

Utilisation of Digital Marketing Platforms for Customer Engagement in Sustainability in the Net Zero Energy Transition in the German Building Sector

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1 ABSTRACT

Achieving a net zero energy future in the German building sector is an extraordinary societal endeavour that requires – besides the adoption of sustainable practices – intensified consumer engagement. However, shifting from consumer awareness to consumer commitment needs a deeper understanding of the social drivers. Until recently, scientific research focused on technical and economic aspects of energy transition, while the contribution of social science in this field is still in a fledgling state (Komendantova, 2021). Consumer engagement is suggested a promising route to follow to integrate social science approaches into this research stream. In achieving enhanced consumer commitment, digital marketing platforms are seen as a powerful tool, as they allow for better consumer targeting, measurability and monitoring as well as establishing a long-term relationship with them. This study validates the applicability of digital marketing platforms for consumer engagement and investigates the impact of perceived consumer value on engagement behaviours in sustainability in the net zero energy transition of the German building sector. To achieve this, the study pursued a qualitative research approach applying a process of planning, designing, preparing, collecting and sharing data (Yin, 2003). Using purposive sampling and snowballing techniques, seven respondents with experience in marketing and business development in construction and architectural firms were interviewed. The qualitative analysis resulted in categories and the establishment of a coding framework via the Maxqda software. The results show that awareness and research in the context of sustainable buildings are the most important stages of the consumer experience influenced by digital marketing platforms. The research suggests a model of digital consumer experience strategy that emphasises simplicity, reachability, transparency, and personalization. In addition, the research found that mainly utilitarian values, environmental values, safety and self-expression are values ranking top of mind of consumers or citizens that influence engagement behavior when acquiring sustainable buildings with social values not to be neglected. This research should enable construction companies to develop relevant and effective propositions for their consumer engagement strategies.

Keywords: net zero energy transition, engagement behaviour, Digital marketing, consumer engagement , Planning

2 INTRODUCTION

Consumer engagement is seen as a critical part of achieving the net zero energy transition in the building sector. Consumers' participation and commitment, leading to the adoption of high energy performance solutions throughout the building lifecycle, will shape the success of the net zero energy transition. Consumer engagement refers to the set of different voluntary behaviours towards a specific product (service) (van Doorn et al., 2010). It fosters a broader societal shift towards active involvement of peers and communities.

In Germany, supported by the government's target of being "nearly CO₂-neutral" by 2050, there are massive contributions to be expected in the building sector not only from renewable energy applications but also from energy efficiency solutions, which are being promoted to gain consumer interest and acceptance.

Digital marketing platforms are a powerful tool for fostering a sense of shared commitment and social involvement through educating and engaging audiences in sustainable efforts (Dadabaeva and Jamoliddinov, 2024). They also allow targeted communication and facilitate interactivity among audiences. In addition, these channels provide competence of data analysis and monitoring to better understand consumer preferences.

This research aims to study the utilization of digital marketing platforms for consumer engagement in sustainability in the net zero energy transition in the German building sector.

It addresses the most recent suggestion by Durmus (2024, p.23) for future research: “forthcoming endeavors could delve deeper into the evolving landscape of digital marketing strategies, explore innovative approaches to enhance consumer engagementensuring our understanding of sustainable marketing continually adapts to the ever-changing energy and environmental landscape”.

This study is divided into five further sections. In section 3, there are the background of sustainability and its importance for the German building sector; digital marketing platform in sustainability and its impact on consumer engagement. Furthermore, it initiated about the sustainable engagement behaviours of consumers in the net zero energy transition of the German building sector. In the section 4, the authors explain the research method to design the analysis, data collection technique and data analysis procedure. Section 5 presents the findings of the qualitative research. In the section 6, the main discussion takes place and, finally, the conclusion is provided in session 7.

3 LITERATURE REVIEW

3.1 Sustainability and its importance for the German building sector

Sustainability

Sustainable development aims to strike a balance between the needs of different generations (World Commission on Environment and Development, 1987). Its concept on the triple bottom line embraces economic, social and environmental sustainability (Catlin, Luchs and Phipps, 2017; Elkington, 1998). Driven by civilisation, buildings have become extremely necessary to maintain the standards of human life. Whilst the construction industry is crucial to the economy and the social aspects of life by designing, constructing and enhancing the living environment (Mjakuškina, Kavosa and Lapiņa, 2019), the built environment sector is the largest greenhouse gas emitter accounting for 37 per cent of the global emissions (Dyson, 2023).

