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Typologies of Business Models of Integrated Home Renovation Services: Accelerating Energy Efficient Renovations for Homeowners Associations in The Low Countries and France

Ragy Elgendy[1*], Erwin Mlecnik[1], Henk Visscher[1] and Queena Qian[1]

[1]*Department of Management in the Built Environment, Faculty of Architecture and the Built Environment, Delft University of Technology, Delft, The Netherlands ; R.Elgendy@tudelft.nl* (RE); E.Mlecnik@tudelft.nl (EM); H.J.Visscher@tudelft.nl (HJV); *K.Qian@tudelft.nl (QQ)*

([*]Main presenter and corresponding author)

Abstract

The need for energy efficient buildings has become increasingly important in the context of climate change mitigation. Across the European Union (EU), 41,2% of the population resides in multiple ownership apartment buildings with figures rising in some countries as high as 65%. A majority of these buildings are in need of energy renovation. Integrated home renovation services (IHRS) have emerged as a potential solution to accelerate highly energy-efficient renovations for Home-Owner Associations (HOAs). The question arises: How do the business models of current integrated home renovation services address highly energy-efficient renovations by HOAs? This paper explores the current state of IHRS from the viewpoint of the Low Countries and France. The methods used are desk research and interviews. Four business models of service providers in the Netherlands, Flanders, and France were analyzed, to define their strategies within the regional context. The analysis categorizes and compares IHRS business model (BM) typologies to increase knowledge about IHRS functioning and capacity to bring innovation to home renovation processes. The results show that the BMs of these providers share some similarities and differ in other aspects. Regarding the similarities, all four providers share the value of offering customized energy renovation packages, also in terms of customer segments, by addressing the specific needs of HOAs. They slightly differ in terms of the channels used, customer relationships, key resources, key activities and key partners. They differ in revenue streams and cost structure, owing to context-specific aspects of the type of organization. The outcome of this study can help inform the development of effective and targeted IHRS initiatives in the EU.

Keywords: energy efficiency, renovation, business model, homeowner associations, integrated home renovation services

1 Introduction

The European Commission has set a goal to reduce the dependence on fossil fuels by 2050 (Tsemekidi Tzeiranaki et al., 2022). Buildings in the EU are responsible for 40% of energy use and 36% of greenhouse gas emissions (Tsemekidi Tzeiranaki et al., 2022). In this context, the residential sector is a major contributor to this dilemma, as it uses about 27% of total final energy consumption (Eurostat, 2020) . In fact, many of the existing residential buildings in Europe are owned by the Homeowner Associations (HOAs) (Tsemekidi Tzeiranaki et al., 2022). These HOAs organize multiple homeowners' joint liability to maintain the building operation (Feather, 1990) . The current energy renovations rate of buildings is low, accounting for 1% annually (EC, 2019; Tsemekidi Tzeiranaki et al., 2022). Therefore, there is a need to speed up the energy transition of those

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buildings by specifically addressing joint decision-making processes to reach the goals set by the EU to be climate-neutral and homes to be gas-free by 2050 (EC, 2021). Integrated home renovation services (IHRS) have been offered as a viable solution for speeding up the energy transition in the European housing sectors (Agliardi et al., 2018; Milin and Bullier, 2021; Bagaini et al., 2022). IHRS could be offered in the form of a one-stop-shop (OSS) solution, whereas the whole renovation process is implemented by one provider (Bertoldi et al., 2021; EC et al., 2021). The business models (BM) of the IHRS providers vary in terms of their approaches and strategies (Laffont-Eloire et al., 2019; Bertoldi et al., 2021; Bagaini et al., 2022). The existing literature presents various models of OSS BMs, which can be classified into primary categories; Facilitation, Coordination, and Development models and further subdivided categories (Bagaini et al., 2022) and OSSs that are government-driven, industry-driven, ESCO-based, cooperative and store based models (Bertoldi et al., 2021). However, reviewing the close relevant literature revealed a lack of knowledge about the BMs of IHRS providers targeting HOAs within the context of energy renovation.

