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Business Model Development for Temporary Home Renovation Consultancy Centres: Experiences from European Pop-Ups

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Abstract: Local authorities (LAs) play an essential role in diffusing home energy renovation measures. However, there are rare business models developed for local authority actions. This paper aims to develop a critical review of the way that local authorities developed business models for pop-up centres where consultants can encourage home energy renovation measures. From 2017 to 2021, participatory research was conducted in collaboration with seven LAs from the UK, France, Belgium, and the Netherlands. Although local authorities could use business model approaches for the development of pop-up home renovation consultancy centres, we noticed that LAs could not apply specific strategies to fit various customer segment groups. Therefore, a traditional business model needs to be investigated further for local authority activities.

Keywords: pop-up consultancy centre; local authorities; home renovation; decentralised approach; home-owner renovation journey; business models

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1. Introduction

The European Union has a 32.5% energy-efficient goal by 2030 and 40% greenhouse gas (GHG) reduction target compared to the 1990 level [1]. Many studies have indicated that an energy transition of the residential sector (e.g., single-family homeowners) is key to achieving this energy efficiency target [2–5]. However, there is a delivery gap for 2020 and an ambition gap for 2030 in the energy efficiency efforts. According to the National energy and climate plans (NECPs) assessment, the net energy savings were 29.4–29.7%. That falls short of the target of 32.5% [6]. There are needs and concerns for realising an investment push, a boost of renovation effort, and a transition [7]. To encourage the adoption of home energy renovations, policy actors at the national, regional, and local levels have developed policies and policy instruments. This has resulted in many examples and theoretical studies—for example, [8–11].

Particularly, residential buildings account for 25% of the total energy consumption in the building sector [12]. Existing housings represent the most significant challenge and opportunities in the carbon and energy-neutral goals. In order to promote home renovations, private homeowners need to be informed and persuaded to use such instruments [13]—for example, Energy Performance Certificates (EPC) [14], financial incentives [15,16], neighbourhood renovation schemes [17], group buying schemes [17], and so on—and authorities need to arrange supporting marketing and campaigns. In European countries, some key barriers to home energy renovations are insufficient awareness of the building users [18,19], biased consultations [20], the decision-making process [21], or difficulty accessing finance and certified experts [16].

European Member States such as Spain, the Netherlands, and the UK support a decentralised approach for low-carbon and energy reductions, and local authorities (LAs) are often considered responsible as a mediating facilitator [22–24]. LAs, as mediating facilitators or energy advisors, can be impartial and give a sense of trustworthiness to homeowners [25]. Therefore, LAs have developed approaches to increase the awareness of

the possibilities and advantages of the energy efficiency measures among homeowners and facilitate easy access to these measures and financial support [26,27]. In this regard, localism is a pragmatic approach to offering equal access to citizens and developing opportunities for organising a local supply.

In this framework, we focus on such local approaches, and we investigate the development of local pop-up energy consultancy centres in renovation target areas. Such centres have been increasingly used by local authorities [28] for various reasons: a pop-up centre can potentially attract more people than a centralised consultancy centre, LAs can operate close to the residents, and LAs can offer equal access to renovation information as well as connect with the local drivers and local supply. Compared to fixed renovation consultancy centres, a pop-up concept can attract people via nudge marketing and as a temporary means [29].

The successful implementation of pop-up home renovation consultancy centres requires insights into the added value, marketing channel, supply, and finance and organising this as a continuous effort (instead of "single, incidental" campaigns). Moreover, since LAs usually do not provide or carry out the technical measures themselves, their implementation requires (facilitating) cooperation between the supply chain, consultants, and homeowners. This makes it highly relevant to analyse pop-up centres through the lens of business models. The business model focuses on creating, delivering, and capturing values, consisting of customer segments, value propositions, communication channels, customer relationships, key activities, key resources, key partners, revenue streams, and the cost structure [19].

This paper aims to develop a critical review of the way that the local authorities developed business models for pop-up centres where consultants can encourage home energy renovations. From 2017 to 2021, participatory research was conducted in collaboration with seven LAs from the UK, France, Belgium, and the Netherlands. Section 2 describes the research method used in this paper and the nine pop-up centres developed by the LAs that we considered as cases. Section 3 illustrates the application of business model canvases for pop-up centre development based on LAs' self-reporting data and observations. Section 4 comprises a discussion of a gap we observed when using business model development factors to assess public sector activities, a way of using the pop-up centre as a communication tool, and the limitations of this study. Section 5 offers recommendations for LAs to develop a successful pop-up centre that fits their local policy initiatives and goals.

2. Methods

2.1. Participatory Research

An advantage of participatory research (PR) is integrating theoretical perspectives to practice through a collaborative process [30]. According to Cargo and Mercer [31], PR can improve the research quality by reducing the reporting bias and measurement error and increasing recruitment. Non-academic partners can get benefits by adopting a research protocol [32]. Many researchers have suggested using business model approaches for developing home renovation consultancy or one-stop shops [8,33–35]. The studies are often focused on supply sides or private parties, or the results stay at the academic level. This paper deals with the pop-up consultancy centre developed by local authorities, and we seek to investigate the knowledge-to-action gap through the participatory research method. We had a partnership with seven local authorities from Belgium, the Netherlands, the UK, and France. Through the partnership, we could enhance the research capacity and widen the dissemination of the theoretical knowledge.

2.2. Business Model Canvas

The business model canvas (BMC) developed by Osterwalder and Pigneur [36] is widely used due to the ease of practical application and ease of presentation of its complex components [37]. The BMC consists of nine building blocks: customer segments, value propositions, communication channels, the expected relations with customers and partners,

key activities, resources, key partners, revenue stream, and cost structure. It gives a practical instrument that allows organisations to develop a business model by focusing on value creation. LAs are unfamiliar with developing business models in practice. The BMC is easily adaptable in various contexts, such as business, design, engineering, and sustainability sciences [38]. For these reasons, a modified model has been applied to the business model of non-profit organisations for public services [39]. In this study, the nine factors are redefined as described in each subsection. The LAs tried to reflect the nine factors for the pop-up consultancy centre development.

