



# Designing a Safety Culture Maturity Model

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# Background

This study is a part of SafePotential (SAF€RA) project focusing on to create models and develop practices for materializing the potential of safety performance measurement.

We developed **SafePotential Toolbox** for measuring safety performance:

<https://projects.tuni.fi/safepotential>

# Previous research

- Previous studies show that there is a clear link between safety culture and safety performance in many industries
- Maturity models have been introduced in many managerial fields, also safety culture and safety performance measurement
- A maturity model defines maturity levels that evaluate the perfection of the analyzed subjects via different sets of multidimensional criteria and describes vital attributes that could characterize an organization's operation at a particular level
- Maturity models allow the assessment of the current situation, as well as the identification of obvious development needs
- Maturity analysis can be used
  - to provide information on the present state of safety culture and possible ways to improve it
  - for setting targets and benchmarking
  - for predicting the outcomes of safety interventions and following up improvements

# Objective

- Many previous safety maturity models have not been assessed for reliability or validity.
- Detailed measures to evaluate the level of safety culture maturity are often missing.
- Current models have somewhat limited scope and do not always give adequate insight into the level of safety culture and the factors affecting it or how they are related to each other.
- There is a call for a maturity model that covers the most frequently recurring factors of the existing validated models and proposes an approach to maturity evaluation.
- Once this model exists, safety culture measurement could be better utilized in safety promotion.
- An objective, transparent, and validated maturity model could also diminish the need for third parties to evaluate the state of safety culture.
- The objective of the current study is to design a new maturity model for analyzing safety culture.

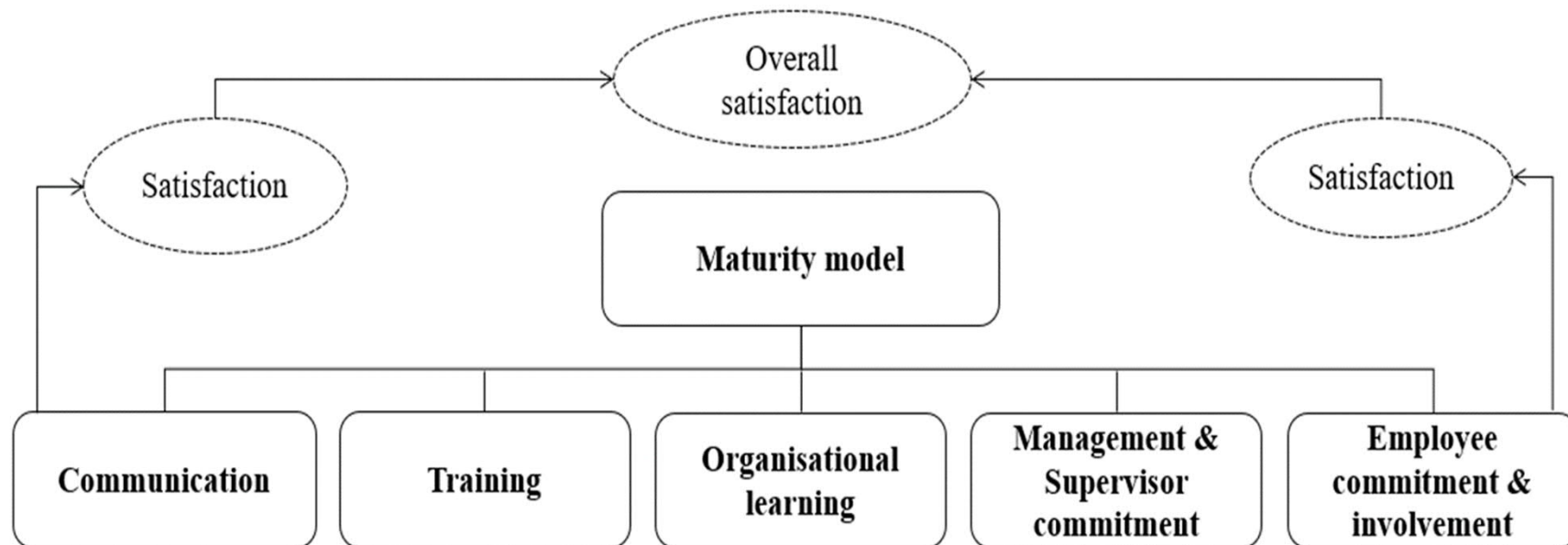
# Materials and methods

The first three phases of the design science process were utilized

- 1) The **scope** of the model is limited to safety culture, and the model is applicable to different organizations without limitations
- 2) The **design** of the model: The evaluation variables are identified by combining existing literature. The model contains four written maturity levels, and higher levels build on the requirements of lower levels.
- 3) The main content of the model is defined based on a recent critical review examining safety culture maturity models (Goncalves Filho & Waterson, 2018). Fourteen safety culture maturity models that had been assessed for reliability or validity were selected, analyzed, and compared. The most frequently recurring themes and evaluation criteria were identified from these models.

# Maturity model

- The model framework was divided into five main themes. Related questionnaire consisted of 29 items in five themes.
- Each of these themes is also evaluated in terms of a respondent's satisfaction towards the evaluated theme



# Evaluation instrument

The evaluation of the items in the model is carried out with four-step maturity levels representing the sophistication level in each item

Example item	Management's attitudes towards safety
Level 1	Managers consider safety as an employee responsibility. Lip service is paid by management to the importance of safety commitment.
Level 2	Managers are interested in participating in safety-related issues only when accidents occur.
Level 3	The majority of managers are interested in participating in safety-related issues.
Level 4	Managers clearly think safety is an important part of general management.

Written evaluation criteria and four maturity levels were chosen to be in-line with the previous maturity model and to achieve following benefits:

- 1) Written maturity levels provide clearer and more objective alternatives for the respondents in comparison to Likert scales
- 2) Presentation of written maturity levels raises awareness of best practices, generates discussion and facilitates the identification of development areas already during the completion of the survey
- 3) Written maturity levels decreases the need to use external consultants and knowledge on practices outside the own organization in the evaluation

# Discussion

- The literature provides many models for safety culture measurement but too little evidence of the models' validity and reliability.
- The developed model responds to this challenge by synthesizing the previous models that have been tested for validity or reliability.
- **Researchers** may use the model in large-scale survey research (e.g., in identifying links between safety culture and the level of safety)
- **Practitioners** may utilize it as a checklist, or in auditing performance management practices, for example, through group interviews or workshops
  - Based on the results, improvement means can be generated and prioritized in order to reach higher maturity levels



# Thank you!



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