The German building sector toward sustainable development

The building sector in Germany has contributed a significant share to the construction market due to rapid urbanisation and population growth caused by immigrants (Technavio, 2024). This leads to a large consumption of utilities and resources which are responsible for greenhouse gas emissions. As a result, this sector has become the third largest greenhouse gas emitter with 111 million tonnes of CO₂ in 2022 (Nasr, 2024). To ensure its long-term development, the German government has set itself the target of being “nearly CO₂-neutral” by 2050. It has promoted regulations and legal frameworks that support green development, high productivity and digitalisation in the market (Technavio, 2024). The shift towards decarbonisation is associated with a number of relevant companies in the building sector making significant efforts to position themselves as ecological and environmentally friendly.

3.2 Sustainable marketing, digital marketing, digital marketing platforms and its impact on consumer engagement in the field of sustainability

Marketing and digital marketing in sustainability

Triggered by concerns about climate change, technology innovations and supporting policies, sustainable marketing has become a powerful tool to promote positive impacts of companies on ecology, society and economy. According to Rastogi, Agarwal and Gopal (2024, p. 1), “sustainable marketing involves developing and promoting products and services in such a manner that the resources are utilized optimally, providing maximum satisfaction to the consumer and the company, along with ensuring a better life for both current and upcoming generations”. According to Bhuvanewari (2021, p. 1), “digital marketing is the promotion of products or services using online channels, electronic devices, and digital technologies”. In practice, however, sustainable marketing faces a major challenge related to lacking consumer awareness that leads to misunderstanding and mistrust towards promotion of sustainability (Durmus, 2024). Thanks to the evolution of the wireless transformation era, digital marketing has become an influential tool for promoting sustainability applications (Dadabaeva and Jamoliddinov, 2024).

Digital marketing platforms and its impact on consumer engagement in the field of sustainability

Digital marketing platforms refer to social media, blogs, webinars and online forums to engage consumers on sustainability issues (Durmus, 2024). According to Cevher (2024), websites, email marketing and search engines represent digital channels. These platforms have a positive correlation with consumer engagement

(Arjang, Utami and Redjeki, 2024). They have a significant impact at each stage of the consumer experience consisting of awareness, research, purchase and after-sales stages (Cevher, 2024). It requires companies to adopt digital experience strategies that focus on customer engagement and determining how digital elements integrate into customer experience journey. The digital customer experience strategy (DX) maturity spectrum provides a digital consumer experience strategy that navigates consumer engagement across the digital channels with the following key elements (Anon., 2024). Channel flexibility refers to the ability to move between channels; the consistency of content and tracking and the tracking and retention of consumer's interactions; reachability focuses on the availability and accessibility of the consumer's preferred digital channels; fast and real-time support is included in the service and purchase convenience; personalisation means establishing individual experiences; simplicity is relevant to user-friendly features and design (Anon., 2024); in addition, transparency exerts a key influence in digital platforms to build trust, especially with ecologically minded consumers (Dadabaeva and Jamoliddinov, 2024). By integrating these important factors into their digital strategies, companies can demonstrate their truthful accountability through comprehensive sustainable reporting and information.

3.3 Consumers' sustainable engagement behaviours in the net zero energy transition in the German building sector

The shift in societal, especially, household attitudes towards energy use is crucial to energy transition (Smaliukienė and Monni, 2019). By gaining consumers' acceptance of green alternatives and innovations, the clean energy transition is accelerated through the application of innovations and green solutions. The building sector is in the third phase of its transition to net zero energy, with increasing applications towards energy efficiency, low-carbon electrification and low-carbon fuels (Markard and Rosenbloom, 2022). It is important for the solution providers to understand the concept of consumer engagement and the drivers of consumer behaviour, so that they can offer effective engagement strategies.

