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Incident Investigation: On a Collision Course towards a National Standardised Approach

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Abstract

The investigation of rail incidents is a highly specialised and important area within the rail industry. Historically training for investigators has been disjointed, with no standard approach being applied consistently. Currently in Australia, rail incidents are investigated by the various rail operators and regulators of each State, with the more serious incidents investigated by the Australian Transport Safety Bureau (ATSB). However, it is hoped with the introduction of a National Safety Regulator for the industry, a standardised competency framework for rail incident investigators can be developed. Consequently, this will also lead to more standardised training across the industry for these specialised career paths. A previous scoping report published by the CRC for Rail Innovation highlighted a need within the industry for a standardised competency framework and training package. Based on the results of the scoping report, a comprehensive Training Needs Analysis for the rail industry was undertaken. This paper will examine potential barriers and facilitators that the industry may face when implementing this national training. Furthermore, based on the results of the Training Needs Analysis, differences and similarities in the needs of rail organisations as well as between operators and regulators will be examined.

Introduction

Within the rail industry, rail safety investigations are considered vital to the advancement of safety, and are also a core component for the prevention of incidents reoccurring (Watson, 2004). However, the approaches currently utilised to train and develop investigators varies considerably between rail organisations. Previously, it was suggested that incident investigators would benefit highly from being trained multi-modally (Air, Rail, Marine etc). It was reasoned that the core competencies required to be considered a competent incident investigator could be generalised across the varying transport modalities. Thus, this provided a more efficient way to develop investigator training, with the addition of more specific, ad-hoc industry specialised content. This approach was adopted by several transport agencies including the US National Transport Safety Board, the Transportation Safety Board of Canada and the Australian Transport Safety Bureau [ATSB] (Braithwaite, 2004). However, outside of the ATSB, it has become apparent in Australia that there is a lack of training courses which comprehensively cover the entire breadth of competencies required in the Rail Industry. Further, these courses tended to be organisational specific, making analysis and cross-mapping of how these courses align to other organisations' difficult. The investigation of rail incidents is currently the responsibility of the rail organisations, as specified by the Rail Safety Regulators. The problem is this involves the application of different standards and varying policies of the jurisdictions under which each organisation works.

A previous Cooperative Research Centre (CRC) for Rail Innovation scoping report (Short, Kains & Harris, 2010) highlighted the rail industry's view that there was a greater need for the development of a pool of competent investigators. There were suggestions that the rail industry was currently lacking the ability to draw on skilled investigator resources. Further, there was consensus amongst the Australian rail industry that the development of this specialist role be beneficial and it would be an attainable goal as a new career pathway for incident investigators. The implementation of a national standard for training provided quality assurances of a high and consistent standard, also improving the credibility, development and mobility of incident investigators. The current training that is being undertaken by investigators involves a mixture of informal learning opportunities coupled with more formal courses and on-the-job experience. Further confusing the current training options, larger rail organisations have taken the initiative and begun to implement their own in-house training based around other, already existing training programs. In contrast other organisations have been outsourcing their training and development. As has become evident, the problem with the current methods for rail incident investigator training is, whilst there are several readily available courses already developed in the market, these courses do not have a standard approach to their quality and content.

The experience and relevant qualifications required for incident investigators are dependent on the level and severity of the incident being investigated. In the rail industry, incidents are classified at five different levels. Severe incidents are classified as level one or two. As an example, the tragic 2003 Waterfall incident in NSW which resulted in injury and the death of 7 individuals, including the driver, was classified as a level one incident. Incidents which are classified as level 3-5 are less severe in nature. For example, depending on the circumstances a near miss can be classified as a low level five incident. These incidents are generally investigated internally by rail organisations. Anecdotal evidence suggested that some of the rail organisations viewed investigations as an additional task, requiring all line managers and supervisors to be competent in conducting basic low level investigations as part of their job requirements.

