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Navigating the Digital Shift: The Interplay of Cognitive Biases and Decision Styles in Technology Acquisition by Eastern European SMEs

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Agenda

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3. Research Propositions and Methodology

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Introduction

Problem

Eastern European SMEs have a **lower digital technology adoption rate** than thier Western counterparts.

Context

Digital technology is crucial for SME success, but Eastern European firms face unique challenges *(limited capital, slower digital infrastructure development, lower digital skills)*, all leading to low adoption rates.

Research focus/gap

The impact of **cognitive biases on managerial decision-making** regarding digital technology acquisition and adoption in Eastern European SMEs.

Research objectives

1. Identify **key cognitive biases** and **heuristics** influencing technology acquisition and adoption.
2. Explore their **effects on managerial choices** and **organizational outcomes**.
3. Propose **practical interventions** to mitigate these biases.

Source: European Commission (2020) ; Ferrazzi et al. (2025)

Theoretical Background: Behavioral Decision Theory (BDT)

Behavioral Decision Theory (BDT) provides a framework for understanding **how individuals make choices,** especially when those choices differ from traditional logical predictions.

Since it is rationally bounded, human decision-making is swayed by **cognitive biases** (systematic errors) and **heuristics** (mental shortcuts), not solely by rational analysis.

The theory of Tversky and Kahneman (1974) holds particular significance in operations management, where decisions about adopting new technologies can greatly **affect an organization's efficiency and competitiveness.**

In **small and medium-sized enterprises (SMEs),** where resources are limited and decision-making is often concentrated among a few individuals, these **quirks of human judgment can have a profound impact.**

Source: Tversky & Kahneman, (1974); AlKhars et al. (2019); Nickerson (1998); Walasek et al., (2024); Arkes & Blumer (1985); Donohue et al. (2020); Macdonald, et al. (2016)

Theoretical Background: Biases and Heuristics

Cognitive biases are **systematic deviations from rational judgment** that arise from the bounded cognitive architecture of decision-makers. In the context of technology acquisition, such biases influence every phase of the procurement process – from **problem recognition** and **vendor evaluation** to **implementation** and **post-adoption justification**.

Recent research across entrepreneurship, management, and information systems emphasizes that these biases are **not merely random errors** but reflect **predictable heuristics** that managers employ to simplify complex, uncertain environments.

These heuristics conserve cognitive resources and **speed up decision-making**, but they **systematically distort perception, evaluation, and learning.**

IMPACT: Deviations from rational decision models can affect acquisition efficiency, technology integration, and competitiveness. Decision-makers rely on experience, analogical reasoning, and peer references rather than on formal analyses.

Source: Tversky & Kahneman, (1974); Thomas, 2018; French et al., 2025, Hammond et al., 1998; Fasolo et al., 2025, Guercini & Runfola, 2021; Rafinda et al., 2024

Theoretical Background: Biases and Heuristics

How biases can hinder rational decision-making in technology acquisition?

Table 1 - Cognitive Biases and Behavioral Mechanisms in Technology Acquisition

Bias	Behavioral Mechanism	Manifestation in SME Technology Procurement	Representative Sources
Anchoring Bias	Overreliance on initial numerical or qualitative reference points when forming judgments.	Fixation on vendor's first price quote or a single product demonstration, leading to poor negotiation leverage.	Kahneman & Tversky (1974); Hammond et al. (1998); Guercini & Runfola (2021)
Availability Heuristic	Judging likelihood or value based on easily recalled or recent information.	Relying on anecdotal success stories or recent peer adoptions, neglecting less visible evidence.	Tversky & Kahneman (1973); Rafinda et al. (2024); French et al. (2025)
Confirmation Bias	Seeking or interpreting evidence that confirms existing beliefs while discounting contrary data.	Ignoring vendor performance problems when technology aligns with prior expectations.	Nickerson (1998); French et al. (2025); Thomas (2018)
Overconfidence Bias	Overestimating one's capabilities or control over uncertain events.	SME owners assume they can integrate complex systems without sufficient training or infrastructure.	Thomas (2018); Malmendier & Tate (2005); Rafinda et al. (2024)
Loss Aversion	Weighing potential losses more heavily than equivalent gains.	Refusal to replace outdated systems due to perceived risk of disruption or sunk investments.	Kahneman & Tversky (1979); Guercini & Runfola (2021)
Sunk Cost Fallacy	Continuing prior investments due to emotional commitment to past expenditures.	Persisting with failing technology projects rather than reallocating resources.	Arkes & Blumer (1985); Thomas (2018); Meier & Peters (2023)

