

A Unified View of Electronic Invoicing Adoption

Developing a Meta-Model on the Governmental Level

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What is Electronic Invoicing?

"The sending of invoices by electronic means i.e. transmission or making available to the receiver and storage using electronic equipment for processing....."

(European Council Directive 2001/115/EC)

Electronic invoicing is...

- essentially **the sending of invoices via electronic means** (DB Research 2010)

Electronic invoicing can...

- **help streamlining** administration **processes** in **public sector** institutions
- **improve quality** of service / **decrease error rate**
- **save costs** through an **efficient invoicing** process
- help in the **fight** against **tax evasion** by offering a **transparent process**

(Agostini and Naggi 2010, Tenhunen and Penttinen 2010, Billentis 2012)



Why Electronic Invoicing?

However...

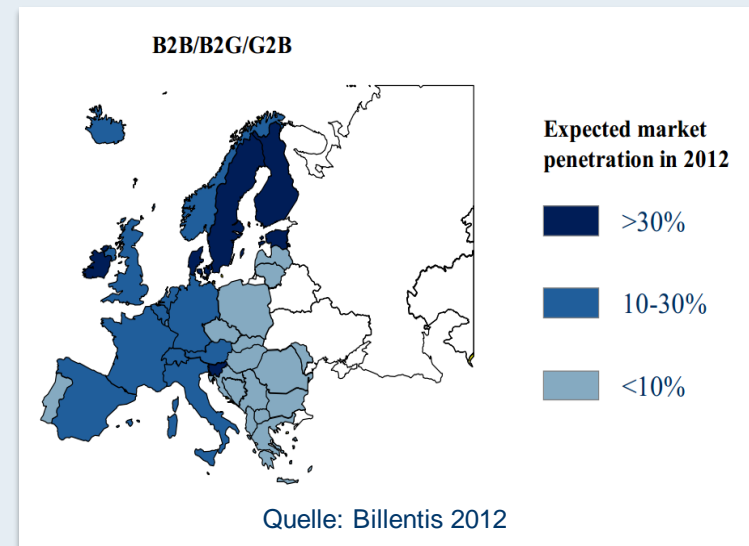
- **electronic invoicing market shows a very high fragmentation** (Billentis 2012)
- **adoption and diffusion / usage of electronic invoicing is still low** (DB Research 2010, Billentis 2012)
- **procurement processes in the public sector are still completely paper-based in most cases** (McCue et al. 2012, Billentis 2012)

There is big potential, as...

- **45-65 % of all businesses issue invoices to the public sector** (Billentis 2012)

Though...

- **public sectors do not use more than 10% of this potential** (Billentis 2012)



Research on Electronic Invoicing

Emphasis of prior research on electronic invoicing was laid on:

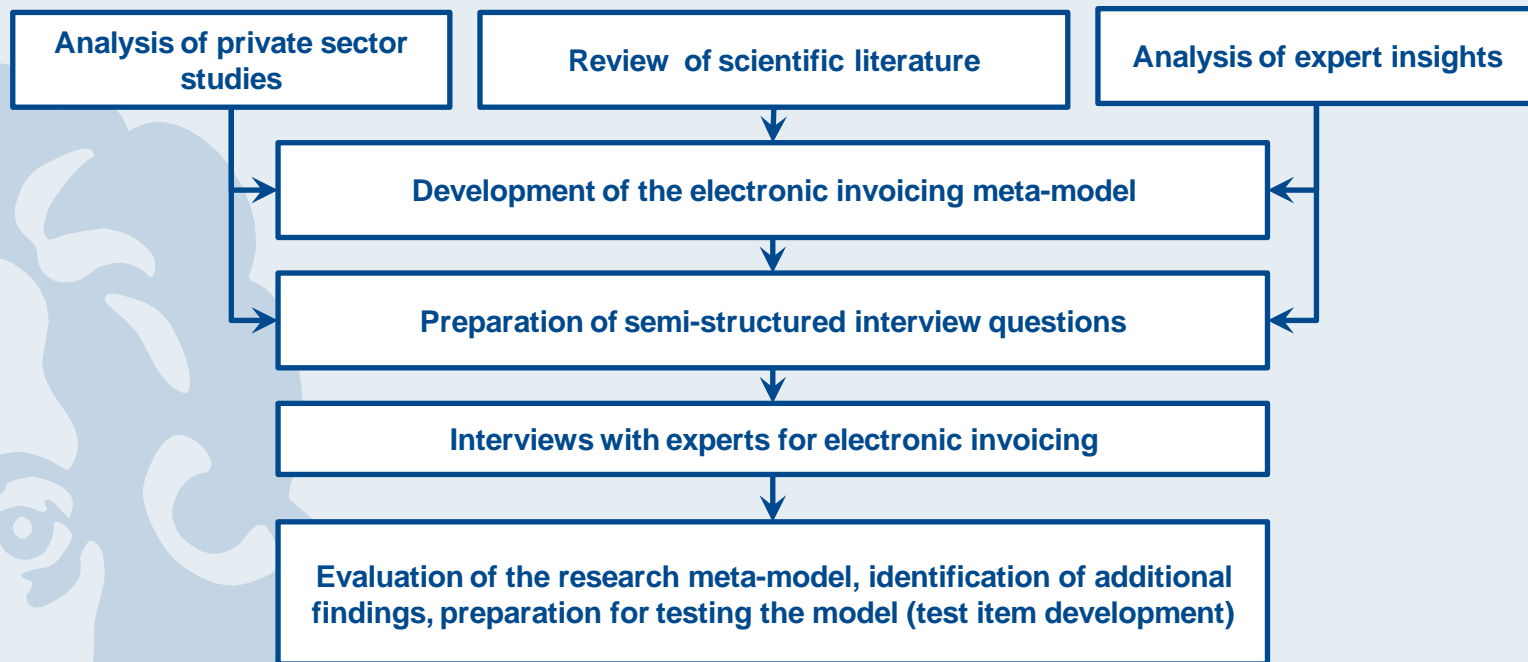
- **Ecological impacts of electronic invoicing** by looking at the **carbon footprint** (Tenhunen and Penttinen 2010)
- **Business performance impacts of electronic invoicing** by assessing **performance indicators** (Lempinen and Penttinen 2009)
- **Interorganizational impacts** by focusing on **business relationships** (Penttinen et al. 2009, 2010, Sonntagebauer 2010, Kivijarvi et al. 2011)
- **Factors influencing adoption of electronic invoicing** on the **individual level** (Zhang and Ibragimova 2003; Juntumaa and Oorni 2011)
- **Drivers and inhibitors** of electronic invoicing **adoption** on **organizational level** (Edelmann and Sintonen 2006, Penttinen and Hyytiäinen 2008, Schömburg and Breithner 2010)
- **Impacts of governmental intervention** and **participation** in adopting electronic invoicing (Agostini and Naggi 2010, Arendsen and van de Wijngaert 2011)

Research Gap



- **Research** approaches investigating the **slow diffusion** of **electronic invoicing** on the **governmental level** are still rare
- There is **no comprehensive model** of impacting **factors influencing electronic invoicing adoption** on a **governmental level**

