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Will GenAI Make or Break Your Process?
Structuring the Influence of GenAI on Business Process Resilience

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Research Context and Motivation

Volatile Organizational Environments

Organizations face frequent disruptions like workload surges and system failures, increasing the need for resilient business processes.

Role of Business Process Resilience

Business process resilience (BPR): Ability of the process to *anticipate* threats, *cope* with unexpected events, *restore* its performance to an acceptable level after disruption and *learn*.

Impact of Generative AI

Generative AI adoption is rapid but its effects on process stability and resilience remain unclear and potentially disruptive.

Socio-Technical Perspective

GenAI acts as a sociotechnical intervention affecting technology, human roles, and organizational structures together.

Problem Statement and Research Question

Unstructured GenAI Implementation

GenAI is often introduced without clear tasks or governance, causing uncertainty in business processes. [7,8]

Impact on Employee Workload

Instant integration of GenAI outputs can increase coordination and validation demands while increasing cognitive strain on employees [19].

Research Question:

The study investigates GenAI's potential impact on business process resilience including absorption, adaptability, and robustness.

Balancing Benefits and Challenges

GenAI acts as a stress test revealing both efficiency gains and challenges like rework, productivity loss and employee fatigue.

Dimensions of Business Process Resilience

Core Resilience Dimensions according to Kraus et al. [1]: absorption, adaptability, agility, flexibility, redundancy, robustness, recovery, resourcefulness, and rapidity.

- **Function of Absorption and Adaptability**
  - Absorption mitigates immediate disruption impact; adaptability allows adjustment over time to changing conditions.
- **Speed and Flexibility Aspects**
  - Agility and rapidity highlight quick response; flexibility offers alternative execution paths during disruptions.

- **Redundancy and Robustness Importance**
  - Redundancy provides backups to compensate failures; robustness ensures endurance under stress without function loss.

Methodological Approach

Mixed Methodology

Combines qualitative analysis with process simulation to study GenAI impact on business processes.

- **Qualitative Analysis:** to map empirical findings onto business process resilience, identifying the benefits and threats of GenAI.
- **Process Simulation**: simulates marketing process before and after GenAI introduction analyzing performance indicators.
- **Analytical Integration**: to combine qualitative and quantitative approaches and link resilience concepts to observable process behavior.

Qualitative Analysis: Potential Positive Effects of GenAI on BPR

Enhanced Speed and Agility

GenAI accelerates content creation and idea development, improving agility in knowledge-intensive business processes. [20, 21]

Support for Beginners

GenAI provides templates and structured suggestions, helping beginners improve output quality and reduce barriers to entry. [20, 21]

Resourcefulness and Flexibility

Generates multiple alternatives and suggests workflow adjustments to manage disruptions and changing requirements. [22]

Conditional Resilience Contribution

GenAI enhances decision support but does not provide physical redundancy, requiring careful integration and governance. [23]

Qualitative Analysis: Human and Organizational Challenges

Increased Workload and Technostress

GenAI integration raises demands for prompt engineering and troubleshooting, causing technostress and reducing productivity. [25-27]

Quality Assurance Challenges

Low-quality AI output leads to rework loops and extra coordination, straining business processes without strong quality controls. [24, 21, 25]

Shifts in Employee Roles

Roles shift from value creation to monitoring and error correction, impacting job satisfaction and trust in AI technology. [28-30, 32]

⇒ **Impact on Business Resilience**

Human factors influence resilience as employees maintain process continuity; undermining motivation may reduce overall resilience.

Qualitative Analysis: Risks Across BPR Dimensions

Absorption Capacity Challenges

Processes may become overstretched managing increased validation and coordination efforts due to GenAI integration. [21, 26]

Adaptability and Output Inconsistency

Persistent output inconsistencies like model drift require ongoing workflow and governance adjustments impacting adaptability. [21, 32]

Redundancy and Dependency Risks

Reducing human tasks with GenAI increases reliance on single systems or vendors, raising vulnerability to failures. [33]

Robustness and Recovery Threats

Issues like hallucinations, bias, and opaque logic threaten robustness; lack of governance weakens recovery capacity.[33, 35]

Example Process and Simulation Setup

Business Process: Design Marketing Campaign with GenAI

A medium-sized enterprise uses GenAI for text and image generation to enhance marketing campaign planning and execution.

Process Modeling and Simulation

The process is modeled using BPMN before and after GenAI integration to compare efficiency and structure changes.

