

OPTIMISING HEALTH AND SAFETY (H&S) MANAGEMENT BY ALIGNING JOB TASK TO RISK BEHAVIOUR PROFILE MATCHING

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Abstract

Engineering tasks usually require high competencies of workers who have to make numerous speedy and accurate decisions on their own. Such required actions are more prevalent in a corrective maintenance environment than for planned projects or in a production environment. Correct selection of candidates to best 'fit' such tasks are required not only for their competencies, in relation to experience and knowledge, but also their propensity for risk-taking behaviour. Optimal risk-taking behaviour profile to high risk job task matching is critical and should be addressed at the recruitment stage, with adjustments made on a continuous performance appraisal basis, with specific emphasis and input during incident evaluations.

This paper highlights the need for H&S management system interventions that will acknowledge the impact of individual risk-taking behaviour on incident statistics. It is important to evaluate the risk related to a specific job task and propose methods for allocating risky job tasks according to risk-taking behaviour profiles of employees.

The study recommends the evaluation and classification of individuals to determine their propensity for risk-taking behaviour by psychometric testing and historical risk behaviour analysis. The purpose of such risk profiling should be to match specific job tasks in relation to the risk involved in performance to that of an employee's risk-taking profile. The findings provide evidence for the need for HR management and engineering interventions to affect H&S management systems by assisting in correct risk-taking behaviour profiling (HR intervention) and job task risk profiling (engineering intervention) with the aim of reducing the number of incidents.

Keywords: H&S management, Job task risks, Risk behaviour profile

1. INTRODUCTION

The ultimate aim of H&S management is zero harm to employees and people exposed to an organisation's activities. On the other hand, human resource (HR) management aims for the correct recruitment and maintaining of the most suitable candidate for a specific position. To this endeavour various evaluation methods, with a psychological base including specifically designed psychometric tests, are engaged. Psychometrics, which means 'to measure the brain', is used to assess a candidate's ability or personality using standardised methods (Dean, 2008). Such psychometric tests involve looking closely at the psychological profile of a job candidate and examining their personality and reactions in different situations and also evaluating their specific relative skills (Lepper, 2009). The aim of such procedures is to limit risks that candidates may pose to an organisation.

The interaction of H&S management and HR management should be of interactive support with the goal of lowering total risk exposure to the organisation. Focus on human behaviour rather than just on procedures is not a new feature of risk management and relates not only to the impact of engineering activities, but also the human aspect of the work environment. The former relates to the physical causes of accidents while the latter requires human action to be taken into consideration as most accidents recorded are related to human failure (Navare, 2003).

The specific risks posed by an individual are due to his unique risk-taking behaviour profile, as influenced by his perception of specific risk. Such perception of risk relates not only to personal psychological make-up, but also the cultural impact of his environment. Behavioural aspects transcend all boundaries in that we seek to manage the initiative and ability of those involved or affected by incidents, irrespective of boundaries. Navare (2003) postulates that by acknowledging the impact that incorrect individual risk-taking behaviour could have on H&S management, organisations will achieve the goal of zero incidents sooner.

Understanding and evaluating risk-taking behaviour of employees affords organisations the opportunity to better manage the risk component related to HR management that indirectly could have the most negative impact on H&S systems.

2. REVIEW OF THE LITERATURE

2.1 Risk-taking behaviour

Human risk-taking behaviour is dependent on various parameters, for instance, the differences in the behaviour of genders and the view of risk to oneself and to others. Women have been found to show a greater difference between personal and general risk than men, reducing the often quite large gender difference in ratings of general risk (Sjöberg, 2002). People on the other hand are more concerned about the risks to others than to themselves (Sjöberg, 2002). The application of human behavioural factors requires an understanding of human capabilities and fallibilities so as to recognize the relationship between work demands and human capacities when considering human and system performance. The aim is to eliminate or reduce the chance of adverse behavioural outcomes, which can lead to harm through accidents or chronic exposure to conditions adverse to H&S (Bellamy, Geyer and Wilkinson, 2008). The motivation to act upon a certain response and intentional or unintentional risk-taking requires understanding of the psychology of human behaviour. According to Domingo and Santiago (2008), the optimum amount of risk a person is prepared to take depends not only on uncertainty, but also on the person's risk preferences. Individual risk-taking behaviour is affected to the extent that the individual's abilities allow him certain actions (du Toit, 2012).