2.3. Data Collection

We collected comprehensive data related to LAs' business model development and the way LAs apply the model to the pop-up centre development. The data were collected through self-reporting and group-level assessment. The focal point of the data analysis and interpretation presented in this paper is summarising the qualitative information, strengths, and challenges for each business model canvas factor: customer segments, value propositions, communication channels, customer relationships, key activities, key resources, key partners, revenue streams, and cost structure. At the same time, the LAs monitored the number of visitors during the pop-up opening period. Additionally, they provided quantitative data such as the opening time, investment, and exploitation costs for the pop-up centres.

2.4. Comparative Assessment

Based on the qualitative and quantitative data, we analysed the effectiveness of the pop-up centre. The SWOT analysis was a useful method to investigate the pros and cons of each pop-up. A card sorting method [40] was used to classify the categories and to understand the LAs' experiences. For the quantitative data analysis, we used an ANOVA test. Since the comparing groups were more than 3, an ANOVA test was suitable to investigate whether there was a difference of effectiveness among the pop-up centres.

3. Case Studies

Seven local authorities developed and operated nine pop-up consultancy centres in different forms between 2017 and 2019 (see Figure 1). Pop-up A was a greenhouse to promote services and get closer to homeowners in target areas. The pop-up was developed with a relatively small effort. Pop-up B was elaborately designed as a tiny house. The design was intended to look attractive and to make people curious. Pop-up C was a standing banner with a low-cost pop-up idea. It was small enough to place inside libraries and council buildings. LAs expected that this form might reach out to more residents. Pop-up D was also a form of a house. The solar panels and wooden cladding referred to sustainable nature. Pop-up E was an automobile form with high mobility, so it was suitable to be located anywhere. Pop-up F was a portable container as a mobile office. That mobile pop-up stayed in one place for around one week. People could visit without making an appointment. Pop-up G was located in a shopping mall. The location ensured a constant stream of pedestrians. Pop-up H was in the waiting area of an office. People could search the renovation information and services offered by a LA through the standing browsers, which was called an interactive module. Pop-up I was located in a vacant commercial place in a local shopping centre.

Overall, mobile pop-up centres were placed in public spaces, outside the city centre, open areas in the neighbourhood, or shopping centres. In contrast, fixed-location pop-ups were accommodated in a vacant space in a shopping centre or an office.