Consumer engagement refers to a set of different voluntary behaviours towards a specific product (service) (van Doorn et al., 2010). These behaviors encompass seeking information, proactive managing, sharing feedback, helping and advocating (Bănică, Patrício and Miguéis, 2024). Indeed, Bănică, Patrício and Miguéis (2024) shared their view that seeking information enables a better understanding of products and services; proactive managing focuses on monitoring and optimizing their use; sharing information belongs to social dissemination to improve solutions; helping means supporting to deal with product-related issues; and advocating refers to providing recommendations.

Value perceptions have a major influence on purchase behaviours and lead people to choose one brand over another (Sweeney and Soutar, 2001). Durmus (2024) highlighted that personal values, social norms and environmental perspectives lead to consumer behaviours in the area of sustainability. According to Smaliukienė and Monni (2019, p. 21), "economic benefit is a very important stimulus for behavioural changes". This is reflected and extended in the concept of utilitarian value, which belongs to the consumer's consumption demands such as quality, usefulness and price value (Chen et al., 2019). In addition, social value is another driver of engagement behaviours, that refers to social network returns (Wang et al., 2021). Furthermore, it is confirmed that environmental value is related to consumers' environmental concerns, which can be satisfied by green solutions (Komendantova, 2021). Bănică, Patrício and Miguéis (2024) confirmed that utilitarian value has a significant impact on seeking information, proactive managing, helping and advocating while social value is aligned with sharing, helping and advocating; environmental value has an indirect impact on seeking information, proactive managing and advocating. In this context, it seemed interesting to the researchers to observe the relation between materialist values and post-materialist values, i.e. self-expression, quality of life or environmental attitudes, as discussed by Inglehart (1981) and its impact on consumer behavior in the building sector of Germany.

3.4 Initial conceptualization and research table

The figure one shows a graphical representation of the four research questions followed by the research methodology chosen comprising detailed research objectives, research questions and interview questions.

The research aims to validate the applicability of digital marketing platforms for consumer engagement in sustainability of the net zero energy transition in the German building sector. It also investigates the drivers that influence engagement behaviours in the net zero energy transition in the German building sector. By

pursuing a qualitative approach, the upcoming results are expected to fulfil these study objectives. The study includes four research questions: (1) To what extent do diverse digital platforms influence consumer engagement in sustainability in the German building sector? (2) How can digital platforms be strategically used for consumer engagement in sustainability in the German building sector? (3) To what extent does the materialist value orientations of individuals influence their prioritization of environmental protection versus security and economic factors? (4) How do consumer values influence engagement behaviours in the German building sector?

