How to Observe Strategic Behaviour in DecisionMaking Environments: a Literature-based Conceptual Framework

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Why strategic behavior?

After using the new Preference-based Accommodation Strategy design and decision method, one of the stakeholders was surprised that he did not use any strategic behavior.

“I did not use any strategic behavior”

“maybe because the outcome was favorable or maybe …”

This started our curiosity into the relationship between SB and DSS

Research problem and aim

Strategic Behaviour (SB): Stakeholders influencing decisions to maximize personal/group interests.

Gap: Limited understanding of how SB operates in Decision Support Systems (DSS).

Aim: Explore how SB manifests and can be observed in Decision Support Systems (DSS).

Research methodology

Approach: Narrative literature review using keywords, focusing on the publications from 1990 onward.

Databases: Scopus, Web of Science, Google Scholar, ScienceDirect.

Keywords:

Strategic behaviour: "strategic behaviour", "tactical behaviour", "opportunism", "gaming the system", "stakeholder strategies"

Decision Support Systems: "DSS", "decision support", "preference-based systems", "multi-criteria decision analysis", "collaborative systems"

Intersectional themes: "strategic manipulation DSS", "strategic user interaction", "bias in DSS" "gaming digital decision systems"

Literature research

Inclusion criteria:

- Explicit discussion of strategic behaviour in group or mediated decision-making.
- Empirical, conceptual, or theoretical engagement with DSS.
- Relevance to fields such as planning, policy, management, governance, or information systems.

Exclusion criterion:

- Studies focusing exclusively on single-user decision systems or strictly technical DSS algorithm design without behavioural context were excluded.

Categorisation of the literature

What is SB?

Where and when SB happens?

Which resources are used for SB?

How SB happens (observing it)?

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Definition of SB

Strategic behaviour (SB) **lacks a universally accepted definition**.

The concept originates from game theory, notably the work of Neumann & Morgenstern (1944), who emphasized that in competitive scenarios involving multiple decision-makers, individuals act rationally to maximize their utility by anticipating the actions of others.

This photo has been generated by AI.

Cooperative/Collaborative vs. Competitive Strategies (Constructive vs. Destructive)

In the literature, different publications have used different terms to distinguish the SBs…

How to value SB from a normative point of view

- Strategic behaviour in general has a negative connotation
- However, even when an actor anticipates a win-win outcome, expecting positive effects for both themselves and others SB is present Ten Heuvelhof (2016)
- SB is justified on the basis of these legitimate interest
- In this research, we treat SB as an inherent part of decision making focusing it towards constructive cooperation.

Forms of SBs, characteristics, and their description

Form of behaviour	Characteristic	Description
Collaborative	Information sharing	Ensuring all relevant information is openly shared
	Public testing of assumptions	Verifying assumptions in a transparent manner
	Openness on goals	Clearly communicating individual and group goals and desired outcomes of actions
	Invitation to other perspectives	Actively seeking and valuing input from others
	Concern mutually beneficial solution	Striving for outcomes that benefit all parties involved
	Understanding of other one's goals	Recognizing and considering the objectives of others
Competitive	Control of information	Keeping relevant information to oneself rather than sharing, such as selectively sharing information
	Private testing of assumptions	Verifying assumptions individually without involving others
	Secrecy on goals	Not communicating individual goals and desired outcomes of actions
	Dismissal of other perspectives	Ignoring or undervaluing input from others
	Focus on individual gain	Prioritizing personal benefits over mutually beneficial solutions
	Disregard for others' goals	Not considering or recognizing the objectives of others

Sources: Binnekamp et al., 2006; Olekalns & Weingart, 2008; Pillutla & Murnighan, 1995; Saorín-Iborra & Cubillo, 2019; Schweitzer et al., 2005; Toma & Butera, 2015; R. J. Volkema & Fleury, 2002