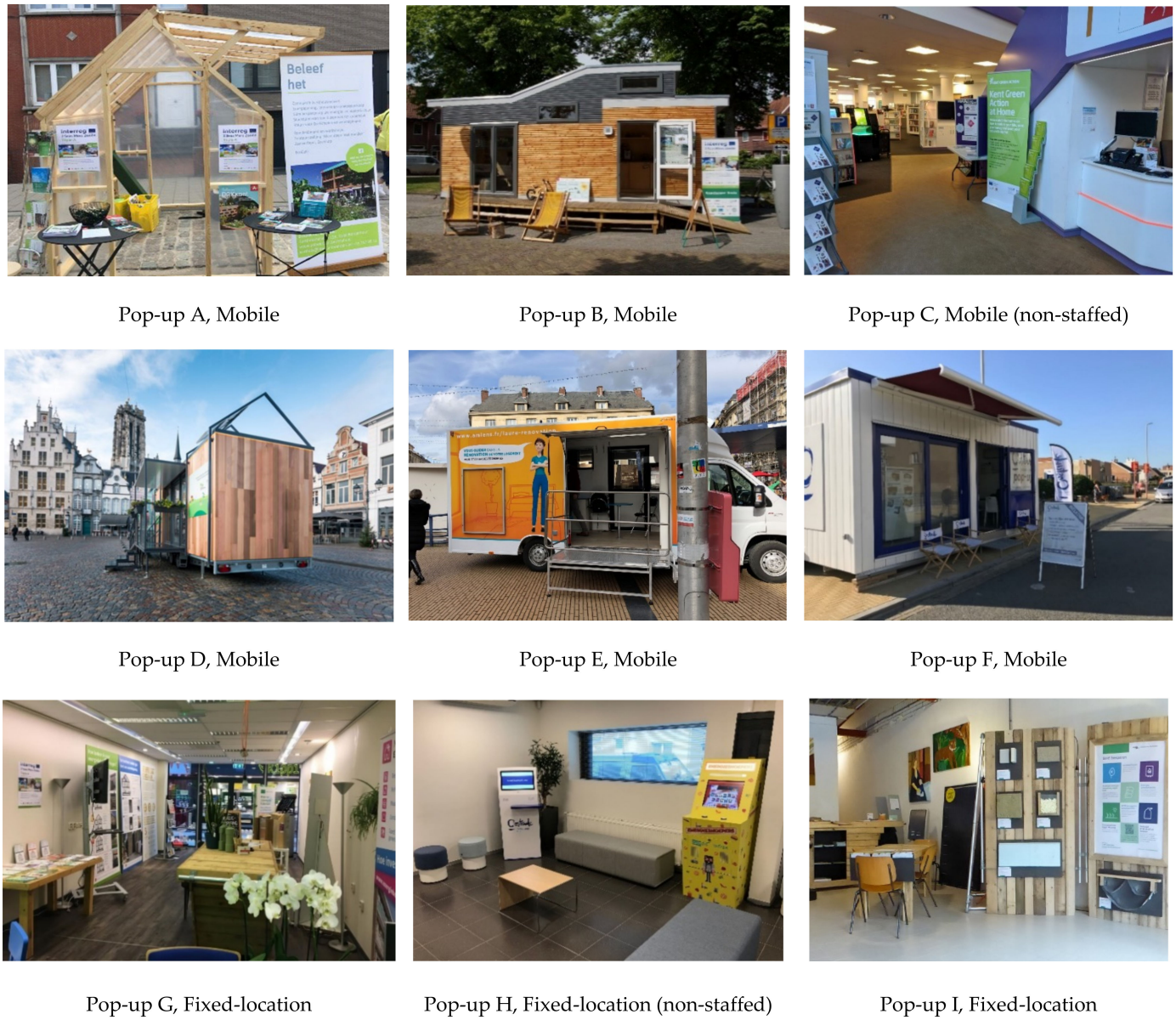

Figure 1. Overview of the pop-up consultancy centres.

4. Results: Business Model Canvas Applied by Local Authorities

4.1. Customer Segments

The "Customer segments" building block identified expected customers for the pop-up [36]. Reflection on this building block guided LAs to understand the characteristics and types of end users in target areas in order to help identify different relationship types and various channels to reach out to these customers. The LAs first jointly participated in a workshop in June 2017 to discuss target customers, and consequently, they deployed a common understanding for an integrated segmentation approach. The LAs segmented the type of homeowners and their possible core characteristics into seven distinct categories based on family composition, education, and life circumstances as follows:

- Young families. These homeowners are young who have recently bought a house. They are potentially high energy users who may be receptive to piloting technologies that could save them energy and money.
- Empty nesters. With children who have recently left home, these homeowners may want to renovate their existing home and may have some savings to make the property

more comfortable. Alternatively, these homeowners may want to move to a new home and make energy upgrades.

- Existing adopters. These homeowners have already adopted at least one low-carbon technical measure and may be willing to try other renovation measures.
- Homeowners undergoing major life changes. For example, these homeowners are experiencing change, for example, moving home due to a new job or looking to sell their property due to a change in life circumstances.
- Highly educated, financially successful families. These homeowners may have some disposable income in order to invest and may be more willing to take a risk. They may also be more environmentally conscious and willing to trial technologies for their environmental benefits. These homeowners may be short of time and be receptive to timesaving/unburdening solutions.
- Homeowners who are receptive to the renovations of their neighbours. Word of mouth and visually seeing what renovations a neighbour has made can make homeowners more willing to undergo the same renovations. Therefore, these homeowners would be more receptive to the broader roll-out of these technologies rather than the initial pilot targeting.
- Homeowners who are confronted with fuel poverty. These homeowners struggle to pay their energy bills and may be vulnerable to the effects of living in a cold and possibly damp, unhealthy home as a result.

Although LAs categorised or aimed to reach the customer segment groups listed above, their work did not go as planned in practice. For multiple LAs, it was difficult to obtain specific data of people living in certain target areas, either because these data were not available (in the right format) or because they lacked time to collect and analyse such data. For instance, the LA for pop-up A did not use the customer segments; instead, they considered other factors, such as the construction year of a house and the dwelling typology. In practice, most LAs perceived that most visitors were young people or families in mobile pop-ups. The young families were the most accessible group to reach, since they often started a cohabitation (getting married, new-borns, or buying a house). Another example, the LA for pop-up I targeted only a low-income group, since their houses often needed renovation urgently, while they could not get financial support or lack information.

Overall, LAs considered the target area more than guiding the customer segment. They used the following characteristics to point out target areas and to locate a pop-up centre.

1. Degree of individual homeownership in the area;
2. Commonalities in house characteristics: a certain standardisation of communication can be developed in such cases;
3. Demographics in the area: to assess expected motivation of households;
4. Building quality and previous renovation activity in the area: to assess the need or dynamics for additional measures;
5. Energy use in the area: a relatively high energy use can lead to higher CO_2 savings after renovation or reduction of fuel poverty;
6. Availability of demo exemplars, political support, and/or citizen support in the area.

4.2. Value Propositions

Value propositions are the products or services that create value for customers. Value propositions deal with what added value the pop-up centre will bring to the customer segment. A main consideration of LAs was proximity of the consultancy centre. LAs reasoned that proximity would lead to increasing awareness, providing information more effectively and demonstrating low-carbon technologies to accompany the homeowner during their (nearby) customer journey. Every LA applied tailored and personalised advice and coaching, covering different homeowner renovation journey stages [27]. The main strength of the mobile pop-ups was the ease of approach to diverse neighbourhoods. On the other hand, they had to be prepared to also target multiple types of homeowners. The

fixed pop-ups had the theoretical advantage of addressing the values in a fixed target area and being able to anchor on these values with specific actions.

Theoretically, LAs were supposed to use different strategies and services according to the customer segments. However, over fifty percent of the participated LAs did not take other actions for segmented customers. We observed that customer segmentation approaches did not always match LAs' assumptions and needs. Particularly the mobile pop-ups could encounter all types of households, depending on their very short-term locations. For some fixed pop-ups, a primary survey or study about visitor types in advance provided a piece of information for each segment, which could be completed once the pop-up started its activity on the location, and consultants could collect supporting data.

4.3. Communication Channels

"Communication channels" indicates not only channels but also tools or activities that were used to attract homeowners and to promote renovation measures. LAs developed specific communication to reach homeowners to consult the pop-up services. All LAs used online and offline promotion channels, such as postcards, ad envelopes, digital and local newspapers, leaflets in the neighbourhood, supporting events, social networks, and websites. LAs collaborated with the local press, using press releases and articles in local municipal newspapers to create media attention. LAs brought printed publications in regional service centres, shops, residences of active inhabitants, and so on. The majority of LAs stated that printed advertisements or events were more efficient in inviting homeowners than online promotion.