Theoretical Background: Biases and Heuristics

How biases can hinder rational decision-making in technology acquisition?

Table 1 - Cognitive Biases and Behavioral Mechanisms in Technology Acquisition

Bias	Behavioral Mechanism	Manifestation in SME Technology Procurement	Representative Sources
Status Quo Bias	Preference for existing states of affairs due to familiarity or inertia.	Delaying digital transformation projects even when benefits are clear.	Samuelson & Zeckhauser (1988); Thomas (2018)
Optimism Bias	Overestimating positive outcomes and underestimating risks.	Expecting rapid ROI from digitalization without accounting for learning curves.	Sharot (2011); Fasolo et al. (2025); Rafinda et al. (2024)
Bandwagon Effect	Adopting choices because others in the same network have done so.	Following competitors' adoption of software without evaluating contextual fit.	Abrahamson & Rosenkopf (1997); Meier & Peters (2023)
Framing Effect	Evaluating outcomes differently depending on how options are presented.	Choosing vendor offers framed as "cost-saving" rather than "risk-mitigating," even when equivalent.	Kahneman & Tversky (1981); French et al. (2025)
Escalation of Commitment	Intensifying investment in failing decisions due to ego or sunk costs.	Continuing to fund underperforming IT implementations to avoid admitting mistakes.	Staw (1981); Thomas (2018)
Herding Bias	Conforming to perceived group norms or peer practices.	Selecting technologies endorsed by trade associations without independent analysis.	Bikhchandani et al. (1992); Meier & Peters (2023)

Theoretical Background: Individual Decision Styles and Decision Logics

Why individuals differ in processing information?

Decision Style

Denotes habitual modes of gathering, evaluating, and acting on information.

Rational | **Intuitive** | **Dependent** | **Avoidant** | **Spontaneous**

Decision Logic

Represents deeper reasoning principles that guide interpretation.

Logic of Appropriateness

The decision is determined by its "appropriateness" to roles, norms, rules, identity, or routine.

Logic of Consequence

The decision is based on consequences, payoffs, cost-benefit analysis, or strategic calculation.

Source: Thomas, 2018; Rafinda et al., 2024, March (1994)

Theoretical Background: Attention-Based View and Sensemaking

How cognitive biases translate into organizational actions?

Attention-Based View (ABV)

→ Attention, a limited cognitive resource, determines which issues gain managerial focus and how they are prioritized.

Biases act as attentional filters in this process

Sensemaking Theory

→ Shows how managers interpret what they notice.
→ Sensemaking is retrospective and social: managers construct meaning by linking ambiguous cues to familiar narratives.

Biases distort this process

Integrating ABV and Sensemaking yields a sequential mechanism

Source: Ocasio's (1997), Weick's (1995)

Theoretical Background: Organizational Formalization and Procurement Processes

How structural factors influence decision biases and logics?

- **Formalization** – the extent to which rules and procedures are codified – governs attention, coordination, and accountability

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- **Digital workflows** increasingly introduce structured evaluation gates that can counter anchoring and framing biases without removing human judgment

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- The literature distinguishes between **enabling** and **coercive formalization**.
  - ***Enabling structures*** – checklists, scoring rubrics, transparent reviews – guide learning and reduce heuristic reliance.
  - ***Coercive systems*** emphasize compliance, reinforcing rigidity and status quo bias In SMEs, excessive formalization can create "rule-bound blindness" discouraging exploration and entrenching path dependence.