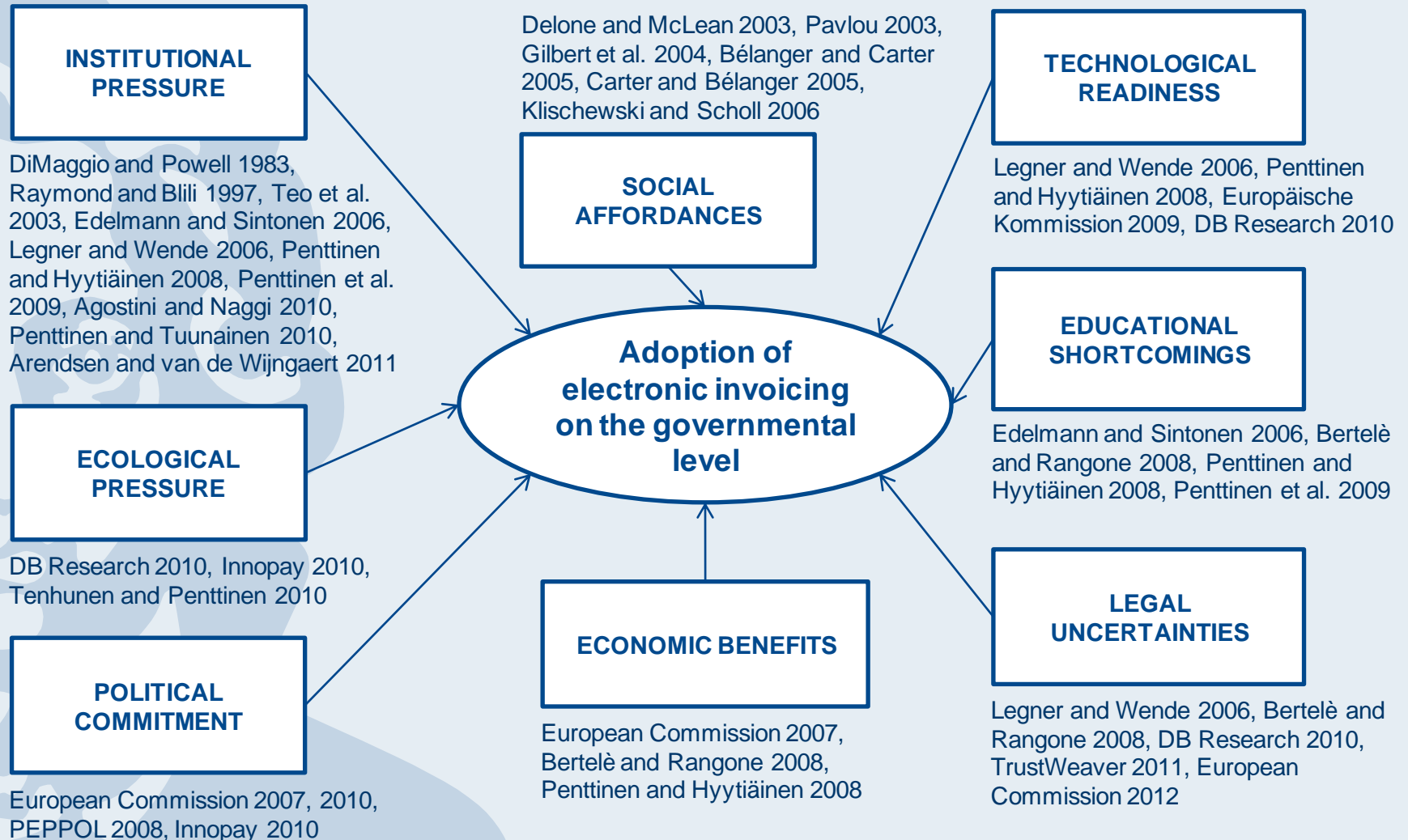
Research Approach Overview



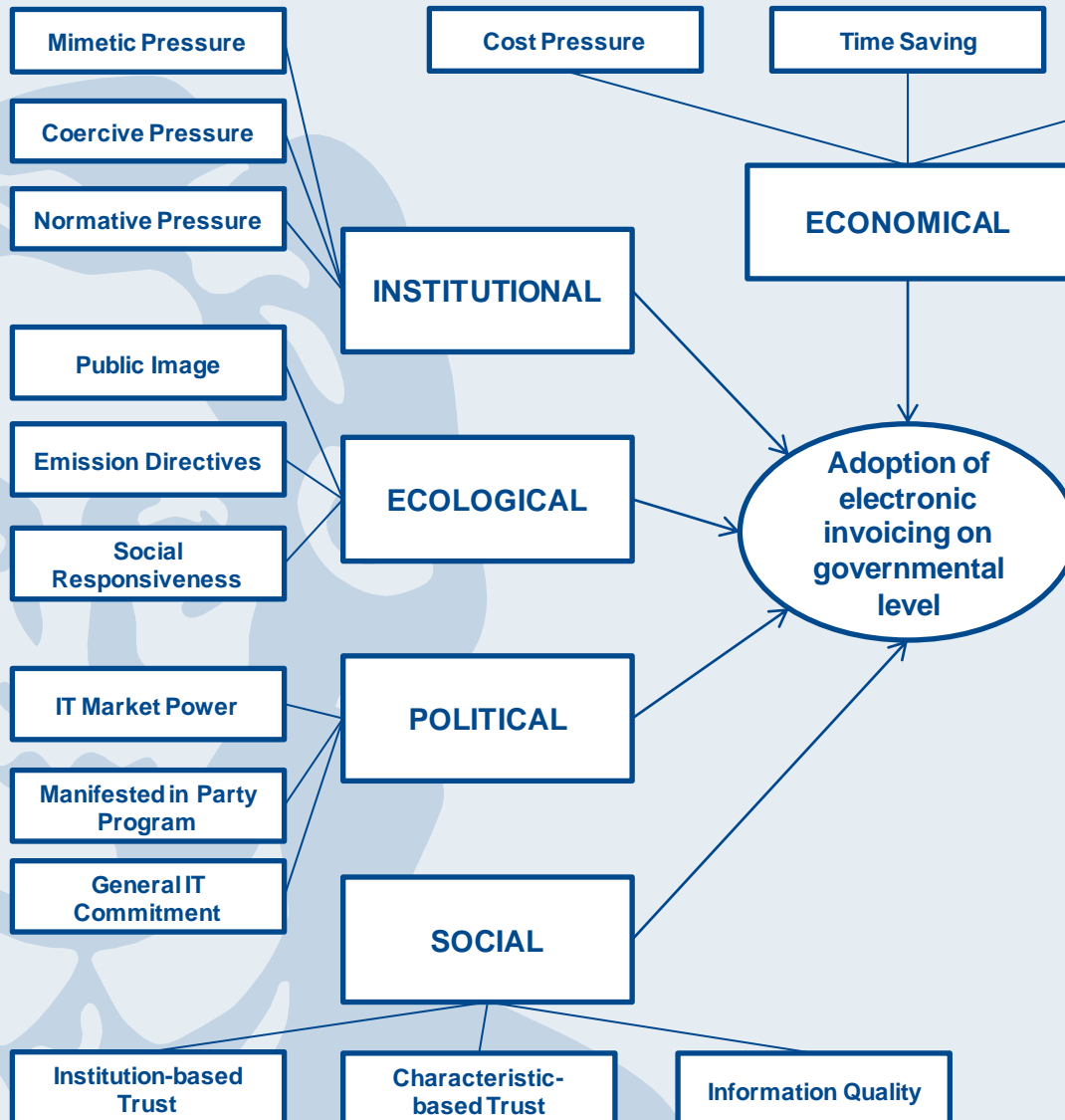
- **Relevant scientific literature** was first **identified** in the most relevant IS journals and conference proceedings, then **structured** into categories (Webster and Watson 2002)
- **Relevant practitioner literature** was identified through reviewing multiple practitioner publications in relevant practitioner journals (CIO, PC World, IT Professional), newspapers and mentioning in scientific studies
- Developed **EIAMM** model **evaluated** through **semi-structured interviews** with **experts** for electronic invoicing on **country level**

Literature Review on Electronic Invoicing

Relevant factors for the adoption of electronic invoicing on the governmental level



E-Invoicing Adoption Meta Model (EIAMM) (1/2)



Economic factors are typically represented by cost pressure and associated goals like process efficiency and time saving

Institutional pressures arise from business relations to competitors, suppliers and other partners who insist on the use of paper or electronic invoices

Ecological concerns (e.g. emission directives) respond to the need for a green and sustainable image and higher social responsiveness.