This paper aims to address this gap by exploring the various typologies of BMs of IHRS providers targeting HOAs. Four case studies were conducted in the Netherlands, Flanders, and France. The analysis aims to bring forward information and knowledge for promoting highly energy-efficient renovations targeting HOAs and key stakeholders (service providers and policymakers), and to provide comprehensive knowledge to the debate about the BMs of IHRS to accelerate energy renovation for HOAs.

2 Research approach

2.1 Context

This paper is an elaboration of the work done as part of the project CondoReno (https://condoreno.org, funded by the European Union's Programme for Environment and Climate Action (LIFE) MGA. The project aims to support the creation of IHRS for buildings co-owned by multiple private homeowners, focusing on HOAs in the Netherlands and Flanders, while paving the way for upscaling IHRS across Europe.

2.2 Research question and approach

This paper aims to answer the question: How do the business models of current IHRS address highly energy-efficient renovations by HOAs? The research investigates this question from a strategic management perspective using the business model canvas (BMC) based on Alexander Osterwalder's earlier work (Osterwalder et al., 2005) to find synergies while creating business approach recommendations and finding new strategies (Osterwalder and Pigneur, 2010). Various authors have also used this approach to assess business models for speeding up energy renovations (Mlecnik et al., 2019; Pardalis et al., 2020; Bagaini et al., 2022).

2.3 Research method

First, this research was supported by literature to gain knowledge about IHRS providers running their BMs. Second desk research was conducted to find relevant cases of IHRS providers targeting HOAs, and four Western European cases were chosen to examine variations in the methodologies and resources employed by different entities. The first case involved a climate agency situated in Paris, known for its pioneering efforts, functioning as a public-private entity. A private nonprofit organization in its early stages of development offering IHRS just for HOAs in the Netherlands was included as the second case. Two cases were selected from Flanders, one representing a municipality of a medium-sized city and the other a municipality of a larger-sized city. Third, a qualitative questionnaire and interviews were respectively conducted with 4 experts from the

selected providers of IHRS targeting HOAs. Nine key aspects pertaining to the building blocks of BMs of those providers were explored in the qualitative questionnaire, semi-structured interviews and in-depth interviews, namely: customer segments, value proposition, channels, customer relationships, revenue streams, key activities, key resources, key partners, and cost structure (Osterwalder et al., 2005). The participating experts in the interviews and questionnaires (see table I) are frontrunners from the Netherlands, Flanders, and France, working on the energy transition of multiple homeowners' buildings. During the interviews, the experts were asked to present their BMs to acquire a comprehensive understanding of the interviewees' BMs. The interviews were recorded and transcribed for the analysis, and the analysis was sent to the interviewees to be validated.

Table I: Profile of the conducted interviews

Code	***Date***	***Type of organization***	***Position interviewee***	***Duration***	***Method***
I-1	09-01-2023	Public Agency in a large city	Project leader	1h and 3 min	Online
I-2	23-01-2023	Private non-profit organization provider	Director	57 min	Online
I-3	13-02-2023	Public actor Medium-sized municipality	Consultant	1h	Online
I-4	06-03-2023	Public actor Larger municipality	Project coordinator	47 min	Online

2.4 Data analysis

The four BMs of the providers were deductively analyzed and coded according to the 9 building blocks. A cross-case analysis of four BMs was carried out to find the similarities and differences and how different these models are from the models found in the literature.

3 Results and discussion

In relation to the 9 building blocks, Table II compares and summarizes the 4 BMs of the IHRS providers.

