Operational Risk Profiling: method, tool and preliminary results

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Abstract

Those in governance roles must understand the operational, context-dependent risk profile of their organisation and its workgroups. They must apply due diligence and ensure that resources and processes remain purpose-driven, focused on what matters, socially defensible and aligned to work as done. Risk profiles must be set against risk appetite, and where there is a mismatch, the risk profile must be modified or reduced. This paper outlines an operationally focused and context-sensitive approach to risk profiling, and how construct validity was developed through iterative field-testing, as well as evaluation of early-stage descriptive and predictive utility.

Keywords

risk, operational, context, engagement, health, safety

Introduction

This paper describes the development of a risk profiling tool which aims to integrate three important foundations of health and safety management systems in organisations: worker engagement and participation, internal context description and risk profiling (Ashby, 2022, Peace, 2023). I describe how we have attempted to establish content validity (Drost, 2011) through the stages of concept design, development, and field-testing, and via evaluation of preliminary results. I conclude with reflection on what we have learned so far and the need for further research, as well as development and testing of the tool in a wider range of organisational settings.

Organisations are complex socio-technical systems, and the rapid pace of technological change far outstrips the pace of change possible with traditional deconstructionist management systems. There is a need in an increasingly dynamic society to model organisations and management systems in holistic, context-sensitive ways (Rasmussen, 1999). Audit and assurance frameworks and activity has existed for many years now, but organisations still incubate and host many fatal and near fatal accidents each year. If we wish to understand and modify or reduce our increasingly complex operational risk profiles, an additional approach is needed.

Two due diligence duties of Officers of a PCBU under s44 HSW Act 2015 are particularly relevant to this discussion: to understand PCBU operations and the associated hazards and risks, and to ensure that the PCBU has appropriate resources and processes for managing these risks (IOD, 2016). Many larger organisations use health and safety management systems (HSMS) to organise, implement and continually improve processes and resource allocation for managing health and safety risks (Makin & Winder, 2010). Officers of these organisations may rely on the presence and assurance via audit of HSMS to in part discharge their due diligence duties as outlined above. However, several organisational phenomena – bureaucracy (Smith, 2018) the accumulation of clutter (Rae et al., 2018), methodology as social defense (Wastell, 1996) and work-as-imagined work-as-done misalignment (Conklin, 2012) – suggest limits and shortfalls of the management systems audit paradigm.

Bureaucracy in HSMS arises when there is a disconnect between purpose and process (Smith, 2018). Bureaucratic management systems can elevate process (performing and counting inspections, checklists, forms, incident reporting, site visits, committee meetings etc.) over critical analysis and understanding of what is needed to achieve organisational objectives in a safe and healthy way.

Safety clutter is the accumulation of safety procedures, documents, roles, and activities that are performed in the name of safety, but do not contribute to the safety of operations (Rae et. Al., 2018). Clutter accumulates through incidents triggering uncritiqued additional layers of safety activity, through perceived but extraneous compliance requirements, and via the separation of safety roles from frontline work.

Wastell (1996) builds a compelling case that irrational and blind trust in methodology can arise when duty-holders are faced with complex organisational challenges. Ensuring a methodology is applied well is an achievable proxy; a 'social defense' against the anxiety of confronting the extent of real-world uncertainty and assumptions, a means to diffuse responsibility for difficult decisions, and a myth to allay the threat of accusation of failure to discharge duty.

Work as done is necessarily variable, as workers adapt in real time to changes and manage trade-offs between efficiency and thoroughness (Hollnagel, 2014). It is detailed and messy when compared to work as imagined and prescribed via HSMS (Conklin, 2012).

Furthermore, the many tragic workplace incidents reported in the media each week highlight the wider challenge facing organisations, that risk normalization occurs at both the individual worker level and at the level of the organisation.

Individual risk perception is a notoriously tricky issue (Klein, 2008, Reason, 2008). Human brains and bodies are primed to learn about our environments through feedback loops. The more a person does something dangerous but doesn't experience bad consequences (injury or a scary near miss) the more our brains are habituated to the risk (Kahneman, 2011). Driving is a good example of this – unless a person has recently had a crash or close call, they must actively 're-mind' themselves of just how dangerous driving is to avoid slipping into complacency.

At the organisational level, the same kind of normalization effect can happen but through different mechanisms – the more time goes by without a fatal or near fatal incident, the less likely it is that there will be an organisational focus on critical risks that are retained within operations.