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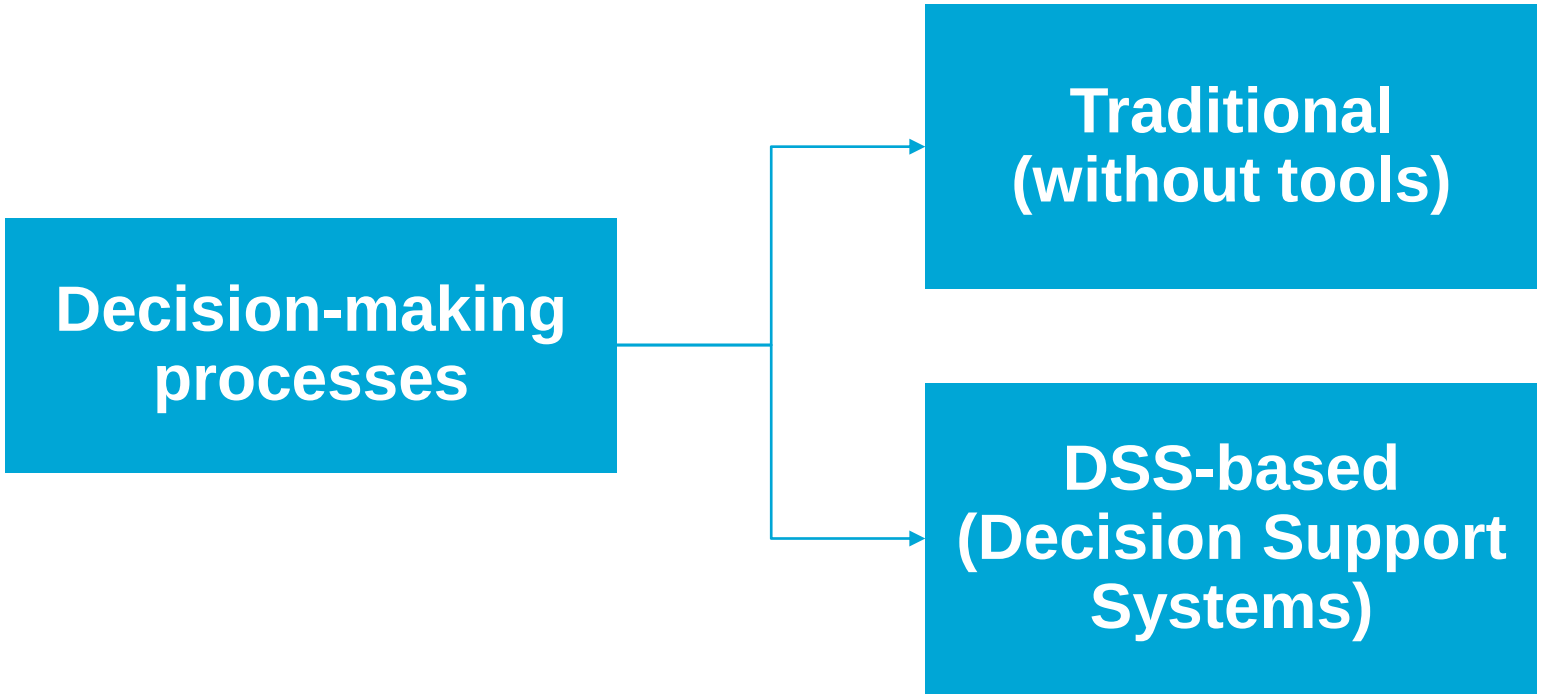
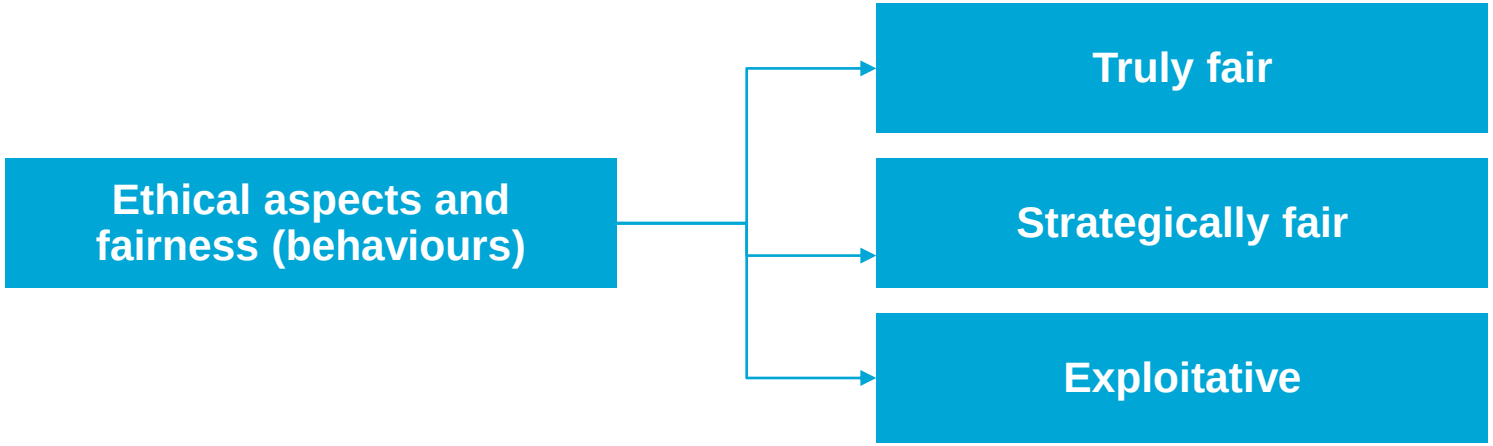
Where SB happens?

- SB happens in multi-actor decision-making processes.



SB in multi-actor decision-making processes and its components

- Power dynamics: Decisions are often determined more by power than by what is optimal for the group.
- Interdependence: The interdependence between private and common benefits may jeopardize attainment of common benefit potential.
- Ethical aspects and fairness: While a goal may be justified, the strategies used to achieve it can raise ethical concerns.



Decision Support Systems (DSS)

Definition
Mainly computer-based systems supporting decision-making

Different types of DSS:

- Individual systems
- Group Decision Support Systems (GDSS):

  ➢ *Open Design Methodology, a form of GDSS: Drawing from the Dutch "Polder model", it emphasizes dialogue, transparency, and openness, thereby replacing the traditional "black box" nature of decision-making with a "glass box" .*

Sources: Chen et al., 2004; Keen, 1980; Van Loon et al., 2008; Ackermann, 2021; Edelenbos & Klijn, 2006; Binnekamp et al., 2006; Edelenbos & Klijn, 2006.

When SB happens?

When these stratetegic actions are observed…

Sources: Abigail et al., 2018; Bruijn & Ten Heuvelhof, 2008; Bennet et al., 2015; Grosz et al., 2004; Volkema et al., 2010; Steinel & De Dreu, 2004; Schweitzer et al., 2006; Lewicki & Robinson, 1998; Elfenbein et al., 2009; Olekalns et al., 2014