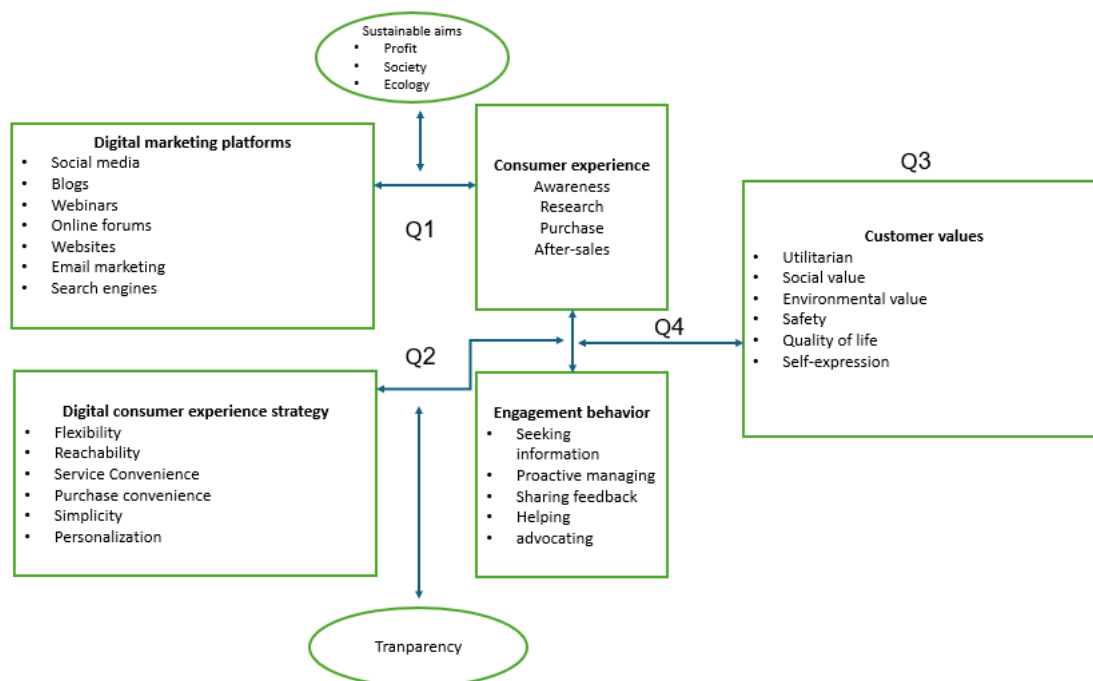


Figure 1: Initial Conceptualization developed by the authors based on Durmus (2024), Bănică, Patrício and Miguéis (2024), Komendantova (2021), Dadabaeva and Jamoliddinov (2024), Anon., (2024), Inglehart (1995)

4 RESEARCH METHODOLOGY

This study aims to fill the gap in the literature with empirical evidence and concepts to identify the relationship between different digital marketing platforms and consumer engagement in the net zero energy transition in the German building sector.

4.1 Research approach, design and data collection

This exploratory research paper uses the case study method to answer “why” and “how” questions. It allows for analysis in a real-life context with direct observations. Qualitative research was chosen due to the limited existing literature on the topic. There are six interdependent stages of the qualitative research process including planning, designing, preparing, collecting and sharing (Yin, 2003). Based on the literature review, the four questions were identified. The interview questions were asked in semi-structured interviews facilitating open-ended questions for eliciting independent and diverse perspectives of respondents.

4.2 Sample selection

The study uses purposive sampling and snowballing technique. The main sampling criterion was experience in marketing and business development in the German building sector. There were three female and four male who participated in the interviews. The seven interviews were conducted in English. All interviews lasted between 20 and 60 minutes. The interviews were recorded and transcribed for analysis.

4.3 Data analysis procedure

The processes of the applied qualitative research included interviews, observation and documentation. The qualitative analysis is based on categorization and the establishment of a coding framework. Coding is generated from keywords, research questions and relationships. The study used the MAXQDA software to

code and categorise data. Initial codes were established from keywords according to the research questions and arranged subsequently into thematic categories.

After the interviews had been conducted, the transcribed documents were used for the analysis. The final steps are the research findings and documentation. Direct quotes from participants are provided for validity purposes.

4.4 Ethical considerations

Prior to the interviewing, all respondents were informed of the research objectives in the invitation letter and at the beginning of the interviews. All recorded data were used for analytic reasons only and were deleted once transcription had been completed. The identities of the interviewees were kept anonymous.

5 FINDINGS

5.1 Digital marketing platforms

The respondents were asked as to which digital marketing platforms they used in their business.

Websites and social media are the most often used platforms by all respondents as R3 illustrates: “The website provides detailed information about our project, service, and the company’s commitment to sustainability”. While all respondents confirmed their use of LinkedIn, Instagram is used by R3, R4, R6, R7; Facebook is used by R4, R7 and Youtube by R7. Exemplarily, R3 referred to online forums: “online forums provide communication channels for the consumer and share experience and maybe ask questions about our products that we complete with the sustainable process.” Webinars are also organised to provide in-depth information so that consumers get a better understanding about the companies’ solutions (R3, R7). However, R1 reported his concern about webinars: “I think it slowed down again. It was quite popular during the Covid times, but I think after that they somehow disappeared”. R1 and R4 use blogs on their webpages. R1 and R6 take advantages of search engines. R1 and R7 confirmed their application of email marketing in terms of newsletters. R4 articulates their use depending on the market interest: “In Germany you will probably have consumers that get upset about newsletters and find that it’s a very difficult and very aggressive marketing tool. But in the US it’s different and they have a very high acceptance. So, we decided to only reach out for mainly our clients that are connected to our US office”.

