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Issues with Voluntary Reporting by Train Drivers and Their Impact on the Railway

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ABSTRACT

For organisations to take preventive measures and eliminate potential accidents, the information gained through voluntary reporting is essential. Employees do not, however, report voluntarily for a number of reasons. In this study, we examine why train drivers, who are vital to maintaining rail safety, fail to report hazardous occurrences, leading to employee silence. The measurement tool, which has already been developed specifically for aviation employees, has been applied to 346 train drivers working on Turkish Railways. The scale used for research purposes has proven to be valid and reliable for organisations involved in railways. As a result, it was determined that the drivers did not participate in voluntary reporting due to relational and prosocial, disengaged, quiescence and acquiescence and fear and defensive factors. The highest score for the reasons for non-reporting was observed in the dimension of quiescence and acquiescence. The results of the correlation analysis between dimensions, which are assumed to be the reasons for non-reporting, point to strong positive relationships between each dimension.

KEYWORDS

organisational silence; voluntary reporting; railways; transportation; safety management system.

1. INTRODUCTION

The railway industry has evolved into a complex area where capacity and speed have increased and operations have diversified with technological developments. This led to different points of view on safety, the development of new systems and models [1]. Although the railway has significant advantages over the road in terms of accident risk, the railway industry has a structure in which potential accidents that may occur during operations could result in large fatalities, severe financial and psychological losses just like in industries such as aviation, health, mining and energy [2–5]. Industry stakeholders are aware of the image their institutions will lose in the event of an accident and the importance of the compensation payable. Beyond material loss, irreparable events such as loss of life also increase the importance of safety. In all safety-critical industries, organisations are not putting safety management on hold. Issues are considered from a 'safety first' perspective. International, institutional and sectoral measures are increasingly being taken to deal with accidents and undesired events. In this context, it is crucial to build mechanisms for the prevention of accidents in railway organisations to properly run these systems. For example, with the European Union's "Rail Safety Directive", the issue of Safety Management Systems (SMS) has become an international binding issue. The main tool in the SMS is the voluntary reporting system [6]. Voluntary reporting systems are the most significant system in terms of producing useful data on railways safety.

Voluntary reporting plays a significant role in SMS specific to railways, as it does in the aviation industry. Such that, the Railway Safety Directive [6] defines SMS as "Procedures to ensure that accidents, incidents, near misses and other dangerous occurrences are reported, investigated and analysed and that necessary preventive

measures are taken" with the heavy focus on reporting incidents before an accident occurs. It highlights the importance of the issue and the need for safety systems and procedures. Reporting serves as a crucial channel of communication between management and employees in this situation. Due to regulatory requirements or to operate insurance, employees are more likely to apply for mandatory reporting. Even though mandatory reporting offers significant safety data, it is insufficient to provide a complete picture. Reporting incidents that fall outside of the reporting requirements is crucial, meaning incidents that do not result in serious failure or damage of people or equipment but have all the ingredients for an accident to happen or are on the verge of happening. The voluntary reporting of non-injury accidents, unsafe events and near-misses is seen as a very significant data source for proactively anticipating hazards, detecting new ones and developing preventative strategies [7].

Even though the written norms and rules, e.g. SMS definition of the Railway Safety Directive [6] have been developed and systems have been created in terms of procedures, it is the human resource that will complete the relevant paperwork. In other words, preventive reporting depends on the employees to report unsafe events other than accidents, which must be recorded due to their potential consequences [7]. The literature lists organisational requirements that must be met for voluntary reporting to occur at the desired level/reflecting reality. Reason [8] identifies five key components for establishing a culture of reporting: (1) protection from disciplinary action; (2) confidentiality; (3) separation of the agency collecting and analysing the reports from the regulating authority; (4) quick, useful, accessible and understandable feedback to the reporting community; and (5) ease of reporting. In a different study on the organisational design viewpoint on reporting schemes, Lucas [8] identifies four factors: (1) the type of information gathered; (2) the uses of information in the database; (3) analysis tools to collect and analyse data; and (4) the structure of the scheme (e.g., centralised or local, mandatory or voluntary). Although there have been research on organisational aspects, little is known about reporting from an individual standpoint [10].

Through voluntary reporting systems, it is possible to report events and unsafe situations that are not yet in danger but may enter the future, which seems unimportant for the time being. However, studies show that for a variety of reasons, employees avoid voluntarily reporting by remaining silent [11]. Depending on numerous sociological and psychological factors, employees feel reluctant to share or record any information about an unsafe event. van der Schaaf and Kanse [12] list the reasons of voluntary non-reporting: (1) fear of disciplinary action (as a result of a "blame culture" where those who commit an error are punished) or other people's reactions (embarrassment); (2) risk acceptance (incidents are part of the job, cannot be prevented; the "macho" perspective); (3) useless (perceived attitudes of management taking no notice, not likely to do anything about it); (4) practical reasons (too time-consuming; too difficult). Other studies [7, 13, 14] have looked at the causes of non-reporting, but only one has employed a valid and reliable scale to measure the reasons of voluntary non-reporting [15].

