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An Assessment of the Safety Culture of National Railways of Zimbabwe

By

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Research Article

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ABSTRACT

The purpose of the study was to assess the safety culture of the National Railways of Zimbabwe (NRZ). A qualitative research methodology was adopted for the study. Purposive sampling was used to select the study participants and the data was collected through focus group discussions and individual interviews. Twenty three unstructured individual interviews and eight focus group discussions were conducted. The interviews and discussions were guided by five safety culture indicators namely, leadership; two-way communication; employee involvement; learning culture; and attitude towards blame. The findings revealed that NRZ was relatively strong with respect to employee involvement but was very weak in the other four safety culture indicators. The study thus concluded that on the whole NRZ had a weak safety culture.

Keywords: organisational culture, safety culture; leadership; two-way communication; learning culture; blame culture; just culture.

INTRODUCTION

The fundamental objective of train operations of any railway system is to provide a safe arrival of goods and/or passengers. Safety is therefore a key objective of train operations and must, as of necessity, be an integral part of the corporate or organisational culture. Corporate culture comprises the pattern of values, norms, beliefs, attitudes and assumptions that shape the ways in which people in organisations behave and things get done (Armstrong, 2011). It encompasses aspects such as language, patterns of behaviour and interactions (Harvey and Brown, 1998) and reflects assumptions about the way work is performed, the acceptable and unacceptable work practices, and the behaviours and actions that need to be encouraged or discouraged (Mullins, 2005). According to Furnham and Gunter (1993), organisational culture is simply an adopted and acceptable way of doing things in an organisation so much so that if not adhered to the efficiency of the organisation may be significantly reduced. Safety culture as an integral component of the organisational culture affects the attitudes and behaviours of the members of an organisation in relation to health and safety performance (Cooper, 2000) and reflects attitudes, beliefs, perceptions, and values that employees share in regarding safety issues (Cox and Cox, 1991). A good safety culture enhances the performance of an organisation (Cooper, 2001).

Owing to the difficulty in defining safety culture in measurable terms researchers and practitioners have considered it more pragmatic to assess the safety culture of organisations on the basis of safety culture indicators. A number of sets of safety culture indicators have been developed, notably among them being Wiegmann et al.'s (2002) set which comprises four indicators as follows:

- **Organisation commitment to safety.** This indicator is concerned with the extent that safety is prioritised in the provision of organisational direction and allocation of resources. For example, the precedence senior managers place on espousing safety values, training and developing employees, and allocating funds for the maintenance and renewal of equipment and facilities.
- **Involvement of operational supervisors in safety related interventions.** This element relates to the extent that the line supervisors are involved and committed to the organisation's safety programmes, interventions and activities. This may, for example, be with regards to employee training programmes and total preventive maintenance programmes for equipment and infrastructure.
- **The organisation's formal safety system.** This aspect is largely concerned with safety communication and the effectiveness of the safety personnel. The indicator encompasses matters such as efficiency and utility of the incident reporting system, safety information dissemination and feedback mechanisms as well as the perceived effectiveness of and the respect for the role of safety practitioners.

- **The organisation's informal management system.** This element caters mostly for the unwritten ordinances regarding safety behaviour, reinforcement and reward: the so called 'unwritten ground rules'.

There has also been a trend towards the development of industry specific safety culture indicators and one notable set for the railway industry was designed by the Her Majesty's Railway Inspectorate (HMRI) of UK in 2004 for use in the development of a safety culture assessment toolkit for the railway train operating companies (TOC). The set comprises five indicators namely, leadership; two-way communication; employee involvement; learning culture; and attitude towards blame (Health and Safety Executive (HSE), 2005).

