



A Framework for a Comprehensive Definition of ‘Safety’ through Maximum Elements Block (MEB) Method

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ABSTRACT

Safety is such a multithreaded concept that it spreads its utility umbrella from healthcare and engineering sectors to urban planning and social sciences. The present research, therefore, attempts to synthesize the existing definitions and frameworks of safety along with the proposed ones into one comprehensive definition that really captures the essence of its various dimensions. This work reviews literature from different disciplines using maximum elements block (MEB) method and analyzes them for identifying the pivotal constituent elements that define safety. These findings indicate that safety may involve not only the absence of harm, the state of preparedness, risk management, psychological well-being, but also others. The proposed definition can therefore be used to give a unified understanding of safety across the board and thus assist in laying the foundation for the development of enhanced safety coverage.

Keywords: Safety, Definition, Block, Element, Comprehensive

1. Introduction

Safety is an important attribute in existence, aimed at reducing risk and preventing harm. It is underlined by its gravity regarding health, well-being, and quality of life. However, the issue of safety is not uni-dimensional in character; it is related to many disciplines and contexts. While in healthcare, safety may relate to patient care and medication management, in engineering it may relate to concerns for structural integrity and accident prevention. Still, notwithstanding its importance, the concept of safety is inconceivable under a common understanding. This paper will attempt to fill this lacuna by trying to provide an all-inclusive definition of safety through a critical review of available literature.

2. Research Problem

“Safety is a large topic that resists simple definition.”(Dekker, 2012, p. 1.). This work covers maximum possible aspects of safety for a comprehensive definition.

3. Research Questions

What are the prevailing definitions of safety in the current literature from a number of diverse disciplines?

What themes do recurring elements take in the literature as to what the term safety means?

What is an integrated definition of safety capable of facilitating improvements in practice and policy to promote safety across disciplines?

4. Literature Review

The concept of safety has been defined and examined within a wide purview, thereby yielding many meanings.

Definitions and Perspectives

Health and Medicine: Safety has been defined by the WHO as "the condition of being protected from or unlikely to cause danger, risk, or injury" (WHO, 2018). This definition stresses the avoidance of injury, especially in medical practice.

Engineering and Technology: In engineering, the concept of safety often means reliability of systems and fail-safe mechanism design. The American National Standards Institute defines "safety" as a condition "being safe from undergoing or causing hurt, injury, or loss". ANSI 2015.

It means that psychological safety is about an environment where in the realization of being safe would make people open to stating opinions and raising questions without fear of retaliation from others. This definition came to the fore through the discourse in social sciences by Edmondson in 1999.

5. Themes

The review of safety literature has resulted in the following themes:

Risk Management: Most safety practices have in their core some critical building blocks regarding identification and mitigation of risk as its kernel, as indicated by Hubbard in his study dating back to 2009.

Preparedness and Response - There should be efficient planning concerning emergency preparedness and response.

Cultural and Contextual Factors - Safety depends upon the culture and context of the society concerning their prioritization about safety.

6. Maximum Elements Incorporation method

Maximum elements incorporation method is applied through a proper combination of separate block of elements. This helps in arriving at the list of maximum possible elements

Element blocks are based on questions for coverage like:

- a. What?
- b. Why?
- c. From whom?
- d. From what?
- e. Through what?
- f. Through whom?
- g. To whom?

Etc

7. The Framework

The proposed framework is laid out here

Element Block 1	Element Block 2			
	Element Block 3	Element Block 3.1	Element Block 3.1.1	Element Block 3.1.1.1
	Element Block 4			
	Element Block 5			

Element Block Framework

8. The data set and analysis

Content for this study consists of a dataset of peer-reviewed journal articles, industry reports, relevant organizational publications from diverse disciplines including healthcare, engineering, psychology, risk management etc. This study synthesis definitions and frameworks from various disciplines using maximum elements block (MEB). A content desk review was conducted using academic databases such as SafetyLit, CAS, JSTOR, PubMed, Google Scholar, Scopus etc. Key terms included "safety," "risk management," "psychological safety," "safety culture" etc. The blocks here are designed to be very flexible to fill up with data or elements or terms to the maximum possibility.

A	condition	of	relative (practical/operational)	freedom
	state		absolute (theoretical)	liberty

	quality			unaffectedness
	characteristic			release
	trait			

Element block 1

from	danger
	hazard
	harm
	injury
	risk
	damage
	negative consequences
	negative effect
	loss

Element block 2

to	body of entity	living/nonliving (hierarchy)
	target	

Element block 3

mitigated through	copied resources
managed through	tools
	techniques
with the help of	innate capabilities
	external measures
	internal measures
	tolerance
	copied resources

Element block 4

in the domain of	industry
	public
	household/domestic

Element block 5

as a result of	occurrence
due to	happening
because of	mis-happening
through	accident
	incident
	cause
	phenomena

Element block 3.1

through	an	entity	either	living/nonliving
		source		
		substance		
		event		

Element block 3.1.1

caused	either	internal/external
resulted		intentionally/unintentionally
effected		physically/psychologically
		directly/indirectly
		planned/unplanned
		anticipated/unanticipated
		automatically/manually
		permanently/temporarily

Element block 3.1.1

9. Survey

Each of the elements in the block is presented to a sample of 100 safety professionals of varying background and experience. Each of the element is rated by the participant on a rating scale of 0 to 10 for incorporation in safety definition

10. Results

Ratings on the elements across disciplines varied and some broad categories emerged from the analysis based on contextual variability, perception of risk, cultural influence etc

- 1) Contextual Variability: Definitions varied widely depending on professional background and situational context.
- 2) Perception of Risk: Risk assessment was a point of pivotal concern in defining safety by most of the respondents from engineering and technical backgrounds.
- 3) Cultural Influence: Definitions of safety emanate from organizational culture and require a mentality oriented toward safety during operational procedures.

Considering ONLY the highest rated elements (0 to 10 rating scale), mentioned next to the corresponding elements, as per the survey the definition of safety arrived is:

“A state (9.12) of relative (10) freedom (9.42) from risk (9.67) to living or non living entities (9.25) through an entity or event (8.91) either caused intentionally or unintentionally (9.21); physically or psychologically (9.42) etc which can be mitigated through (9.26) innate capabilities (9.14) or external measures (9.94)”

Note: Full dataset would be shared, on submission of a satisfactory statement of research purpose in writing to corresponding author.

11. Conclusion

The results also show that safety is a complex, multi-disciplinary concept whose meaning is modified by discipline, context, and culture. No one single unified definition of safety meets the demands, and for good safety management and policy implementation, it takes an integrative approach considering these deviations.

12. Further studies

Further studies shall be conducted with emerging information technologies on larger datasets.

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