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Interreg Europe

European Union
European Regional
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How can a company be resilient?

Resilience Index for companies

Presented by: Ferenc Tolner, Production and Innovation Manager, am-LAB

Event: Regional Resilience in Europe: The Role of Industry Structure in Determining Resilience

1st Seminar – Online

21st January 2021

FOUNDATION project

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Overall objective

Activities

- **EXCHANGE OF EXPERIENCES:**
- Ecosystem Analysis and Case Studies
- 36 Good Practices
- Workshops, study visits, Seminars
- Regional stakeholder group meetings
- SME / Entrepreneurial Roundtables
- Action Plans

€1,860,974.00

from **1 Aug 2019** to **31 Jul 2023**

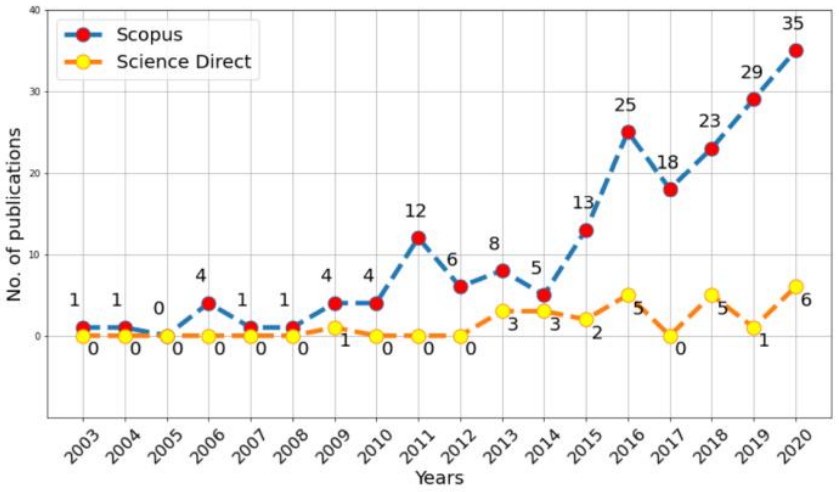
TOPIC
SME competitiveness

Content

- Motivation
- Background
- Types and characteristics of resilience
- Approaches to measure resilience
- Approaches to improve SME resilience
- Limitations
- Possibilities
- Conclusion

Motivation

- **SMEs are of great interest in economic added value to GDP within EU and USA as well**
- **Instead of easily predictable local market, interconnected globalised environment that presents a more turbulent environment**
- **Difficult (international) supply chains**
- **Sequential crises that cannot be avoided (2008: credit crisis, 2020: Covid19 pandemic)**
- **Increasing interest in SME resilience research**



Background

- **There is no uniqe global SME definition**
- **Within EU:**

SME category	Staff size	Annual turnover	Annual revenue
Medium	< 250	≤ 50 m €	≤ 43 m €
Small	< 50	≤ 10 m €	≤ 10 m €
Micro	< 10	≤ 2 m €	≤ 52 m €

- **SMEs contribute to the economy of EU by approximately:**

1. **2/3 of total employment**
2. **2/3 of GDP**
3. **99% of the total number of workplaces**