- **Leadership.** With respect to this indicator, senior management should play a leading role in developing and sustaining a positive safety culture by prioritising safety issues in all its decisions and actions. For example, the safety budget and disbursement of funds for safety issues should take precedence over all other expenditures.
- **Two-way communication.** A two-way communication system which is both vertical and lateral is considered most effective for the dissemination, exchange and feedback of safety information. For example, effective implementation of a railway train service requires collaboration and cooperation among departments such as the locomotive maintenance, permanent way, and train crew departments.
- **Employee involvement.** Employees are more likely to support in full those interventions in which they were involved from the planning stages than those in which they are 'romped' in at the implementation stages. Involvement of employees promotes a 'buy-in' and a sense of ownership among the employees that provide the necessary motivation for safety performance.
- **Learning culture.** A learning culture encourages organisation's members to learn from previous experiences by identifying the unsafe acts and unsafe conditions and then taking the necessary steps to remedy the situation. The learning culture can be developed through continuous reviewing and monitoring of safety performance and processes, effective communication and continuous feedback and sharing of information with and among the staff.
- **Attitude towards blame (blame culture).** Where there is a blame culture most employees would rather not report an incident than report and risk being blamed for the particular incident. Unless a culture that encourages reporting and learning from errors is developed there is a high risk of similar incidents occurring repeatedly (Whittingham, 2004).

Statement of the problem

Zimbabwe experienced an acute economic decline in the mid-2000s resulting in the Government failing to honour its financial obligations both internally and externally. The internal obligations included financial assistance to state owned enterprises (SOE) such as the NRZ. The resultant under-funding of SOEs has impacted negatively on the operations of NRZ with particularly adverse effects on the maintenance of the infrastructure and rolling stock. The track infrastructure, for example, is now in a serious state of disrepair with temporary speed cautions placed in many parts of the railway line as a measure to mitigate the safety hazards. The rolling stock is equally in a serious state of disrepair. Many of the locomotives, for example, operate without speedometers and this makes it difficult for the train drivers to observe the regulated speeds particularly over the speed cautions. A large portion of the wagon fleet has sharp wheel flanges making them easily susceptible to derailments. With such level of safety exposure in operating conditions, the ability of the NRZ to consistently provide a safe train service is now heavily reliant on the safety performance of the employees, train crews in particular. A good safety culture is believed to positively impact upon an organisation's performance (Cooper, 2001) and given its challenges NRZ requires a strong safety culture to be able to continue to provide a safe train service. It is therefore of paramount importance to assess whether NRZ's safety culture is strong or weak so that appropriate remedial action can be taken as necessary.

Objectives of the study

The objectives that guided the study were to:

- Assess whether NRZ has a strong or weak safety culture
- Identify elements of NRZ's safety culture that need strengthening
- Recommend strategies to address deficiencies in NRZ's safety culture

Conceptual framework

Organisational culture serves as a powerful lever in guiding the behaviour of members of an organisation in day to day activities in pursuit of the corporate goals (Cooper, 2001) and safety culture is the critical factor that encourages safe behaviour among the members (Wiegmann et al., 2007). An ideal safety culture propels the system towards maximum resistance against operational hazards (Reason, 1998) and a strong culture suggests

a common perception among members of an organisation on how things should happen with little room for nonconformity (Senior, 2002). Given its extent of safety exposure, NRZ needs a strong safety culture in order to

ensure that there is collective commitment among the organisation's members to consistently provide a safe train service. Practitioners and researchers have suggested various safety culture indicators on the basis of which the strength or weakness of a safety culture in a given organisation can be assessed. For example, Wiegmann et al. (2002) suggested organisation commitment to safety; involvement of operational supervisors in safety related interventions; the organisation's formal safety system; and the organisation's informal management system as the key elements that can be assessed. The HSE (2005) suggested that typical safety culture indicators for railway train operating companies should encompass leadership; two-way communication; employee involvement; learning culture; and attitude towards blame. Therefore an assessment based on such safety culture indicators would enable the study to determine whether NRZ's safety culture is strong or weak as well as identifying the specific aspects that should be improved in order to strengthen the safety culture.

RESEARCH METHODOLOGY

Design

The study employed a qualitative research design. The qualitative research design facilitates understanding of behaviours and perceptions of members of an organisation and, according to Marvasti (2004), it provides a detailed description and analysis of the quality or the substance of the human experience. The design was therefore adopted because in order to be able to assess the nature of the safety culture obtaining at NRZ it was necessary to obtain the necessary contextual insight regarding the experiences and perceptions of its members.