Table II: The key differences among the 4 BMs according to the 9 building blocks

Building block	***Business Models***			
	BM1 I-1	***BM2 I-2***	***BM3 I-3***	***BM4 I-4***
Brief description	Public-private climate agency	Private non-profit IHRS provider	Municipality of a medium-sized city	Municipality of a larger-sized city
Customer segments	Homeowners HOAs Condominium managers City and national entities	HOAs Condominium managers Municipalities	Homeowners HOAs Vulnerable groups Larger and medium-sized high-rise condominiums	Homeowners HOAs Vulnerable groups Dwellings over 20 years old
Value proposition	Provision of : Energy advisory services Technical assistance Access to grants Utilization of building retrofit as a mean to tackle other issues such as energy poverty and greening areas projects	Facilitation and coordination of energy retrofits Energy performance guarantees Living cost neutral proposition based on the multi-annual maintenance plan Transparent communication Providing attentive support	Provision of tailored IHRS for HOAs Increasing the building value Reduction of energy bills Provision of neutral advisory service	Provision of tailored IHRS for HOAs Providing HOAs with the practical support to develop and implement a masterplan for energy renovation Provision of neutral advisory service

Table II: The key differences among the 4 BMs according to the 9 building blocks (continued)

Building block	***Business Models***			
	BM1 I-1	***BM2 I-2***	***BM3 I-3***	***BM4 I-4***
Channels 	Active use of social media platforms, municipal networks, public forums Arranging visits and meetings with HOAs Utilization of digital platforms as a means to connect with HOAs and different stakeholders	Active use of social media platforms, Arranging visits and meetings with HOAs Participating in renovation events in the municipality	Online request forms, newsletters, personalized letters/mails, create booklets and brochures, Arranging visits and meetings with HOAs Participating in network events, organizing information sessions and webinars (providing training sessions as a planned activity in the next years)	Organizing events for HOAs and Condominium managers, Networking with HOAs and expert teams through municipal events Sharing information on the website, Utilizing email as a means to communicate with customers Holding webinars and conferences, Creating and sharing promotional videos
Customer relationships 	Customer relationship is established through: Organizing forums and visiting HOAs Arranging trophy events for HOAs that have implemented energy renovations	Customer relationship is established by: Fostering trust between the organization and the customers by providing guarantees	Customer relationship is established through: Emphasizing solution-focused for co-creation Actively involving customers in the process of finding and implementing solutions	Customer relationship is established through: Transparently communicating with homeowners Emphasizing solution-focused co-creation Facilitating tailored renovation solutions for each HOAs
Revenue streams 	The main revenue is grants obtained from the Metropolitan Area and the City Council.	Revenues are generated through investment decisions made at various stages of the renovation process	The main revenue is obtained from EU-funded projects and grants provided by national climate agencies, Exploring and providing income streams (e.g. energy savings and public funding)	The main revenue is obtained from: Grants obtained from the city HOAs that subscribe to the masterplan approach of the provider Investment decisions
Key activities 	The core activity revolves around providing a completely free public service Providing technical and administrative support Raising public awareness through public lectures and events Managing digital tools Providing advice on financial schemes Providing access to grants	Providing process guidance, Providing advice for municipalities Oversee the process of energy renovations conducts webinars Sharing information and news on websites, Publishing articles or papers in journals, Intermediation of parties offering IHRS	Providing advice for HOAs and homeowners on energy renovations Offering technical and administrative support Assisting HOAs in applying for loans and subsidies, Training HOAs on the renovation process Advocating for policy changes	Developing the masterplan for energy renovations Training HOAs and condominium managers on the benefits of energy renovations, Assisting HOAs in applying for loans and subsidies Managing digital tools
Key resources 	Human resources Partnership with experts City data Customer relationship management tool	Human resources (1FTE) Partnerships with experts Digital platform Various tools/software that help in the planning for the renovation process	Human resources Customer relationship management tool	Human resources (2FTE) Renovation coaching by the local government Customer relationship management tool
Key partners 	Private and public entities and individuals, including: The municipality of the city Architectural firms Lawyers and experts	Private and public entities and individuals, including: Architectural firms Engineering firms Municipalities Lawyers and experts	HOA board members, Condominium managers, The City National climate agency Lawyers and experts (e.g. technical experts)	Condominium managers Architectural firms Engineering firms Governments Lawyers and experts (e.g. financial experts)
Cost structure 	Costs are allocated for: Salaries Energy advisors Digital tools Financial support	Costs are allocated for: Salaries Insurance Taxes Travel expenses Office space rent Website maintenance Investments/funding	Costs are allocated for: Salaries Communication expenses Management of customer relationships	Costs are allocated for: Salaries Investment in time providing financial training and possibilities of the co-owners

