs can be found in every organization across every sector, from global conglomerates to micro businesses. They can affect quality management in several ways. For example:

Lack of knowledge could lead to misdiagnosing a process upset. This can lead to inappropriate corrective action, due, for example, to lack of experience or insufficient or incorrect information

Distraction could lead to a foreign object entering the production line

Fatigue could lead to a worker taking a reading from the wrong instrument, or transposing digits during data input into a process control interface

Stress impacts our cognitive abilities, hampering our memory and decision-making abilities. This could lead to taking the incorrect action (memory failure) or the wrong decision, or sometimes even preventing someone being able to make a decision

Furthermore, many of these factors can have a cumulative effect, as one factor increases the likelihood of another occurring. For example, fatigue can lead to a lack of situational awareness or poor decision-making, resulting in quality errors or accidents.

Around 80% of aviation accidents are caused by the human errors of pilots, air traffic controllers, mechanics, maintenance inspectors and others[4]. Consequently, in the aerospace industry Quality Management Standards, clause 10.2.1 (nonconformity and corrective actions) of the AS9100-series has an additional requirement to consider human factors when determining the causes of an issue. This means that the often-cited cause of a product error: "operator made a mistake" is not acceptable; you must dig deeper to establish why.

The key thing about PIFs is that they are actually OH&S issues. "Human Factors" is a specific field within OH&S.

[4] https://www.boeing.com/commercial/aeromagazine/articles/qtr_2_07/article_03_2.
html#:~:text=In%20the%20early%20days%20of,controllers%2C%20mechanics%2C%20etc.)

The direct relationship between quality and OH&S

The link between safety and quality is so important in the aerospace sector, that human factors is a dedicated discipline - from design and manufacturing, through to maintenance and aircrew relationships (the latter known as Crew Resource Management (CRM)).

There are many examples of aircraft incidents driven by poor or ineffective work in manufacturing, maintenance or CRM in operations. There is also the concept of a **'just culture',** which promotes continuous learning from previous mistakes and, critically, encourages open and free reporting of issues, to share - so all can learn - rather than to hide, due to fear.

For an example of how a culture can lead to issues or disasters, it's worth reading **the Haddon-Cave investigation** into the RAF Nimrod enquiry. It outlines how a safety case document, drafted with "incompetence, complacency and cynicism," was responsible for the death of 14 personnel after an aircraft fire. The report's title underlines its conclusions: 'A Failure of Leadership, Culture and Priorities'.

This is why the relationship between quality and OH&S is a direct one, not a loose or vague correlation.

Quality management

Human factors

Health and safety

Good OH&S management can reduce the human factors "dirty dozen" in a number of ways. For example:

- Promoting communication and collaboration between employees can help to identify and mitigate risks

- Creating a culture of safety and respect can encourage employees to speak up when they see something wrong

- Providing training and education to employees can help them to understand the risks and how to avoid them

- Managing workload and stress levels can assist in reducing fatigue and error

- Providing adequate resources to employees can enable them to do their jobs safely and effectively

- Establishing clear procedures and guidelines can help employees to know what to do in different situations

- Monitoring performance and identifying potential problems can prevent accidents and injuries

- Taking corrective action when necessary can help improve safety and quality

More and more organizations are integrating their quality management and OH&S management. For instance Magna International's Stadco facility trained the quality team on OH&S, and the OH&S team on quality management.

Furthermore, implementing OH&S measures, such as training programmes and designating health and safety leaders, can create a positive culture, where employees take ownership of their safety and that of their colleagues, as well as the quality of the service or product.

This can lead to increased collaboration, open communication and a more positive work environment. **Hillhouse Quarry Group** experienced this very outcome when they implemented ISO 45001 and saw improved communication channels and more empowered employees. This type of outcome can also reduce other PIFs such as stress, pressure and lack of assertiveness.

Harnessing employee feedback

By soliciting feedback from employees, you can identify areas of the production process that could be developed. By actioning these changes, your organization can improve quality, reduce costs and increase efficiency. This impact was seen directly by **Lerwick Port Authority** when they implemented ISO 45001, after which workers were able to engage more systematically, taking advantage of departmental meetings, comment sheets, staff notices and face-to-face discussions to raise issues more proactively.

Harnessing customer feedback

In a similar way, you can use human factors to improve your organization's customer satisfaction by taking into account customer feedback. By gathering feedback, you can identify areas of your products or services that require improvement. For example, customers may provide insight on the functionality or usability of a product. By incorporating these observations into the design and manufacturing process, your organization can improve the quality of your products or services, increasing customer satisfaction and loyalty – and OH&S for your workers.

[5]SafeStart: https://safestart.com/
[6]https://www.gallup.com/workplace/229832/culture.aspx

Soliciting feedback

Identify areas for improvement

Improving quality, reducing costs and increasing efficiency

When Scot Forge implemented the SafeStart[5] human error programme, they saw a 40% decrease in customer complaints.

The crucial role of OH&S in quality management

OH&S play a crucial role in quality management. Understanding and managing PIFs can help you reduce the risk of human error, improve employee engagement, and increase customer loyalty.

Your organization can benefit from integrating OH&S with quality management processes and using them to your advantage. By promoting and culture of trust, you can achieve both your quality management and OH&S goals, increasing competitiveness and profitability.

This was confirmed in a recent Gallup study which showed that organizations with a strong organizational culture experienced a **25% growth**[6] **in workforce over a three-year period**, and an **85% net profit increase over a five-year period. Which organization wouldn't want performance like that?**

Discover the benefits of certification to an occupational health and safety management system

The ISO 45001 standard provides a framework for success that encourages a positive culture, improves performance, reduces costs and formalizes risk analysis. It also gives confidence to interested parties that relevant regulations and compliance obligations are being met, all of which reinforces organizational resilience.

Find out more about certification. **Visit our landing page.**

bsi.