The mentioned scale's adaption to the railways context is believed to have a substantial impact on enhancing rail safety. Because of their crucial position in the operational process and threat to safety posed by their actions and inactions, train drivers attract attention as vital employees in a potentially dangerous situation. Therefore, understanding the reasons of the non-voluntary reporting of the aforementioned railways employees is valuable. Because voluntary reports that are rich in quantitative and qualitative terms seem to be essential to the achievement of railways safety. This study addresses a topic that has not received much attention in the body of literature specifically devoted to railways, namely voluntary non-reporting/silence behaviour of train drivers working in the railways. The primary goal of the study is to identify the factors that prevent Turkish drivers' voluntarily disclosing railways safety issues.

We hope that our study will add to the body of literature by validating a scale that had previously been developed in the context of aviation, applying it to the context of railways and revealing the reasons for not reporting with a methodically more robust structure. On the other hand, we believe that by understanding the reasons why employees choose not to report, practitioners will be better able to assist organisations in knowing their workforce, recognise the barriers to reporting and work to eliminate them.

2. THEORETICAL BACKGROUND

The notion of organisational silence was first brought to the organisational behaviour literature by a group of researchers in the early 2000s, despite the fact that it is based on numerous theories and models in the con-

text of organisational theory and sociology disciplines [17–19]. The concept does not imply that a member of the organisation should be quiet because they have nothing to say, but rather that they should keep quiet for a variety of reasons even though they have something to say or an idea to share. In their initial study outlining the conceptual framework, Morrison and Milliken [16] defined the environment of silence while also providing a theoretical foundation for the concept of silence in organisations. They claim there are two ideas that dominate the organisation and define the climate of silence. These include: (1) Expressing an opinion is not worthwhile; (2) Expressing an opinion and being curious are both risky. The first case in this instance concerns the employee side, while the second concerns the managerial side. According to the model, the managers' implicit beliefs and fear of negative feedback, which are shaped by various environmental and organisational factors, are reflected to the whole functioning of the organisation and the structure, policies and managerial approaches of the organisation, prepare the ground for a climate of silence. In addition, this climate is reinforced by the silence of employees due to certain concerns and thoughts.

As a result of an extensive literature analysis, Pinder and Harlos [17] classified the silence behaviour of employees into two groups as quiescence and acquiescence silence and provided a model for why employees chose to remain silent. Premeaux and Bedeian [19] conducted an empirical study to determine the effects of individual and contextual factors on breaking silence. As a result of this study, they determined low self-monitoring, internal locus of control, self-esteem, top management openness and trust in supervisor as factors that break the silence. As opposed to the claim that 2The voice and silence may seem to be polar opposites because silence means withholding ideas, while voice refers to expressing ideas about important issues and problems in organisations,2 Dyne et al. [18] argue that the issue is not that straightforward. They presented a conceptual framework that proposes these two constructs should be thought of as complex and multidimensional in nature. According to employee motivations, they identified a distinction between three forms of silence: acquiescent, defensive and prosocial silence. According to the authors, silence/voice behaviour has different consequences for employees in work organisations. Employee silence is classified by Brinsfield [20] into six categories: relational, defensive, diffident, disengaged, ineffectual and deviant. Yürür et al. [21], who studied the differences between acquiescent, defensive and prosocial silence, argue that these types of silence do not cover all of the motivations that drive the silence behaviour. The authors drew attention to the existence of deviant silence in organisations, which is defined by Brinsfield [20] as deliberately harming the organisation, colleagues and managers. Silence behaviour in this context may result from a variety of reasons related to nations, industries and organisations.

Çakıcı and Aysen [22], on the other hand, discussed the silence behaviour of managers. By interviewing the managers and the individuals who the managers collaborate with, a qualitative study was carried out in their study. The study's findings show that the manager's silence can be problematic and the key factors contributing to this are the manager's and subordinate's individual traits, organisational traits, the quality of relationships and perceived risks for both managers and observers.

The employees' unwillingness to participate in voluntary reporting activities is a significant, concrete signal of silence behaviour that is influenced by a variety of factors. Mandatory and voluntary reporting, an essential safety enhancing activity, are crucial, especially in organisations that operate in high-risk industries. In their study, Under and Gerede [23] consider avoiding from voluntary reporting as a silence behaviour. An important system for reducing and preventing accidents and incidents in railway operations is reporting in accordance with international standards. The train drivers play a significant role in ensuring that the system works properly. As the drivers are responsible for the control of a moving train while they are working, they may encounter many events that threaten safety and have a high or low level of risk. The fact that drivers do not report situations, acts or events by remaining silent seem to be a crucial research area in this respect.

The historical process reveals that rail transportation is in a continual state of development, with its own set of regulations, benefits and disadvantages [4]. It can be observed that the industry is undergoing a dynamic development process, one that makes use of a broad variety of technology, from steam locomotives to maglev trains. The importance of safety as a central tenet has not changed during this process [24].