For fixed-location pop-ups, LAs had to use more and various communication means than for mobile pop-ups due to the need to attract a more limited number of citizens on a regular basis. The mobile pop-up could be a communication means by itself by being located in target areas or crowded areas where people pass by the most.

4.4. Customer Relationships

"Customer relationships" addresses how the relationship with customers is kept during and after visiting the pop-up centre. LAs offered multiple options to maintain customer relationships, such as follow-up calls, offering tailor-made advice, and invitations to attend or visit demonstration projects. For instance, visitors could get renovation information about their housing conditions and available subsidy from renovation coaches. A web-based registration tool was also actively used to make a reservation for an office visit. One LA managed the follow-up consultancy by itself; others had to rely on sometimes-hired consultants to systematically collect data and maintain relations.

However, it seemed that LAs could not keep this customer relationship for the follow-up consultancy in the long term. One important barrier was that LAs did not initially relate "customer relations" to "key activities". Afterwards, they reflected that this would also have had implications on "key resources", such as a customer relationship management system and data exchange agreements. Another hurdle was that homeowners needed technical information and expert knowledge, which LAs might not offer in a particular stage (e.g., realisation, contract type, and so on). For that reason, most LAs started collaborating in a later stage with other "key partners", such as energy cooperatives, citizen associations, or non-profit organisations, to provide tailor-made support and personalised advice and follow-up customer relations.

4.5. Key Activities

"Key activities" address the LA service's activities and assets (financial support, knowledge, and events). To be able to evaluate the pop-ups as a policy instrument, activities were also coupled with performance indicators. It was evident that LAs provided many products and concrete services in the pop-up centre.

All pop-up types provided necessary information about home renovation, such as renovation measures, advice and coaching, and financial incentives. We observed no

specific differences in the way the consultancy was brought up by staff in the staffed pop-up centres, but there were many differences regarding the type and characteristics of supporting activities. LAs conducted various activities, such as energy breakfasts, open house events, an energy-saving market, and workshops, as well as communication activities through newsletters, websites, social media, flyers, and e-mails.

The detected promotion activities were:

- Distributing leaflets in the neighbourhood, town halls, and so on
- Organising and participating in events, workshops, and local fairs social media
- Combining communication and scheduling with an online platform
- Providing on-site advice
- Serving coffee and tea
- Moving around per target area, sometimes even visiting each district twice
- Organising door-to door letters
- Staffing with well-trained and knowledgeable energy coaches
- Sending invitations, flyers with contact detail to homeowners
- Developing their own communication skills
- Establishing working methods with an adviser or energy coach
- Establishing collaboration with neighbourhood ambassadors
- Distinguishing and managing temporary and permanent activities
- Providing personalised support
- Developing promotional activities in fixed-location pop-up centre
- Providing thermographic photos
- Setting up displays, amongst other demonstrations of technological solutions

Compared to fixed pop-ups, mobile pop-ups focused more on activities for attracting new visitors besides providing necessary information. LAs experienced an unbalanced number of visitors and coaches, depending on quiet or very busy days and actual promotion in these periods. Although LAs applied many activities, it was a challenge to check its impact on increasing homeowners' awareness by using performance indicators. Overall, LAs had conducted and tested as many activities as possible to promote the pop-up without studying the possible effectiveness or evaluation method in advance. Moreover, LAs found that it was difficult to identify communication activities per customer segment Thus, no direct relation with the "customer segments" building lock was achieved in practice.

Nevertheless, there were meaningful activities in this study that could be qualitatively related to the success of the pop-up consultancy activities. First, some LAs invested in thermographic photos to show visitors how well the roof or façade of their house was insulated. Many homeowners were interested in checking the thermographic photos in the pop-ups. As this type of information was directly related to the thermal insulation deficiencies of their houses, it triggered them to think about home renovation measures. Second, collaboration with local stakeholders was important to align local communities and to support local events. Moreover, local stakeholders were willing to develop specific activities to support the "local anchor" or even to develop pop-up centres themselves. Third, some pop-ups successfully focused on group purchases. Group purchases could be organised relatively easy due to the exhibition of the proposed solution in the pop-up centre. Finally, it could be qualitatively observed that visitors were also particularly interested in smart metering and demo homes in the area. Overall, LAs perceived that personalised information worked better than informing a general idea about home renovation.

4.6. Key Resources

"Key resources" indicates the most important assets or inputs utilised by the business model owner. Generally, it deals with what kind of human resources, materials, and equipment are needed. In the previous section, we elaborated what concrete activities were needed, and all of these related to specific resources that needed to be made available or delivered in the pop-up centre (for example, for informing, demonstrating, advising, and

selling specific measures aimed at the insulation of roofs or glazing, showing technologies and products, offering tailor-made financing schemes, and so on).

During the preparation phase, LAs needed to organise an internal management team that could only focus on the pop-up centre implementation. Having knowledgeable energy coaches and well-trained advisors were important human resources. A lack of expert knowledge sometimes made staff feel insecure when offering information. LAs reacted to this either by hiring experts, offering training, or explaining that it is unnecessary that they answer everything by themselves; they can also refer the residents to the right person or organisations. Thus, the LAs had to make sure that they organised a training course for energy coaches or collaborated with experts and third parties. Overall, LAs also tried to integrate the use of online consultancy tools at the pop-up to support consultancy activities.