Specific aspects of the exposure to different cultural environments have an indirect impact on an individual's assessment related to a specific risk. The cultural paradigm relates to the wider context of society and the specific work environment. Cultural values affect the way in which people think and behave when faced with H&S related issues. Perez (2009) indicates that culture is a learned set of values which may take form in an organisation's set of practices being interpreted through rules and norms of behaviour.

Risk perception is a condition of an individual that is self-aware. Organisations and governments are not able to be self-aware so they are incapable of taking risks; rather, they are conduits through which individuals take risks (Holton, 2004). The impact of incorrect decisions made indicates the strong need for organisations to understand and address all risk-taking behaviour.

2.2 Knowledge of risk-taking behaviour

Detailed knowledge of specific risks being faced affords people information on how to mitigate, avoid or manage such risk when exposed to it. The more knowledgeable a person is regarding specific risk factors, the more options are available to mitigate or avoid the risk posed by specific hazards.

Humans inherently do not want to avoid hazards, rather, they regard hazards to be in need of being mitigated and as such are more interested in hazards from a sense of spontaneous stimulation of emotions, which is, albeit weakly, negatively correlated with perceived risk. People apparently do not repress or suppress threatening information, they attend to it. This is in line with the current analysis of memory and trauma (Sjöberg, 2007).

2.3 Experience and risk-taking behaviour

Heuristic learning is the process of learning by experience. Maule (2004) found that heuristic availability involves the ease with which a person can remember a hazard occurring in the past as the basis for determining the likelihood of it occurring again in the future. The impact of such experience gained in a heuristic manner depends on the intensity of the experience, the time lapse since the experience, the individual capabilities and the decisions made during such experience. The impact of such an experience will influence correct or incorrect decision making when the person is exposed to a similar scenario again.

The rate of variability in experience increases with temporal distance and predicts the characteristics of the forgetting function and the characteristic of the level of accuracy of the event (Geoffrey, 2002).

2.4 HR interventions

One of the purposes of HR management is the recruitment and maintenance of the most important asset of any organisation, their human capital. The most important activity of HR management is the staff recruitment and selection process. These processes represent the decisions which exert a major and sustainable influence on any organisation (BuŞe, 2009).

Ai Lin Teo, Yean Yng Ling and Sern Yao Ong (2005) indicate that positive reinforcement motivates workers to perform their jobs in a healthy and safe manner and is desirable above negative reinforcement, for although the same outcome may be achieved, a negative climate would be created. In fact, HR researchers and practitioners expect new OSHA regulations regarding ergonomics to influence the way jobs are done in several major industries (Watson and Scott, 2005). Maintaining and optimising employee job performance enables organisations to be better able to achieve their preset goals and missions. Improving and sustaining such job performance involves well planned employee evaluation criteria performance assessments (Cheng and Li, 2006). Engellandt and Riphahn (2011) suggest that, where job complexity is high, individual productivity is hard to measure and compliance with the norms of organisational culture is considered to be part of individual performance. Post-hiring psychological issues arise and most often involve questions about an employee's continued fitness or capacity for duty (Jay and Aletky, 2007).

The incorporation of individual risk-taking behaviour profiling in determination of correct candidate selection for specific job task matching should not only be an option at recruitment stage but should be standard during routine job appraisals. Such profiling requires correct psychometric testing and a detailed history of the individual's incorrect behaviour including disciplinary actions and involvement in H&S related incidents. Psychometrics, which means 'to measure the brain', is used to assess a candidate's ability or personality using standardised methods (Dean, 2008). Such psychometric testing involves looking closely at the psychological profile of a job candidate and examining their personality, their reactions in different situations and their specific skills (Lepper, 2009), although employees sometimes view psychometric tests as an annoying part of the selection process.