In the majority of countries until the 1990s, the railway industry was a state monopoly. To improve the economic performance of the railways, liberalisation and privatisation initiatives have been started in the past two decades. The aim of liberalisation and privatisation is to increase the economic performance of railways without jeopardising their safety performance. Prior to Turkey's high-speed train service beginning in 2009,

the establishment of SMS became more prominent. With the liberalisation in 2015, it has been made compulsory for railway undertakings and infrastructure managers. In 2018, Turkish State Railways obtained its Safety Certificate for the first time. In 2021, safety goals were established and Risk Analysis Software was put into use for reporting and analysis of risks.

Safety has been treated as a serious management concern and all railway stakeholders have consistently developed and applied safety management practices. Despite the perception that train travel is a safe means of transportation, it is unavoidable that any operational disaster will result in significant financial and psychological costs. Despite the existence of comprehensive standards and documentation for safety in every railway organisation worldwide, the involvement of human resources in the system remains a significant area of concern. Engagement of employees in the reporting system in organisations is the key component in reaching the desired degree of participation. In the related literature, reporting concerns are a major subject. To begin with, in order for individuals to report potential issues before the event occurs, certain conditions must be met [25]. The first requirement for reporting is that the individual must be aware of the event/circumstance. Then, in deciding whether or not to report the problem, the individual must choose the action "notify" and finally take action. The decision to report, which is influenced by a number of variables and the value of awareness, intersects with silence behaviour in this instance. At this point, analysing the causes that motivate the individual to remain silent is crucial. The behaviour of the train drivers, who are undoubtedly the most important actors in the process and the failure to report voluntarily may have detrimental consequences in railways activities where safety is at a high level. The primary administrators of a train in motion are its drivers. In terms of safety, operating trains is one of the most critical functions in the railway industry. To prevent accidents, the behaviour and actions of this employee group performing such a task should be examined. These reports provide critical information to managers and decision makers regarding hazardous situations that would otherwise only be known to train drivers. Based on these reports, the overall safety performance of the railways can be improved by taking necessary measures and making recommendations to prevent similar incidents in the future [13].

Like other means of transportation, railways prioritise safety above all else. International associations and agencies encourage railway organisations to establish a culture that values safety at every level of the organisation and to publish legally binding guidelines on specific concerns as a result or instance, ERA (European Union Agency for Railways) has conducted the Common Occurrence Reporting (COR) project to foster more cooperation and coordinated action among nations and railways on this matter. The primary goal of the project is to develop a common plan for the reporting and sharing of safety incidents for the railway industry in Europe [26]. While these efforts ensure that the system is established and operated effectively, it is crucial to look at the human resource working in railways from a behavioural perspective in order to reveal whether or not it is an effective member of the established SMS.

In their study that examined the precursors of accidents that occur in metro railways, Kyriakidis et al. [27] emphasised the critical role that these precursors play in lowering the chances of accidents, conducting hazard analyses and creating safety measures. One of the outcomes of this study was to establish a culture where all employees support the provision of safety. According to Park's study of the Korean railway industry [14], blame culture, complicated process, complacency and a lack of confidentiality are the main causes of under--reporting or non-reporting. In his study of organisational factors that affect the likelihood of train drivers to report incidents that they can experience while on the job, Clarke [7] defined 12 different types of incidents. At the end of this study, the reasons given for not reporting included thinking that such incidents were just a routine part of the day's work, choosing to call the signalman or inform an inspector instead, thinking that nothing would be done about such incidents even if they were reported, worrying about causing trouble for someone, viewing reporting as unnecessary paperwork and assuming that managers would pay no attention. The study also reveals that the highest barrier to reporting behaviour of train drivers is the managers' attitudes and behaviours toward safety-related issues. They concluded that train drivers intend to underreport incidents when they believe that the management has negative attitudes toward incident reporting or when they believe the reports will be disregarded or no action will be taken. The relevant literature reveals that the safety system will suffer if employees believe that managers have a poor attitude toward safety. Furthermore, a positive safety culture encourages reporting and other safety-supporting elements [24–28]. On the other hand, safety systems based on trust and secrecy will also promote reporting continuity [29].

3. METHOD

In this section, the purpose of the research, the population and its sample, the data collection tool, the data collection process and how the data were analysed are explained in detail.

3.1 Purpose of the study

The main objective of the study is to reveal the reasons why drivers in Turkey do not voluntarily report. To accomplish this, a measurement tool developed by Under [15] to determine the reasons why aircraft maintenance technicians do not voluntarily report was used and Confirmatory Factor Analysis (CFA) was performed with the data obtained from the train drivers. Trying to find out whether drivers voluntarily report unsafe occurrences or safety-improving suggestions in real life is another goal of our study. Additional study objectives include identifying the relationships between the factors that prevent drivers from reporting voluntarily and determining whether voluntary reporting averages vary in terms of variables.

