

Observing the Effects of AI-Assistance in a Contract Analysis Workflow - A Case Study

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Background & Motivation

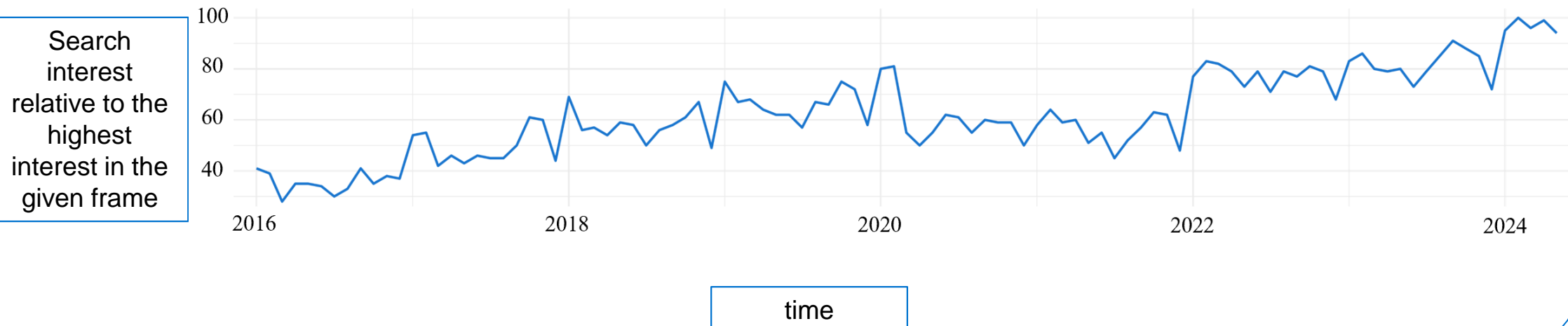
Research Questions

Methodology

Results

Limitations & Outlook

Google Trend „Legal Tech“



“Over the next two to five years, large language models (LLMs) will boost legal department productivity by at least 10% to 20%”

[3] Gartner (2024)

Arbeitsvertrag

Erstellt von: Anita Feigl | Erstellt am: 21.08.24

Filter: **IN ORDNUNG** 7 | **UNFAIR** 2 | **UNZULÄSSIG** 1

2.2 Arbeitszeit

Die regelmäßige wöchentliche Arbeitszeit beträgt 40 Stunden. Die Arbeitszeiten finden Montag bis Freitag von 8.00 Uhr bis 16.30 Uhr statt, wobei eine Pause von 30 Minuten durchgeführt wird. Die Arbeitszeit kann je nach Ermessen variieren. Weitere Details werden mit dem Vorgesetzten abgestimmt.

2.3 Kündigung

Eine Kündigung vor Beginn des Arbeitsverhältnisses ist nicht möglich. Während der Probezeit kann der Vertrag von beiden Seiten ohne Angabe von Gründen mit einer Frist von 2 Wochen gekündigt werden. Nach Beendigung der Probezeit beträgt die Kündigungsfrist 4 Wochen. Es muss immer schriftlich gekündigt werden.

Mit dem Ende des Monats, indem Sie das gesetzliche Rentenalter erreichen, endet automatisch das Arbeitsverhältnis.

Als Arbeitgeber hat *TechQuantum Innovations GmbH* das Recht, Sie jederzeit von Dienstleistungen freizustellen, wenn die Ihnen zustehenden Bezüge weitergezahlt werden. Eine Freistellung muss Ihnen stets schriftlich vermittelt werden.

3. Vertragsstrafe

Sollten Sie Ihre Arbeit vertragswidrig nicht aufnehmen oder den Arbeitsertrag vertragswidrig kündigen, sind sie verpflichtet, eine Zahlung in Höhe von einem Bruttomonatsgehalt als Vertragsstrafe zu tätigen zu zahlen. *TechQuantum Innovations GmbH* behält sich das Recht vor, darüberhinausgehenden Schadensersatz in Anspruch zu nehmen.

Monaten.

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Seite 1

Need for more empirical evidence
in the legal tech research field

[4] K. Munisami (2019), [5] Q. Hongdao et al. (2019)

Law firms faces many barriers
when adopting legal tech

[6] M. E. Kauffman et al. (2020)

Good practice: Evaluating the
effects of an AI application

[7] C. Negi Advocate (2023)

Case Study

Interviews
Experiment

Close research gap

Show success factors

Software evaluation

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RQ1

What are effects, incentives and barriers to adopting AI in the legal domain?

RQ2

What are the incentives and barriers to adopting an AI-Contract-Analysis software in a German law firm?

RQ3

How does the adoption of an AI-Contract-Analysis software in a German law firm affect the existing workflows and what are contributing factors for costs and benefits?

RQ4

What are the largest drivers for costs and benefits and what are remaining challenges? (lessons learned)

Outline



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Literature Review

- Analyzed effects of legal tech on other law firms
- Base for interview guidelines

Semi-structured Interviews

Field-experiment

Literature Review

Semi-structured Interviews

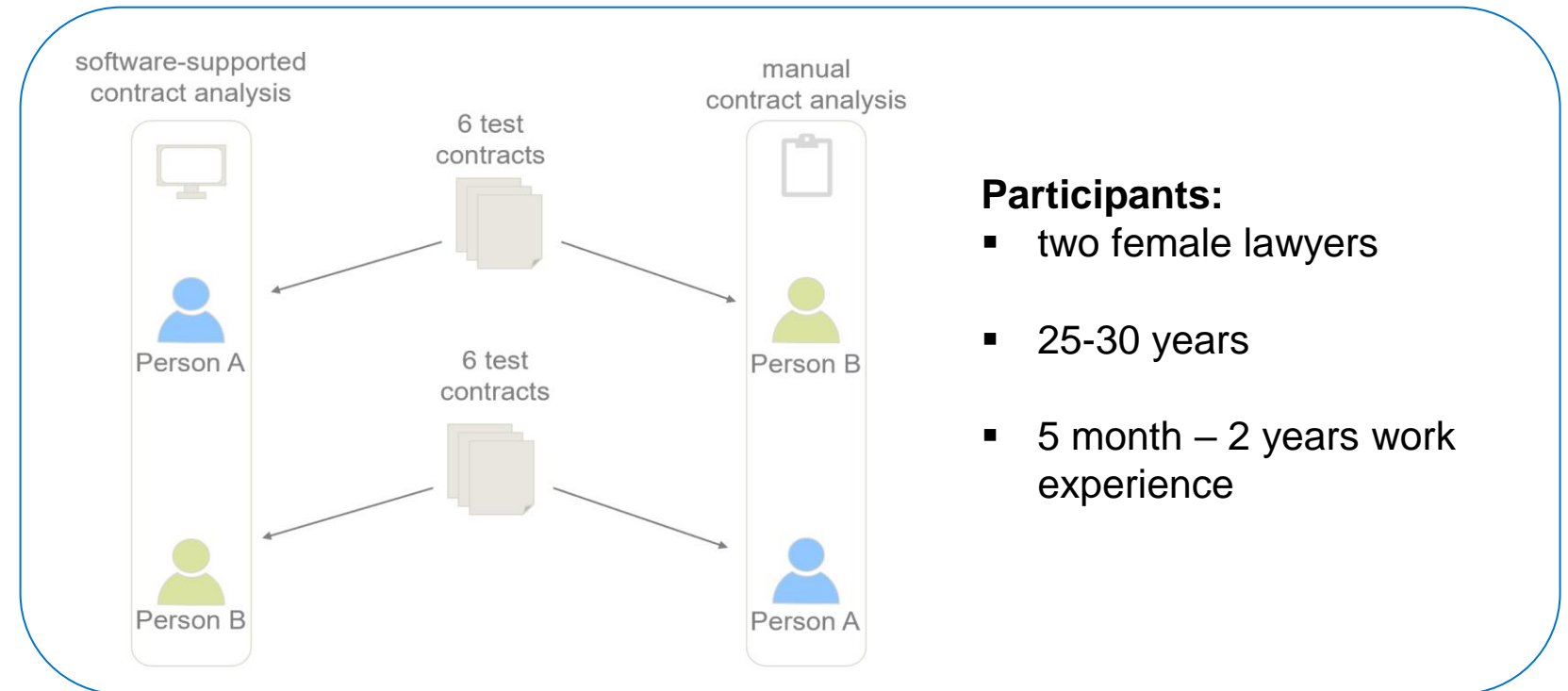
- initial interview with partner of the law firm
- Pre- & post-experiment interview with experiment participants

Field-experiment

Literature Review

Semi-structured Interviews

Field-experiment



Participants:

- two female lawyers
- 25-30 years
- 5 month – 2 years work experience

Outline



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Results

Performance of the KIBeKodA Software

Confusion Matrix

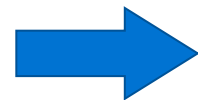
		Actual Class		
		green	yellow	red
Predicted Class	green	222	46	9
	yellow	19	89	11
	red	7	12	29

18.4% (arrow from 9 to 18.4%)

2.8% (arrow from 7 to 2.8%)

Metrics

Metric	Green	Yellow	Red
Accuracy	0.766		
Recall	0.895	0.605	0.592
Precision	0.801	0.748	0.604
F1-Score	0.846	0.669	0.598



Good performance for green classification

Rather low performance in identifying red classes

BUT: differentiation between red or green performed quite good

Results

Time Measurements from the Experiment

Without Software

With Software

First void clause

∅ 1.55 min

∅ 0.85 min



45.2 % time savings

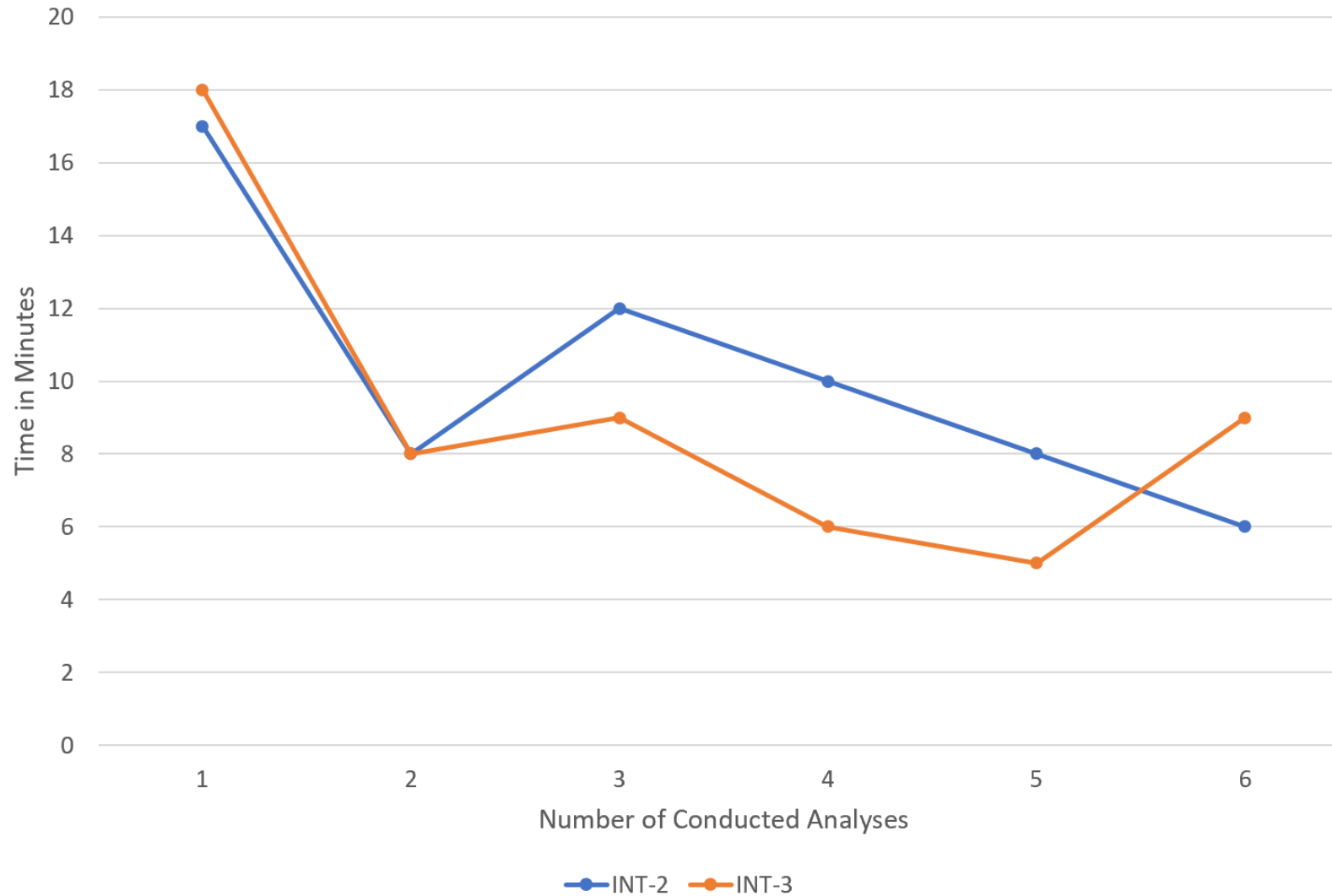
Detailed analysis

∅ 5.5 min

∅ 8.1 min

Results

Time Measurements from the Experiment



Results

Comparison of Incentives, Barriers and Effects for Adopting Legal Tech

RQ1 &
RQ2



Literature Review

Case Study

Literature Review

- High client expectations („**More-for-Less**“) [4]
- Competitive pressure [4]
- Expanding the client base [5]

Case Study

- High client expectations but no direct pressure
- Desire to be pioneers in the digital legal landscape
- Expanding the client base



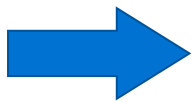
While the underlying reasons for the incentives differ slightly between the literature review and the case study, the overall incentives remain largely similar.

Literature Review

- Hourly-Billing Model → Missing Motivation [6]
- Data privacy & security issues [8]
- Lack of expertise [9]

Case Study

- Subscription model & highly motivated lawyers ("[...] sooner or later, a lot will and should be digitized.")
- Data security as highest priority → take necessary precautions to minimize risks
- Digitally proficient lawyers



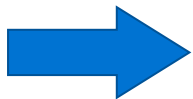
The law firm in our case study faces significantly fewer barriers to adopting Legal Tech since they already use digital methods and are a digitally proficient and motivated team.

Literature Review

- Time savings [8]
- Improved decision-making process [9]
- Paper savings → environmentally friendly [10]

Case Study

- Time savings are expected after the familiarization phase
- Improved decision-making process
- Already digital working methods → no more paper savings



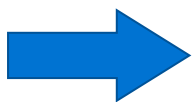
Some benefits have already been achieved by the law firms' digital working methods. Therefore, fewer benefits are expected in the case study.

Literature Review

- Decreasing critical thinking of lawyers [7]
- Exclusion of potential clients due to limited tech skills or resources [9]
- Increase in remote work → decreasing work-life-balance of lawyers [7]

Case Study

- Decreasing critical thinking of lawyers
- Technically proficient client base → no exclusion expected
- reduced internal communication and a more isolated work environment → decreasing work-life-balance of lawyers