Given the challenges outlined above, how might officers of a PCBU ensure that resources and processes for managing health and safety risks remain worker-informed, purpose-driven, uncluttered, socially defensible and aligned to work as done? How might operational risk management and worker engagement be effectively integrated?

Main concepts

In New Zealand, s44 of the Health and Safety at Work Act 2015 sets out governance level due diligence duties including: to understand PCBU operations and the associated hazards and risks, and to ensure that the PCBU has appropriate resources and processes for managing these risks (IOD, 2016). This paper argues that an on-going and nuanced understanding of an organization's internal context and operational risk profile is essential to discharging these duties.

Risk identification is a key requirement of both ISO45001 (Clause 6.1.2) and SafePlus (Performance requirement C7), two prominent approaches to management systems for health and safety in New Zealand.

Risk profiling has at least two meanings in the context of operational risk management; a register of the significant threats identified as relevant to an organisation's objectives, and a measure of the overall 'riskiness' or risk exposure of the organisation and its divisions (Ashby, 2022, Peace, 2023).

Annex SL (ISO/IEC Annex SL, 2020) provides a common framework for International Standards Organization (ISO) management system standards and includes the requirement for establishing both the external and internal context of an organisation. Internal context takes account of stakeholder expectations, most critically the workforce directly involved in achieving organisational objectives and the resultant risk exposures (Ashby, 2022).

Operational risk (Hopkin & Thompson, 2020) can be seen as the type of risk that will disrupt normal everyday work activities and that is inherent to the work environment, processes, equipment, and other resources that deliver the main objectives of an organisation. The primary goal of good operational risk management is to build process reliability and operational resiliency.

Frameworks and models that are holistic deal with or treat the whole of something and not just a part. Holistic approaches emphasise the interconnectedness between parts, and the emergence of properties via the interconnected whole.

Methodology

This paper describes the provisional findings of our work with clients, where we applied an approach based on action research to co-create a solution. Action research can be described as research that is based on a collaborative and problem-solving focused relationship between client and researcher where the goals are to solve a practical problem and generate new knowledge simultaneously (Coghlan & Brannick, 2005). This paper also attempts to develop construct validity for the solution we developed, the GRI® 5P conceptual model, making use of the approach described by Drost (2011), who defines construct validity as how well a concept translates into an operating reality, including how the construct was developed (content validity) and what the construct can do (concurrent and predictive validity).

A client approached us with a problem and asked for our assistance in finding a solution. The problem was multifaceted; ways of monitoring and measuring risk exposure and health and safety performance had become bureaucratic, cluttered, performative, and disconnected from operational reality. Perhaps most importantly, the pre-existing approach had lost the support and trust of frontline leaders and was driving a culture of apathy and resistance towards further health, safety, and risk initiatives.

Our approach was to conduct a series of workshops involving division and site level management, with the aim of seeking to understand the current state and show empathy for the current feelings of frustration and mistrust. We developed the prototype model and tool using input from multiple subject matter experts and peer reviewers, and field-tested it under various conditions, iterating to the point where the tool structure and content stabilised, i.e., subsequent field tests did not yield further iterations of the tool. The outputs of the risk profiling tool were analysed to gain insights which were then tested qualitatively for their concurrent and predictive validity. The following sections outline these stages in more detail.

Drawing on multiple diverse academic (Ashby, 2022, Peace, 2023) and applied (HSE Global Consultants) sources to establish content validity, we developed a conceptual model (Fig.1) named the Global Risk Index® 5P model. The model is intended to facilitate a holistic approach to operational risk profiling by guiding inquiry into and exploration of five interconnected operational categories. It draws on the safe person, safe place, safe systems approach proposed by Makin and Winder (2010), as well as models of internal context such as the 'Nertney Wheel' and 'Porter's Value Chain' (Peace, 2023). It includes people (leadership, culture, capability, communication, etc.), process (tasks and activities done to achieve organisational objectives), plant and equipment (machinery, tools, information and communication technology, and their procurement and maintenance), property and environment (location, design, condition, climate, size, and layout) and performance (organisational outputs measured against objectives).