Data collection process

The study participants were selected through the purposive sampling technique. Purposive sampling is a judgmental sampling technique (Punch, 2005) that involves handpicking supposedly typical or interesting subjects (Baxter et al., 2001) who are likely to be knowledgeable and informative about the phenomenon the researcher is studying (Leedy, 1997). Thus, participants were purposively selected from key operating sections such as the permanent way maintenance section, the rolling stock maintenance section, signals and communication section, the operations management centre, train crew management section, and yard operations.

The data was solicited through unstructured individual interviews and focus group discussions. The five 'railway specific' safety indicators namely, leadership; two-way communication; employee involvement; learning culture; and attitude towards blame were used to guide the interviews and discussions. The unstructured interview approach was adopted for the study because it does not impose any limitations in the manner that the study participants express themselves. According to Bryman and Bell (2003), in an unstructured interview the researcher only has an interview guide or aide memoire listing the topics or issues to be covered only, without any specific questions prepared in advance. The interview guide serves as a reminder to the researcher for the main issues and topics that need to be covered and the respondents may answer the questions in any way that seems sensible to them (Fisher et al, 2010). The unstructured nature of the interview provided the flexibility to explore exhaustively all the pertinent and related issues.

Focus group discussions involve the researcher interacting with a number of people at the same time who share similar interests and concerns in order to work through an idea, issue, or problem that the researcher has selected (Kane and O'Reilly-DeBrun, 2001). The participants were allowed to discuss each issue thoroughly in order to capture their authentic experiences and perceptions. The researcher took notes during discussions and provided a summary of the salient points at the end of discussion of each safety culture indicator. An overall summary was provided at the end of the meeting and confirmation was received from the participants on the correctness of the recording.

A total of twenty three individual interviews and eight focus group interviews were held. The interviews were confined to the management and supervisory levels while focus group discussions were held with the operatives.

Data analysis

The five safety culture indicators were adopted as a priori codes. A priori codes are codes that the researcher may adopt or design before the data is analysed. The data was synthesised and systematically categorised according to the respective safety culture indicators. Each category was considered thoroughly to assess NRZ's strength or otherwise with respect to each safety culture indicator and thereafter an overall assessment of the safety culture was made.

RESULTS

The study revealed the following:

- **Leadership**

Most of the managerial staff interviewed indicated that management was sufficiently committed to safety and boasted of a documented safety management system with a comprehensive set of supporting safety rules. They however admitted that the commitment did not show on the ground because the dire financial position of the company prevented the organisation from adequately funding the safety programmes as well as rehabilitating and replacing the track infrastructure and rolling stock in order to meet the desired safety standards. For example, 'owing to lack of funds critical assets such as locomotives were operating in a dilapidated state; some of them with no speedometers and without the full complement of traction motors.' Equally the maintenance of the railway track was said to be under funded resulting in the track being in a 'serious state of disrepair, with many temporary speed restrictions throughout the railway system.'

Similar sentiments were expressed by supervisory personnel most of whom felt let down by management because it was 'just not easy to try and enforce the TWR (train working regulations) when management itself was failing to provide safe tracks, safe rolling stock and safe signalling system.' They indicated that the downgraded system made it difficult to enforce full compliance with the rules as the conditions for which the rules had been made had been seriously compromised.

The majority of the operatives such as train drivers and locomotive maintenance personnel indicated felt that management was less committed to safety issues. They felt management cared more about operational performance than safety performance. As one of the interviewees put it bluntly "the managers pretend that the system is okay and expect us to run right time: when you run late due to the temporary speed restrictions placed on the line they say you are awkward; and if you do not observe some of the cautions in a bid to try and please them and something goes wrong, they quickly throw the rule book in your face". The locomotive maintenance personnel pointed out that management often chastised them for delaying to repair and release locomotives back to operations despite the delays in getting the spare parts. One of them emphasised the point saying "they (management) are aware that we sometimes have to wait for incoming locomotives to 'cannibalise' parts in order to repair and release the locomotives back to operations yet they complain if targets are not met." According to most of the operatives, management were aware that rules were regularly violated in order to keep the trains running and were not bothered as long as nothing goes wrong. The movement of trains over the centralised train control (C.T.C.) system which has virtually collapsed throughout the railway system was among the cases cited as instances where rules were no longer consistent with the reality on the ground and were thus violated with management's tacit approval.