3.2 Population and sample

The population of the study consists of train drivers actively working in Turkey. As of 2022, there are 3403 drivers working under the Turkish State Railways in Turkey. The crucial role of the relevant employees in ensuring the safety of rail systems is the main determinant that led to the selection of the population in this manner. In this context, both TCDD, the train drivers' employer and the associations the train drivers themselves established were contacted for assistance in gathering data. On the other hand, it was requested that the train drivers who were contacted using the convenience and snowball sampling methods spread the questionnaire among colleagues. To include more participants in the process, the questionnaire form was developed both online and in print. As a result, between May 2022 and November 2023, 450 persons were contacted and data were collected from 346 train drivers who were actively employed in Turkey. The data from these 346 participants were then analysed.

3.3 Data collection tool

Information regarding the study's purpose was provided at the outset of the questionnaire. It was made aware that taking part in the survey was absolutely voluntary. It was made clear that the participants might leave the study at any time, that the survey did not ask for any information that would reveal their identity/position or their employer and that the information gathered through the questionnaire would only be used for scientific purposes. The individuals' voluntary consent to participate was then obtained.

Three sections are included in the data collection tool. Using a scale developed by Under [15] to determine the causes of voluntary non-reporting (VNR) of aviation employees, the reasons of VNR were examined in the first section. The scale includes 25 items and 4 dimensions. A 5-point Likert scale was used to gauge the participants' responses (1: Absolutely disagree; 5: Absolutely agree). In the second section, participants were questioned about whether they had ever experienced an unsafe incident or safety hazard and whether they had ever reported it. Demographic information about the participants were collected in the third section.

3.4 Reliability and validity

The properties of the measure are determined to guarantee that measurement error is maintained to a minimum and that the measure is performing as intended. The initial property is reliability, which is the degree to which a data collection tool produces consistent results or achieves the same results under the same conditions [45]. Cronbach's alpha, the most widely recognised measure of scale reliability, is employed for this purpose. *Table 1* displays the values pertaining to the VNR scale's factor structure. The scale's total Cronbach alpha reliability coefficient was discovered to be 0.893. *Table 1* provides detailed information regarding the item numbers and Cronbach alpha values of each factor.

The scale and the results are very reliable, according to these Cronbach alpha values [30]. Moreover, item-total correlations show that each factor has the desired levels of reliability. On the other hand, validity, which is defined as whether an instrument measures what it was intended to measure, is the second property of a measure [45]. Since the purpose of this study was to validate an already-existing construct, construct validity—which involves determining whether test results accurately reflect a target hypothetical construct—was tested [46]. CFA was used to evaluate the construct validity of the VNR scale produced by Under [15]. CFA

Table 1 – Factor structure of the VNR scale

Factor	*N* of items	Factor load value (range)	Item total correlations	Alpha reliability coefficient
Relational and Prosocial	7	0.568?0.802	0.336?0.713	0.876
Fear and Defensive	4	0.716?0.870	0.622?0.838	0.897
Quiescence and Acquiescence	5	0.602?0.855	0.360?0.748	0.831
Disengaged	6	0.436?0.725	0.162?0.530	0.728
KMO Value	0.858			
Bartlett Sphericity Value	χ^2=3228.234, p<0.00			

is used to validate a predicted or established structure. CFA gives statistical information on the agreement or dissonance between the (suggested) model describing the relationships between latent variables and the obtained (observed) data [31].

The sample of train drivers with first and second level CFA was utilised to verify the four-factor structure proposed by Under [14] for this purpose. According to Meydan and Sesen [32] and Çokluk et al. [31], the acquired goodness-of-fit statistics give the chance to comment on how well the data set fits to the previously identified factors.

The fit values are shown in *Table 2*. The second level CFA's Chi-square/DF was discovered to be 2.892. According to Meydan and Sesen [32], a Chi-square/SD ratio under 3 is regarded as a perfect fit. RMSEA is measured to be 0.080, GFI to be 0.848 and CFI to be 0.875. The modest level of fitness, which is consistent with the first-level analysis, can be explained by the small sample. The fit indices from the second level CFA, which contained the latent variable of VNR, were taken into consideration and it was decided that the four latent variables (relational and prosocial reporting – RPR, fear and defensive reporting – FDR, quiescence and acquiescence reporting – QAR, and disengaged reporting – DR) together explain the latent variable of VNR.

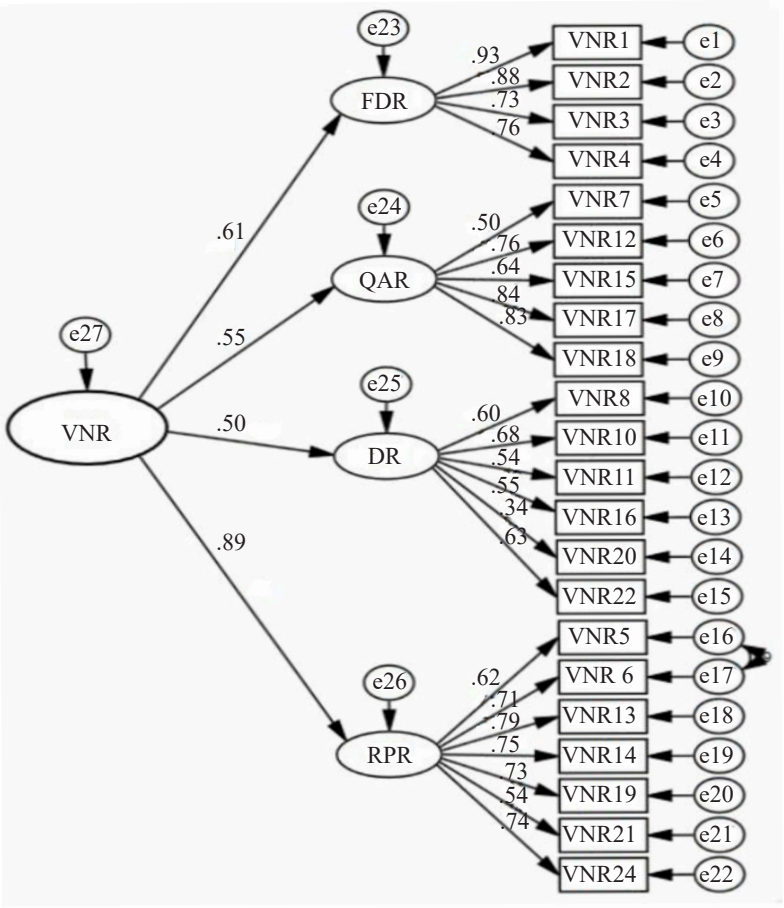

Figure 1 – Second level confirmatory factor analysis

Table 2 – Goodness of fit values resulted from second level confirmatory factor analysis

Chi-square/df	GFI	CFI	RMSEA
2.892	0.848	0.875	0.080

In other words, the current study found that the structure suggested in Under [15]'s earlier work for aircraft technicians is also valid in the context of train drivers. The findings for the second level CFA are presented in *Figure 1*.

4. FINDINGS

4.1 Sample characteristics

The study has 98% male participants. When the participants' ages are looked at, it can be discovered that 63.6% of them are 35 or older. Regarding their educational backgrounds, it was found that 49% of them had undergraduate and graduate degrees and that 70% of the participants had professional experience spanning five years or more.

On the other hand, the participants were asked, "Have you made any voluntary reporting of any unsafe event or a safety-enhancing proposal that you have witnessed before?" in order to determine whether they actually engage in voluntary reporting. A significant portion of the participants, 33%, responded that they had come across unsafe circumstances, but had chosen not to report them.

4.2 Reasons of voluntary non-reporting

Table 3 displays the 22 VNR scale items and the four dimensions (non-reporting based on relational and pro-social, fear and defensive, quiescence and acquiescence and disengaged) that were administered to 346 train drivers. The table also presents the factor means, item means and standard deviations for each of the 22 items.

The dimension of "Non-Reporting Based on Quiescence and Acquiescence Silence" with a mean value of 3,671, is the biggest barrier for not reporting voluntarily among drivers working in the railways. In this regard, in order to improve railway safety, it is crucial to identify the reason why the drivers accept the poor positive reporting culture and frequently submit to it. The answer to the posed question is hidden in the scores given to the items under the pertinent dimension. The highest value under "Non-reporting based on quiescence and acquiescence" dimension belongs to the statement of "I do not report because I think our supervisors urging us to report is only lip service." (M=3.928). The statements "I do not report because I believe that prior reports have been covered up" (M=3.915) and "I do not report because there has been no feedback on previous reports" (M=3.876) resulted as the most significant reasons for silence in the second and third rankings, respectively. This finding thus supports the idea that the most important factors in predicting intentions not to report are those related to managers' attitudes toward reporting [7]. The feedback of managers or other decision-makers, or in other words the communication of incidents and lessons learned to all affected employees and stakeholders is an essential part of voluntary reporting [9, 33]. If employees are to continue supplying information, they must be able to understand how their contributions have helped create new preventive methods, ideally and that the system is not just a "black box" but has a purpose [9].

The second most important factor that causes the drivers not to report voluntarily is "Non-Reporting Based on Fear and Defensive Silence" with a mean value of 3.075. The item with the highest mean value under this dimension is "I do not report because I do not think there is any legislation in place to protect me in case of an accident investigation", M=3.323. The fear of being punished, fired or having their licenses revoked prevents employees from reporting when the legal restrictions are not doing a lot to protect them. Because, as a result of the accidents to be experienced, issues such as judicial investigation and punishment come to the fore. Findings on responses to statements about non-reporting show that forensic investigations as a result of train crashes frighten drivers into reporting. Considering the court decisions regarding railway train accidents that have occurred in recent years, the fact that drivers are found guilty in many accidents justifies this concern [34]. In the expert reports, it is usually the drivers who are found to be the first defective. For employees to report incidents without hesitation, they must have some level of trust in their organisation and managers [7]. The confidentially of "reporters" who disclose safety hazards is crucial in enabling people to share more information and report problems without worrying about being punished [14].