Figure 1: The HSE Global GRI® 5P model for operational risk profiling
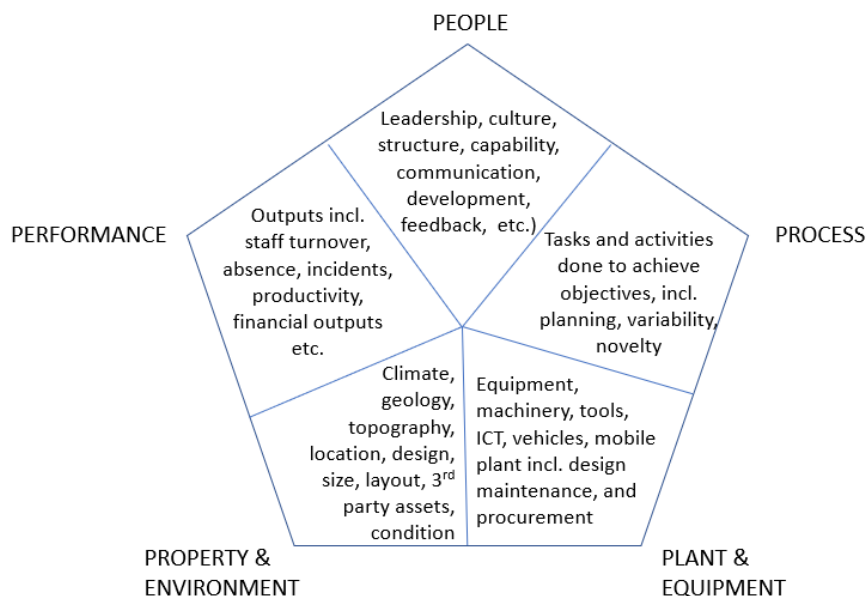
We built a spreadsheet-based prototype tool using the GRI® 5P conceptual model. The spreadsheet platform has the advantage of being easy to update and low cost. The tool was designed to be flexible and adaptable, so that it could be iteratively updated during the pilot study. The five interconnected domains were each scored via a set of elements and subjective judgement criteria appropriate to the element. The outputs are presented as both a single score and a risk profile 'shape' which allows for high-level trend recognition.

The pilot study was conducted within three organisations and more than 100 sites across New Zealand. The organisations and sites were chosen as representative of a wide range of business activity types, sizes, geographic and climatic conditions. A consistent on-site process was used to ensure validity of the pilot study, with two pilot study teams conducting joint assessments and post-assessment debriefs. The on-site process was modelled on humble inquiry (Schein & Schein, 2021). Pre-visit communications were designed to address the concerns of site management and clarify that this was not another audit or inspection. The site visits were conducted 'in the flow of work', observing typical work tasks and environments, as they happen and without preparation or modification. A 'listen and learn' approach was taken, and a psychologically safe environment was fostered with the on-site personnel. A bank of open questions was developed, to ensure a level of consistency across the workgroups involved in the pilot study.

The first ten site visits were used to fine-tune the operational risk profiling tool. The site manager and their team were invited to take part in the risk profile assessment for their site, and to self-score in collaboration with assessors. Feedback on the tool was recorded in real time by the second assessor, and included suggestions for changes to element descriptions, new elements and scoring criteria adjustments, as well as descriptive notes for future coaching in use of the tool. As a result, the tool went through ten versions in its development, over a three-month initial development period. For the remainder of the pilot study, we found the tool had 'settled down' in that there were very few further suggestions for changes to it from site teams and managers, and that these tended to be largely cosmetic in nature.

During the study, operational risk profiling results were tabulated to enable trend evaluation across the initial pilot group. Sites which returned overall results in the bottom and top 5% (the most vulnerable and most resilient) were targeted for more detailed evaluation and learning. This part of the study is still on-going. All sites received a summary report with both local and corporate action plans. It is important to note that these action plans were co-developed in real time by the site team and the assessors.

One of the organisations we are collaborating with in the further development of the GRI® 5P model and method has offered a Te ao Māori perspective on the methodology and its underlying values and principles, which is summarised here. Further study is needed to explore the opportunities afforded by applying this cultural lens to the process.

Stage 1: Calibrate the tool to the organisational ecosystem.

- Kāwanatanga: good governance and understanding of context
- Māhi tahi: active partnership through co-creation and validation

Stage 2: Describe the operational risk profiles of workgroups

- Whai Wāhaitanga: full participation of those with lived experience of risk context and systems
- Kaitiakitanga: Active protection of taonga across People, Process, Plant & Equipment, Property & Environment, and Performance
- Rite Tahi: Equity and equitable outcomes through tuning-in to unique risk insights

Stage 3: Sense-making and co-designing the way forward

- Hauora: Overall indicator of health of the risk management capacity of workgroups
- Kei a koutou te tikanga: what next? You as a collective make decisions

Discussion and results

Operational risk profiling is essentially a deliberate and proactive exploration of work environments and teams of workers (workgroups), to understand and appreciate at an operational level the workgroup's risks, it's capacity to manage these risks, and the appropriateness and effectiveness of organisational level systems and support. It's important to have the process facilitated by an external party who has not become normalized over time to the local contextual features and risks. Preparation and up-front communications are important. Participants must understand that the process is not about writing up another set of hazard or risk registers

with wishful calculations of inherent and residual risk, written for auditors. It is not another audit or inspection, where someone who they don't know and who hasn't worked in their local context, tells them what they are doing wrong.

The primary goal of operational risk profiling using the GRI® 5P model and methodology is to understand how workgroups can reduce the extent of their risk profile, so that capacity is freed up to pursue opportunities. Put another way, the aim is to learn about work, so that unnecessary risk exposure can be removed, the remaining risks controlled more effectively and sustainably, and resources can be redirected towards improvement.

During the initial field trials, the tool and approach yielded immediate practical and valuable insights, including ineffective critical risk controls, unnecessary inconsistency in infrastructure design and installation, and tasks with high-risk exposure that had become normalized. Performance impacts from diverse contextual issues were clarified such as the impacts on people, plant and performance of site remoteness, climate, geography, and topography, leadership capability and site activity type. Of particular interest was the opportunity to share practical lessons from sites that had been through an experience (e.g., nearby forestry harvesting, or infrastructure upgrades) with sites where this experience was imminent.

Preliminary feedback from site management contained a theme of feeling listened to and understood about what matters most currently within their operational areas – a feature missing from the previous audit-based program. Ashby (2022) argues that both the nature of risk (gain or loss) and extent (riskiness) is socially constructed – that is, social group culture and interactions determine which activities and decisions are perceived as risky or not. We found that site teams appreciated the point of operational risk profiling is not to try to have fully objective and quantitative measures and priorities, but instead to stimulate discussion on what matters most, now and in the foreseeable future, and what can be done about it to make a difference.

The practice of achieving safe and healthy workplaces can be understood as a series of paradoxes (Amalberti, 2001, Hollnagel, 2014, Reason, 2000), in how performance is measured, in how learning operates, between constraining and enabling variability, focus on failure versus success, and the thoroughness of planning against the efficiency of action. In his critique of auditing, Power (1999) argues that the demands and expectations of audits sit uneasily with their operational capabilities, being economically and procedurally constrained, while at the same time expected to deliver credible insight and detailed assurance. We found that the tool and our approach in the field was able to encompass the paradoxical nature of the subject, by moving beyond the rigid requirements of an auditable standard or site inspection.

Operational risk profiling is done in the spirit of humble inquiry (Schein & Schein, 2021) and considering 'work as imagined - work as done' conflicts (Hollnagel, 2014). The assessor adopts a 'listening and learning role', and the local team are viewed as subject matter experts. The assessment is transparent and undertaken in partnership with the local team, who must understand and trust in the process, and have full ownership of the resulting risk profile. At one site, the assessor opted to not point out several minor technical non-compliance issues and instead focused on listening to and respecting the perspective of the site manager. At the end of a 3-hour site tour, the site manager, now alone with the assessor, began to disclose some significant psychosocial risks and the subsequent mental health struggles they were experiencing. As a trained mental health first aider, the assessor was able to ask about suicide risk. Immediate support was arranged, with the consent of the site manager. This example illustrated to us the importance of prioritising trust-building, of including psychosocial risk in the GRI® 5P model and baking psychosocial safety into the methodology.

In addition to identifying vulnerable sites in need of support, the operational risk profiling tool allows an organisation to estimate which of its sites are resilient enough to be the testing ground for change initiatives geared towards innovation and operational risk-taking in pursuit of strategic objectives. In this way it is a tool that supports the concept of risk being about gains as well as loss (ISO45001:2018, ISO31000:2018). To take risks well, organisations and their executive and operational leadership must understand what risks they are taking, the context of the risk-taking, and the capacity available to extend and absorb to counter threats and take opportunities.