4.7. Key Partners

Key partners are various stakeholders that help the business model work and contribute to the success of the business. Key partners were the needed network of actors and partnerships that were not part of the LA or consortium. Overall, three types of key partners were detected: public, private, and citizen actors. Public actors were national and regional authorities, other local authorities, public welfare, and multiple city departments. They contributed, for example, with providing national information, regional co-funding, co-staffing, and specific information for certain target groups or advice topics. The detected private actors were local contractors, SMEs, energy-net managers, and installers. They mainly contributed to providing information, displays, and demonstrations of technologies and services. For example, in one case, a contractor produced a mobile pop-up on demand. The detected citizen actors were local ambassadors, neighbourhood committees, and students from a technical school. The LAs reasoned that experienced homeowners were a vital asset to convince new homeowners to renovate. Students were engaged in developing technology demonstrations for the pop-up.

LAs held e-tendering to procure substantial activities from private or citizen actors and searched partners from different actor groups, sometimes relying on their voluntary contribution. At the national level, some LAs also collaborated with grid operators and energy agencies. LAs mentioned that working together with other city departments was not easy, because their goals were different. Private actors were often helpful, because they had expert knowledge and shared resources, but it could be difficult to ensure residents would get the right information. As a LA, it was important to ensure they were objective and not biased. In this regard, collaborating with SMEs was a challenge, because LAs are not allowed to recommend specific supply-side actors as neutral actors. In the later stages of the business model development, LAs sought to work more closely with "emerging" new partners, such as local energy cooperatives and associations that target specific areas or homeowner assemblies.

4.8. Cost Structure and Revenue Streams

The "cost structure" means the costs that occur through the business preparation and operation phases. The main goal is to minimise costs and maximise values. "Revenue streams" means the earnings that a business generates from its activities and channels. Here, the costs of developing and sustaining the pop-ups and creating its revenues were considered. In a good business model, the costs and revenues should balance.

The LAs all relied on European project funding to develop their pop-ups. Visitors could get information in the pop-up centre free-of-charge, which was also funded by project subsidies. Furthermore, the LAs aimed to keep the costs as low as possible and invest in information provision in various ways, mainly (e.g., face-to-face with staff, videos, and leaflets) to keep residents interested in the pop-up. SMEs consortiums were willing to provide their product samples for free so that LAs could benefit from that.

LAs planned to install a paid advice and consultancy for homeowners. However, this activity was new for both homeowners and LAs, and it was therefore considered

inappropriate to pursue. Thus, the LAs did not create any revenues from the pop-up centre. In Figure 2, the range of total cost varied due to the different pop-up running hours, staffing costs, and type of pop-up centre. In order to generalise the data, we compared the hourly cost base. The staffing cost influenced the total cost of the pop-up centres. The total and operating costs were significantly different whether it was a staffed centre or not. Pop-ups C and H showed considerably low operating costs compared to the other pop-up centres. Although pop-ups E and F were staffed consultancy centres, they also showed relatively low operating costs, since LAs did not hire temporary coaches or advisors.

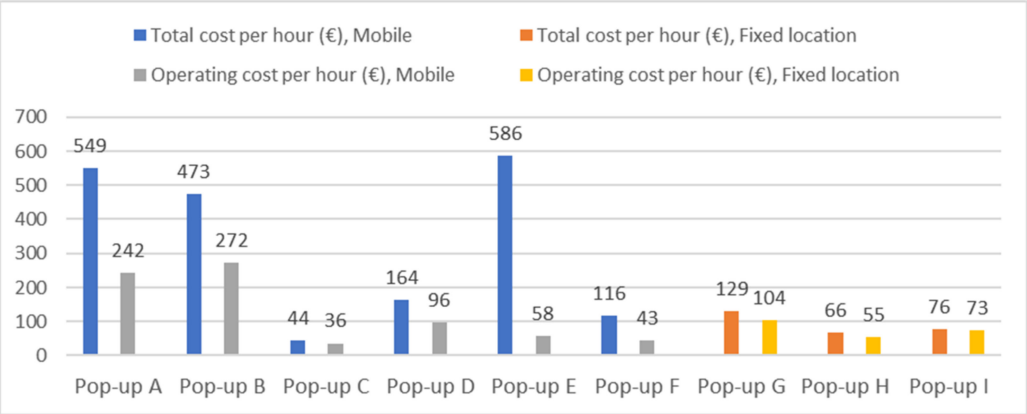

Figure 2. Pop-up cost per opening hour.

In the future, LAs will need to find creative ways to reuse or change existing pop-ups to reduce costs and ensure consultancy continuation. The LAs concluded that this would require the deeper engagement of other public bodies, public–private partnerships, cooperatives, and possibly actors to ensure action after the follow-up consultancy. Therefore, a future strategy might be to develop local renovation hubs and assess what bottom-up initiatives in target areas can be supported using the already set pop-up with the help of local participation and/or home renovation deployment.

The LAs speculated that future revenue sources could be payments for advice, consultancy for homeowners, a fee for suppliers of low-carbon technologies or services, lease or rental of the pop-up, government contributions, and so on. The LAs expected other LAs or private parties to develop similar pop-up centre concepts in the near future.

5. Evaluation of Pop-Up Centres

5.1. Effectiveness of Pop-Up Centres

The LAs applied the BMC to develop their pop-up consultancy centre, and there is no significant difference in the BMC approach. Nevertheless, each LA chose different locations for their pop-up centre, the type of pop-ups, and opening hours. Since every pop-up had different opening hours, it was a challenge to compare the effectiveness. Therefore, we collected information about the total opening hours and the number of visitors to analyse the effectiveness of the pop-up centres. A one-way ANOVA revealed a statistically significant difference in the pop-up centres ($p < 0.001$). In Figure 3, pop-up A was the most functional effective model in terms of the number of visitors, while pop-up C was the least functional effective one.