Examiners should take special care with such psychometric testing because it is here that their findings are distilled to specific recommendations that will affect the employee's life and career. According to Simons (2009) psychometric tests are used by organisations in order to not only save themselves time and money, but also as an aid to achieving a cultural match between an applicant and the job position, which grants them a competitive advantage in the market. Psychometric testing has become essential to any organisation's success, with the applicant pool increasing over time due to the decrease in supply of employment opportunities. It is also essential when faced with the situation of multiple applicants possessing identical skill sets and a decision will then need to be based on behavioural style or aptitude (Simons, 2009).

3. RESEARCH METHOD

The exploratory phase of the study entailed a self-administered questionnaire survey, which investigated Human Resources (HR) managers' views on the need for intervention on profiling individual risk-taking behaviour and the need for matching such profile to specific job tasks. From a sample stratum of 37 HR managers, a response rate of 22% was achieved.

4. RESEARCH FINDINGS

Table 1 indicates the respondents' degree of concurrence with statements related to pre-appointment evaluations of risk profiles to facilitate correct candidate placements or 'fit' for high risk engineering tasks, and to highlight the need for continuous employee appraisal according to incident profiles, in order to 'smooth' the progress of adjustments in job task allocations.

The overall views manifested in a high level of concurrence reiterate the need for HR interventions that will address risk-taking behaviour according to job task, and employee profile matching for high risk engineering tasks, to reduce incident rates.

The strong belief (100%) that ‘human behaviour risk analysis should form an important part of a job applicant’s evaluation’, is a further indication of the need to incorporate scrutiny of such behavioural characteristics in job applicant reviews. 87.5% of the HR managers strongly agreed that the ‘history of risk-taking behaviour can be analysed to form part of a job applicant’s interview analysis’. This reinforces the need to analyse such behaviour and the value of doing so.

The 100% strongly agree response relative to the statement ‘job task-employee profile matching should be standard for high risk engineering tasks’, is indicative of support for extra interventions related to high risk engineering tasks. 75% of HR managers agree that ‘It is possible to match a candidate’s risk profile to a specific job task’. This response further reinforces the need to analyse risk-taking behaviour and to undertake job task-employee profile matching. The unanimous agreement relative to ‘There is definitely a difference in each individual’s risk taking behaviour profile’ is indicative of the need to manage this variable aspect that has mostly been ignored and viewed as a constant. 87.5% of respondents agree that ‘Competency, knowledge and skills should not be the only criteria for job task matching, but also the individual’s risk-taking behaviour profile’ reinforces the need to manage the variable ‘risk-taking behaviour’.

The 100% support for ‘Psychometric testing during job interviews should incorporate values that can identify risk behaviour tendencies of individuals’, is a pre-requisite for a model referred to in the statement ‘A model that can be incorporated and used in job interviews for the correct selection of employees that will lower H&S incidents due to risk-taking behaviour would be ideal’ supported by 100% of the respondents.

The importance of analysing human risk-taking behaviour, the development of a risk-taking profile, job task - employee profile matching, the development of a model and the dynamic nature of managing H&S is underscored by the unanimous support ‘Continuous employee evaluations need to be made according to incident profiles for adjustments in job task allocations’.

Table 1: Degree of concurrence with HR intervention related statements

Statement	Strongly disagree (%)	Strongly agree (%)
Human behaviour risk analysis should form an important part of a job applicant’s evaluation	0.0	100.0
History of risk-taking behaviour can be analysed to form part of a job applicant’s interview analysis	12.5	87.5
Job task - employee profile matching should be standard for high risk engineering tasks	0.0	100.0
It is possible to match a candidate’s risk profile to a specific job task	25.0	75.0
There is definitely a difference in each individual’s risk taking behaviour profile	0.0	100.0
Competency, knowledge and skills should not be the only criteria for job task matching, but also the individual’s risk-taking behaviour profile	12.5	87.5
Psychometric testing during job interviews should incorporate values that can identify risk behaviour tendencies of individuals	0.0	100.0
A model that can be incorporated and used in job interviews for the correct selection of employees that will lower H&S incidents due to risk-taking behaviour would be ideal	0.0	100.0
Continuous employee evaluations need to be made according to incident profiles for adjustments in job task allocations	0.0	100.0

5. DISCUSSION

The implementation and compliance with legislated H&S standards and the creation of environmental control methods usually achieves a high management standard coupled with a lowering of incidents. However, organisations should be alerted incidents occur despite the achievement of such standards and / or no further reductions in incidents are achieved.