Operational risk exposure is influenced by both formal and informal factors (Ashby, 2022). Formal factors include organisational structure and hierarchy, policy, processes and systems, and official communication forums such as health and safety committees. Informal factors include organisational and team culture, risk perception, social networks, and informal hierarchies of influence within work teams. The GRI® 5P model and methodology allows for and intentionally integrates both formal and informal factors into a view of operational risk. As an illustration, we found that the GRI® 5P model and methodology facilitated worker

engagement, participation, and representation. This may be due to several factors: how the risk profiles are developed at the level of the workgroup, the deliberate co-creation of the risk profiles with frontline teams and team leaders, and the humble inquiry inspired method of engagement. Risk profiling at the level of the workgroup became a natural activity for health and safety representatives to be involved in, and they reported feeling a sense of ownership of the resulting risk profile and action plans.

Critical Control Management (ICMM, 2015) focuses attention on the sources of 'material unwanted events', and the critical controls required to ensure they are prevented and mitigated. We found that combining critical control effectiveness verification with operational risk profiling yielded several benefits. It is an efficient use of time and resources, the humble inquiry approach encouraged trust, and we learned about critical control effectiveness under variable work conditions. At one site, towards the end of the site visit, the local team, now reassured that we were not there to audit them or find fault, took us to an installation and explained the work process they felt obliged to follow. They explained a situation where the risk of a multiple fatality event (to this point unknown to the organisation) had gradually increased, in part due to the increasing frequency of extreme weather events in the area. We were able to support the local team by escalation to senior management who immediately mobilised centrally held funding to engineer out this risk (with site team involvement) and subsequently dramatically reduce the risk profile for the site, and ultimately, the organisation. Six weeks later, a major cyclone hit the area. We will never know if our actions saved lives, but because this site's risk profile had been reduced through improved infrastructure, it was literally able to weather the storm.

Another promising early finding is the possibility of the GRI® 5P model to provide anticipatory performance indicators based on current-state assessment of vulnerability and sustainability. We found workgroups that were achieving similar levels of performance (financial, environmental, social) could be at very different states of resilience and vulnerability. When , and therefore varying capability to sustain current performance levels. This provided an opportunity for the organisation to proactively target resources to help deal with specific operational challenges *before* significant falls in performance.

Concerns and potential limitations of the GRI® 5P model and method have also been raised and further work is needed to explore and address them. Risk profiling may become performative and decoupled from the original intent (just another tick-box exercise). Risk profiling methodology produces qualitative insight which may lose validity in the eyes of stakeholders who are looking for quantitative results. Frontline leaders and other stakeholders involved in the process may learn how to 'game' the process to yield better looking results without changing the material risk profile.

Conclusions

The 5P model and operational risk profiling tool is an attempt to understand workgroups as 'human activity systems' (Waring, 1998). It aims to build a profile of key aspects of this 'human activity system', how they exist in dynamic relationship with each other, and how they are impacted by changing threats and opportunities created by internal/external context interplay. We propose that much of the dynamic tension we observed has its source in the paradoxes outlined earlier in this paper that seem to be inherent to operational risk, and in particular the risks associated with health and safety. These paradoxical interactions offer a further line of research (Poole & van de Ven, 1989).

Operational risk profiling works best if it is done in a spirit of genuine appreciation for work-as-done and humble curiosity about what good work may look like. All parties involved must see the value and power of one-on-one conversations in the workplace, where psychological safety is the priority, and 'listening and learning' is the goal. Meaningful and trust-driven worker engagement is possible when one person gives another their full attention, unencumbered by a preconceived agenda or predetermined checklist. When the conversation is curious, the intent is to care, and judgement is suspended, then trust can emerge. Engagement is about human connection, and that always comes with risks, nuance, leaps of faith and unanswered questions. What will I find out? What will happen next? Do we have each other's best interests in mind? Can we trust each other? At the heart of better risk management and better worker engagement is the need to redefine health and safety altogether, as an outcome of good work done well.

Preliminary results of this project pose questions which require further research – for instance to establish concurrent validity (how effectively the approach describe operational risk compared to other methods) and predictive validity (how accurately the approach predicts future conditions). As we begin further operational risk profiling work with other organisations, we have noted the need to recalibrate the tool to industry sectors

and specific organisations. An additional future line of inquiry and research will be how to achieve this while retaining the fundamental structure and approach to enable cross -organisational and cross-sector benchmarking.

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