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Business models in industrialized building of wooden houses in Norway

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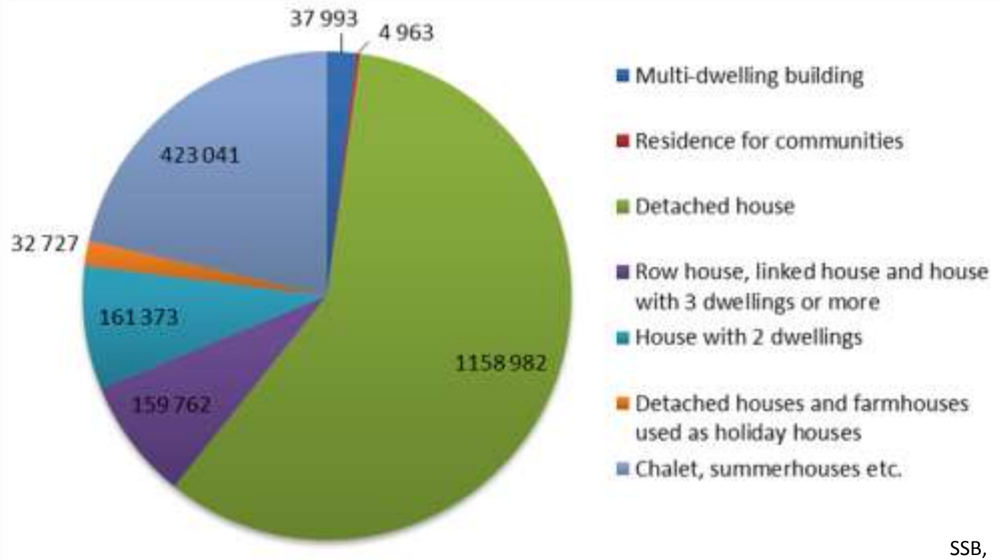
Comparison with a Swedish study

- Brege, S., L. Stehn and T. Nord (2014). "Business models in industrialized building of multi-storey houses." *Construction Management and Economics* 32(1-2): 208–226.
  - Based on 5 company cases
  - Construct 7 business models → one primary
  - Can it be generalized to other countries?
- Apply the construct of Brege et al (2014) on a Norwegian setting
  - Based on 3 company cases in the wood industry
  - Similarities and differences
  - Extend the analysis to include value creation logics

The Norwegian context

Residential buildings and holiday houses in Norway



SSB, 2016

Differences

- Sweden
  - A bigger home market
  - Heavily urbanized after WW2
  - Greater rental sector
  - More multi-dwelling buildings
- Norway
  - Home ownership strong
  - Detached houses and «hytter»
  - Fragmentation of the wood building industry in the 90's
  - More «immature» market

Business models and industrialized building

- Business model
  - A holistic view of how companies do business
    - «describes the rationale of how an organization creates, delivers and captures value» (Osterwalder et al 2005, p.14)
  - Little understanding of different models effect in the building and construction sector
- Important in relation to industrialized building
  - Offsite construction/production or system building
  - Prefabrication of components for elements and complete houses in a factory milieu
  - Standardization, reliable, cheaper and fast

Business Model blocks

(Brege et al. 2014)