- **Formalization moderates behavioral decision processes:** low structure amplifies bias, moderate structure mitigates it, and excessive structure reintroduces distortion.

Source: (Adler & Borys, 1996; Skorková, 2020, (Athota et al., 2023).. , Adler and Borys (1996), (Fasolo et al., 2025, , (Thomas, 2018). , , (Guercini & Runfola, 2021)

Theoretical Background: Cognitive Bias Awareness Matrix

What instrument integrates behavioral decision and organizational learning theories?

The **Cognitive Bias Awareness Matrix (CBAM)** integrates behavioral decision and organizational learning theories, emphasizing that both awareness and remedial capacity determine debiasing effectiveness.

The CBAM comprises two dimensions – **awareness** (*implicit to explicit*) and **remedial capacity** (*individual to organizational*) – producing four configurations:

(I) **low awareness/low capacity**, dominated by intuition and unchallenged bias;

(II) **high awareness/low capacity**, where insight lacks procedural support;

(III) **low awareness/high capa**city, where enabling formalization substitutes for individual insight;

(IV) **high awareness/high capacity**, combining reflection, training, and structured decision aids for continuous learning.

Source: Thomas (2018), Guercini & Runfola (2021), Skorkova (2020), Fasolo et al. (2025), French et al. (2025)

Research Propositions

From this theoretical synthesis, a series of propositions can be derived to guide empirical testing:

(P1) Cognitive biases significantly influence managerial attention allocation during technology acquisition, directing focus toward salient or confirmatory cues while excluding contradictory evidence.

(P2) Biased attention structures influence sensemaking processes, leading to selective interpretation and narrative reinforcement when evaluating technology alternatives.

(P3) The dominant decision logic mediates the relationship between sensemaking and procurement outcomes, translating cognitive and interpretive processes into patterned organizational actions.

(P4) Analytical and independent decision styles weaken the relationship between cognitive bias and procurement outcomes by promoting evidence-based reasoning, **whereas intuitive and dependent styles** strengthen it.

(P5) Organizational formalization moderates the bias-outcome relationship in a curvilinear way: enabling formalization reduces bias effects, while coercive formalization amplifies rigidity and rule-bound blindness.

Methodology

Step 1: Onboarding questionnaire

- Distributed to decision-makers in Romanian SMEs (convenience sampling).
- Gathered information on roles, industry, acquisition practices, and decision standardization.
- Aim: Identify the most diverse pool for interviews.

Sample distribution

Company Size (n=90):

- Micro (70%), Small (21.11%), Medium (6.67%), Large (2.22%).

Industry:

- Rural Economy & Natural Resources (70%), Industry & Productive Infrastructure (21.11%), Commercial & Logistical Services (6.67%), Advanced & Digital Services (2.22%), Human Capital & Social Inclusion (2.22%).

Formalization/Centralization of tech acquisition:

- Low (12.22%), Moderate/Medium (37.78%), High (50%)

Step 2: In-depth interviews

- Selected **17 decision-makers** based on questionnaire responses, prioritizing diversity across industry, company size, and formalization/centralization of tech acquisition.
- Focused on decision-making processes for procuring digital technologies, selection criteria, influence of personal experiences/peers, and adoption challenges.
- Conducted in native languages, audio-recorded, and transcribed, processed with NVIVO.

Qualitative analysis process

1. Thematic approach with deductive coding, guided by existing literature on cognitive biases.
2. Two-step coding procedure (primary and second coder) for validity and reliability, resolving discrepancies collaboratively (consensus coding).
3. Data saturation appeared to be reached with **17 interviews**, prioritizing depth over statistical representativeness.
4. **Limitations:** Limited generalizability beyond Romanian SMEs; valuable regional specificity but may not fully represent other Eastern European contexts.

