Risk assessment methodology for the furniture industrial sector

Matilde A. Rodrigues

Risk Assessment

- It is impossible for organizations to spend an unlimited budget to reduce risks to very low levels or even eliminate it.

- Companies need to take decisions about risk, in order to decide if a certain risk level is low enough or if some risk reduction measures are needed to be applied.

- Risk assessment can serve as the basis for a decision-making about risks.

Risk Assessment

- Currently is possible to verify the availability of a broad range of supporting tools.

- Some issues can be a problem to the risk assessment process:

  ✓ The availability of reliable data.

  ✓ The lack of practical tools.

  ✓ The appropriateness of the criteria considered to support risk decisions and its inclusion in the risk assessment methodologies.
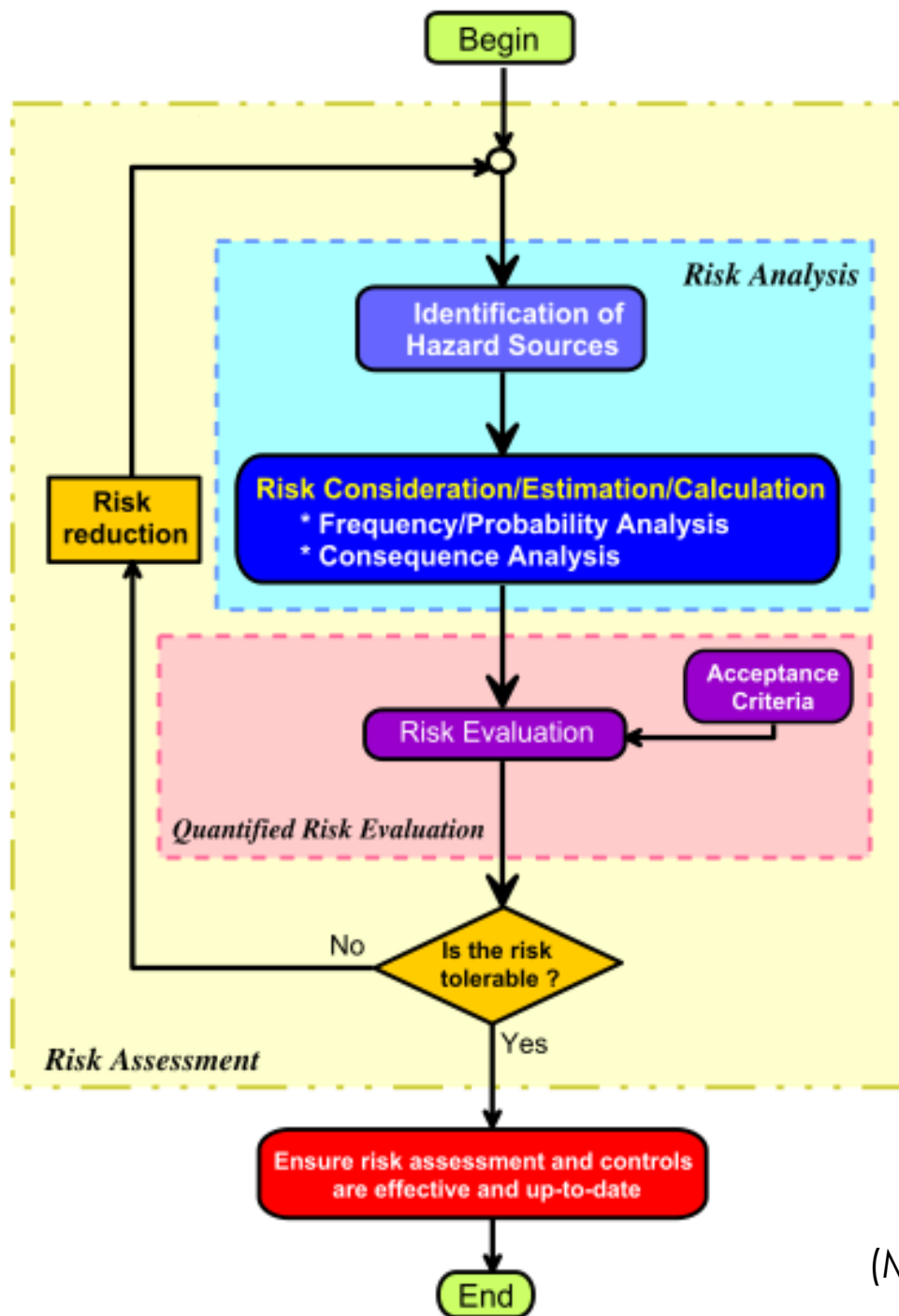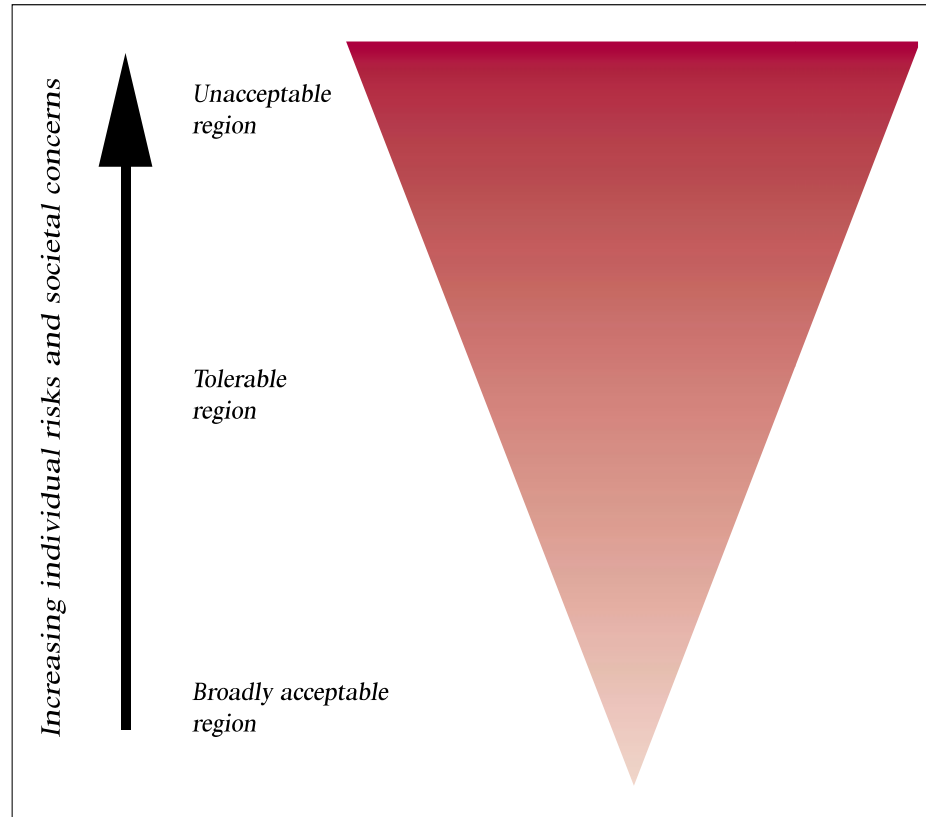
(Marhavilas et al., 2011)