Political commitment arises from manifested goals in party programs, a general IT commitment as well as other political aims towards the proliferation of IT

Social affordances are expressed through the trust that is given to the service (electronic invoicing) as well as to the public sector. In addition, a higher level of information quality can help to overcome adoption barriers

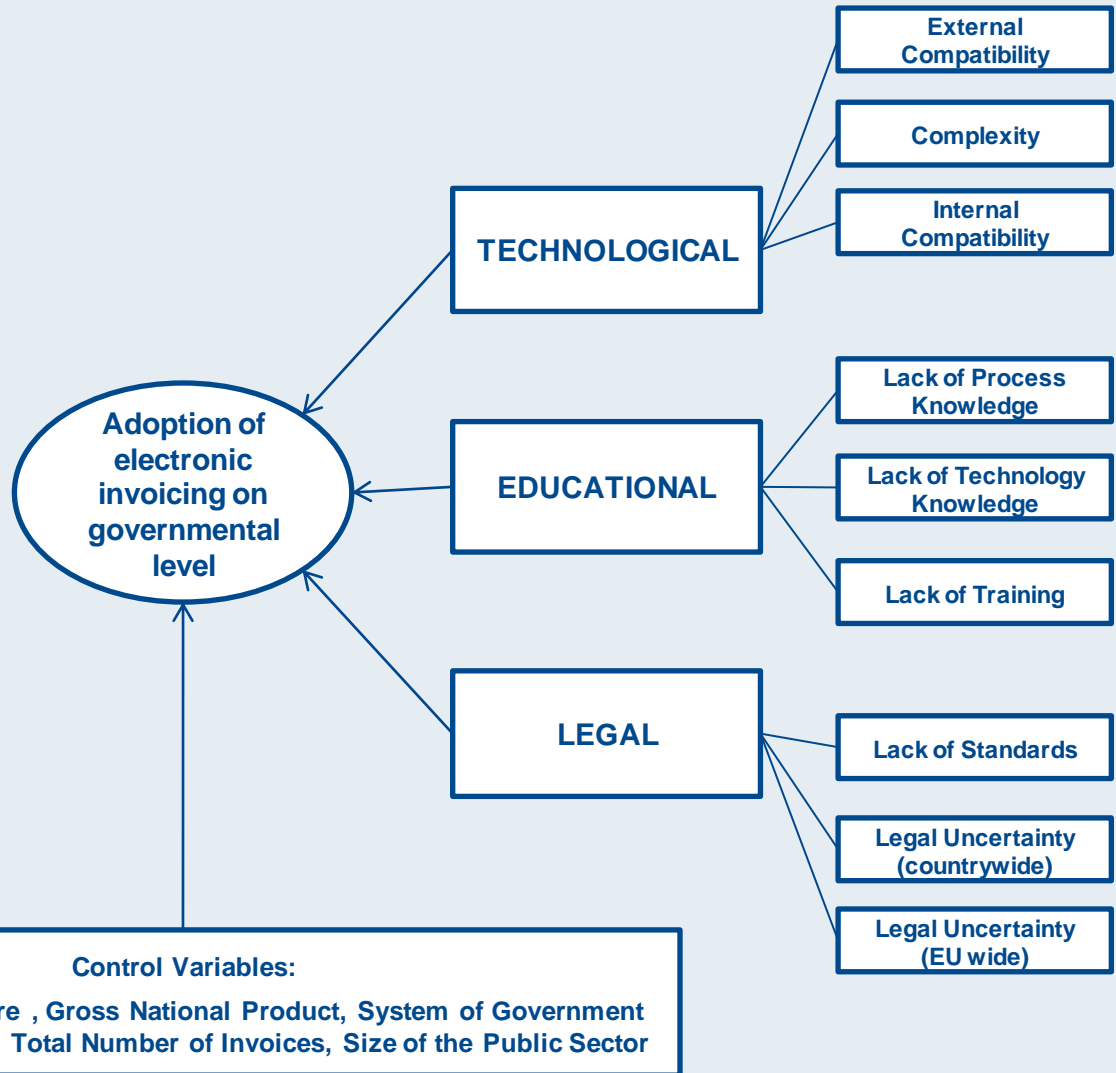
E-Invoicing Adoption Meta Model (EIAMM) (2/2)