Aspects that would indicate the need for further H&S interventions, such as evaluating specific job tasks in order to match them with a candidate’s risk-taking behaviour profile, are:

- High individual decision making required;
- Complexity of the job task;
- Competency required for the job task;

- Once-off projects or non-repetitive job tasks;
- Maintenance and emergency repairs environment;
- Tasks that require less than 5 people to perform;
- Tasks not performed during normal working hours such as after-hours, at night or on weekends;
- Pressure on time constraints for completion of the task(s), and
- Extraneous environmental conditions such as working outside in inclement weather.

Figure 1 indicates the point in individual behaviour where intervention should occur to prevent incorrect risk-taking behaviour that could result in an incident.

In order to match a job task to the individual risk-taking behaviour profile, aspects related to the risk involved in the job task and the risk-taking behaviour profile of the individual need to be evaluated. Such evaluation requires complex modelling and should take into account specifically designed psychometric tests and historical evaluation of specific tasks. For reasons of brevity, the issues will be briefly addressed.

The variables that need to be addressed to develop a profile of risk related to a specific job task are: frequency of the task; engineering equipment required; personal protective equipment (PPE) and clothing required, and the environment in which the task will be performed. Thereafter, the personnel requirements need to be recorded: physical capabilities required to perform the task such as vision, hearing, and strength; qualifications required; type of worker required, and the amount of personnel required. A history of job task performance will provide further insight: incidents experienced; severity of incidents; interval of occurrence, and mitigating procedures required. The decision-making required includes: decisions to be made by the individual in the form of the level of judgment required; management decisions; engineering systems automatic control, and decisions by supervisors and others.

The variables that need to be evaluated in order to determine an individual's tendency for high risk-taking behaviour include: competency of the individual, a historic profile of risk-taking behaviour, and specifically designed psychometric test evaluations. Competence, knowledge and experience includes: experience related to the job task; knowledge and formal qualifications; how often job tasks have been successfully completed, and ability to control and manage job task. History of risk-taking behaviour includes: involvement in incidents related to the job task; severity of such incidents; interval of occurrence, and disciplinary action due to non-compliance with H&S standards. Psychometric tests include: view on risk-taking behaviour; need for organisational policies and procedures; view of individual decision-making related to hazards, and view on management input.