Acceptance criteria

- There are some problems associated with risk acceptance criteria issue:

  - ✓ Fischhoff et al. (1978) - "How safe is safe enough?"

  - ✓ The absence of recommendations for occupational settings;

  - ✓ The inappropriateness of the criteria included in risk assessment methodologies;

  - ✓ The difficulties in the definition of acceptance criteria by the companies;

  - ✓ The different metrics used to assess risk.

Acceptance criteria

Increasing individual risks and societal concerns

Unacceptable region

Tolerable region
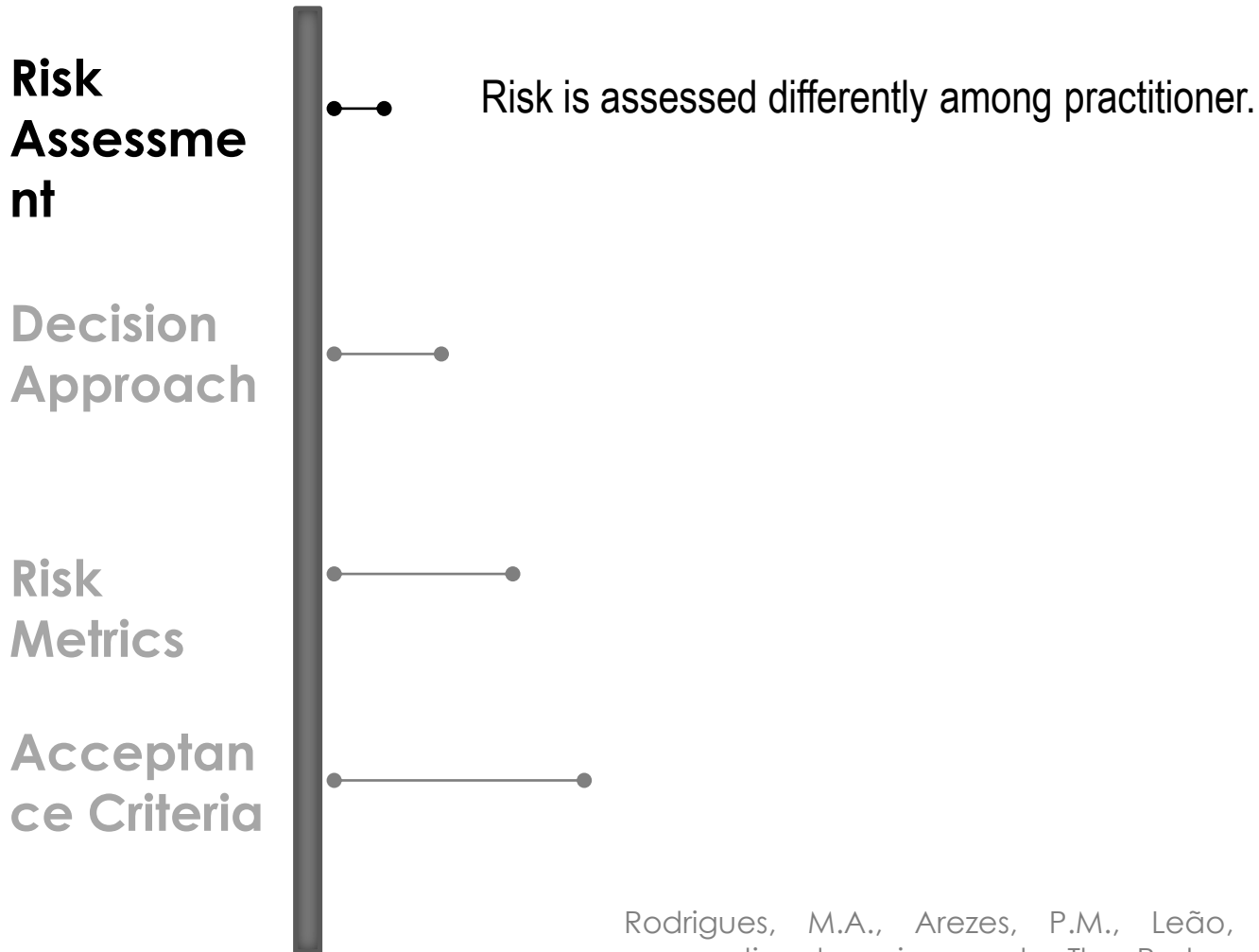
Broadly acceptable region

(HSE, 2001)

Acceptance criteria vs Risk Assessment Methods

- They can be classified into three principal groups:

  ✓ Qualitative – Qualitative acceptance criteria

  ✓ Semi-quantitative – Quantitative acceptance criteria

  ✓ Quantitative – Quantitative acceptance criteria

Contextualizing....

Risk Assessment

Risk is assessed differently among practitioner.

Decision Approach

Risk Metrics

Acceptance Criteria

Rodrigues, M.A., Arezes, P.M., Leão, C.P., 2012. Risk decision in occupational environments: The Portuguese reality. PSAM11&ESREL2012, Vol. 2, 1366-1375, Finland

Contextualizing....

Risk Assessment

Decision Approach

Acceptance criteria were the most know and used approach.

ALARP principle was the less known approach, however is considered the most suitable to be applied.