Summarizing, it is evident that the respondents differentiate as to the purposes of different digital marketing platforms.

5.2 Consumer experience

The respondents were asked as to how important these digital platforms are for engaging consumers in the consumer journey stages of awareness, research, purchase and after-sales.

Awareness

All respondents drew attention to the high importance of digital platforms for the consumers’ awareness. In this vein, R1 emphasized: “Definitely, awareness is highest on the agenda; they enable us to raise awareness of the company, our ambition, products, solutions”.

Also, R6 confirmed R1: “So, for my specific value that I offer to the market, I would say it’s really the level of awareness that I can effect on social media platforms”.

Research

Research is influenced by digital platforms (R1,R2, R3, R6) as well. R6 gave a practical example: “Sure, research, yes, if people now start looking into agriculture – photovoltaic, for example, they should find my company affiliated with the topic; and then, they could get in touch”. R2 explained in more detail: “For research, they’re also very useful; this also depends on the kind of user; for example, of course, researchers itself need to be targeted via peer-reviewed papers”.

Purchase

While R1, R2, R4, R5, R6 do not pay attention to the role of digital marketing platforms in the purchase stage, R3 acknowledges its slight impact: “In the purchasing stage, the website and online forum contribute

to impacts on the decision making process by providing specific information about our product and sustainable architecture awards”.

After-sales

R1 and R3 mentioned the impact of these digital platforms on after-sales. R1 outlined: “Our consumers are also getting younger and younger, and the young generation, they use the digital platforms to really actively search for information. So, this is definitely, I would say, a growing trend that we see, also as to research and after-sales”.

5.3 Sustainability aim

The respondents were asked whether environmental and social sustainability objectives are included in companies’ digital platform strategy alongside profit objectives.

Unanimity was witnessed on both dimensions of sustainability. This is reasoned by sustainability being regarded a core value of companies (R1, R3, R4, R5, R6). R4 indicated this: “Our main aim is to talk about sustainability like how we think, how we take responsibility, we should be and act as an industry”. Environmental objectives are embraced rather than social objectives in the building sector (R2, R4, R5) as R5 explains: “Definitely, the ecological impact is getting more important because more people are searching environmental-friendly products” and continued that it has been influenced of regulatory forces of the government. Accordingly, R2 gives an example: “For example, we will reach this amount of CO₂ emission savings. So, ecological aims are priority number one for us; and to prove everything, or to give numbers for the clients and users; and, regarding sustainability aims, it's always connected to economic aims also in the long-term”.

In contrast, R4 ads the importance of social objectives in their business: “It’s interesting because we are in our urban planning projects, we do always discuss this also in our urban planning projects, this social part is addressed. We support sometimes landscape architects that are trying to influence the situation of having natural environments to be close or inside of cityscapes”.

5.4 Digital consumer experience strategy

This category examines the answers of the respondents on the critical areas of digital consumer experience strategy in the DX model.

Simplicity is the key factor in the digital consumer journey (R1, R2, R3, R4, R5, R7) as R1’s view exemplarily reflects: “We conducted tests with users, we found so many insights, and we felt that also people today are so fast. If it's not nice or if it's too complicated to use, they will not use it”. Consistently, R3 explains how this applies to the building sector: “In sustainable design, which is providing complex information, everything is so complicated to be understood. So, that's why simplicity is very important to explain complex concepts”.

Respondents confirmed the impact of the reachability factor (R1, R2, R3, R6, R7) stated by R3: “With reachability, information and services are available to the consumer anytime and anywhere”.

In addition, personalisation was emphasized by R1, R5, R6, R7 as articulated by R1: “If I am a consultant or an architect for a building, I want to see content which is related to my field of work which is offered and somehow linked to my activity”.

On the other hand, purchase and service convenience are viewed as lower impactful factors (R1, R3, R4, R6) because consumers prefer here direct contacts through personal meetings and direct communications rather than on digital platforms.

Transparency, however, plays a significant role to engage with consumers (R1, R2, R3, R4, R5, R6, R7). In this context, R3 stresses: “It builds just by providing clear information about a company operations such as production process and environment of methods. It enables consumers to practise their participation and to give feedback and make responsible purchasing decisions”.