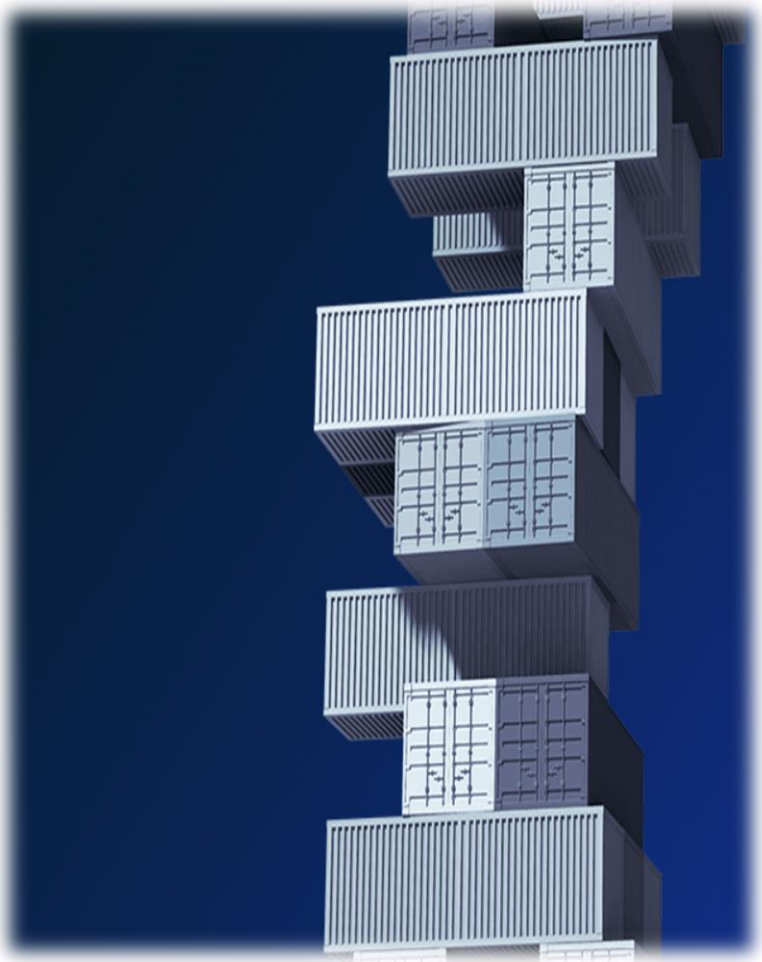
Background

- **They can still produce net employment increase**
- **Increasing international competition**
  (2010: Announcement of Barack Obama of making 16 strategically important sectors more resilient)
- **Economic sustainability and national competitievness comes hand-in-hand with high overall employment rate**
- **„Crisis-withstanding" workplaces are needed**

- ***SME resilience should be developed and fostered!***

Types and characteristics of resilience

- Rather a **time dependent** than a static attribute
- **Answer of the system** to a given disturbance by withstanding the negative effects and returning to the original state
- The whole of actions (**preventive**, defensive and restoring measures) taken before and during the unexpected perturbation
- **Preparedness** within the organisation: how fast it can reallocate its technical and organisational capacities in order to withstand the change
- **End-result of a planning** activity rather than just a descriptive feature of the actual, static state of the system
- Analogy to **change management**