Risk Metrics

Acceptance Criteria

Rodrigues, M.A., Arezes, P.M., Leão, C.P., 2012. Risk decision in occupational environments: The Portuguese reality. PSAM11&ESREL2012, Vol. 2, 1366-1375, Finland

Contextualizing….

Risk Assessment

Decision Approach

Risk Metrics

Acceptance Criteria

Risk matrix was the measure considered more suitable and the widely used to assess the risk of particular activities.

Severity rate and LTI-rate were the approaches considered more suitable and the widely used to assess the safety performance.
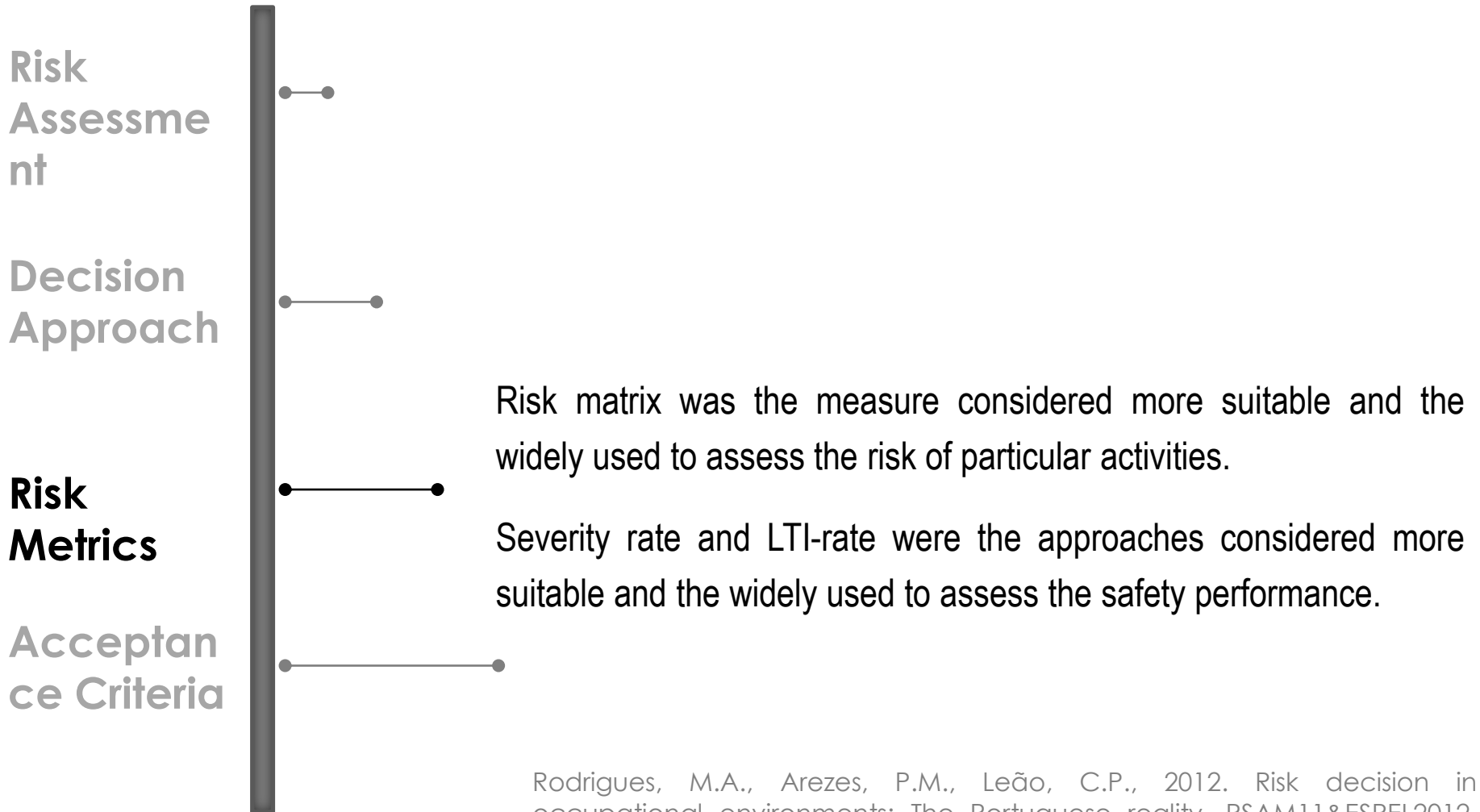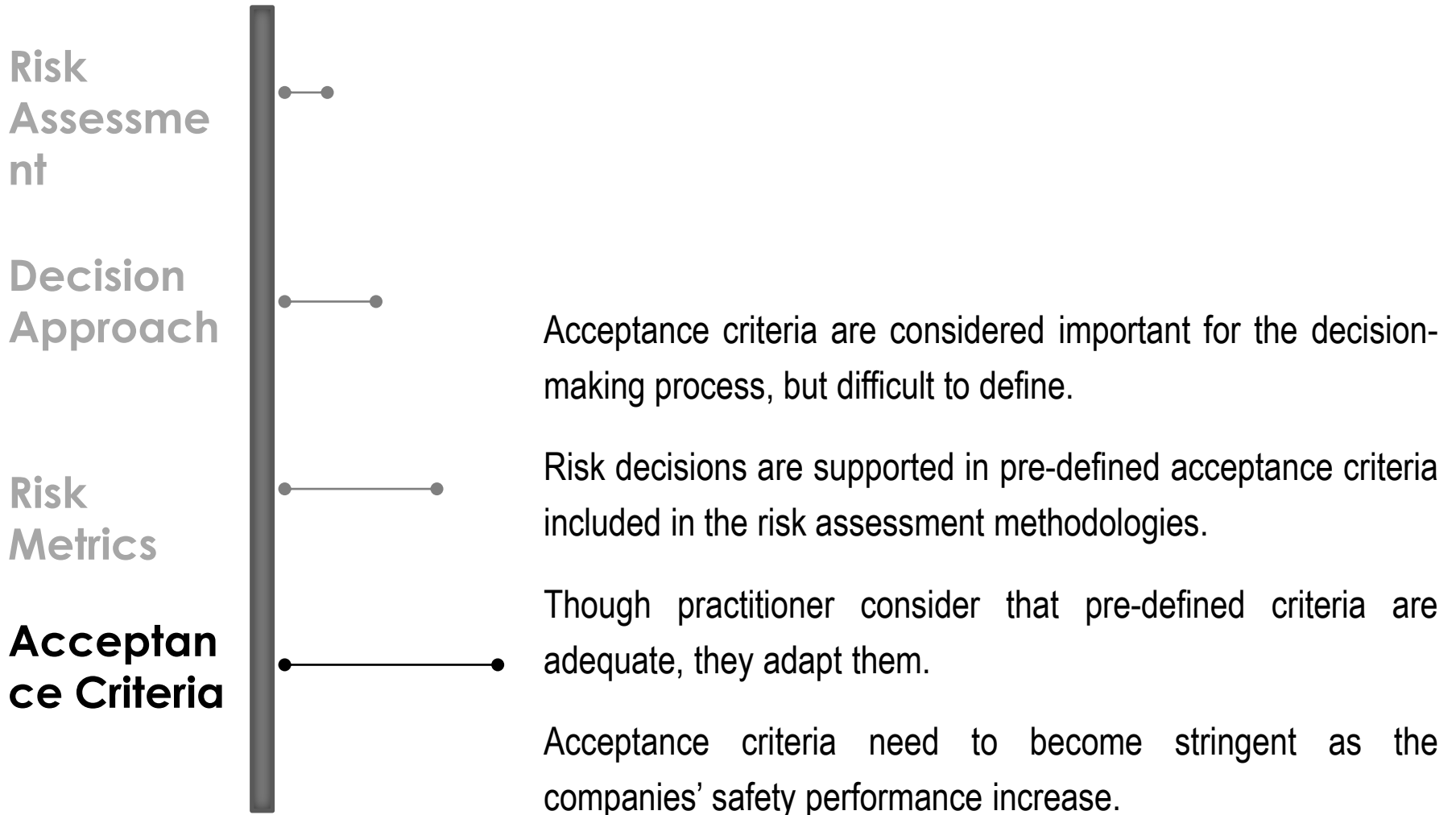
Rodrigues, M.A., Arezes, P.M., Leão, C.P., 2012. Risk decision in occupational environments: The Portuguese reality. PSAM11&ESREL2012, Vol. 2, 1366-1375, Finland

Contextualizing....