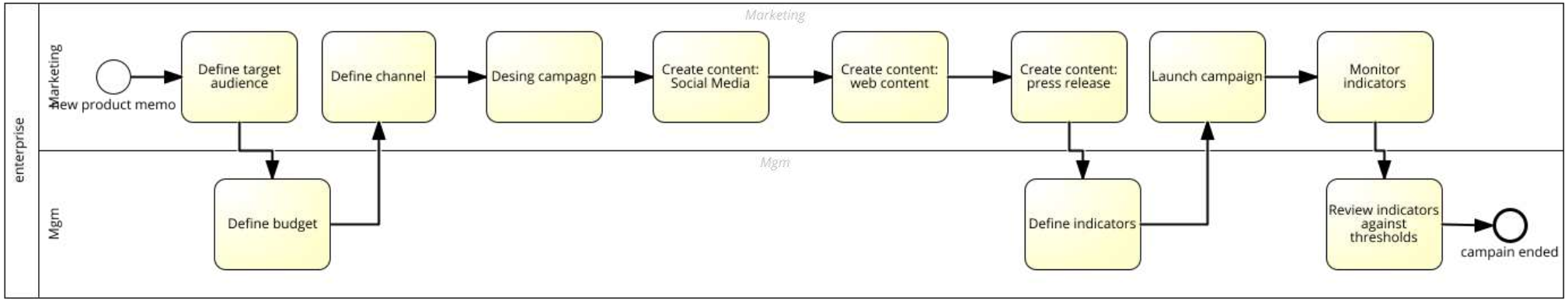
Task Durations and Rework

Simulation assumes human tasks take two hours, AI tasks ten minutes, with a 60% rework probability reflecting quality checks.

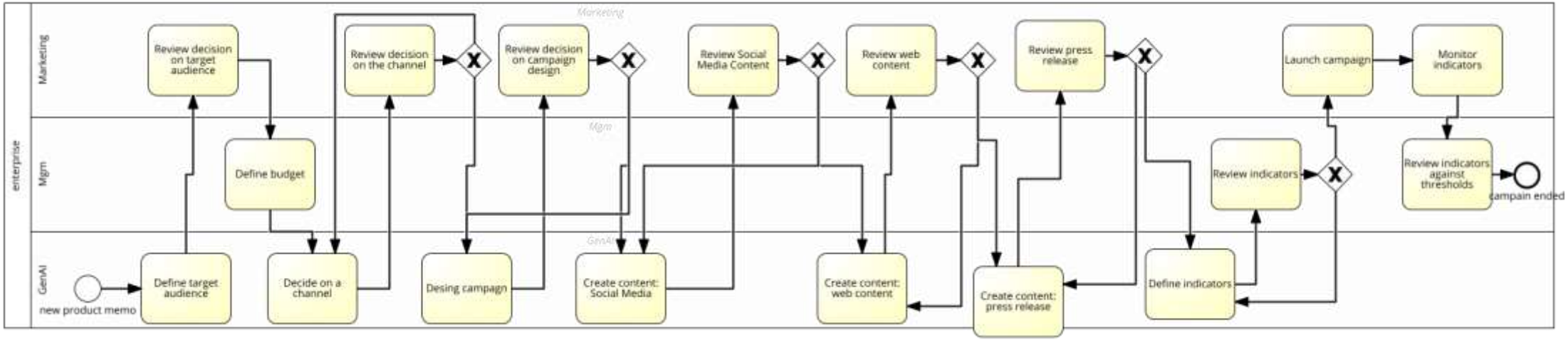
Cost and Resource Comparison

Cost rates are assigned to employees while AI usage costs are negligible, allowing comparison of time, costs, and resource use.

Hypothetical process „Create marketing campaign“: Pre-GenAI Introduction



Hypothetical process „Create marketing campaign“: Post-GenAI Introduction



Simulation Results and Observations

Performance indictor	*Original process*	*GenAI-supported process*
Processing time	2d:14h:45minutes	3d:3h:40 minutes
Bottleneck	Marketing, Management	Marketing
Costs	4.088	4.125€
Resource utilization		
Marketing	97%	96%
Management	59%	63%
GenAI	NaN	34%

Discussion: GenAI as a Stress Test

GenAI as Stress Test

GenAI reveals hidden weaknesses in business processes, testing resilience beyond productivity improvements.

Limitations of Traditional Metrics

Time, cost, and resource metrics overlook process and output quality impacted by GenAI.

Human-Organizational Impact

Shifts toward oversight roles can reduce productivity and well-being if not managed properly.

Conditional Benefits of GenAI

Strong governance and clear decision rules enable GenAI to improve resourcefulness and recovery.

Conclusions and Implications for Research

Conditional Impact of GenAI

GenAI's effect on business resilience depends on governance and organizational adaptation to disruption.

Research Implications

Research should develop operational resilience metrics and gather empirical data across contexts.

Practical Recommendations

Effective GenAI adoption requires process redesign, role clarity, and investment in skills management.

Balanced Sociotechnical Perspective

The study frames GenAI as a complex sociotechnical system with context-dependent effects.

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Thank you for your attention

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