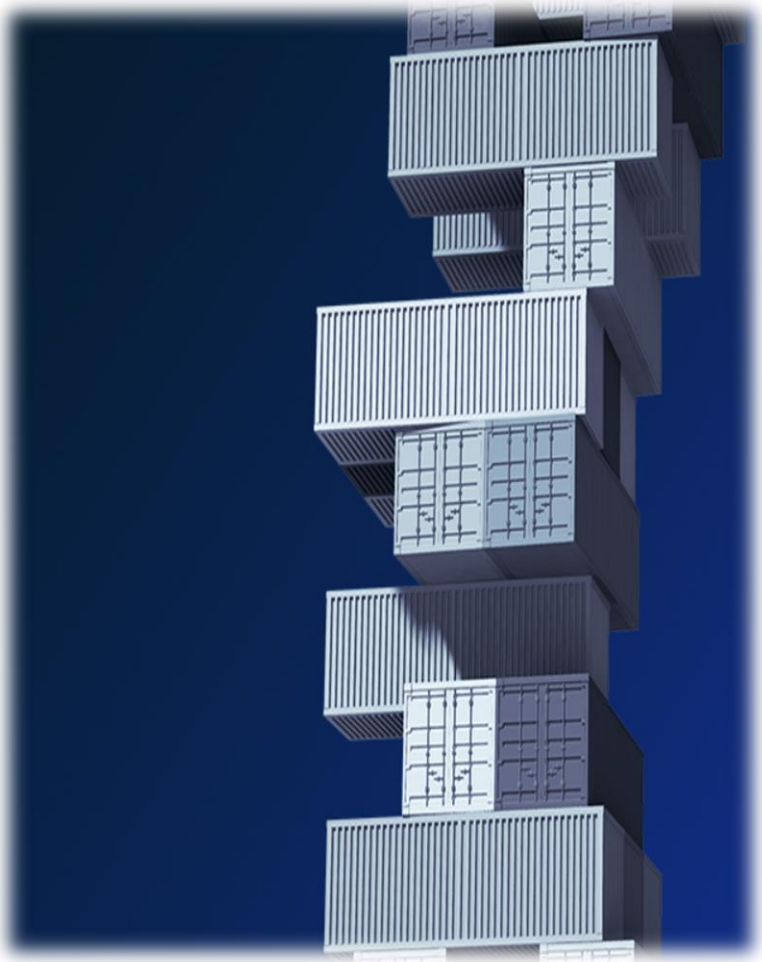


Types and characteristics of resilience

- **In business terms resilience shall be interpreted as crisis management.**

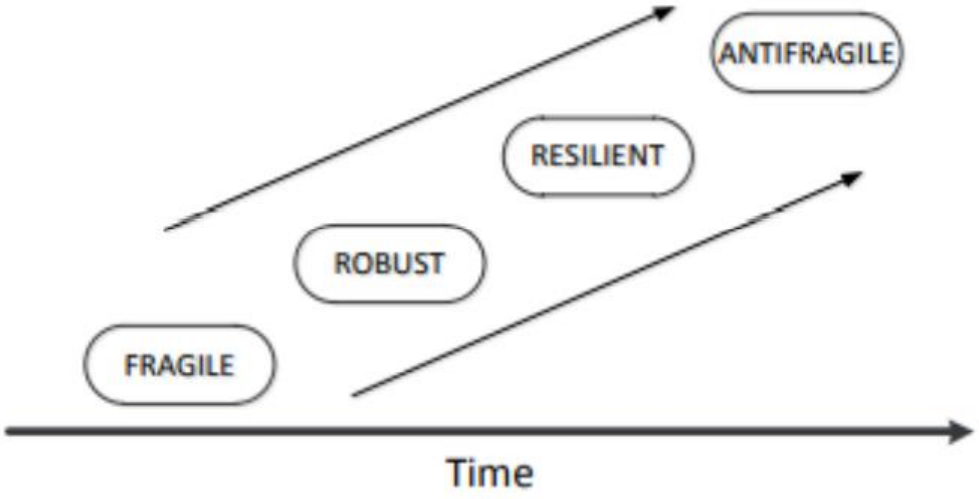
  1. **proactive (forcasting)**
  2. **adaptive (surviving capability and sustainable adaptation)**
  3. **reactive (ability to recover and learn)**

- **The SMEs are mainy family-owned businesses**
- **High emphasis on owners, leading attitude, entrepreneurial skills, family background**
- **Long-term survival may be achieved by learning from successful SMEs**



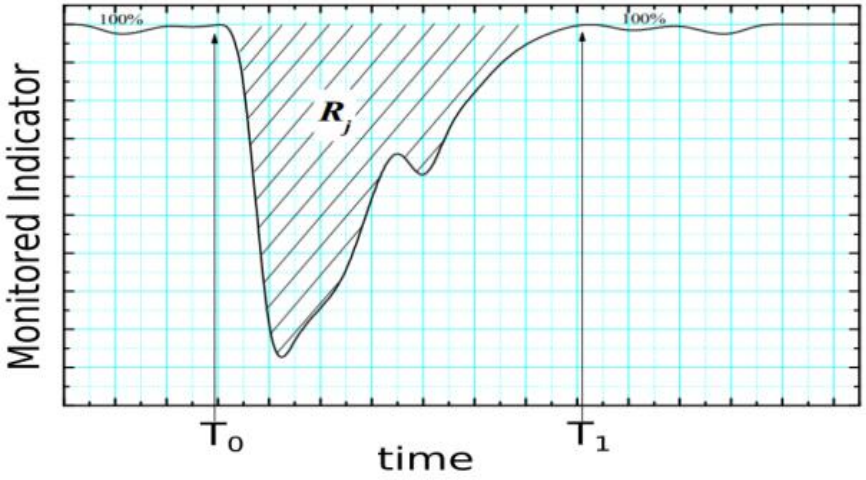
Types and characteristics of resilience

- **Being resilient is not the end stage of the system's developement!**
  - **Fragile: the system collapses in presence of crisis**
  - **Robust: the system can tolerate crisis until a certain extent then collapses**
  - **Resilient: the system can tolerate crisis and survives it with manageable losses**
  - **Antifragile: not just survives the crises but makes an advantage out of it (invests, innovation, new contacts, loss of competitors etc.)**