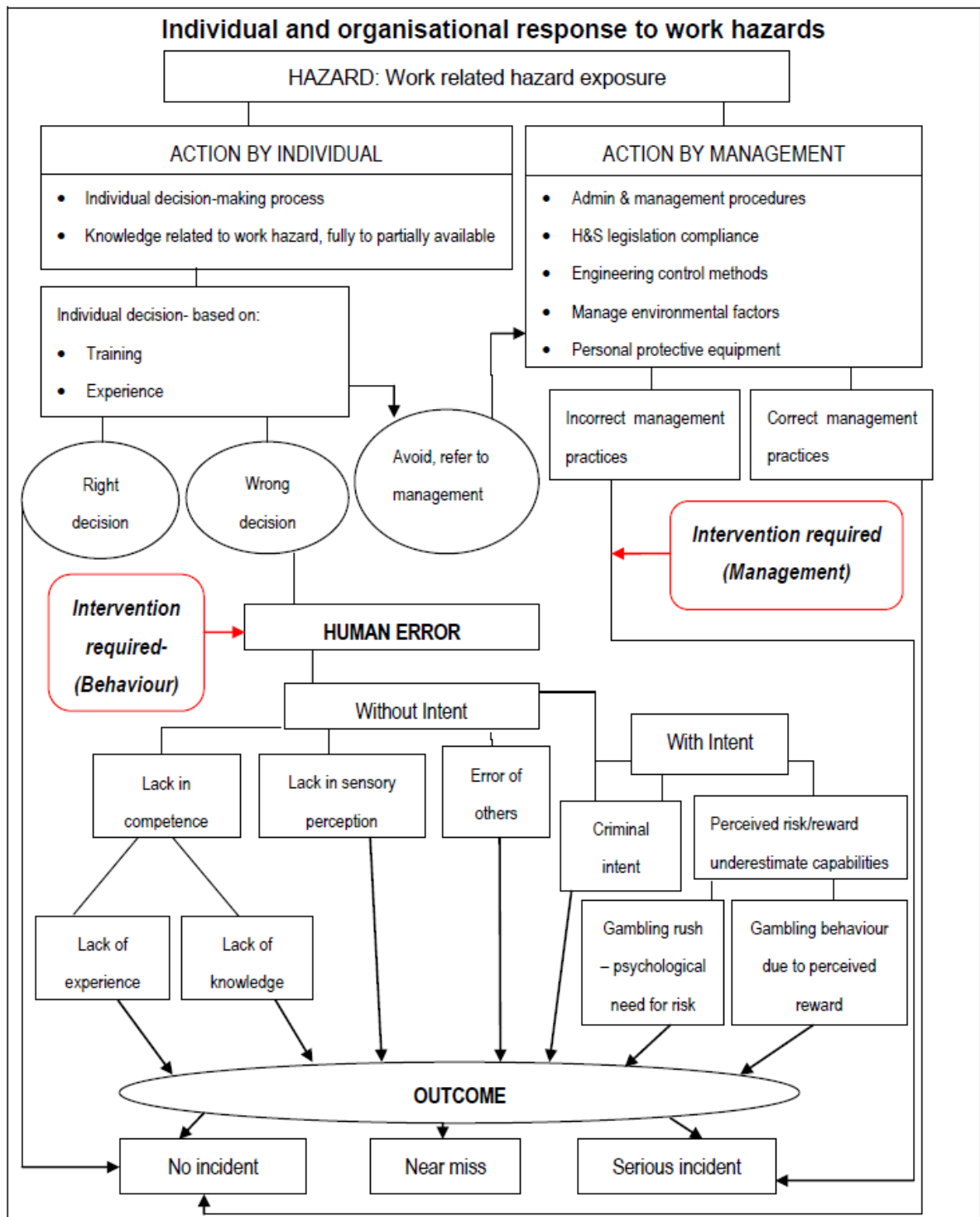


Figure 1: Point of management intervention required to prevent possible incidents (designed by authors)

The most advantageous outcome of HR management is the recruitment and placement of candidates with a perfect profile ‘fit’ to a specific job category. Any risk to organisations from incorrect HR management practices should be limited by acceptable recruitment, placement, and maintenance systems that will identify incorrect selections and behaviour in advance. Matching correct risk-taking behaviour profiles to high risk tasks should meet such requirements.

The individual tendency for risk-taking behaviour is complex and includes various aspects related to the impact of personal and the working environment’s cultural influences, the unique psychological make-up of such individual, their emotional state and their sensory perception aptitude. Total index quantification unfortunately requires specific psychometric testing and in-depth, individual psychological profiling which is not always available to small business entities. Organisations, whose HR systems lack capacity in terms of psychological evaluations, would be best served by evaluating historical behaviour patterns.

Figure 2 indicates the optimal matching for high risk task to match low risk-taking behaviour profiles. The matching, if implemented, provides an ideal opportunity for organisations to lower incident rates, and achieve the H&S goal of ensuring that correct risk behaviour profiles match specific risk related tasks.

