An empirical study on product configurator applications: Implications, challenges and opportunities

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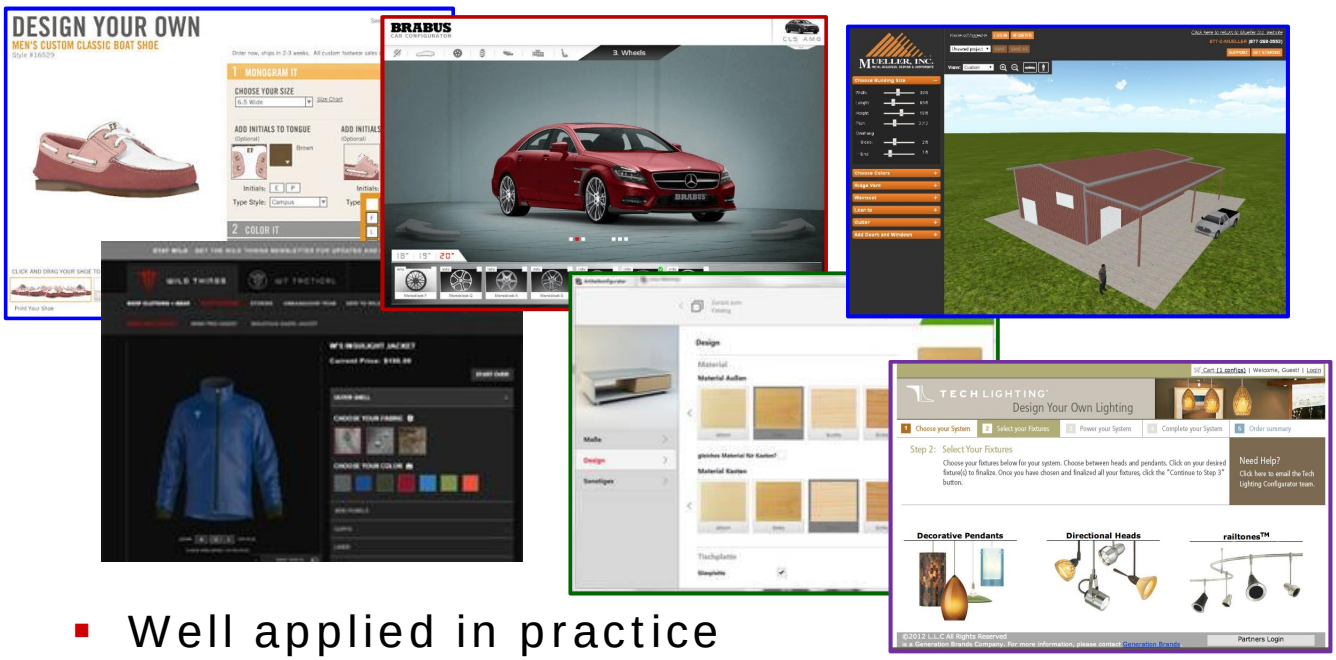
Agenda

- Introduction
- Research methods
- Results, analysis and discussions
- Conclusions

Introduction: Prod configurators

- Computer systems for configuring products



- Well applied in practice

The state of the art

- Theoretical system development
- Knowledge representation, diagnosis, explanation, solving
- Available empirical studies:
  - Lead time reduction
  - Quality improvement
  - Individual configurator development cases
  - Configurator development strategies

The state of the art cont'd

- Lack of investigations on

Implications of prod. configurator (PC) applications for business activities

- Issues not well studied:
  - How PC applications affect business activities
  - Design/development/maintenance difficulties
  - Potential barriers for future effective use

Research purpose

- Empirically investigate the implications of PC applications for business activities
  - How PC applications affect business activities
  - Design/development/maintenance difficulties
  - Potential barriers for future effective use

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Research methods

- Survey instrument development
- Data collection and sample

Survey instrument

- Questions in nominal scales
  - Alternative choices for each questions
    - The literature & work experiences in companies
  - “Other” option
- Types of questions
  - General questions
  - PC application-related: func, users, process changes …
  - Performance-related: order, time, rework …
  - Design/development/implementation difficulties-related
  - Potential future barrier-related
- Questionnaire pretext (5 Finnish companies)

Data collection & sample

- Panel members participation
  - EMPanel Online (data collection company)
  - Email and online survey
  - Checking the completeness of questionnaire using filtering questions
  - Stopped when having enough completed questionnaire
- Sample
  - Size: more than 300 companies
  - Industries: computer, telecom sys., industrial machinery