Source: Ritchie & Spencer (1994); Hsieh & Shannon (2005); Campbell et al. (2013)

Preliminary Results

We identified 17 distinct cognitive biases and heuristics.

Most frequently observed biases / heuristics

1. **Availability Heuristic:** 23 instances (15.13%) – decisions based on easily accessible/memorable information
2. **Anchoring Bias:** 16 instances (10.53%) – decisions heavily influenced by initial information/impressions
3. **Status Quo Bias:** 15 instances (9.87%) – resistance to change, favoring existing solutions
4. **Bandwagon Effect:** 12 instances (7.89%) – adopting technologies because others are doing so
5. **Affect Heuristic** – 10 instances (6,58%) – basing decisions on emotional response

Biases and Heuristics in the 'Other' category

- Negativity Bias, Recognition Heuristic, Hindsight Bias, Choice Overload, Primacy Effect, Present Bias, Mental Accounting, Simplicity Bias, Self-Serving Bias

Code	Count	Frequency
Availability heuristic	23	15.13%
Anchoring bias	16	10.53%
Status quo bias	15	9.87%
Bandwagon effect	12	7.89%
Affect heuristic	10	6.58%
Confirmation bias	9	5.92%
Loss aversion	8	5.26%
Recency bias	8	5.26%
Representativeness heuristic	6	3.95%
Overconfidence bias	6	3.95%
Sunk cost fallacy	6	3.95%
Satisficing	4	2.63%
Framing effect	4	2.63%
Risk aversion	4	2.63%
Optimism bias	4	2.63%
Other	17	11.18%
Total	**152**	**100.00%**

Preliminary Results

Availability Heuristic

"The truth is that, for the most part, I think we explicitly rely on searches, just internet searches."

~ Z.B., CTO, software development company

Anchoring Bias

"The price, that's the first thing, the price, even before we understand what it can actually offer."

~ A. B., CEO, marketing agency

Status Quo Bias

"Everyone protects their position; everyone comes up with six reasons why the old system is good just to keep their position. Because of this, changes are very difficult."

~ L. V., COO, agricultural and food industry company

Bandwagon Effect

"It helped us in the decision that a familiar company (already) uses the same solution."

~ A. B., CEO, marketing agency

Preliminary Results

Avoidant style

*"The truth is that from a technological point of view, **we tend not to switch**, rather than jump into something we're not sure about."*

Dependent style

*"I always **need to have a reliable source** I can turn back to in such matters."*

Intuitive style

*"Well, basically, if it's a simple purchase, then **I go with my gut feeling**."*

Rational style

*"So, we have to use data, **we have to rely on data, on research, and we must gather best practices** from the industry to build a package – or a decision – that others then just have to say yes or no to."*

Spontaneous style

*"When I was at a course, I don't even remember who mentioned it, **I just said: right, I need that.**"*

Preliminary Results

Logic of Appropriateness

*"For example, it plays a role **how much experience we have with a given tool** and what kind of experience that is."*

*"The other situation is when I knew that the software I wanted to acquire **had to be integrated** somewhere into our existing system."*

Logic of Consequence

*"Of course, the **price** at which the given technology is purchased also matters."*

*"Well, **cost** is **the biggest factor**."*

*"Well, **obviously the price**. Sometimes that's something we have to talk about too, but there are also significant price differences on the market for very similar services."*

Discussion

1. Cognitive biases and heuristics do have a **substantial influence on managerial decision-making** regarding digital technology acquisition.

2. Biases rarely operate in isolation, **forming self-reinforcing networks** (emotional judgments, social influences, risk aversion).