The results indicate that BM1,BM3 and BM4 target homeowners and HOAs as primary customer segments and BM2 only targets HOAs. As shown in Table II, it is worth noting that private and public providers tend to consider condominium managers as a segment, which differs from municipal providers that tend to target vulnerable groups as well. This difference could be attributed to different interests and scopes between private, public and governing institutions. Regarding the proposed value, the four providers share the value of facilitating the energy renovations for HOAs, despite differences in their services and organizational models. Each service provider employs a mix of different channels to reach their customer segment. Table II shows that all BMs use online platforms to reach their customer segments, such as actively using social media and holding webinars. Live-oriented methods are also used across the 4 BMs, such as arranging meetings, visits and events for HOAs. All providers prioritize transparent communication with HOAs to maintain a positive customer relationship. BM1 engages through forums, HOAs visits, and a digital platform, while BM2 maintain customer relationship through attentive support and provision of guarantees. BM3 and BM4 additionally emphasize a solution-focused approach for energy renovations to HOAs. BM3 actively involves customers in the co-creation process, while BM4 offers tailored renovation solutions. Moving into the revenue streams, BM1, BM3, and BM4 all rely on grants as a main revenue source. In contrast, BM2 generates income through investment decisions made at various stages of the renovation process. For the key activities, all providers offer advice and assistance as the main key activity to their customers. For instance, BM1 raises awareness and provides financial advice and grants, while BM2 guides the renovation process, coordinates with partners, advises municipalities, and oversees energy renovations. Other providers are involved in technical activities, such as BM4, which helps in developing masterplans for energy renovations. For the key resources, all four providers have human resources working full-time on providing and promoting energy renovations, especially for HOAs. However, they differ in their reliance on data and tools. For instance, BM1, BM3 and BM4 use local data as a key resource, while BM1 relies mostly on the digital tool as a main key resource to connect homeowners, different stakeholders and service providers. Regarding the key partnerships, all four providers have partnerships with architectural firms, local authorities and various experts such as lawyers and engineers. Municipalities tend to collaborate with condominium managers and HOA board members to positively engage with homeowners, as in the case of BM3 and BM4. For the final building block (cost structure), all four providers allocate costs for salaries and some investments, while they differ in their specific cost allocations. BM1 and BM3 invest in energy advisors and customer relationship management tools, while BM2 covers a range of administrative expenses. BM4 focuses on time investment and financial training for co-owners. These differences and similarities highlight the diverse approaches taken by the four providers in their pursuit of energy renovations for HOAs. Based on these findings, three typologies of business models for HOAs were emerged, namely: public climate agency model, private energy renovations model, municipal support and advice model.

4 Conclusion

This study aimed to explore the current state of IHRS from the viewpoint of the Low Countries and France. Four business models of providers of IHRS were explored, using desk research and interviews as the main data collection methods. Based on the comparative analysis of the data, the study pointed out that the BMs of these providers have some similarities and differences. Regarding the similarities, all four providers have the value of providing the service of energy- renovations for HOAs. In terms of customer segments, all the providers target HOAs as a main target group. They slightly differ in terms of using different channels, maintaining the customer relationship, utilizing resources, implementing activities and collaborating with different partners. They substantially differ in terms of the revenue streams and cost structure. Based on the findings, these differences could be attributed to context-specific aspects related to the organizational model. Three

models were concluded to be the main typologies of IHRS providers targeting HOAs, which results in these differences. The three typologies emerged: the public climate agency model, the private energy renovations model, and the municipality support and growth model. Ultimately, the findings of this study provide additional knowledge that can contribute to informing the development of effective and targeted IHRS initiatives in the European context, although the findings are limited to the four cases. Future research can focus on exploring IHRS from other European contexts and different service providers and which have the most successful BM and why.

Author Contributions

Methodology and administration of the study: RE. Guidance on data collection: RE, EM. Supervision: EM, HJV and QQ. Data collection and analysis: RE, EM. Writing, review and editing: RE, EM, HJV and QQ.

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