On visibility of management, the managerial respondents revealed that managers were quite in touch with the field operations and indicated that managers conducted line tours regularly though the frequency of the tours differed according to managerial levels with lower managers being required to be more visible. This was confirmed by many of the supervisors and operatives. Most of them however, indicated that the line tours had become of very little value because the same safety concerns had been repeatedly raised with the managers with no redress.

On the structural organisation, the study revealed that the head of the Occupational Health, Safety and Environment had over the years been moved down the hierarchical ladder. From being a full departmental head the position had been degraded to a section head as a consequence of the organisation's restructuring strategy. Most of the interviewees felt that the downgrading of the Safety Manager suggested that the safety function was less important than other functions that had retained the full departmental status. In one focus group discussion the members actually indicated that "for safety issues to be treated with the seriousness they deserve the Safety Manager must be treated like the Chief Internal Auditor and report directly to the General Manager (Chief Executive Officer)".

- **Two-way communication**

On the whole, all levels of participants indicated that downward communication from the management to the front line staff was positive and that a written safety policy was in place and was accessible to every employee. Furthermore, company-wide and local safety warnings and advices were regularly posted as necessary. For example, the train crews advised that there was a daily instruction book in which all safety issues affecting their respective sections were entered and it was mandatory for every train crew member to peruse the instruction book when signing on for duty. Safety posters were posted on strategic places such as locomotive cabins, shunters' cabins, train control rooms, etc. It was also revealed that all important safety advices were posted on the weekly notice / publication.

The feedback system from the operatives and supervisors to the managerial ranks was indicated to be weak. Most supervisors expressed frustration in that their weekly system monitoring reports were not discussed

with their respective section managers nor was any action taken on many of the issues raised therein. One supervisor said “even if I simply changed the dates on my weekly reports and submitted the same report repeatedly I’m sure no one will notice because the reports are simply filed away without reading”. Another long serving supervisor, expressing frustration over non-action of their reports, had this to say: “these guys (management) come here as trainees, we teach them the job, they get behind the desk and start reading about the railways and they think they now know everything: you know what? They are just railway employees – in fact mercenaries – ready to move anytime. Us, we are railwaymen – this job is our life: we talk with the sleepers, the wagons and locomotives daily and know exactly what the system wants. We will see who wins.” Such comments are indicative of a frustrated workforce crying out for a meaningful engagement with their superiors.

Most of the respondents indicated that there was minimal horizontal communication because of the strict functional protocols that have to be adhered to. This undermined the effective flow of safety information and collaboration among departments. Some respondents also indicated that the ingrained regimental approach was particularly counter-productive in cases of emergency because some members of staff only responded promptly if the distress call was channelled through the traditional chain of command. For example, as revealed in one of the focus group discussions, a train controller who had received a report of a serious train accident had concluded that a breakdown train would be required to attend to the incident and immediately advised the running shed supervisor to mobilise the breakdown train requirements. The running shed supervisor did not, however, respond immediately choosing to wait for formal instructions from his ‘boss’ who was not readily available owing it being a weekend. As a consequence there was an inordinately extended delay to the recovery process and resumption of normal service. Under different circumstances such inept response to emergencies could cost lives.

- **Employee involvement**

The study revealed that employees were primarily involved through their representatives at either trade union level or at safety committee level. The operatives were generally satisfied with such involvement because the two levels of representation were better placed to negotiate or represent their collective interests, with the trade union looking after the company-wide safety issues and the safety committees handling local safety issues at plant, department or section level. The employee representatives were involved in planning and implementation in safety activities such as of safety audits, safety awareness campaigns, work safety analyses and risk assessments. Both the supervisory respondents and the operatives were satisfied with the nature and extent of employee involvement.