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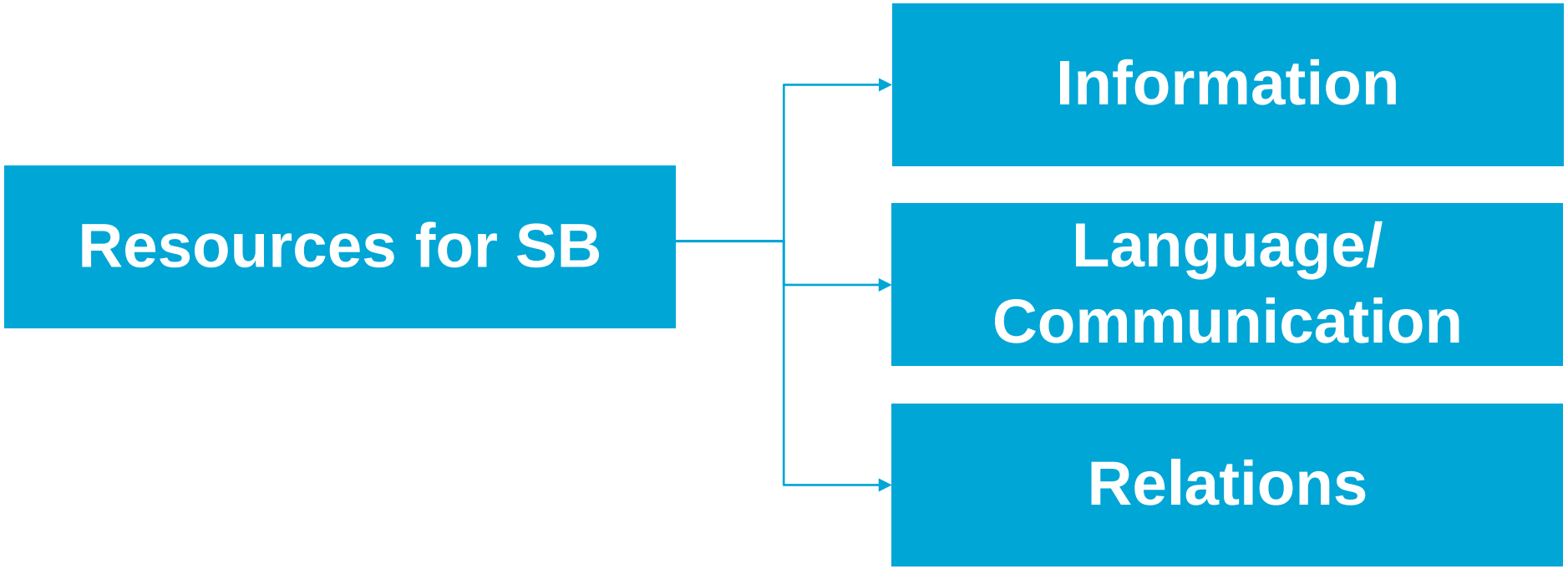
Resources for SB



Core principles of DSS

Transparency:

To provide trust and support informed decision-making

Inclusivity:

To ensure representation of stakeholders' goals.

Sources: Johnson et al., 2021; Ten Heuvelhof, 2016; Toma & Butera, 2015; Binnekamp et al. 2006; Binnekamp, 2010; Abgottspon & Andersson, 2013; Chong & Lalla, 2020; Tsirtsis et al., 2024; Benbasat & Nault, 2005.

SB in DSS literature

- DSS literature focuses on outcome optimization using tech support and equilibrium models.
- SB in DSS is viewed differently, often as agent-based behavior in computer science.
- Focus is on system robustness, not user interaction within DSS.

- *Need to explore how users engage in SB during DSS use (observation framework/model).*

Sources: Chen et al., 2004; Keen, 1980; Ten Heuvelhof, 2016; Arnott, 2004; Benbasat & Nault, 2005; Ackermann, 2021; Zigurs, 1989; Schafer & Gallemore, 2016; Huang et al., 2011;