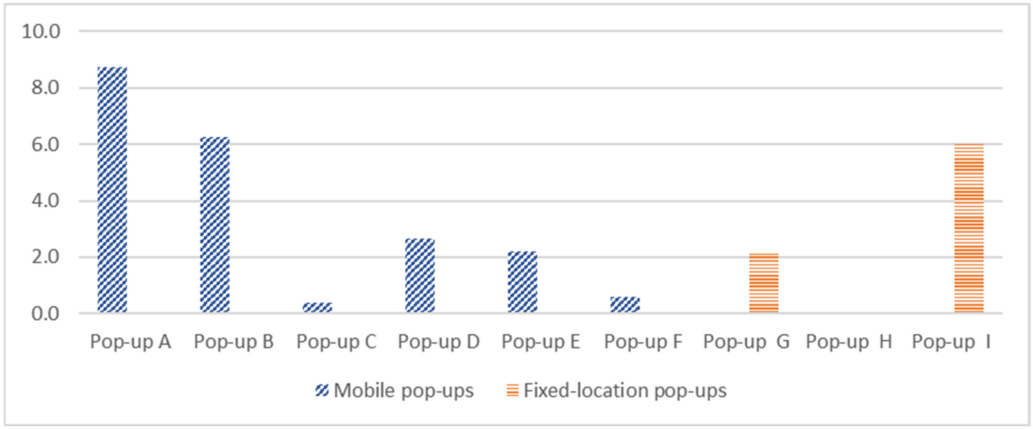

Figure 3. Effectiveness of the pop-ups based on the number of visitors per hour.

5.2. SWOT Analysis

We used a SWOT analysis to investigate the pros and cons of each pop-up (see Table A1). We observed that the results were quite similar to each other, because the LAs followed the business model canvas and used similar approaches. Therefore, we classified the results according to mobile and fixed-location pop-ups.

5.2.1. Mobile Pop-Up Centre

The advantages of mobile pop-ups are mobility and outstanding appearance. The shape of the short-term mobile pop-ups was a free-standing object and a transformed caravan. It was relatively easy for LAs to choose good locations and easily experiment with various places, such as remote neighbourhoods from crowded areas. The LAs with big size and the massive weight of pop-up centre had the challenge to transport the pop-up centre to store it. LAs recommended that the size and weight of the pop-up should not be too big for easy mobility. A mobile pop-up centre can attract many visitors and get attention from citizens in the visited neighbourhood.

The advantage of a mobile pop-up is that LAs can reach a different audience than the usual one. The mobile pop-ups usually stay on the one site two times per week to avoid people missing visiting the pop-up centre. The mobile pop-up centre could attract many visitors and get attention from citizens in the visited neighbourhood. It also had easy accessibility for homeowners and mobility for LAs.

5.2.2. Fixed-Location Pop-Up Centre

The fixed-location pop-up centre had the benefit that people could visit the centre whenever they had time. Moreover, visitors could stay longer and got consultants or individual advice in a quiet atmosphere. It means that a fixed-location pop-up needs to facilitate knowledgeable advisors or experts. For this reason, this pop-up also could be used as an office for follow-up consultants or personalised building diagnosis rather than promotion activities. In addition, LAs perceived that a long-term presence could lead to trusted relationships between organisations and citizens in a targeted area.

Nevertheless, there was also a challenge of bringing homeowners to the consultancy centre before this pilot project because of no attractiveness of the pop-up and the wrong location selection, which were not many passengers around. The pop-up centre in the city centre did not get attention from people, because pedestrians in the city centre have different purposes, but the pop-ups near the shopping mall worked better. We observed that it was better to be closer to homes.

6. Business Model Development by Local Authorities: Discussion and Future Research Opportunities

We discuss some specific aspects of the LAs' business model development—as exemplified here for the development of pop-up consultancy centres—focusing on the differences in applying the public or private sector model.

6.1. Public Sector Business Model Application

A business model can be a useful tool to achieve goals such as business growth and profitability and capturing values [41], and the model developed by Osterwalder and Pigneur [36] has widely been used for profit generation. Sanderse, et al. [42] and Hvenmark [43] reviewed that applying the business model in the non-profit sector may lead to misunderstandings because of a first-profit aim. Hence, we have to consider the different characteristics of public sector business and its consequences. Previous studies on developing consultancy centres or one-stop shops were often limited to addressing the issue from a supply-side perspective [35,44]. This paper offers new insights to define and translate the business model elements in the framework of the management of a "business" by a LA. In this case, the main goal of the business is the operationalisation of an instrumental policy means.

In traditional business models, identifying and classifying customer segments is essential to understanding their needs and providing the right sources through the right channels [45]. However, for policymakers, the customer is often more generally considered as the "citizen". While generating revenue is a significant element for a private sector actor and its business, a public actor can rely on public money for experimentation within certain conditions that contribute to local and regional development. That is why, in this study, LAs did not necessarily seek commercialised partnerships nor revenue-generating opportunities. A third-party business-funded model could be used [42], since the LAs were funded by European project budgets and helped by other public, private, and citizen actors with the view of achieving successful experiments. Nevertheless, our results supported the study by Weerawardena, et al. [46], arguing that the public sector needs to distinguish different value creation strategies and captures, since these are two different streams in public sectors.

In practice, LAs can also be more affected in their business model development limitations by often changing political parties and mandates; traditional business might have the advantage that management is more stable and that businesses and operational activities can be developed to a better suitably in the long term. LAs reported that many important decisions were influenced by a central or national government or political parties, and they had to coordinate and communicate with them constantly. For example, selecting key partners and resources was considered more complicated than when done by private sectors, and LAs did not have much freedom to choose key resources. It is not a negative condition; however, LAs experienced that they should have more freedom in decision-making to fit local and regional conditions. Additionally, LAs perceived a need for additional developments in parallel for supporting marketing plans, local ambassadorship, and cocreation.