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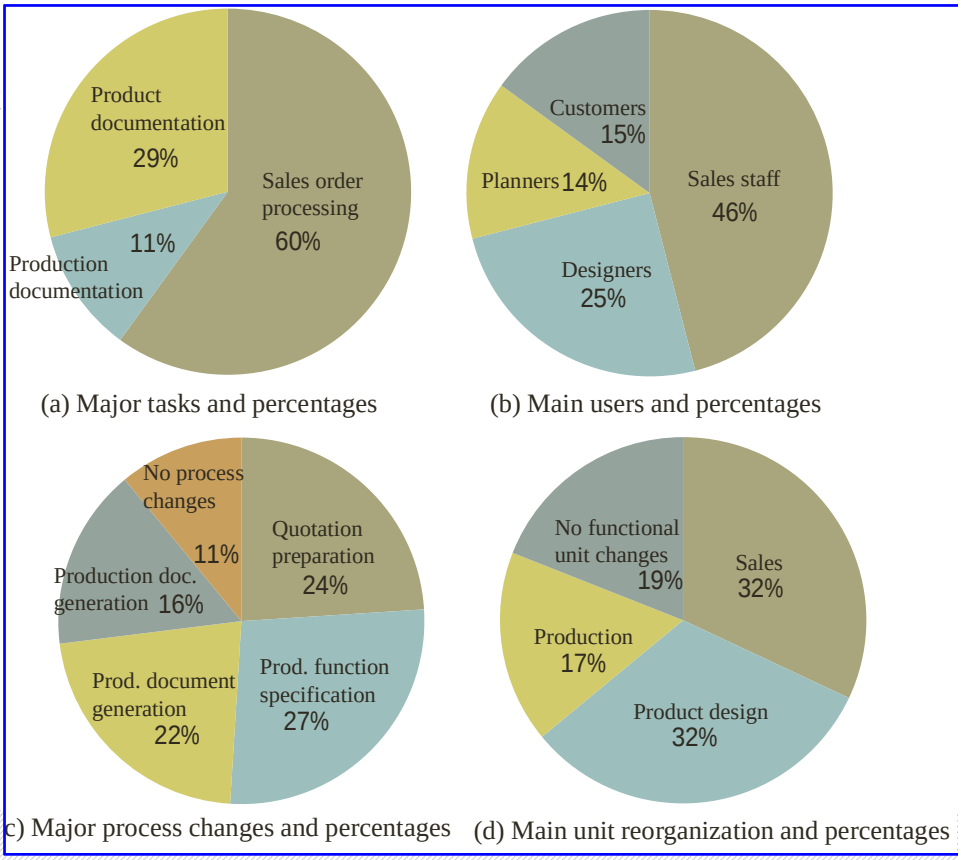
Results and analysis

- Data collection results
  - 64 completed questionnaires
  - Balanced distributions wrt size, industry, time duration
- Analysis
  - Computed the occurrence of alternatives selected
  - Unit of analysis: each alternative
  - Analysis classification:
    - How PC applications affect business activities
    - Design/development/maintenance difficulties
    - Potential barriers for future effective use

Some example results 1 / 3

- Overview of results for PC applications affecting business activities



Some example results 2 / 3

- How PC applications affect business activities
  - 19% of the respondents: No functional unit changes
    - Possible reason: customers are the major users of PC
  - 11% of the respondents: No business process changes
    - Possible reason: customers are the major users of PC
  - 10% of the respondents: No changes to legacy sys.
    - Possible reason: PCs are built-in modules of ERP systems
  - 63% of the respondents: Hire full time employees
    - Possible reason: companies lack good IT system designers/egrs

Some example results 3/3

- Difficulties in designing/developing/using PCs
  - Most respondents have difficulties
  - Reasons:
    - The lack of good IT staff
    - Communication problems
- Barriers affecting the effective application of PC
  - Product's continuous evolution (75% respondents)
  - The lack of IT staff (47% respondents)
  - Unclear customer requirements (47% respondents)
  - Unsafe feeling of employees (34% respondents)

Discussions: Opportunities

- Based on the results, companies may investigate
  - IT capacity and capability enhancement
  - Organizational redesign
  - Company-wide supporting activities

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Conclusions

- An exploratory study on the implications of prod. configurator applications
- Some interesting results.
- Limitations of the data collection methods → exact reasons can't be identified; casual relationships can't be revealed.
- Empirical studies using nominal scales for data collection in the future

My collaborator

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Thank You for Your Attention!

Q&A