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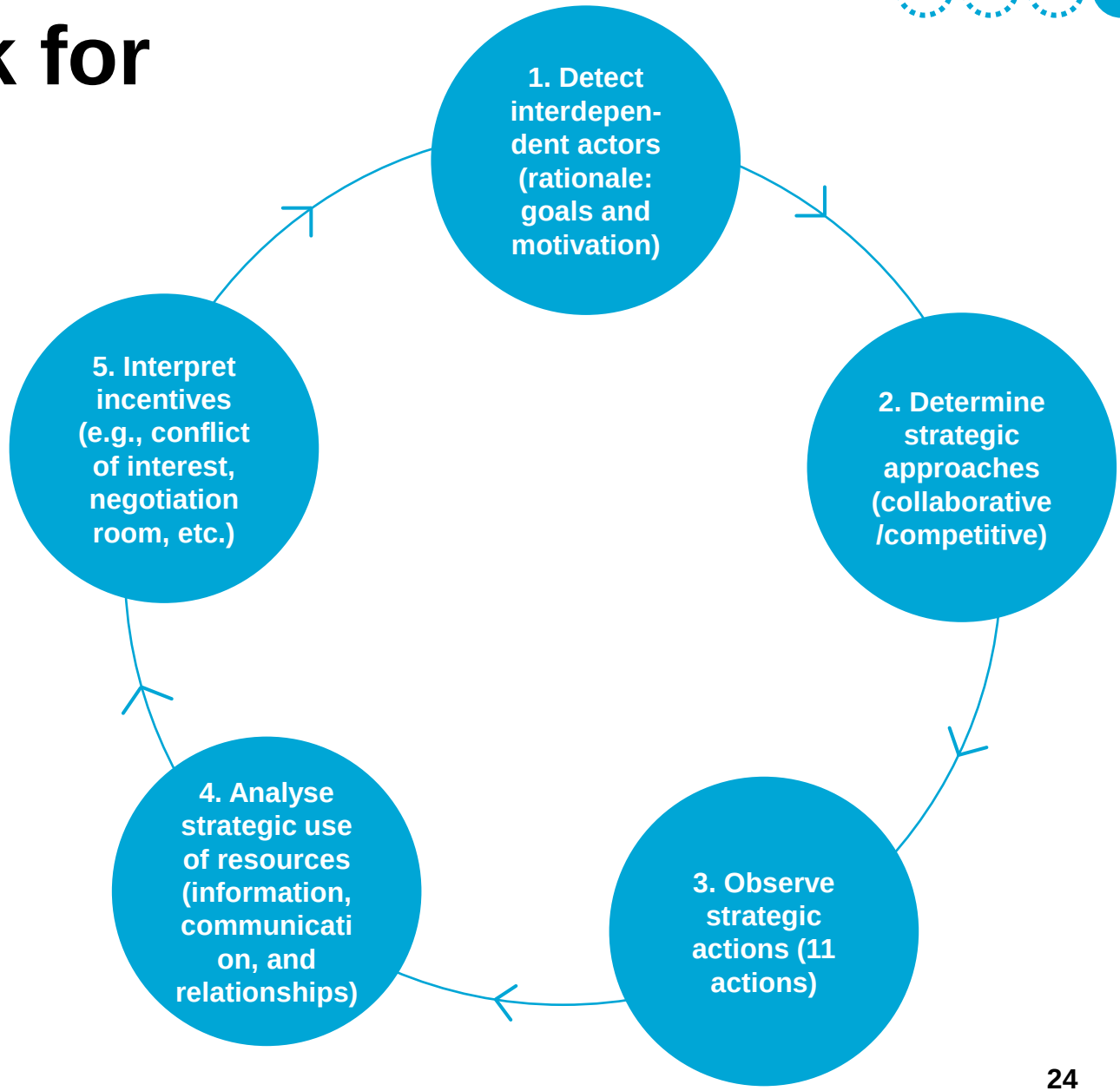
Conceptual framework for observing SB in DSS

- A lack of structured frameworks to systematically observe and analyse these behaviours across contexts.

- A five-step SB observational framework that helps identify and interpret strategic dynamics in DSS-supported, multi-actor environments.



Conclusions and future research

- SB (collaborative and competitive) is part of group decision making and as such inevitable, but manageable with thoughtful DSS design.

- Next Steps -> Empirical observation of SB in real DSS using the developed conceptual framework

References of the paper

SCAN THE QR CODE TO DOWNLOAD THE REFERENCE LIST

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Thanks for your attention!