From the research experience, the model canvas was thus mainly useful to guide LAs in the pop-up centre development process, motivating their integrated thinking from the viewpoint of the homeowner and discussing and establishing cocreation opportunities with other actors.

6.2. The Interpretation of Public Communication in the Business Model

As it often goes with innovations, they come along with the need for a lot of communication. Previously, this paper discussed the used communication channels. Public sector communication can also be different in nature compared to when others organise this communication. For example, Glenn [47] identified the core communication activities for the public sector. They are consultation, advertising marketing, media relations, strategic

communication planning, and so on. The communication channel in the "traditional" business model canvas mostly refers to promotion and advertising activities. So, the LAs classified their activities based on digital and nondigital advertisements, and they used various methods to promote the pop-up centres. The effective communication channel needs to be matched with the goal of the message [48] and a customer segment. Most LA web communications about home renovations and energy savings do not address a specific customer segment but, more in general, the "citizen". Digital means like social media, e-newsletters, and e-mail have the potential to be directed to specific citizens, but LAs rarely use this potential due to a lack of data or privacy concerns.

The research indicated that nondigital media were perhaps more effective for attracting citizens. Nondigital communication such as newspaper, leaflets, and door-to-door visits can significantly influence homeowners as a short-term means, while it takes place in real-time. In practice, it is challenging to investigate which tool worked effectively. This evaluation process was not done for this study. A more elaborate evaluation process could help LAs know whether a specific channel effectively delivered their message and reached homeowners. In view of the ongoing digitisation and development of local government e-services, the digital/nondigital divide is an interesting topic for future research.

It should be noted that advertising is not a core activity for the public sector. Therefore, we need to look at the concept of the communication channel on a broad scale and also think more holistically about how communication key partners and engaged citizens can be involved in the business model development. According to the classification by Howlett [49] and Glenn [47], a pop-up centre can be used in the procedural domain, which is focusing on individuals' or groups' behaviour changes. There has been an overall public sector change from holding power over citizens to holding power with citizens [50], emphasising the importance of listening to homeowners' needs and the participation of citizens. In this regard, the LAs worked together with local ambassadors and neighbourhood committees during the pop-up operation phase. Through this approach, LAs could easily contact residents, and people felt familiar with the members at the pop-up centre. Thus, the collaboration with citizen actors contributed to reaching diverse customer groups in a target area.

6.3. Observed Limitations Regarding the Use of the Business Model Canvas and Opportunities for Future Research

In this research, we noticed that LAs could not apply specific strategies to fit various customer segment groups. Although they were aware of the characteristics, it seemed to be a challenge to categorise certain types of visitors based on recognised customer segments. Nevertheless, LAs considered the age of houses, ownership structures, and demographic information to decide suitable target areas. Furthermore, it may be essential for customer segmentation to include behaviour and life patterns from a psychological point of view [31], because awareness and behaviour changes are related to the psychological impact. This could, for example, be realised by conducting a pre-survey with citizens in the target area to understand homeowners' needs and priorities.

Second, the LAs needed to complement the business model development with additional means, such as communication, cocreation, and marketing plans. A strategic and performance-based approach can be recommended for identifying promotion activities related to using policy instruments, distinguishing between temporary and permanent key activities. The promotion activities were now too generic, but the value of real interactivity with citizens was regarded as higher than for virtual activities.

Many LAs highlighted the importance of an internal management team that can only focus on the pop-up centre development and use. An internal management team can work on schedule management, promotion, and communication activities. This essential component and the transaction costs for developing a new "business" are often neglected in business model development.

This research addressed an interesting new approach where pop-ups were used as a short-term activity embedded in existing shops. This shop-in-shop concept could also be further explored, for example, to support one-stop shop developments.

Last, this study did not assess the willingness to adopt home renovation measures and satisfaction with the pop-up centre. For future research, listening to visitors' opinions and needs through a survey may help keep a customer relationship and improve the pop-up centre by understanding visitors better. Such evaluations are also instrumental for assessing the effectiveness of policy instruments.

7. Conclusions

This paper investigated the application of the business model canvas to develop pop-up home renovation consultancy centres by local authorities. The research shows that the pop-up centre idea can be used as a decentralised policy instrument to spur the adoption of energy renovation measures and low-carbon technologies by citizens in target areas. Local authorities could use business model approaches for the development of pop-up home renovation consultancy centres. The business model development approaches defined in the previous literature certainly have their merits, while their application in practice by public actors can also be limited.

The use of the business model canvas led to numerous insights. First, local authorities found that it was very difficult to collect sufficient data about customer segments. In such cases, the use of building and target area characteristics may become more dominant for identifying the possible measures to promote instead of customer values. In practice, the business model development is always a work in progress, not necessarily positioned at the beginning of the development process. For example, some developed pop-ups also collected information about customer segments only once they were developed or installed. This could lead to remodelling the business model and optimising the business model building blocks.

Homeowner consultancy pop-ups do not attract sufficient visitors by themselves. LAs need to invest in a wide range of communication channels, activities, and resources. In target areas, traditional offline communication might still be more effective than online communication. The key activities of a pop-up consultancy centre reached far beyond offering consultancy. On the one hand, the staff needed to be trained to deal with technical issues, as well as human interactions. On the other hand, a large range of supporting activities was also required to attract visitors. It can be recommended to discuss and establish key performance indicators in an early stage per needed activity in order to be able to evaluate the pop-up as a policy(-supported) instrument.

Due to many different variables for each pop-up, it was a challenge to figure out exactly which factor directly influenced the effectiveness of the pop-up centre. Even though there was no optimised pop-up case or a recommended type in this study, we propose that LAs should consider the following issues for a successful pop-up consultancy centre based on our findings.