3. The Bandwagon Effect, while encouraging adoption, can lead to **strategically misaligned decisions**.

4. Less common biases like Optimism Bias can lead to **underestimating risks**.

5. These findings so far **align with extant research**, highlighting the systemic effects of biases.

Conclusion and Further Steps

Key takeaways

→ The identified biases / heuristics (e.g. availability heuristic, anchoring bias, status quo bias, bandwagon effect, affect heuristic) contribute to subjective / suboptimal decision-making and, in some cases to resistance to change;

→ Interconnected nature of biases highlights complexity..

Practical recommendations for SMEs

1. Bias awareness training programs.
2. Structured decision-making frameworks for objective assessments.
3. Fostering a culture of critical thinking to counter social and emotional influences

Future research directions

→ To uncover the underlying meanings and gain deeper insights from the research material.

→ To validate findings across broader contexts, to elaborate on the proposed interventions, and to assess their effectiveness.

→ Conducting experiments based on our insights.

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Thank you for your attention!

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Appendix

Appendix 1: Semi-Structured Interview Questions

Semi-Structured Interview Guide

General information about the company and respondent

Name of the company:
Industry:
Respondent position:
Respondent work experience:
Implemented technology:

Introduction

- Welcome and Consent Confirmation:

Thank you for agreeing to participate in this interview. Before we begin, I want to confirm that you have read and understood the consent form provided with the onboarding questionnaire and that you agree to proceed with this interview.

- Confidentiality Assurance:

I assure you that this interview is for research purposes only. We will not be discussing sensitive or personal information, and your responses will be treated with the utmost confidentiality. The information you provide will not pose any risk to your company's reputation.

Background Information

1. Role and Experience:

Could you please describe your role in the company and your experience with technology procurement?

2. Company's Technology Landscape:

Can you give an overview of the current digital technologies used in your company for collaboration, workflow, and service process optimization?

Appendix 1: Semi-Structured Interview Questions

Decision-Making Process

3. Initial Consideration:

When you first consider acquiring new digital technology, what are the key factors that you take into account?

4. Information Gathering:

Describe how you typically gather information about potential technologies. How do you ensure that you have a comprehensive understanding of the options available?

5. Evaluation Criteria:

What criteria do you use to evaluate the digital technologies you are considering for procurement?

Heuristics and Biases

6. Time Constraints:

Can you recall a situation where time constraints affected your decision-making process for technology procurement? How did you handle it?

7. Information Overload:

Have you ever felt overwhelmed by the amount of information available when choosing a technology? How did you manage to make a decision in such a scenario?

8. Past Experiences:

How do past experiences with technology influence your current decision-making? Can you provide an example?

9. Predictability and Unpredictability:

How do you deal with the predictability or unpredictability of technology performance during the decision-making process?

10. Memory Constraints:

Are there instances where you had to rely on memory for important information about technologies? How did you ensure the accuracy of your recollections?

Appendix 1: Semi-Structured Interview Questions

Specific Biases

11. Availability Heuristic:

When making decisions, how do you ensure that your most recent experiences or readily available information do not disproportionately influence your judgment?

12. Anchoring Bias:

Can you describe a time when the first piece of information you received about a technology significantly shaped your subsequent decision? How did you recognize and adjust for this bias, if at all?

13. Seeking Diverse Perspectives:

How do you incorporate different viewpoints or opinions to avoid biases in your decision-making process?

14. Decision Reflection:

Looking back at your technology procurement decisions, can you identify any that may have been influenced more by heuristics or biases than by objective analysis?

Impact of Individual Decisions

15. Individual Influence:

In what ways do you believe your individual decisions have impacted the technology procurement process at your company?

16. Delimiting Organizational and Individual Effects:

When considering technology acquisition, how would you describe the interplay between your organization's culture, norms, and decision-making processes and your own personal experiences, knowledge, and leadership style in shaping the final technology procurement decision?

Closing

- Final Thoughts:

Would you like to share anything else about your experience with technology procurement and decision-making that we haven't covered?

- Thank You: