



Determinants of Ship's Crew Education on River Transportation Safety Culture

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River transportation safety is an important issue in the context of community mobility and goods transportation, especially in countries such as Indonesia, which has many rivers as transportation routes. However, river transportation still faces various challenges in terms of safety. Data shows that accidents on rivers still occur frequently. Therefore, the development of a good safety culture among operators and users of river transportation services is very much needed. Safety culture is a concept that describes the attitudes, values, and behaviours of individuals and organisations in prioritising safety. One factor that influences safety culture is the level of education of boat operators. This study was conducted on the Musi River with a sample size of 100 boat crew respondents. The correlation analysis results showed a correlation coefficient between education and safety culture score of 0.159. The significance value (Sig, 2-tailed) was 0.114 (>0.05). This indicates that the relationship between educational level and safety culture is unidirectional, meaning that the higher the educational level of a ship crew member, the better their knowledge of safety culture tends to be. However, because the significance value of 0.114 is greater than 0.05, this means that the relationship between education and safety culture is not statistically significant.

Keyword: *Level of education, River transportation safety, Ship's crew*

1. INTRODUCTION

River transport safety is an important issue in the context of community mobility and goods transportation, especially in countries such as Indonesia, which has many rivers as transportation routes. In Indonesia, river transport not only plays an important role in supporting economic and tourism activities, but also serves the needs of communities in remote areas that are difficult to reach by other means of transport. However, although river transport offers various benefits, it also faces various

challenges in terms of safety. Data shows that accidents on rivers are still one of the main causes of injury and death in the transport sector. Accidents in the river transport sector can be fatal, both for passengers and the environment. Therefore, the development of a good safety culture among operators and users of river transport services is essential.

Safety culture is a concept that describes the attitudes, values, and behaviours of individuals and organisations in prioritising safety. In the context of river transportation, safety culture can be influenced by various factors, such as public awareness and understanding of the importance of safety, training for crew members, and the existence of supportive regulations. In many places, there is still a perception that river transportation does not require strict safety standards, which ultimately reduces awareness of the importance of safety culture. One factor that is thought to influence safety culture is the level of education of the crew.

Research on the influence of education levels on safety culture shows that education plays an important role in shaping individuals' attitudes and behaviours towards occupational safety in various environments, including industry, construction and healthcare. Various studies highlight how adequate education can increase risk awareness and provide the knowledge necessary to implement good safety practices.

One relevant study was conducted by Jayakumar et al. (2017), which found that workers with higher levels of education tend to have a better understanding of safety procedures and the risks associated with their work. This study shows that education can influence safety knowledge levels, thereby reducing workplace accidents. Another study by Zohar and Luria (2003) shows that a good safety culture in the workplace is related to the educational level of employees. They state that educated employees tend to support and engage in better safety practices, as well as comply with established safety regulations. Meanwhile, research by Geller (2001) concludes that safety education and training approaches must be tailored to the educational level of workers. Thus, this can help improve the effectiveness of safety programmes and reduce accidents in the workplace.

Research by Kurniawan (2022) found that individuals with higher levels of education have a better understanding of risks and safety procedures. This research shows that education provides the basic knowledge necessary to understand safety regulations and the importance of complying with safety norms. According to her research, Shinta (2021) revealed that a good education improves an individual's ability to assess risks and understand the potential hazards that may occur in their environment. Therefore, educated individuals tend to be more cautious and have a higher commitment to a culture of safety. Adi (2020) explained that a culture of safety is not only influenced by organisational policies but also by the individuals within it. Education plays a central role in shaping individuals' mindsets to be more supportive of and committed to safety practices. This study also shows that individuals with higher education tend to participate more in safety training programmes.

Research by Hartono (2021) highlights that education levels influence individuals' perceptions of safety. Individuals with better education tend to have broader knowledge about various aspects of safety, enabling them to better understand and apply safety principles in their daily lives.

2. METHODOLOGY

Oppenheim (2019) shows that adequate education not only increases knowledge but also raises individuals' awareness of the importance of safety. A person's level of education can influence their cognitive ability to understand and analyse risks. More educated individuals tend to have better knowledge of safety procedures and are able to identify hazards in the work environment. This is in line with the thinking expressed by Ajzen (1991) who states that in the Theory of Planned Behaviour, attitudes towards behaviour, subjective norms, and behavioural control can influence an individual's intention to participate in good safety practices.