As previously mentioned, the lack of comprehensive training methods led to rail organisations tailoring their own training to meet their individual needs. Because the application of safety policies and acts varied between the jurisdictions, this training method was seen to be appropriate. However, with the impending harmonisation of workplace health and safety acts across the Australian States and Territories, in addition to the introduction of a new National Rail Safety Regulations in 2013 whereby the ATSB will expand their operations to cover rail incident investigations, there is currently a strong need and support, within the industry towards the development of a standard approach to incident investigation training. The commonly held belief amongst the industry is that the development of a nationally standardised competency framework for investigator training would allow investigators to develop a unified and comprehensive skill set.

With strong agreement within the rail industry that a collaborative approach was required to develop a national competency framework for their incident investigators, a comprehensive Training Needs Analysis of the industry was commissioned by the Australian CRC for Rail Innovation. This research involved extensive consultation and collaboration with Rail Operators and Regulators in Queensland, New South Wales, Victoria, South Australia, Western Australia as well as representatives in New Zealand. Using the results from the training needs analysis, this paper will examine the barriers and facilitators affecting the implementation of a national training framework.

Training Needs Analysis

To determine what was required for rail incident investigators to perform their job, an industry wide training needs analysis was developed (Biggs, Banks & Dovan, 2012). A previous paper written by Biggs, Banks and Dovan (2012) provides a more in-depth examination of the Training Needs Analysis. The research utilised a modified-Delphi method, involving a combination of qualitative and quantitative data collection methods. The research consulted a panel of subject matter experts and the methodology was chosen as it provided a structured technique to gaining consensus from an expert panel (Hsu & Sandford, 2007; Keeney, Hasson & McKenna, 2001; Linstone & Turoff, 1975). There were four rounds of data collection involved in the training needs analysis, with information attained in the previous round re-presented to the subject matter experts.

Consultations were held with industry experts who were members of the project steering committee. These initial meetings were used to gain a better understanding of the context and background information pertaining to the highly specialised area of rail incident investigations. In addition, detailed information was sought to identify what competencies were needed to perform the tasks of investigation. Anecdotal evidence was collected from subject matter experts' regarding what training was currently being implemented, perceptions of the training needs, gaps in current training and future training needs based on job projections. These initial meetings were beneficial as it was relayed on more than one occasion that:

“I would like to see accident investigators have more career opportunities and be more homogenous in their approach to investigations. The problem lies in getting a curriculum up and running that can help facilitate this” (Informal interview comments stated by one organisation and similar responses obtained by 3 other organisations, 2012)

The initial information was analysed and re-presented back to the industry representatives for feedback. This time round, there were two points which started to become abundantly clear:

1. There was indeed a high demand for investigator training, however, the level of such training was still unclear
2. Current training options were too disjointed and there was no alignment to any standard approach

Once the obtained information was analysed, in conjunction with alternate information obtained from the ATSB Transport Safety Investigation Diploma and generic investigation content from the Australian Governments *training.gov.au* website, a revised list was created which included ten competencies with 94 knowledge requirements and 74 skill requirements.

Barriers and Facilitators to the Implementation of a National Competency Framework

The collective results obtained from the training needs analysis and consultations conducted during the data collect phase indicate that there is strong industry support for the development of a national training program and capability framework. This supported previously obtained anecdotal evidence which suggested:

“Having a standardised training program would increase the pool of applicants we can recruit from. Further, we can also outsource our investigations to an external investigator” (Short, Kain & Harris, 2010)

Underpinning the importance for the implementation of a national competency framework are the strong considerations required towards identifying factors which can have a limiting effect as well as those which can help facilitate the process (Belling, James & Ladkin, 2004). There are many hindering factors which can have an impact on the implementation of a national competency framework. Through the surveys and industry consultations, it became apparent that there were several influencing negative factors. Organisations that are moving through a change process should anticipate resistance to change (Brooks, 2009).

Barriers

Previous research examining organisational change determined that financial factors could act as both a barrier and facilitator towards the implementation process (Blake, Kohler, Rask, Davis & Vi Naylor, 2006). It was commonly reported during the consultations with rail industry experts, that there were widespread concerns regarding the funding available from industry, potentially having an influential impact on the implementation of a national framework. Currently, highly regarded training courses such as the 3-day ICAM (Incident Cause Analysis Methodology) course costs organisations substantial amounts of money, time and valuable resources. Alternatively, another highly regarded training course for rail incident investigators was run by Cranfield University in the United Kingdom. However, the cost for rail organisations to send their investigators to participate in these courses was reported to have a substantial negative impact on the regularity of organisation participation. The implementation of a national training standard needs to strongly consider the associated costs, in particular, the pricing of the training needs to be at a level which is not prohibitive for smaller rail organisations. Without procuring the necessary funds, and obtaining the

interest and investment from industry for the product, the implementation would be severely hindered.