Approaces to measure resilience

- **So far there is no consensus in scientific literature on proper mathematical definition**
- **There are various approaches:**
  - **Investigating variations in hard-data [1], [2]:**

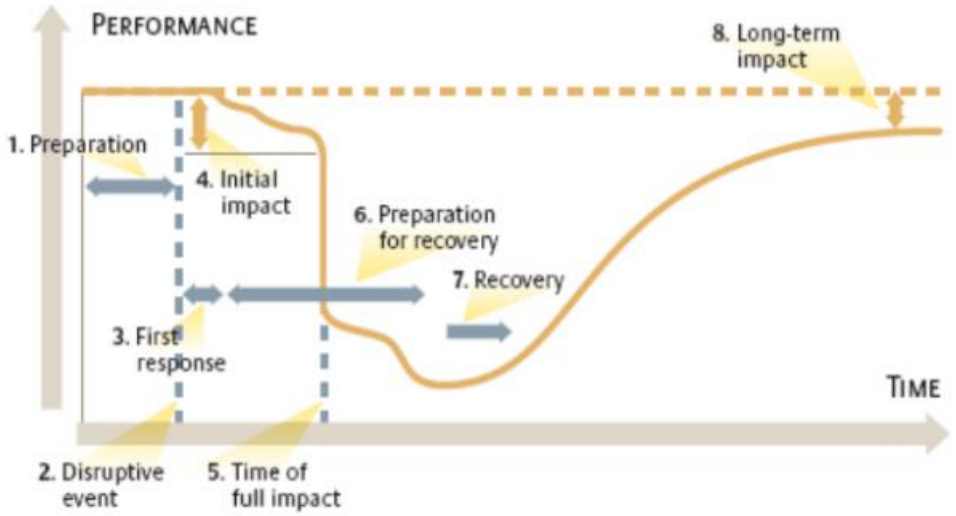


$$R = 1 - \frac{PC_{loss}}{PC_{normal}}$$

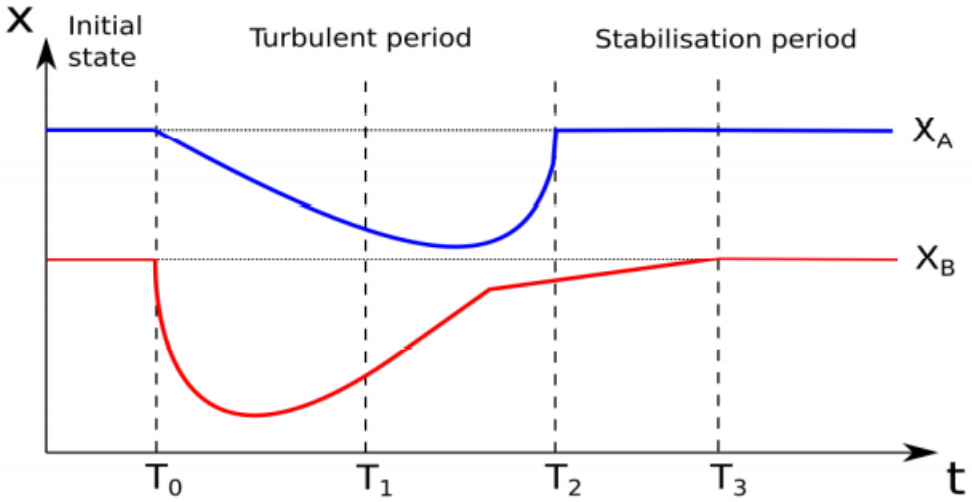
$$R = \sum_{i=0}^{n} w_i \int_{t=T_0}^{t=T_1} \Big[1 - q_i(t)\Big]\, \mathrm{d}t$$

Approaches to measure resilience

- **Stages in reaction to the disruption viewed in a monitored parameter**



- **Different possible time dynamics viewed in a monitored parameter**



Approaces to measure resilience

- So far there is no consensus in scientific literature on proper mathematical definition
- There are various approaches:
  - Investigating variations in hard-data
  - Investigating company specific soft-data
    - Questionnaires with management actors
    - Fuzzy-approach to navigate among linguistic expressions (Likert-scale on answers, relative importance values of interviewees, Fuzzy decision matrix) [3]
    - Survival analysis (Cox regression) [4]
    - Factor analysis for influencing factors, then ANOVA and multiple regression analysis, correlation analysis [5]