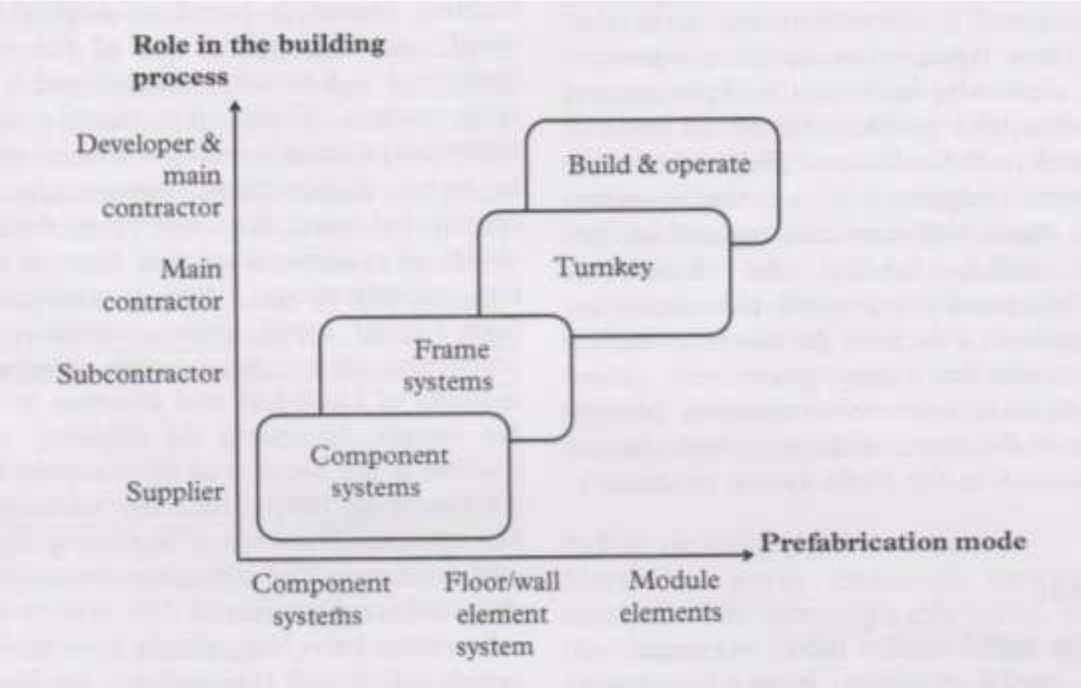
- Market position
  - Segments and relationships through which the value propositions are communicated, negotiated, and adapted/developed
- Offering
  - Value proposition directed towards customers – a bundle of hardware, software, and services
- Operational platform
  - Resources and competences of the company, together with complementary external resources from suppliers and partners

Business Model elements

(Brege et al. 2014)

- Prefabrication mode (Offering)
  - Component systems
  - Floor/wall system
  - Module elements
- Role in the building process (Market position)
  - Supplier
  - Subcontractor
  - Main contractor
  - Developer & main contractor
- Role in the user segments (Market position)
  - Level of standard
  - Degree of customer adaption
- System augmentation (Offering)
  - Component systems
  - Frame systems
  - Turnkey
  - Build & operate
- Complementary resources
  - Volume modules, floor/wall elements, component systems
  - Design and onsite production resources

The offering combines the role in the building process and type of prefabrication mode



(Brege et al 2014)

Analysis of five Swedish companies

- Revealed seven business models
  - System supplier: turnkey
  - System supplier: free factory
  - In-house developer and system supplier
  - Frame system supplier
  - Frame system supplier: free factory
  - Component system supplier: tech support
  - Component system supplier
- One model – «system supplier with turnkey offering»
  - particularly viable for the Swedish market
    - «Showed the best fit between the environment and the internal business elements»

Value creation logic in the Business Model

(Stabell and Fjeldstad 1998)

- Value chain
  - Porter’s view of “long-linked” industrial relations
- Value shop
  - Rely on “intensive technologies”
    - Found in professional services – medicine, architecture, engineering
- Value network
  - Based on nodes of mediation
    - Telecommunication and financial services are examples

Distribution of activities in the Business Model

(Pan and Goodier 2012)

- Pre-site
  - Off-site/manufacturing/prefabrication
- On-site
  - Traditional site based construction and assembly
- Post-site
  - Maintenance

Theoretical elements for analysis of the cases

Business Model blocks (Brege, Stehn et al. 2014)

- Market position
- Offering
- Operational platform
  (pre-cut, floor/wall, modules)

Value creation logic in the Business Model (Stabell and Fjeldstad 1998)

- Value chain
- Value shop

Distribution of activities in the Business Model (Pan and Goodier 2012)