Further, it was also identified that the organisational structure of the rail industry could decrease the effectiveness of any national implementation. The structures currently in place for the rail industry on the whole do not facilitate rapid change. These findings regarding the current structures not being conducive to rapid change is consistent with previous research into the barriers of 'silo structured' organisations (Cilliers & Grevenstein, 2012). Previous research found that similar silo structured organisations created, in some parts, an 'us versus them' mentality, often threatened by outsiders. This mentality was consistent with previous information that while there was no standard training as a whole for the industry, variables such as the different size and number of resources available for each rail organisation meant that there were some organisations who tailored training content to meet their organisational needs. Also consistent with theories of silo structured organisations, there was a distinct lack of effective communication between organisations (Cilliers & Grevenstein, 2012; Jones, Watson, Gardner & Gallois, 2006). This became clear during the industry consultations, where there were reports that different rail organisations were undertaking investigations in varying manners. This was also due to differences for rail operators and regulators based on the various State and jurisdictional standards, which had a strong effect on any effective collaboration. However, with the development of the 2013 National Rail Regulator, the industry as a whole has begun to move towards similar group objectives.

Another issue which currently impacts on the rail industry as a whole is the ageing demographic of their workforce. This factor required marked considerations, as previously obtained anecdotal evidence suggested that there was strong resistance from current investigators to go back to studying for a qualification. Because many of the individuals currently employed to undertake investigations were nearing the end of their careers, they reported that studying for them would be a waste of time. Specifically, it was made clear by one investigator that *'if I were forced to go back to studying, I would just take early retirement'*. Further adding to this apparent barrier to implementation, there was a perceptual fear from current investigators that new graduates and recruits would be taking over the specialised industry, further supporting the negative influences often associated with silo-structured organisations. Following on, as previously reported, there were also strong held beliefs that any potential training options afforded to investigators were not as important or beneficial as already gained rail industry experience.

Any new investigators who are entering the organisation need to have strong operational knowledge of the industry. Individuals entering the investigation setting on the back of a tertiary qualification will not be viewed as successful as those who have been in the industry. Experience matters. (Anecdotal evidence obtained from 3 rail organisations, 2012)

In addition, industry consultations confirmed that there were concerns held by current investigators over the need for training qualifications. This was consistent with previous research examining employee resistance to change which identified that it was common for individuals to perceive change as bad due to their perceptions that the change is not needed, not having faith in the change, or feeling threatened by the unknown caused by the changes (Armenakis & Harris, 2002; Brooks, 2009; Stanford, 2005). It became evident whilst interviewing many of the more experienced rail investigators that there was continued debate regarding the current experiences of investigators against the proposed tertiary qualifications. A commonly held message amongst many of the interviewed investigators was,

“It is important that investigators have operational experience in the rail sector. The key is to build your experiences from the get go. If there was a viable option for a practical component with the training, that would be beneficial. For us current investigators, any training options also need to have strong considerations towards Recognition of Prior Learning” (Structured interview questions with the rail industry, 2012)

Facilitators

The development of a collaborative approach to industry accepted training standards, was perceived to offer a number of potential benefits for both the rail organisations and individual investigators. In addition, the research also revealed that there were numerous factors which were helpful in facilitating the implementation process. Most importantly was the harmonisation of workplace health and safety legislation across Australian States and Territories. Coupled with the introduction of the new Rail Safety Regulations in 2013, there is an increasing need and demand in the industry for the development and implementation of a standardised framework for training. Further, results obtained from the interviews and surveys indicated that there were currently no suitable training options which covered all desired aspects of the industry, consistent with previous findings from the project’s scoping report. The development of a National standard framework would provide a training option which would be highly credible and consistent amongst the rail industry. As previously quoted, the standard training framework provides consistency for the investigators in the industry, in addition to increasing the pool of potential applicants.