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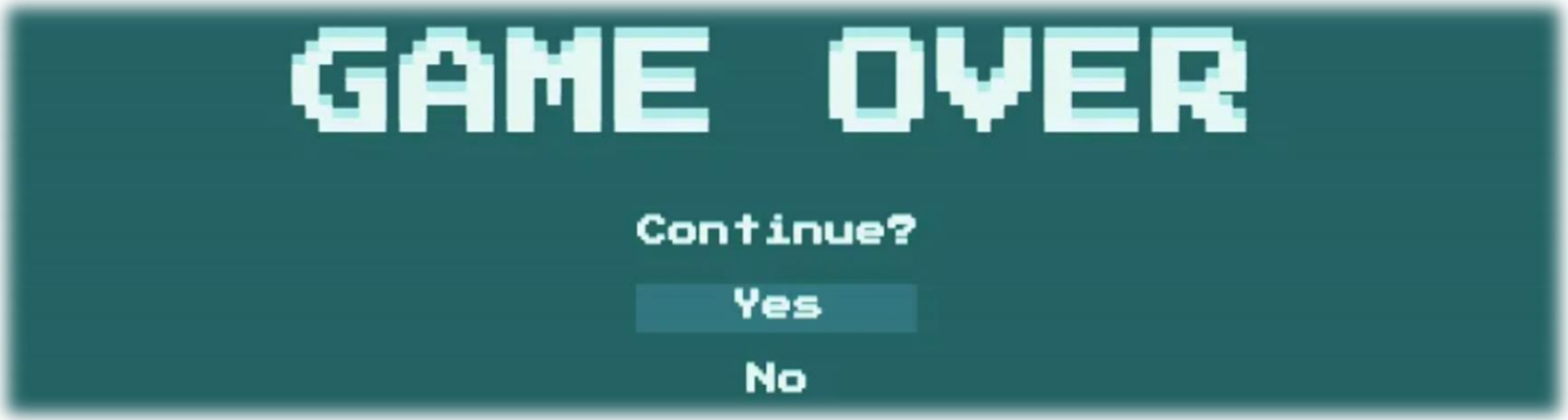
  - Investigating system of companies and breakdown of regions (simulations similar to statistical physical approaches) [7]

Approaches to improve SME resilience

- **Based on findings listed in scientific literature (non-exhaustive list):**
  - **Greater emphasis on staff trainings to improve resilient mindset**
  - **Resilience can be depicted from the activities of the SME not the characteristics**
  - **SMEs are great knowledge generators but poor knowledge accumulators**
  - **Strategical thinking and modern managerial tools**
  - **Clusterisation for risk reduction**
  - **Proactive attitude to technological novelties**
  - **Cautious R&D investments (e.g.: AI)**