Table 3 – VNR scale dimensions and items means

VNR scale	Item mean	Factor mean	SD
Non-reporting based on relational and prosocial silence	2.804		
I5	2.517		1.196
I6	2.915		1.212
I13	2.799		1.292
I14	2.768		1.189
I19	2.935		1.260
I21	2.739		1.071
I24	2.959		1.260
Non-reporting based on fear and defensive silence	3.075		
I1	2.952		1.384
I2	2.765		1.325
I3	3.323		1.392
I4	3.262		1.262
Non-reporting based on quiescence and acquiescence silence	3.671		
I7	3.057		1.337
I12	3.928		1.238
I15	3.578		1.241
IS17	3.876		1.153
I18	3.915		1.128
Non-reporting based on disengaged silence	2.337		
I8	2.319		1.028
I10	2.340		1.132
I11	2.149		1.104
I16	2.010		0.899
I20	2.578		1.004
I22	2.625		1.178
Total		2.916	0.672

Response categories: 1 – Absolutely disagree, 2 – Disagree, 3 – Unsure, 4 – Agree, 5 – Absolutely agree

The statement "I do not report because I think that I will face the same problems experienced by my co--workers who have previously reported" is the second item that the drivers find frightening about reporting. The item also indicates that the drivers are also concerned about reporting due to the weak positive just culture. The item also suggests that because of the poor positive just culture, drivers are also worried about reporting.

"Non-Reporting Based on Relational and Prosocial Silence" with a mean value of 2.804, is the third factor that discourages drivers from voluntarily reporting. According to studies, employees may prefer to remain silent since they do not want their relationships with their colleagues to be harmed [23]. In this context, the statements "I do not report because I do not want to stir up trouble with my supervisor(s) by reporting them" (M=2.959), "I do not report because I do not want to damage my relationships with my supervisor(s) by reporting them" (M=2.935) and "I do not report because I do not want to stir up trouble with my co-worker(s) by

reporting them" (M=2.915) can both be stated to be parallel to the literature. This dimension involves social pressure that allocates blame and punish someone for mistakes thus getting someone else into trouble. Moreover, an individual could feel ashamed of their own mistake [7, 12, 13].

The last dimension that causes drivers not to engage in voluntary reporting is "Non-Reporting Based on Disengaged Silence", M=2.337. According to Premeaux and Bedeian [19], employees are typically self-interested and their choices and actions align with those interests. As a result, it may be inferred that an employee's decision to report voluntarily depends on whether doing so offers benefits or not [23]. In other words, if the employee feels that reporting will not benefit them in any way, it will be a waste of their time. This viewpoint is supported by the item "I do not report because I do not want to waste time reporting when I do not have time for my own duties", M=2.625. The practical considerations of time and effort are also tied to this dimension. Employees may view reporting as being too time-consuming or challenging to submit due to the excessive amount of paperwork involved [12, 13]. Due to employees' lack of time to deal with non-priority issues, workplaces with high workloads are also more likely to see non-reporting [13].

4.3 The voluntary reporting experiences of train drivers in real-life

In accordance with another goal of the study, the train drivers were questioned about whether they had ever submitted volunteer reports in real life. It is determined that 33% of the drivers did not perform voluntary reporting of any unsafe event, safety hazard or safety-enhancing ideas they had encountered in the past. It should be highlighted that while the striking 33% of drivers who do not report voluntarily is a problem that needs to be considered and resolved. On the other hand, 12.6% of participants said they had no such experience that required reporting.

4.4 The relationship between the dimensions of voluntary non-reporting

In order to determine whether there is an association between the four factors that constitute the reasons for VNR, we did the correlation analysis, which is used to establish the relationship between two variables.

It has been discovered that there are positive relationships between all of the variables of not reporting as seen in *Table 4*. There is a strong statistically significant positive relationship between relational and prosocial non-reporting and fear and defensive non-reporting (r=0.502; p<0.01). The relationships between quiescence and acquiescence non-reporting and fear and defensive non-reporting (r=0.467; p<0.01) as well as the relationship between quiescence and acquiescence non-reporting and relational and prosocial non-reporting (r=.417; p<0,01) are both strongly statistically significant and positive.

Table 4 – Correlation analysis results of four dimension of VNR

n=346	Fear and Defensive	Relational and Prosocial	Quiescence and Acquiescence
Relational and Prosocial	0.502*	-	-
Quiescence and Acquiescence	0.467*	0.417*	-
Disengaged	0.127*	0.397*	0.244*

*Note: *Correlation is significant at 0.01 level (2 way)*

The findings from the correlation analysis, which show high positive correlations, allow us to state that circumstances that make drivers fear and defended also cause them to engage in relational and prosocial behaviours. As a result, the driver who agrees with the statement "I do not report because I think the DGRTS (Directorate General of Regulation of Transport Services) will punish me" under the dimension of fear and defensive also agrees with the statement "I do not report because I do not want to stir up trouble with my supervisor(s) by reporting them" and chooses not to report, acting in a way that will not harm relations with their superiors. The fear in this situation is both about action (because of blame culture which penalises people for making mistakes) and about how other people will react [12].