- Pre-site
- On-site
- Post-site

Case companies in the study

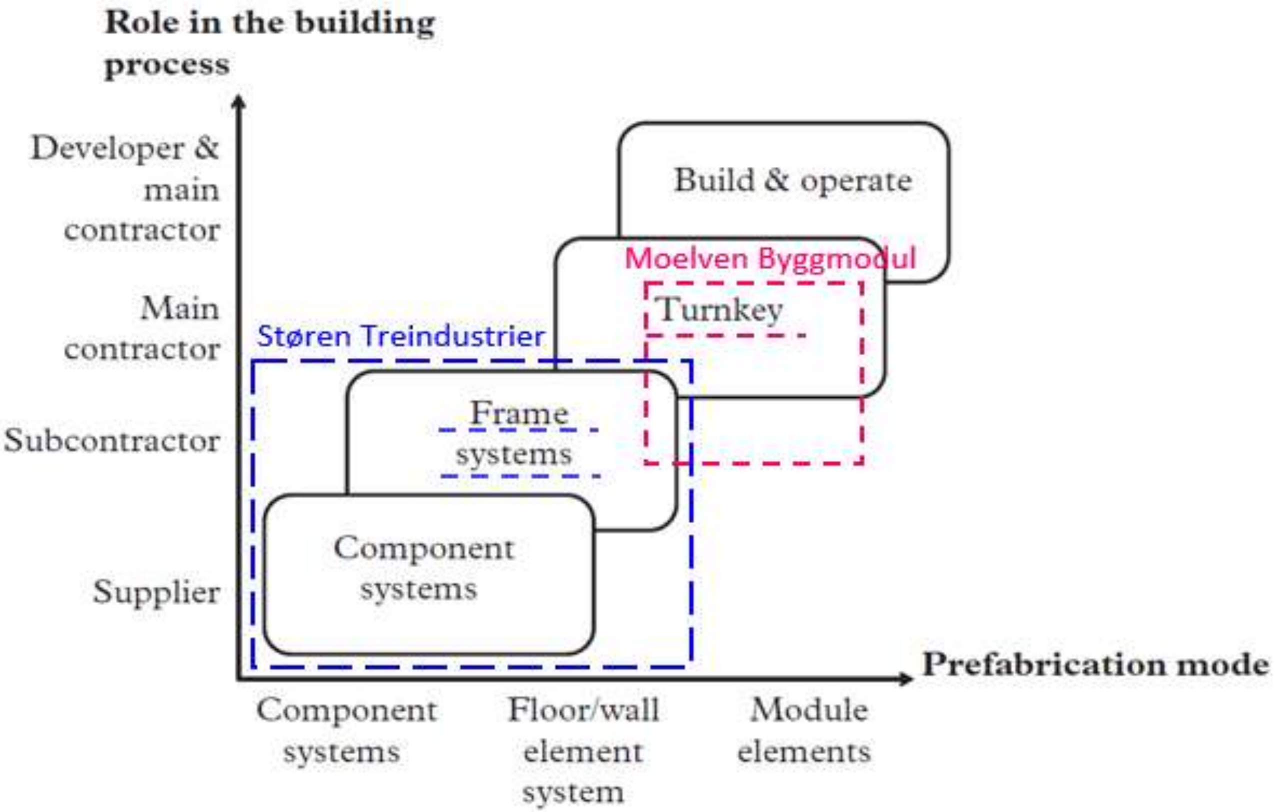
- BoligPartner
  - Among the 10 biggest wood house companies
  - Precut components
- Moelven Byggmodul
  - Main producer om modules in the Scandinavian market
  - 4 factories in Sweden and 2 in Norway
- Støren Industrier
  - Producer of wall/floor elements
  - Highly industrialized production

