**Decision-Support Systems and Decision Making: Managing Decisional Deskilling in Human-DSS Interactions in Organizations.
A Quantitative Study**
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Research Interests:

➢ AI-oriented data and knowledge modeling

➢ Deploying Emerging Technologies in the Workplace

  ▪ Impact on organization development, organizational creativity, and innovation capabilities

➢ (Digital) leadership, international remote project work

Investigating the Dark Side of Human-iDSS Interactions
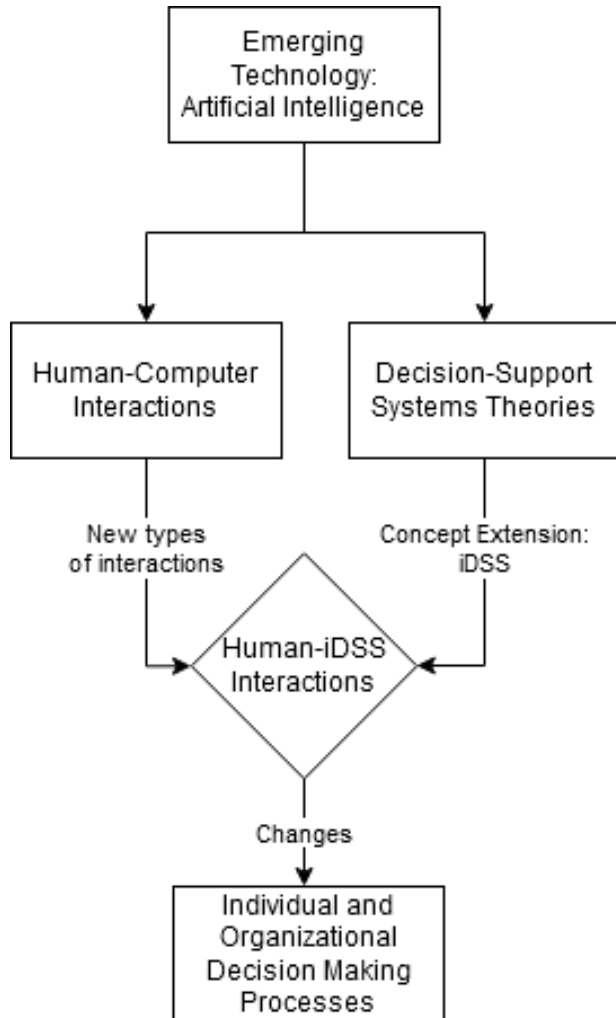
The focus is on the relationship between human-iDSS interactions and Decisional Deskilling, and the impact of this relationship on the knowledge of financial professionals.

Interacting factors in the relationship, which might impact Decisional Deskilling:
Individual factors, such as the knowledge and skills of the users, as well as their attitudes and motivations toward using iDSS.
Technical factors, i.e., the design and functionality of the iDSS including the ease of use, and availability of relevant information
Organizational factors, i. e. policies and procedures that govern the use of iDSS, as well as the level of support provided to users.

Decisional Deskilling, an unintended consequence, refers to the loss of declarative and/ or procedural knowledge on the individual employee's task level

Prior research suggested the degree to which iDSS performs decision-making activities, user's dependency on iDSS, and time spent with iDSS as contributing factors.

Method

- Literature review on DSS, iDSS, and deskilling

- The quantitative empirical approach is addressed through an anonymous online survey in the financial services sector in Germany, including investment banking, consumer banking, asset management, insurance, and other financial services

- Qualitative insights on the individual, organizational, and technological factors are gathered through open questions including access to training and support programs and experience with iDSS.

- The iDSS investigated might support decision-making processes in risk management, fraud detection, portfolio management, credit scoring and underwriting, as well as financial forecasting and modeling.

- The iDSSs can be partially or fully automated, taking over different decision stages, including 1) gathering information, 2) identifying problems,3) developing options 4), selecting the best course of action, and 5) implementing the decision

- To test hypotheses, the correlation (Pearson), and statistical significance among variables were determined. Qualitative content analysis was used for the open questions.

- Mitigation techniques to address Decisional Deskilling were then developed.

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Hypotheses Testing

Contributing Factors	Declarative Knowledge		Procedural Knowledge	
	N=39		N=39	
	r	p	r	p
iDSS taking over decision making activities	0.37	.019	0.37	.021
Dependence on iDSS	0.63	< .001	0.66	< .001
Time spent with iDSS	-0.09	.588	-0.03	.853

Value of Coefficient r	Correlation
$0 \leq r \leq 0.1$	No Correlation
$0.1 \leq r \leq 0.29$	Low Correlation
$0.3 \leq r \leq 0.49$	Medium Correlation
$0.5 \leq r \leq 0.69$	High correlation
$0.7 \leq r \leq 1.0$	Very High Correlation

Hypothesis	Result
H_1 The greater the extent to which the iDSS performs routine and time intensive tasks, the less declarative knowledge possessed by the financial professional.	Supported p = .019
H_2 The greater the extent to which the iDSS performs routine and time-intensive tasks, the less procedural knowledge possessed by the financial professional.	Supported p = .021
H_3 The greater the financial professional's dependence on the intelligent system the less declarative knowledge possessed by the financial professional.	Supported p = < .001
H_4 The greater the financial professional's dependence on the intelligent system the less declarative knowledge possessed by the financial professional.	Supported p = < .001
H_5 The greater the time the financial professional has spent with the intelligent system, the less declarative knowledge by the financial professional.	Not supported p = .588
H_6 The greater the time the financial professional has spent with the intelligent system, the less procedural knowledge by the financial professional.	Not supported p = .853

Trainings and Support Programs

advanced
courses
software
programs
work mentoring
skills hard academy
seminars online
career soft
coaching team
conferences knowledge
development
basic

Access to trainings
- Most have access to trainings
- Few financial professionals have no access to training
- Some do not need any trainings due to automated systems

but
some trainings and support programs offered are outdated e.g., in terms of technology or considered irrelevant, especially basic trainings

Participants who have access to training programs stressed the importance of these programs in maintaining and improving their skills.

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The Unintended Consequences of Deploying iDSS in Financial Services

Financial Services Professionals	
Positive	Negative
• Systematic task organization • Automated assistance • Shared responsibility	• Limited control over decisions • Loss of competence • Pressure to make quick decisions • Struggling with systems limitations • Transparency of decision making

Organizational Consequences	
Human Capital (Employee-related)	IT Compliance

Loss of knowledge
• Declarative Knowledge „What"
   • Explaining the decision (task-specific)
• Procedural Knowledge „How"
   • Explaining information processing
	Misuse of the system
	   • Desired outcome (gaining control)
	System circumvention
	   • Lack of trust

Practices to Address Decisional Deskilling

1. Providing <u>proper</u> training resources and programs to support skill maintenance and development

2. Encouraging participation among employees

3. Monitoring employees' reliance on iDSS and identifying areas where additional training and support are needed

4. Increasing participation in human decision-making activities

5. (Re-)evaluating the effectiveness of the system in place

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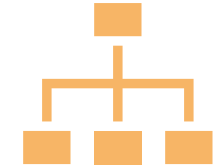
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Limitations and Future Research

Small sample size -> generalizability

Participants' own opinions and ratings -> bias

Time-sensitive results -> applicability in the future

Only three contributing factors ´

Larger sample

Longitudinal study tracking the effects of Decisional Deskilling over time

Mixed method analysis, e.g., qualitative interviews, in-depth case studies understanding the complex phenomenon of Deskilling

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