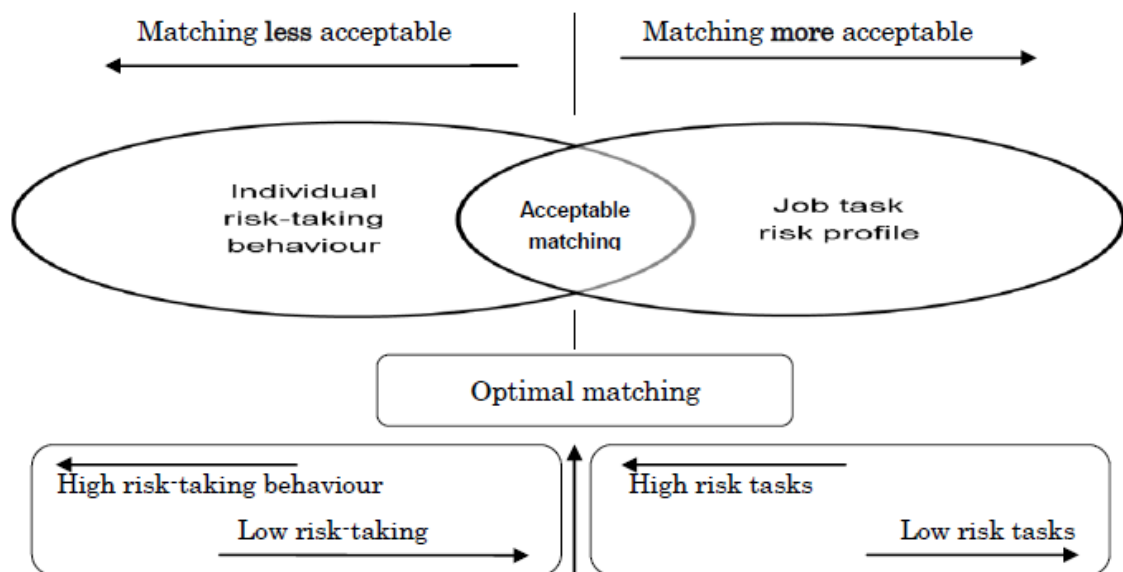


Figure 2: Matching job task to risk behaviour profile

6. CONCLUSIONS

Risk is a part of life and is an inter-grained concept in our subconscious mind. Every action humans take has a subconscious calculation on the risk involved and the possibility for gain or loss. Actions taken are based on the individual belief that such actions will be to the person's advantage, and are influenced by the individual's psychological and cultural background. By understanding such parameters of the individual, better planning can be embarked on to reduce the future risk individual behaviour poses to an organisation.

The variability of risk that human behaviour poses to organisations needs to be taken into account and managed in ways that can quantify the risk-taking profiles of individuals. H&S management can no longer be seen as the management of environmental factors only, but must also take into account the critical component of individual behaviour. Such components relate to the capacity of influencing incident statistics due to personal decisions made according to beliefs and psychological profiles. Organisations need to employ ongoing assessment processes in working towards and achieving set goals and targets. Such targets can only be achieved from lessons learned by previous incident experiences (Al-Qudah and Al-Momani, 2011).

The differences in individual perceptions of risk are influenced by a variety of environmental, psychological, personality trait and cultural factors. Each individual's risk-taking behaviour profile differs and poses unique risks to organisations. In most cases, current H&S management systems do not acknowledge or manage risks posed by individual risk-taking behaviour resulting in a section of H&S not being addressed in totality, and thus not effecting total achievement in an approach to zero harm. By investigating alternative management options, such as risk-taking behaviour to job task matching, organisations should near such ultimate goal of lowering incident statistic substantially.

7. RECOMMENDATIONS

Human behaviour as a risk factor cannot be eliminated and will always have an impact on optimal H&S system performance. Therefore, organisations need to acknowledge the threat and rather invest in systems and procedures that will manage this difficulty in their H&S chain. HR recruitment and HR maintenance systems should incorporate individual risk-taking behaviour profile to job task matching in the correct selection of candidates for high risk job tasks. The model proposed in figure 2 of job task to risk-taking behaviour profile matching, if implemented, provides an ideal opportunity of limiting the impact individual risk behaviour could have on H&S management system performance.

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