The benefits of a standard training framework would also have a largely positive impact for individual investigators. As an example, this would mean that there was an increase in their ability to move between organisations, increasing their job opportunities, valuable industry experience and expanding their professional development. In addition, the benefits would also be substantial for rail organisations, as their ability to share resources, including more efficient means to share the cost of training development would increase. These benefits could be used to overcome the previously raised potential barriers surrounding finances. As an example, the highly regarded and successful courses for rail incident investigators run by Cranfield University in the United Kingdom, cost organisations substantial amounts of time and money to send their investigators overseas. By introducing a standard National framework, supported by the rail industry, the costs involved would not be as substantial. This stands to be the biggest organisational benefit, as it was reported that the time required for rail organisations to independently develop training curricula and resources can be very high. It meant that some of the smaller organisations did not have the necessary resources to train their rail investigators in a similar way to their larger counterparts. Therefore, the implementation of standard training would not only benefit both organisations and individual investigators, but the safety credibility of the investigators and the industry as a whole would also increase substantially.

To develop the framework for incident investigations, the methodology undertaken involved extensive industry consultations. In doing so, the relevance and accuracy of the content and commitment from organisations to the project was increased. This meant that there would be more industry support for the National framework as they played a key role in the development. Having the support of the industry was identified by Blake and colleagues (2006) to be a facilitator in the implementation process. They determined that commitment from management, coupled with staff involvement during discussions regarding the change process were both successful facilitators of any implementation. Further, it was made abundantly clear that there were concerns regarding the training qualifications by some of the more senior investigators. The concerns of current investigators regarding training courses

were mainly aimed at the higher level Masters qualification with the demand for a Certificate 4 qualification higher in comparison. However, the current training module being developed would take advantage of a spiral framework. This meant that training would be offered as a short course, at a Certificate 4 level, and for those wishing to add more to their qualifications, a Masters course would be available. In addition to these courses, the research sourced a Bachelor in Accident Forensics, being offered by CQUni Australia, who were also developing further Post Graduate Diplomas in specialised areas to be added to the proposed spiral module.

Whilst there was a strong appreciation for organisation/rail specific content and experience, the training needs analysis determined that there was less industry emphasis on the course based training containing components specifically related to industry capability requirements. This also suggests that the development of a national competency framework for rail investigators can be developed from already existing generic competencies established and certified under the Australian Qualifications Framework for training. While the proposed developed framework would provide a qualification, there was interest from some rail companies who were happy to provide potential practical placements. By introducing a professional standard for railway investigators, it has potentially provided an assurance of a higher consistency and standards for investigator job performance. In addition, the credibility of the industry as a whole would also improve.

The Future

Since the CRC scoping report was first undertaken in 2010, there is now a greater understanding within the Australasian rail industry regarding the importance of having a standardized approach to incident investigator training. As a consequence, the wheels are in motion and the industry is starting to move towards a standard competency framework for training. The feedback obtained in this project's training needs analysis indicated that there is a perception in the industry that it is essential for incident investigators to obtain training in generic capability requirements including elements such as being objective, using critical thinking and maintaining safety. Additionally, the training needs analysis identified a common perception amongst the industry that investigator training should cover the same content, regardless of whether the level of incident investigations for investigators was high or low. This suggests that the spiral framework should be applied, paralleling an increase in the depth of applied content with the advancement of the course.

While there is now agreement amongst the rail industry that the implementation of a national standard for training will be beneficial for everyone, there are still many obstacles to overcome. This paper has highlighted some of these potential challenges and has also indicated the factors which may assist in the development. With the National Rail Safety Regulator set to be enforced from 2013, the need for a standard training approach has never been greater for the industry. Given the importance, it is time for the industry to break from their current silo structures and begin working collaboratively with each other, the CRC, and industry representative bodies such as the ARA. The results obtained from the current training needs analysis has indicated that the rail industry as a whole has identified what they need in terms of incident investigations. The goal now is to continue their good work and collaboratively work towards a national standard for incident investigation.

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