5.5 Consumer values

This category discussed the prioritization of consumer values in the net zero energy transition in the German building sector.

All respondents agreed that a utilitarian value was top of the consumers' priority. R2 highlighted this preference: "Consumers put a lot of cost on their shoulder to reach sustainability" confirmed by R7: "At least, it makes sense for consumers to see that it pays off after some amount of time; they really are afraid of taking a loan for now".

Furthermore, R1, R2, R3, R5, R6, R7 highlighted the value of security. R1 stated that "the security is the basis".

Self-expression also plays an important role among consumer values (R1, R2, R3, R6, R7). R3 gives a practical example: "We have worked with big brands that produce sustainable products. So, their buildings should be built in the sustainable way with the sustainable materials". R1's view exemplarily reflects: "In digital marketing, it's a lot about self-expression. I feel always. So, the more people are active in the digital space, the more they are willing also to express themselves. Uh so, this will bring the engagement high up."

Environment and quality of life is mentioned by R1, R2, R3, R6. R3 explained that "the consumers need to put their trust and safety in quality units and also bring spatial values in quality of life".

R2, R6, R7 state that social value has a certain priority but lower than the utilitarian one. Additionally, R1 introduced ethics as an important value because the European market is much concerned about this value in all processes and components that belong to the value chain.

5.6 Engagement behaviour

This category discussed in more detail how utilitarian, social and environmental values influence engagement behaviours in sustainability in the German building sector.

Utilitarian value plays a key role on seeking information (R1, R3, R6, R7), helping (R5) and proactivemanaging (R3). R3 stated that the "utilitarian aspect ensures that the product or service met consumer needs and expectations directly influencing information seeking".

Environmental value has an impact on sharing (R2), seeking information (R5, R7), and advocating (R1, R7). However, these respondents confirmed that this value does not play a major role such as utilitarian value, but it should not be totally neglected. By providing local context in creating awareness of sustainability, its impact was high on these engagement behaviours (R1, R2, R3, R4, R5, R6, R7).

Social value was emphasised in sharing feedback (R7, R2, R6) and in helping as shown by R6's statement: "Sharing feedback and helping, I would say these are the two mostly related to social values. Of course, it's also helpful to improve and to change things". This is confirmed by R3 stating: "Sharing feedback and helping are very important on social media, because this builds reputation, trust and promote your competency".

6 DISCUSSION

Regarding the first research question focused on identifying the key factors influencing consumer engagement through digital marketing channels, it was found that awareness and research are the most important stages influenced by digital marketing platforms (R1, R2, R3, R4, R5, R6, R7). This is confirming the literature that social media platforms stand as unparalleled arenas for engagement, these platforms have the positive relationship with consumer engagement (Arjang, Utami and Redjeki, 2024). As earlier discussed in the literature review, the platforms enable companies' to present their sustainability efforts and engagement with their audiences (Dadabaeva and Jamoliddinov, 2024). Sustainable values are highlighted through the platforms to educate consumers (R1, R2, R3, R6). After analysing the responses, the authors found that purchase and after-sales receive little attention on the digital platforms, as most services and products in buildings are provided as tailored-made through direct physical sales and after-sales services (R2, R4, R5, R6, R7). The authors found that websites and social media are the most used platforms by all respondents.

Research question 2 identified key factors applied in the digital platform strategy for consumer engagement in sustainability in the German building sector could be found.

It is suggested that flexibility, reachability, personalisation, simplicity service and purchase convenience are key areas of digital consumer experience (Anon., 2024). In addition, transparency is a key influence in digital platforms to build trust, especially with ecologically minded consumers (Dadabaeva and

Jamoliddinov, 2024). After analysing the data, the authors conclude that simplicity (R1, R2, R3, R4, R5, R7), reachability (R1, R2, R3, R6, R7), transparency (R1, R2, R3, R4, R5, R6, R7) and personalisation (R1, R5, R6, R7) are key areas that considerably influence the digital consumer journey. They enable complex technical concepts in the building sector to be made clear and easy to be understood in order to build trust and close consumer relationship (R1, R2, R3, R7). Besides, due to regulation and consumer demands, environmental objectives are embraced rather than social objectives in the building sector (R2, R4, R5).

