Emerging data-driven service innovation and ecosystem
in the construction phase of the smart building

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Purpose – In the smart building context megatrends such as urbanization, sustainability and digitalization open up unique new value creation opportunities. At the same time, they challenge the established value creation and institutional logics in industries such as construction and facility management. There is a particular need for empirical studies that adopt a networked and systemic life cycle perspective in data-driven service innovations. This study contributes by studying such innovations building agile hybrid (building and digital) platform structures and capabilities for the smart buildings already in the early construction phase. By adopting S-D logic as a theoretical approach, this paper examines co-innovating data-driven service innovation in an emerging ecosystem to tackle significant productivity challenges and serve multiple beneficiaries in the smart building context.

Methodology – Longitudinal case-study approach was applied to examine empirically the stepwise collaborative innovation process by focusing on so called initiating phase from the iterative design to gather lessons learned from the first field experiment for the POC (proof of concept). Aligned with the process, two-phased interviews of different involving actors in addition to weekly meetings and field visit were implemented between September 2020 and April 2021. Altogether 25 thematic interviews were conducted including representatives from various involving actors such as builder, supplier and equipment rental in addition to system integrator, technology integrator, connectivity provider and data analytics and application specialist.

Findings – The empirical findings reveals complexity, uncertainties and dynamics of the construction phase in terms of multiple actors, physical building platform, and related knowledge-centric activities and value creation processes. Similarly, they explicate multiple new value creation opportunities enabled by data-driven service innovation not only for beneficiaries in the construction, but throughout smart building life cycle. Specifically, findings show dynamics in roles, resource integration and value expectations of involving actors when setting the mutual target, re-focusing, designing and experimenting the innovation embryo as well as orchestrating the emerging ecosystem. Finally, findings seem to indicate complex tensions related to co-operation and competition, value creation and value capture, as well as autonomy and orchestration. They reflect on one hand generic critical co-evolutionary drivers of ecosystems aligned with previous (platform) ecosystem literature. On the other hand they reveal specific institutional logics in the smart building context, particularly in the construction phase.

Research limitations – Empirical study is based on a single case study aiming to deepen understanding and open avenues for further studies. Focus is also on the initiating phase, though being critical in ecosystem level co-innovation.

Practical implications – For practitioners the paper provides deeper understanding about the complex contextual settings of the construction, where also the basis for hybrid platform structures are established for the smart building life cycle. Further, findings support involving actors to analyze their roles, resources and value expectations when co-innovating in an emerging ecosystem.

Originality/value – There is still needs to shift the research focus from firm-level to eco-system level composition of value propositions and service innovations. Thus the study narrows the identified research gap considering the lack of empirical research on the multi-actor and inter-organizational settings of service innovation. Aligned with S-D logic, instead of only focusing too narrowly on innovative offerings or the innovation process, essential is to understand service innovation by paying attention to the multiple actors, resources, and institutional arrangements at different levels.

Key words: S-D logic, service innovation, ecosystem, construction, smart building

Paper type – Research paper