Technological factors can be represented through the complexity of the invoicing technology in question, or the time and effort needed to establish compatibility to internal and external systems

Educational factors can be described by awareness of and training in electronic invoicing processes, technologies and basic benefits

Legal uncertainties mainly arise from a lack of standards as well as a variety of differing national regulations

Control variables help in explaining differing adoption rates in different countries



Conclusion

We derived a **conceptual model** explaining the **adoption of electronic invoicing** in the **public sector** through the use of **literature review** and **expert interviews**

- **Eight main factors have been outlined in the process:** institutional pressure, ecological pressure, political commitment, technological readiness, economic benefits, educational shortcomings, legal uncertainties and social affordances
- The eight **identified factors** are **not equally influenceable**
- **Several categories** identified, where **no or little scientific research** has been done **yet**

Limitations:

- **interviews** conducted on a **country level**, **interviewees** situated in **different countries**
- presented **meta-model** is **emphasizing** the areas for further research **rather than explicitly describing** and analyzing relationships between concepts

Further research:

- **Empirical test** of the model
- Examination of **related effects** among the generic **categories** and their **combined resulting impact** on the adoption process

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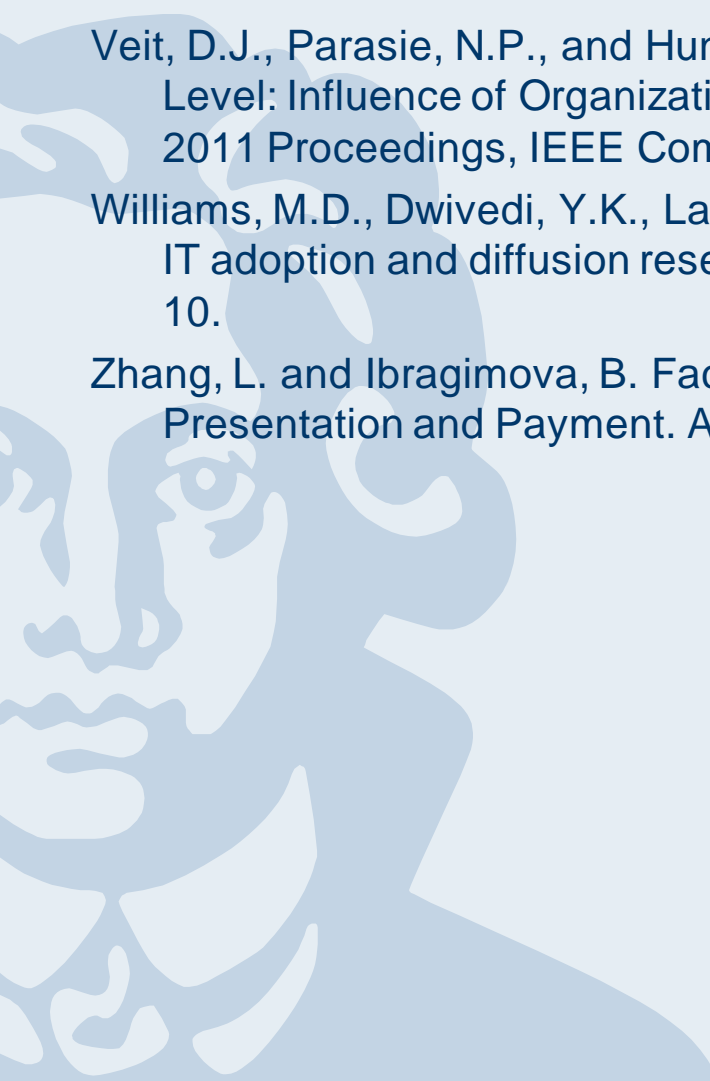
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