Similarly, it can be concluded from the correlation analysis that the same circumstances that cause drivers to act in a quiescence and acquiescence manner also make them act fearfully and defensively, which prevents

them from reporting voluntarily. For instance, the driver agrees with the statement "I do not report because I think that previous reports have been covered up" which makes the driver act in a quiescence and acquiescence manner, also agrees with the statement "I do not report because I think my company will punish me" which falls under the dimension of fear and defensive non-reporting. The reports could be covered up, on the one hand and the driver could face punishment if they persist, on the other.

Another correlation analysis finding indicates that the same circumstances that lead drivers to engage quiescence and acquiescence behaviours and fail to report voluntarily also cause relational and prosocial behaviours and avoidance of voluntary reporting. For instance, it can be said that the driver who agrees with the statement "I do not report because I think our supervisors urging us to report is only lip service" under the dimension of quiescence and acquiescence non-reporting, may also agree with the statement "I do not report because I do not want to be stigmatised as the "complainer" in my company/among my co-workers." When examining the two expressions attentively, it becomes clear that they are connected. Since "reporting" is only a talk, it may be said that if the employee insists on this circumstance, they will be labelled as a complainant and would rather not report.

5. DISCUSSION

It is anticipated and considered vital in railways for the train drivers to report any action, violation, event, hazard or combination of these that could lead to an accident or incident. These recorded data allow for the systematic development of risk reduction and accident prevention strategies. Due to their position and type of work, drivers are the ones who first notice the circumstances that endanger train traffic, especially those that involve navigation. In this context, drivers play a key role in the safe continuation of the service. Therefore, it's crucial to find out whether drivers report unsafe events or make safety-improving suggestions, as well as why they hesitate to do so.

33% of participant in this research stated that they did not report even though they encountered any major or minor safety-threatening event or circumstances. It is important to understand the reasons for such high levels of non-reporting behaviour. Research studies show that with voluntary reports of employees, situations/factors that have the potential to threaten safety can be eliminated and thus future accidents can be prevented [15, 35].

According to the findings for the sub-dimensions, the dimension of "Non-Reporting Based on Quiescence and Acquiescence Silence" is the primary factor preventing drivers from voluntary reporting an idea that will improve safety, a threat that could directly jeopardise safety or an unsafe event. When the expressions in the dimension are looked at, the drivers do not believe that their superiors' expressions about reporting are serious or realistic. Additionally, it can be said that the drivers experience a sense of worthlessness as a result of the fact that they observe that no action has been taken in response to the reports or any feedback provided on associated issues and they become dejected that they are powerless to change the current situation. It was noted by Liu et al. [36] that employees who do not trust their managers do not participate in voluntary reporting. The employees claimed that the managers' attitudes and behaviours on issues relevant to their professions caused them to remain silent, according to Karaca's research [37]. In order to prevent non-reporting based on quiescence and acquiescence, studies have pointed out that managers should provide feedback to each report, even if it does not increase safety, in order to encourage and motivate employees to report and as a result, to strengthen the reporting culture [38, 39]. As a result, by believing that reporting behaviour is beneficial, employees will be able to feel valuable and the possibility of an increase in reporting behaviour will be strengthened. If not, Wood [40] claims that workers will exhibit acquiescence behaviour.

Another important finding of our study is that "Non-Reporting Based on Fear and Defensive Silence" is an important silence dimension. As it is known, fear-based silence is an important factor that negatively affects organisational performance [41]. This result obtained in the study is due to the concern of the drivers in the face of some situations. As is well known, railways operate in an environment with great potential for serious financial loss and even fatalities. Consequently, a common scenario is the way legal procedures operate in the face of any circumstance. Reason [42] asserts that there is a close connection between employees' reports and the type of sanctions their employer will impose as a result of an error or violation. According to a different study, Dekker and Breakey [43] contend that randomly punishing employees for errors or infractions will lessen their propensity to report in the future [44]. In this context, it can be claimed that ensuring justice and trust in such cases is quite beneficial in reducing non-reporting behaviour.

Another finding of our study is related to the concerns of employees about the deterioration of relations with co-workers and prosocial attitudes. This dimension's comparatively lower ratings compared to quiescence/acquiescence and fear/defensive-based non-reporting dimensions are important to note. It is evident that it still contributes to some non-reporting behaviour, though. Examining the statements in the dimension leads to the conclusion that the drivers do not want to have problems with their superiors or that they do not want to report their superiors and colleagues in order to protect them from potential harm after reporting. According to Dyne et al. [18], employees do not just remain quiet to save their personal relationships; they also hide part of the information they see or hear to defend their organisations or colleagues. In summary, it can be claimed that the tendency of drivers to not report voluntarily is affected by the idea of not hurting their relationships, colleagues and organisations when the pertinent dimension is considered.