Risk Assessment

Decision Approach

Acceptance criteria are considered important for the decision-making process, but difficult to define.

Risk decisions are supported in pre-defined acceptance criteria included in the risk assessment methodologies.

Risk Metrics

Though practitioner consider that pre-defined criteria are adequate, they adapt them.

Acceptance Criteria

Acceptance criteria need to become stringent as the companies' safety performance increase.
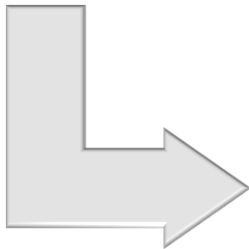
The instrument...

Model to define the risk acceptance criteria

- Based on guidelines related to major industrial hazards and other general guidelines

Case Study
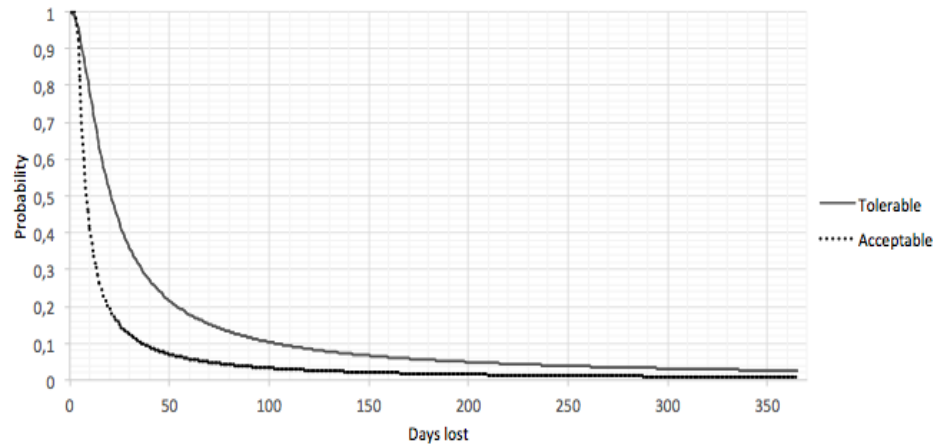
- In the Portuguese furniture industrial sector

The furniture industrial sector…

The furniture industrial sector…

The instrument…

Acceptance criteria

Frequency of accidents (%)	Severity						
	Lost workdays						Death
	[0-3[	[3-7[	[7-21[	[21-90[	[90-180[	≤180	
]90-100]	T	I	I	I	I	I	I
]80-90]	A	T	I	I	I	I	I
]70-80]	A	T	I	I	I	I	I
]60-70]	A	T	I	I	I	I	I
]50-60]	A	A	I	I	I	I	I
]40-50]	A	A	T	I	I	I	I
]30-40]	A	A	T	I	I	I	I
]20-30]	A	A	T	I	I	I	I
]10-20]	A	A	A	I	I	I	I
]5-10]	A	A	A	T	I	I	I
]1-5]	A	A	A	A	T	I	I
]0.5-1]	A	A	A	A	A	T	I

Risk matrix that include the defined acceptance criteria

The instrument…

Frequency of accidents (%)	Severity						Death
	Lost workdays						
	[0-3[	[3-7[	[7-21[	[21-90[	[90-180[	≤180	
]90-100]	T	I	I	I	I	I	I
]80-90]	A	T	I	I	I	I	I
]70-80]	A	T	I	I	I	I	I
]60-70]	A	T	I	I	I	I	I
]50-60]	A	A	I	I	I	I	I
]40-50]	A	A	T	I	I	I	I
]30-40]	A	A	T	I	I	I	I
]20-30]	A	A	T	I	I	I	I
]10-20]	A	A	A	I	I	I	I
]5-10]	A	A	A	T	I	I	I
]1-5]	A	A	A	A	T	I	I
]0.5-1]	A	A	A	A	A	T	I

Example…

- A company recorded 10 accidents in the last year:

  - ✓ 7 accidents resulted in 1 lost workday;

  - ✓ 1 accident resulted in 16 lost workdays;

  - ✓ 2 accident resulted in 60 lost workdays.

Example…

Thank you!

mar@estsp.ipp.pt