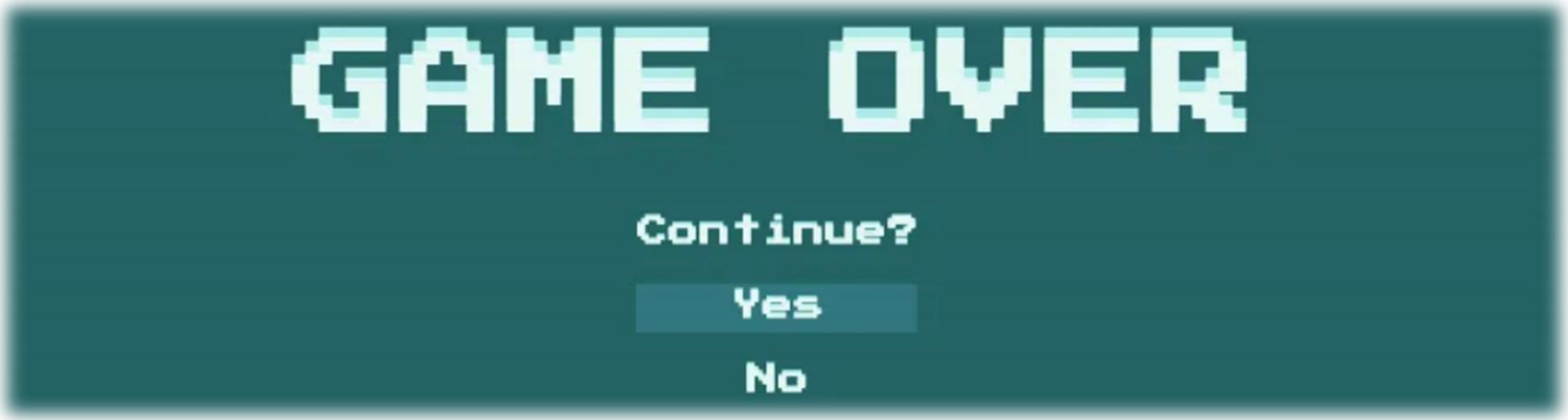
Limitations

- **Hard-data alone does not suffice**
- **At least one crisis phenomenon must be passed through (and survived…)**
- **Various types of SME structures, industries, managerial structure and ICT maturitiy stage, hard to use holistic approaches**
- **Collection of company specific soft-data might be problematic and biased**
- **No real way to check results**
- **The company is not just the tangibles then the staff: knowledge accumulation shall be fostered**



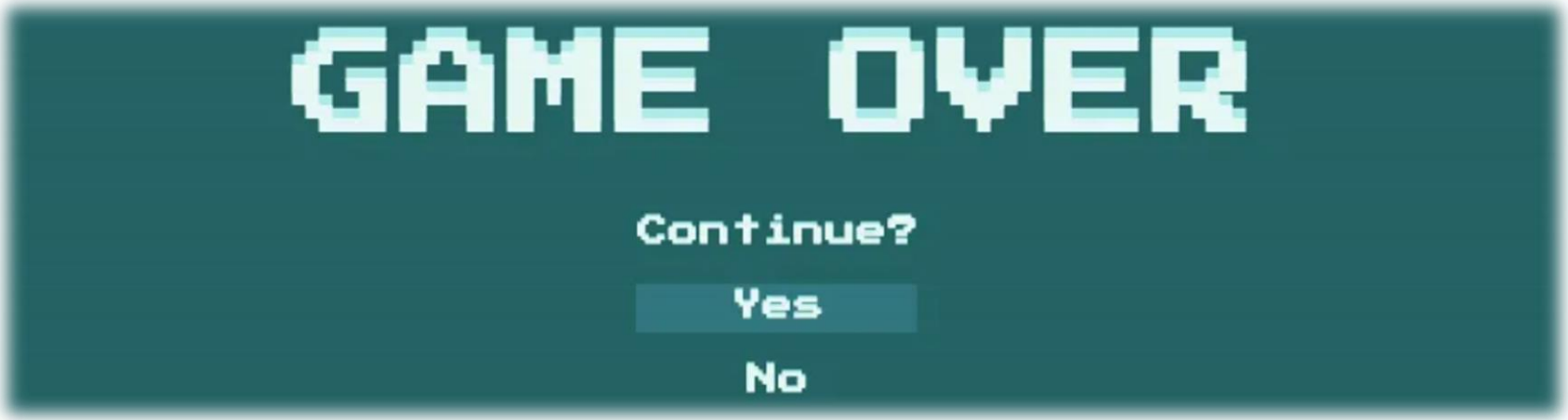
Possibilities

- **Questionnaire development**
- **SME resilience-audit (understanding vulnerabilities, SWOT, definition of key areas to develop)**
- **Supporting local government fund reallocation processes**
- **Trainings for owners/leaders (experience exchange, best practices etc.)**
- **Bringing together SMEs, chambers, local government actors etc.**
- **Identifying local SME interconnectedness, in order to understand local community vulnerability aspects**



Conclusion

- **SME business resilience is still a researched area**
- **Existing solutions shall be considered with reservations**
- **No holistic model at present**
- **Lack of proper and sufficient data (timespan of several years would be preferred)**
- **A comparatory, inter-industry model shall be developed with relative measures**
- **SMEs shall be treated regionally distinct (there might be different traditions in entrepreneurism and various regulatory environments)**



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Thank you!

Presented By:

Ferenc Tolner
Production and Innovation Manager
am-LAB
Email: ferenc.tolner@am-lab.hu

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