Most of the managerial respondents were equally satisfied with the nature of employee involvement. A few of the managerial respondents, however, argued that trade union involvement put safety issues up for negotiation and compromise. They questioned the wisdom of negotiating safety issues and indicated that developing safety rules and setting safety standards should be a managerial prerogative with the affected employees invited to participate on specific issues as decided upon by management. Such an approach, apart from being considered confrontational, overlooks the fact that rules are only effective to the extent that employees are willing to consistently adhere to them: if they are not willing they will simply devise ways and means to circumvent them. This notwithstanding, involvement through trade union representation and safety committees is likely to engender collective commitment to safety within the organisation.

- **Learning culture**

According to most of the operatives and supervisory respondents, NRZ did not learn from previous accidents. They supported this assertion by pointing out that management had sanctioned the operation of cross-trippers as a normal form of operation when it is on record that many of the serious and/or fatal train accidents that NRZ has experienced involved cross-trippers and the working conditions of these trains were repeatedly identified as major contributors to the train accidents. The train crews in particular, felt that management was only interested in the operational performance of the organisation and had little, if any, regard for their safety. The respondents decried the fact that management was actually paying an incentive to get the train crews to volunteer for the cross-trippers. The despondency among the operatives was summed by one of them who said “these guys (management) are taking advantage of the harsh economic conditions to get us to accept this blood-money: it’s wrong and they know it – sooner or later some people will lose their lives and families will be left without bread winners”. The operatives also indicated that recommendations from other serious accidents had not been followed through leaving the system exposed to similar safety hazards that had caused the accidents.

The managerial respondents acknowledged the failure of NRZ to follow through on some of the recommendations arising from the accident investigations and cited financial constraints as the major limiting factor. The managerial staff, however, defended the continued use of the cross-trippers on the basis of their effective utilisation of locomotives and speedy delivery of consignments. They indicated that management had

strengthened the supervision of the cross-trippers to mitigate against the safety risks. The position taken by NRZ management is a classic example of safety being subordinated to other operational objectives.

- **Attitude towards blame**

The operatives felt that management always blamed train crews whenever there was a train accident without taking into consideration of other factors. They felt that this was a deliberate approach by management in order to protect themselves from 'blame or prosecution'. In one focus group discussion, the following example was given:

"A train is derailed and the investigation reveals that the train was travelling above the regulated speed over a portion of line where a temporary speed restriction had been placed three months previously owing to a faulty track. The locomotive hauling the train did not have a working speedometer. The line is attended to thereafter"

Verdict: "Train driver was guilty of over-speeding and so demoted for a given period as punishment."

The participants then raised the following questions:

"What about the person who failed to provide a working speedometre to enable the driver to accurately monitor the speed of the train?"

"What about the person who failed to attend to the track fault for three months?"

The participants indicated that the reason why the rest of the role players were not penalised is that the issue could end up finding fault with top management.

Most of the supervisors confirmed that the operatives strongly felt that they were singled out for blame and targeted for punishment whenever accidents occurred even if the unsafe acts were induced by systemic deficiencies. One supervisor indicated that some graffiti in one of the tool-box rooms which read '**rule 1 for all and all for rule 1**' summed up the feeling of operatives. (Rule 1 in the TWR reads 'The first and most important duty of every member of the staff is to provide for the safety of the public and employees. Every endeavour must be made to avoid irregularities in the running of trains and to prevent accidents and damage to property.' Most of the supervisors agreed that the majority of the operatives, train crews in particular, felt that they were needlessly blamed each time there was a train accident). Some of the supervisors sympathised with the train crews observing that the crews were needlessly exposed to unsafe conditions while others felt that the train crews needed to be extra cautious because they were warned in advance over the state of the equipment and infrastructure.

The managerial respondents, however, maintained that they did not unnecessarily blame the frontline staff. They indicated that the state of the infrastructure had been communicated to all concerned and it was therefore imperative that everyone involved should take due care.