Disengaged reporting is the final dimension within the scope of our study, preventing the drivers from voluntarily providing information. According to results from the train drivers, this factor has a less impact on non-reporting behaviour than other dimensions. In the literature, it is emphasised how crucial it is to consider the benefits that employee will receive before determining whether or not to report voluntarily. Otherwise, the employee views reporting as a waste of time [19–23].

6. CONCLUSION

Train drivers are a valuable source of information for efforts to improve rail safety. Both their principal function in the operations and their actions or inactions have an impact on safety. Therefore, it is crucial that train drivers report any actions or circumstances they may have observed as a safety risk. Voluntary reporting systems are important tools for obtaining the aforementioned data and using it as an input in efforts to increase safety. In this regard, it is anticipated that this study, which is the first of its kind and attempts to shed light on the causes of train drivers' voluntary non-reporting, would significantly advance the body of knowledge and benefit practitioners.

This study adds to the body of literature by validating a scale that had previously been utilised in the context of aviation to the context of railways and by exposing the reasons behind the underreporting of train drivers in a methodologically more robust framework. On the other hand, the findings offer crucial information on what practitioners should do to enhance voluntary reporting, offering a crucial resource on how to improve safety by understanding their employees and the challenges they face during this process. Some recommendations can be offered to the companies in the industry based on the example of the institution where this research was conducted. These include establishing employee incentive tools (such as awards) in the reporting system, ensuring the traceability of all reports in the Safety Management System, making reports a part of the organisational culture, training employees about voluntary reporting, how and on which issues they could make a report and giving feedback about reports.

7. FURTHER RESEARCH

To gain a comprehensive understanding of the factors influencing train drivers' voluntary reporting behaviour, further research is warranted. Moreover, our study has identified several limitations that present opportunities for future investigation. The data utilised in this study were derived from a survey administered to train drivers employed by a specific railway company, relying on their subjective beliefs. It is assumed that participants possess an adequate level of awareness regarding voluntary reporting and its mechanisms and that their responses are accurate and sincere. However, these findings are constrained in their generalisability to other railway organisations and drivers. Therefore, future studies would benefit from broadening the scope to include multiple railway firms and diverse occupational groups within the railway sector. Additionally, while this research has examined various barriers to non-reporting, more comprehensive studies could explore organisational, environmental and individual factors.

Further research avenues may involve investigating managers' perspectives on silence (voluntary non-reporting) or voice (voluntary reporting). Additionally, exploring the relationship between non-reporting behaviour and factors such as organisational commitment, organisational justice and trust could provide valuable insights. Studies examining the consequences of voluntary non-reporting behaviour could also be conducted. Furthermore, conducting international studies with participants from different countries and cultures and con-

ducting cross-cultural comparisons, would yield important findings. Such comparative analyses could be performed by comparing results from studies conducted in different countries with the data collected in Turkey.

Further research might be done by conducting studies on managers' perspectives on silence (voluntary non-reporting) or voice (voluntary reporting). Additionally, it is possible to analyse the relationship between non-reporting behaviour and other factors including organisational commitment, organisational justice and trust. Studies can also be carried out to investigate into the consequences of voluntary non-reporting behaviour. In addition, such a study can be conducted internationally, with participants from different countries and cultures and important results can be obtained by making a cross-cultural comparison. The results of studies conducted in different countries can be compared with the received data from Turkey.

DATA AVAILABILITY

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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Tren makinistlerinin gönüllü raporlama ile ilgili sorunları ve demiryolu üzerindeki etkileri

Özet

İşgörenlerin yapacakları gönüllü raporlar, örgütlerin önleyici tedbirler alması ve olası kazaları ortadan kaldırması için önemli bir veri kaynağı niteliği taşımaktadır. Ancak işgörenler bazı sebeplere bağlı olarak gönüllü raporlamada bulunmaktan kaçınmaktadır. Bu çalışmada,

demiryollarında emniyetin sağlanmasında kritik öneme sahip olan tren makinistlerinin emniyeti tehdit edecek olayları hangi nedenlerle bildirmeyerek örgütsel sessizliğine yol açtıkları incelenmiştir. Daha önceden havacılık çalışanları bağlamında geliştirilen ölçme aracı, Türkiye'de demiryollarında görev yapan 346 tren makinistine uygulanmıştır. İlgili ölçeğin demiryolu taşımacılığı örgütleri bağlamında geçerli ve güvenilir olduğu kanıtlanmıştır. Makinistlerin ilişkisel ve prososyal; umursamazlık; boyun eğme ve kabullenme; korku ve korunmaya bağlı olarak gönüllü raporlamada bulunmadıkları sonucuna ulaşılmıştır. Gönüllü raporlamada bulunmama nedenlerine ilişkin en yüksek puan, boyun eğme ve kabullenme boyutunda gözlenmiştir. Gönüllü raporlamama nedenlerini açıklayan boyutlar arasında pozitif yönlü güçlü ilişkiler tespit edilmiştir.

Anahtar Kelimeler
örgütsel sessizlik; gönüllü raporlama; demiryolu; taşımacılık; emniyet yönetim sistemi.