Individuals learn from their environment through observation and imitation. According to Bandura (1977), workers with higher levels of education tend to be exposed to better safety standards and participate in safety training more frequently. Through observation and experience, they can build a culture of safety in their work environment.

Schein (1992) argues that safety culture within an organisation is greatly influenced by the level of education and competence of its employees. More educated employees tend to have better knowledge of safety and are more likely to promote a safe working environment. This theory suggests that safety culture can be improved through investment in education and training.

This research was conducted by interviewing ship crews in the Musi River waters, specifically in Dramaga Pasar 16 and Dramga 7 Ulu Kota Palembang. It involved 100 respondents obtained using the Slovin formula and interviews were conducted based on structured questions in a questionnaire. The collected data was analysed using Spearman's correlation analysis.

The independent variable, namely the educational level of the crew, is categorised as no schooling, primary school level, junior high school level, senior high school level, and university level. Meanwhile, the dependent variable, namely safety culture, is measured through 10 parameter questions.

Table 1. Safety Culture Parameters in the River Transportation Environment

Kode	Parameter
BK 1	Pimpinan/rekan kerja/awak kapal selalu menekankan pentingnya keselamatan
BK 2	Selalu melakukan pengecekan kondisi kapal dan mesinnya menjadi rutinitas sebelum kapal dioperasikan setiap hari
BK 3	Secara rutin memastikan bahwa peralatan keselamatan selalu tersedia dalam jumlah yang lengkap dan dalam kondisi baik di atas kapal
BK 4	Selalu menggunakan rompi keselamatan saat berada di atas kapal selama beroperasi
BK 5	Selalu menjaga dek kapal tetap bersih dan bebas dari barang yang dapat menyebabkan tersandung

BK 6	Selalu memastikan kapal dalam kondisi stabil sebelum melakukan proses pemuatan
BK 7	Selalu memantau kondisi cuaca dan arus air sungai sebelum dan selama pelayaran
BK 8	Selalu menjaga komunikasi baik dengan petugas maupun sesama awak kapal tentang isu keselamatan
BK 9	Mematuhi jadwal kerja dan istirahat untuk mencegah kelelahan saat bertugas
BK 10	Merasa nyaman melaporkan kejadian kecelakaan atau hampir celaka tanpa takut mendapat hukuman untuk dievaluasi

3. DISCUSSION

The city of Palembang, which is crossed by the Musi River, is divided into Seberang Ilir and Seberang Ulu. River transportation is still very popular, especially among people living on the banks of the Musi River. River transportation in Palembang is most popular at Pier 16 Ilir and under the Ampera Bridge. Below is a visualisation of passenger transport at Pier 16 Ilir and under the Ampera Bridge in Palembang.



Figure 1. River transport at Pier 16 Ilir below Ampera

River transport serves both passengers and goods. For passenger transport, the community typically uses Getek boats, 40 hp speedboats, or 200 hp and 400 hp longboats. Meanwhile, for goods, the community uses Jukung boats, which can carry a large amount of goods, such as gas cylinders, cement, bricks, construction iron, water towers, rice, water gallons and so on. Generally, people living in the Banyuasin Regency area use Jukung boat transport services.

After conducting an analysis using Spearman's correlation analysis, the following results were obtained:

Table 2. Correlation values between education level and safety culture

			pendidikan	skor_budaya_keselamatan
Spearman's rho	pendidikan	Correlation Coefficient	1.000	.159
		Sig. (2-tailed)	.	.114
		N	100	100
	skor_budaya_keselamatan	Correlation Coefficient	.159	1.000
		Sig. (2-tailed)	.114	.
		N	100	100

Based on the table above, the correlation coefficient between education and safety culture score is 0.159. The significance value (Sig. 2-tailed) is 0.114 (> 0.05). The direction and strength of the relationship based on the positive coefficient value (0.159) indicate that the relationship between education level and safety culture is unidirectional, meaning that the higher a person's education level, the better their safety culture tends to be. However, because the value is small (< 0.3), the relationship is weak. Statistical significance shows that the significance value of 0.114 is greater than 0.05, which means that the relationship between education and safety culture is not statistically significant.

Thus, there is insufficient evidence to state that education level is significantly related to safety culture. The results of Spearman's correlation test show that: Education level has a positive but weak and insignificant relationship with safety culture.

4. CONCLUSION

The relationship between education level and safety culture is unidirectional, meaning that the higher a person's education level, the better their safety culture tends to be.

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