Case descriptions

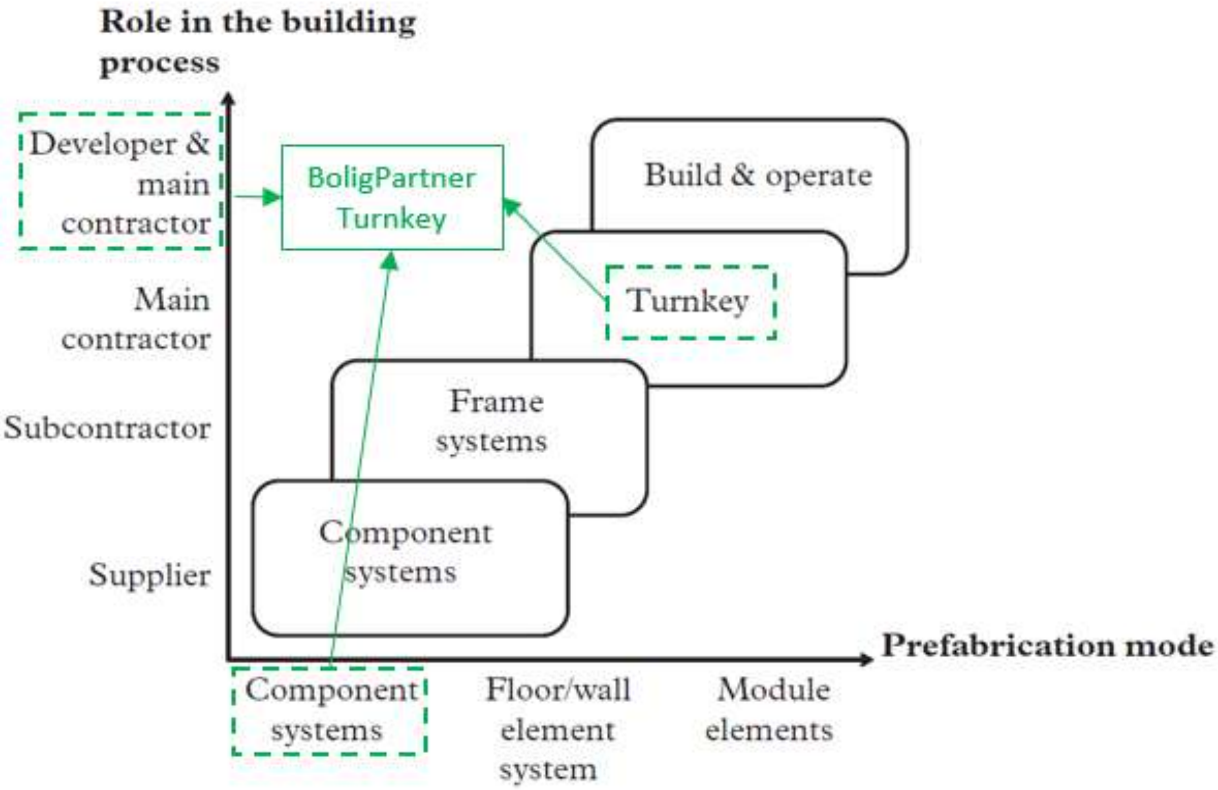
	Moelven Byggmodul AS	Støren treindustrier	BoligPartner
Market position	Builds: apartment buildings up to 5 storey (mainly 3-4); public and private projects like schools, kinder garden, hotels and student homes; temporary housing for construction and civil engineering	Builds: detached and semi-detached houses, small apartment buildings up to four storages, and public building like schools, kindergartens and care centers	Delivers: private and leisure homes within three segments: small apartment buildings 2 – 5 storey (mainly 2 and 3) or semi-detached houses; detached houses; cabins
Commercial transaction	Business-to-business (B2B)	B2B	Business-to-consumer (B2C) 90%, B2B 10%
Role in building process	50 % main contractor, otherwise subcontractor	Sub-contractor and supplier. Offers consulting role in the early design phase, architectural and engineering services, to be high involved.	Builder and main contractor in 90 %, otherwise sub-contractor/building-set supplier
Offering	From turnkey on large projects to supplier of modules. The modules are built on customer orders and specifications based on standard sizes	Customized wall/floor elements or climate-proof structural frame, pre-cut components, roof trusses + design	Turnkey solutions on customers owned property or buy property in suburban regions to develop new residential areas. Customers are inspired from catalogs, but 90 % of their customers do modifications to the standards
Operational platform, prefabrication mode	Mix of own and external architects, engineers and project management. Production of module in 2 factories in Norway, 4 in Sweden. Standardized elements – 15 modules/day, interior customized – 2,5 modules/day	Mix of own and external architects, engineers and project management. Production of pre-cut components, Floor/wall elements, roof trusses in 1 factory in Norway. 2 houses/day. Mass-customized production, highly automated	Own architects, engineers and project management. No own production. Firm purchases pre-cut components from 1 main key supplier and installs houses on-site based on contractual carpenters
Supplier integration	Uses long-term contract with a limited number of suppliers for each category of raw materials based on competition in the marked	Main supplier of raw materials is from their mother company, strong trust relations, marked prices	Relies on one single supplier of pre-cut components (high mutual dependency) Long term contracts on limited number of suppliers of other materials
Distribution of activities (pre-,on-,post-site)	90% pre-site, 10% on-site, no services post-site	90% pre-site, 10% on-site, of the element in the structural frame. No services post-site	100 hours reduction on-site with pre-cut components. No services post-site
Value creation logic	Value chain (*dominant*) + shop	Value chain (*dominant*) + shop	Value shop (*dominant*) + chain
Business model	System supplier turnkey	Frame system supplier	Turnkey

Moelven Byggmodul

Støren Treindustrier



BoligPartner



Analysis of the Norwegian cases

- Two companies – Moelven and Støren – operates in line with Brege et al (2014) and can be located in their model
  - The logic of off-site prefabrication + value chain
- One company – BoligPartner – does not fit
  - It has an other sort of business model based on turnkey
    - Customized design + precut components + on-site production/local carpenters
    - Value shop logic – problem solving for customers (with architects and carpenters)
- Brege et al (2014) have mainly focus on value chain logic and prefabrication
- The market for multi-storey houses is still less mature in Norway

- The question is:
  - How representative is BoligPartner for actors in the Norwegian market?
  - Will the shift towards more urban building change BoligPartners business model?