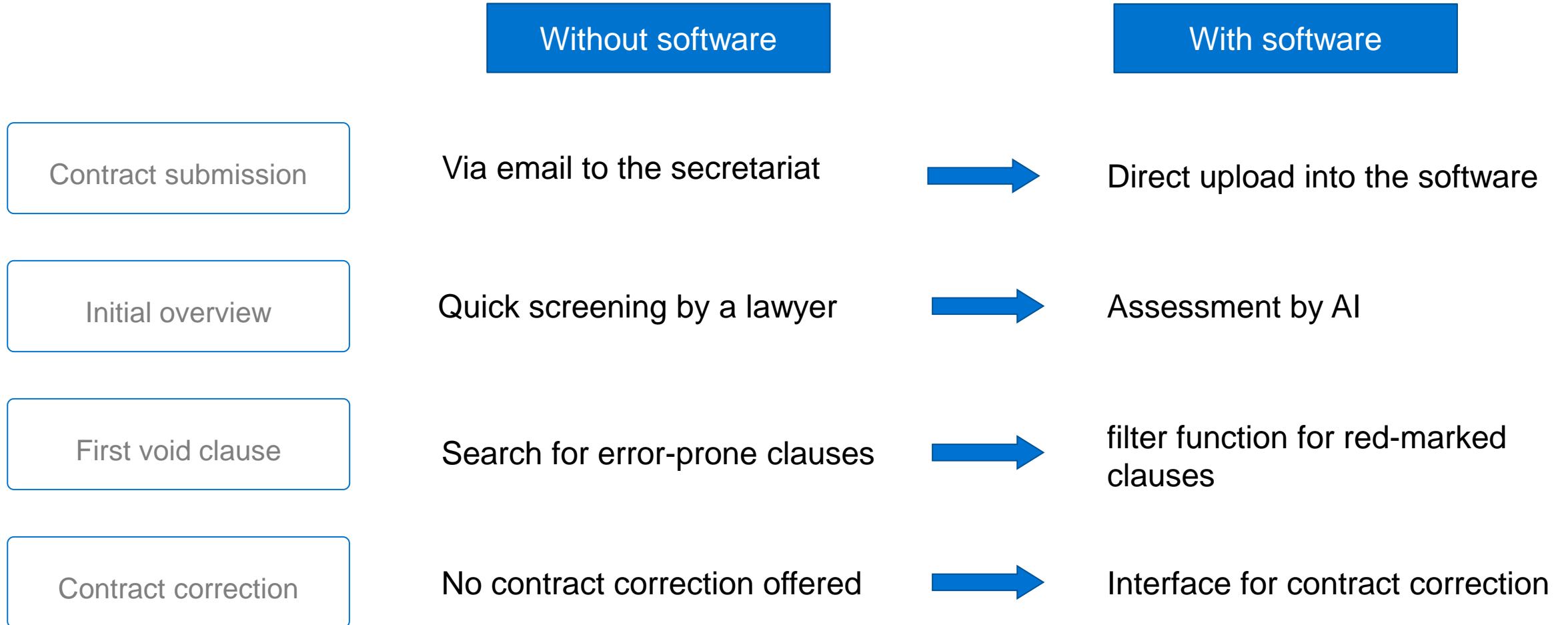


Small differences in reasons and negative effects between literature and case study could be identified.

Results

Changes in the Existing Analysis-Workflow due to the KIBeKodA Software

RQ3



positive

"I found the interface pretty self-explanatory."

"There wasn't much additional text either, it was limited to the essentials of the contract and the classification, which I liked."

"And this traffic light system, it's just something people know. So I really liked that."

negative

"[...] what bothered me a bit was this mixture of German and English."

"Sometimes the software recognized things as clauses that weren't."

"[...] it would be good if it were possible for individual sentences to be evaluated, not just clauses."

Key Drivers

- **Largest concern:** data protection
- **Key benefit:** an overall increase in efficiency
- No focus on monetary benefits

Lessons Learned

- **Workflow optimization:** need for a client submission interface to optimize the workflow
- **Human-in-the-Loop-system:** Effective solution for contract analysis to minimize liability risks
- **Liability Risks in Contract Corrections:** Contract corrections may raise liability risks

Outline



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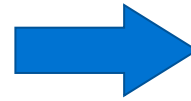
Research Questions

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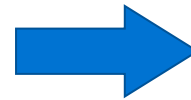
Limitations & Outlook

Small amount of participants with similar demographics



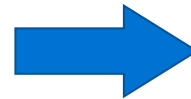
Limited diversity of perspectives

The KIBeKodA software is not yet integrated



Long-term effects are based on lawyers' expectations

A single researcher conducted research work



Potential biases

Extend the field-experiment to contract correction by the software

Follow-up evaluation after the software is fully integrated in the workflow

Test software in a more traditional law firm



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- [2] K. Zhukovina, “Legal Tech Overview: Best legal tech companies and trends,” *Ascendix Tech*, May 18, 2023. <https://ascendixtech.com/legal-tech-overview-best-legal-tech-companies/>
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- [4] K. Munisami. “Legal Technology and the Future of Women in Law”. In: *Windsor Yearbook of Access to Justice* 36 (2019), pp. 164–183.
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- [8] A. Rodionov. “Harnessing the Power of Legal-Tech: AI-Driven Predictive Analytics in the Legal Domain”. In: *Uzbek Journal of Law and Digital Policy* 1.1 (2023).
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- [10] A. K. Srivastawa. “Exploring Contract Management in the Digital Age: The Impact of Artificial Intelligence”. In: *Jus Corpus Law Journal* 4.1 (2023), pp. 737–749.



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