- A mobile pop-up consultancy centre has high flexibility and can reach various types of homeowners. Thus, this pop-up can be used as a promotion tool due to the attractive form.
- A fixed-location pop-up can be used as a long-term consultancy centre providing in-depth and personalised advice and coaching. For this pop-up, LAs should facilitate knowledgeable staff or experts.
- LAs should consider family composition, education, life circumstances, lifestyle, and personality to classify customer segments.
- Cocreation and collaboration with stakeholders should be organised in different stages.
- Internal collaboration is essential in terms of schedule management, promotion, and communication activities.
- The involvement of civic actors is essential to reach local citizens in a target area.

- A marketing mix is helpful in the early preparation stages; however, sustaining LAs' activities is also crucial for a long-term plan.
- A visitor survey should be conducted to understand segmented customer groups better.

Following up customer relations is also a specific point of attention: if pop-up visitors cannot be led to follow-up consultancy and further renovation actions, the pop-up will most likely not be a success as a policy instrument, which means not leading to sufficient increased renovation measures. Following up visitors has implications on the way the business model is composed: it can strongly affect the needed activities, resources, and partners. The one-stop shop model, where one contact point follows the customer throughout the whole renovation journey, was difficult to achieve for local authorities, as they are currently limited in the way they can help homeowners during contracting, implementation, and quality assurance. This would require a stronger public–private and/or public–citizen collaboration with, for example, energy cooperatives, non-profit organisations, or citizen associations. In the long term, LAs would prefer market and/or citizen parties that take over pop-up home renovation consultancy centres and services.

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Appendix A

Table A1. Overview of Strengths, Weaknesses, Opportunities, and Threats of Pop-Up Centres.

Pop-Ups	Strengths	Weaknesses	Opportunities	Threats
A	• The attractive form of pop-up (greenhouse) • Collaboration with companies • Combination with information sessions, workshops, and fairs • Organising info-meetings with neighbourhoods	• Limitation of reaching range of residents due to the size of the city • Difficult transporting the pop-up • Need approval to use a certain location • No cocreation • Not used very often but joined with a stand provided by the fair organisation.	• Easy mobility • No insurance needed • Easy storage (dismountable) • Location of the pop-up (close to the entrance of a supermarket)	• Complains from visitors but no relation to home retrofitting

Table A1. *Cont.*

Pop-Ups	Strengths	Weaknesses	Opportunities	Threats
B	• Appearance of the pop-up • Collaboration with energy cooperative and suppliers	• Need energy coaches due to unexpected success	• Mobility allows the pop-up to be used in many locations, including other municipalities	• The mobile concept needs additional resources for reaching locations
C	• Combination with social media • Ensuring local schemes for energy • Low-cost investment • Collaboration with local authorities, energy and water companies, and contractors	• Non-staffed, and visitors can take information packs. • Different needs from visitors (materials vs. consultation)	• Reaching a wide range of residents due to the location of pop-up. • Inviting local SMEs to participate • Folder concept provides the most accurate information on funding to residents	• People are reluctant to provide details or sign up for questionnaires. • Some residents wanted to discuss other council services
D	• Easy mobility • Showing the thermographic aerial photograph of the city roofs • Saving cost to construct a stand in local trade fairs for construction, renovation, and home improvement. • Collaboration with local associations, actors, and initiatives	• Requiring careful planning about the size and the need to visit neighbourhoods • Less attractive to children (a group of young families) • Importance of quality of advice and subsequent follow-up	• Combination with events and other project • 4 coaches to support citizens • Attractive shape of the pop-up • Distinction of activities between temporary and permanent activities for efficiency of the pop-up use. • Potential for stronger collaborations with other departments, supply-side actors.	• Located in neighbourhoods brings less attention from visitors. • Staffing is challenge during winter period, and no visitors.
E	• Conducted visitor surveys during the pop-up opening • Well organised and trained renovation coaches • Personalised support is provided • Easy mobility allows to be placed in many locations for consultation and reach different types of residents	• Consultants should know how to advise homeowners.	• Combined with workshops or theme breakfast • Combined the pop-up with the habitat fair) • Combine it with taking thermographic pictures • Having models to provide a better view to homeowners what is possible to do	• Many visitors come and relatively a smaller number of consultants

Table A1. *Cont.*

Pop-Ups	Strengths	Weaknesses	Opportunities	Threats
F	• The proximity and easy access for visitors • Collaboration/ cooperation with supply sides for the group purchase (PV, insulation, green power) • Organising information session, collaboration between private (Fluvius) and public (the municipal department).	• Installation of a large container (6 × 3 m) • Transporting the pop-up office • Visitors cannot make an appointment	• A closer cooperation with the vicinity centres and/or neighbourhood initiatives, in order to reach more people • Combined promo-tion/communication campaign • Cocreation with schools (a good opportunity for schools to train students)	• Need permission from the city administration
G and I	• Collaboration between internal municipal programmes and departments • Collaboration with private/public intermediaries achieved to cover detailed advice, implementation, and customer relations • Development of communication skills • Anchor of the Municipal neighbourhood approach towards the energy transition	• Need for staffing by the municipality • Internal procedures can slow down needed fast response • Not all municipal neighbourhood activities join the initiative • Relatively high investment in staff and facilities	• Approach sustainability from multiple angles using events • Develop a neighbourhood anchor and local network • Activate local "ambassadors" • Toolkits for specific customer segments • Long term presence can lead to building networks and activating citizens • Different organisations might integrate their actions and customer relationship management to provide a smoother customer journey	• Lack of integrated follow-up of visitors • Neighbourhood includes homeowners with limited financial means • Proposed and executed measures are often "quick wins", e.g., installing led bulbs, airtightness strips, and so on
H	• Low running cost	• No cocreation	• Combined activities by advertising in local press, on website and social media	

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