The study also revealed that although reporting of accidents and incidents was adequately provided for in the general procedural manual and the respective departmental manuals as necessary, not all accidents were reported. Most of the operatives indicated that only accidents that could not be 'hidden from management' were usually reported. Hence none of the near misses and other minor accidents, such as minor derailments that the operating personnel were able to handle without raising any alarm were reported. The operatives indicated that if they reported the accidents they risked getting themselves into problems unnecessarily because although "everyone is aware of the unsafe conditions under which we work, when things go wrong it's us who have to face the music". Another view raised by the operatives was "if we fix the problem ourselves it's a win-win situation: we stay out of trouble and the job gets done on time, but if we report it's a lose-lose situation: we get into trouble and the job is delayed". Such blatant violation of standing procedural orders signifies a climate of mistrust and rule of fear.

The managerial respondents professed ignorance of the fact that some accidents were deliberately not reported. This is indicative of a management which does not want to face up to reality or is simply out of touch with reality. Such an approach limits the organisation's capacity to develop a strong safety culture.

CONCLUSIONS

In terms of the five safety culture indicators NRZ is only relatively strong with respect to its employee involvement mechanism whereby employees participate through trade union representation and safety committee representation but very weak in the other four safety indicators. Management commitment to safety was largely rhetoric. The relatively impressive demonstration of leadership in terms of budget allocation for safety issues and setting up the necessary structures, procedures and processes to manage safety is seriously undermined by the failure to translate these efforts into visible safety interventions resulting in a marked gap between 'rhetoric' and 'reality'. Under pressure to perform, management has placed operational expediency ahead of safety

considerations. The Safety Manager's position is too junior to effectively influence corporate policy and objectives. It was therefore concluded that leadership was weak. It is imperative for management to take

proactive steps to plan, organise and implement strategies that prioritise safety performance and minimise production-safety conflict (HSE, 1999).

Communication was characterised by a relatively strong one-way communication system with a comprehensive safety policy and set of safety rules but is seriously weakened by a lack of a feedback mechanism and ineffective lateral communication. This undermines the free flow of safety information from the frontline staff to the decision makers as well as retarding collaboration among support functions. The overall assessment of the communication network concluded that the communication was ineffective. Accordingly measures to instil an effective communication system that will provide the necessary knowledge and understanding to prevent risky behaviours and enhance safety culture (Vecchio-Sadus, 2007) must be explored.

The study also concluded that NRZ was not a learning organisation as evidenced by the continual use of cross-trippers for normal operations notwithstanding their propensity to accidents. This has deeply polarised the safety values between management and the rest of the employees the latter believing that management were deliberately and expediently disregarding 'lessons' from previous experience. An organisation with a strong culture learns from its errors and identifies the true root causes (International Atomic Energy Agency, 2002) so as to institute effective and mutually acceptable preventive or mitigatory measures.

The ingrained blame culture has further alienated management from employees resulting in the emergence of deeply contrasted values and perceptions on key safety issues such as reporting and investigating of accidents. Management expected the employees to report all accidents and incidents as provided for in the procedural manuals yet the employees made every effort possible to 'hide' accidents and incidents whenever possible because of fear of reprisal. Employees must not be afraid of punishment in admitting a mistake (International Atomic Energy Agency, 2002) if a strong safety culture is to be attained.

On the whole, therefore, the study concluded that NRZ had a weak safety culture.

RECOMMENDATIONS

In order to strengthen the safety culture it is recommended that NRZ management should:

- Enhance its commitment to safety issues and secure the necessary funds to finance the safety budget and take concrete steps to address the safety deficiencies bedevilling the organisation.
- Improve the communication network and develop a feedback mechanism through which safety information can be channelled by frontline staff and take appropriate measures to enhance horizontal communication in order to facilitate interdepartmental collaboration.
- Ensure that NRZ develops a learning culture. There should be a thorough follow through on all recommendations regarding the improvement of safety performance so that the train working regulations remain consistent with operational realities.
- Eradicate the 'blame culture' and replace it with a 'just culture' which recognises that the human errors are usually symptoms of deep rooted systemic safety management deficiencies.
- Consider upgrading of the Safety Manager's post so that it is placed at a level where the incumbent can directly and effectively influence corporate policy and objectives relative to safety issues.

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