The third research question investigated which materialist value orientations of individuals influence their prioritization of environmental protection versus security and economic factors. The results showed that, safety and economic factors and a lower ranking of ecological values were suggested by literature (Komendantova, 2021). Confirmed by the findings, safety and utilitarian values seem to be a *conditio sine qua non* (R1, R2, R3, R5, R6, R7). R5 also mentioned that “security in terms of fulfilling the regulation, it is more important than environmental aspect”. According to fundamental life conditions and legal reasons, safety and utilitarian are above ecological values (R2, R5). Whilst utilitarian values were prioritized, respondents in the building sector placed a strong emphasis on self-expression (R1, R2, R3, R6, R7). R3 explained that buildings play a crucial role in presenting and symbolising the owners. Interestingly, R1 suggested ethics to be a significant factor because there are serious concerns about the ethics claimed in all processes and components of the products in Europe. Ethical perceptions of consumers have a positive impact on cultivating a sense of loyalty and emotional attachment to companies (Iqbal, 2024).

Referring to research question 4, the relationship between utilitarian, social and environmental values on engagement behaviours was investigated. According to Bănică, Patrício and Miguéis (2024), utilitarian values have a significant impact on seeking information, proactive managing, helping and advocating while social value is aligned with sharing, helping and advocating; environmental values seem to have an indirect impact on seeking information, proactive managing and advocating. According to the data analysis, the authors experienced that utilitarian values play a key role in seeking information (R1, R3, R6, R7), helping (R5) and proactive managing (R3). Environmental value has an impact on sharing (R2), seeking information (R5, R7), and advocating (R1, R7). Social value was emphasised in sharing feedback (R7, R2, R6) and in helping (R6). Commenting on the relationship between materialist, utilitarian and post-materialist values, the findings imply an integration and balanced consideration of these diverse values: whilst utilitarian values were strongly confirmed and prioritized in Germany, self-expression, environmental values and quality of life and, to a lower extent, social values were also regarded highly relevant. The following figure two summarizes the findings.

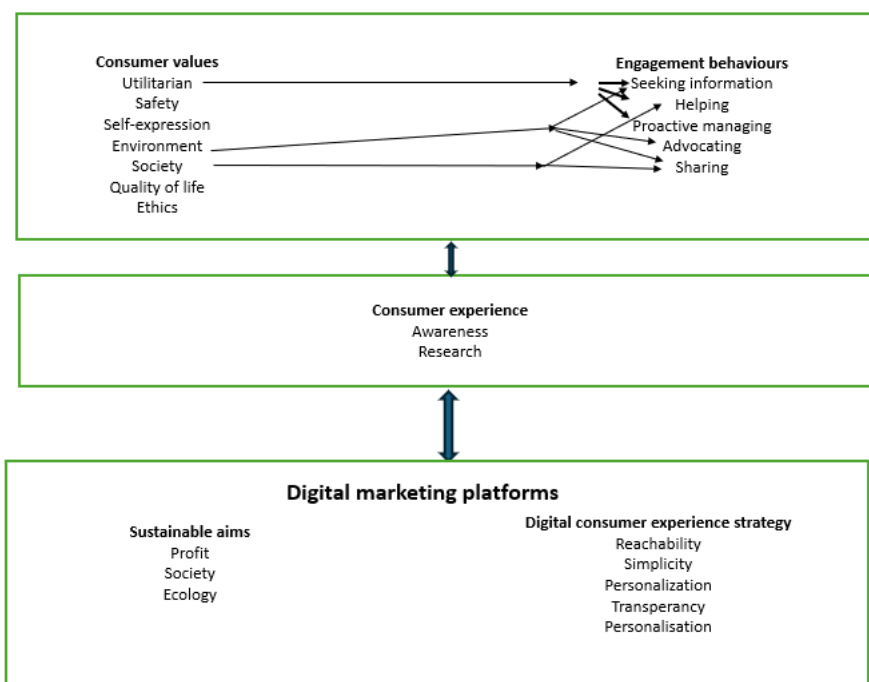


Figure 2 Final model

7 CONCLUSION

In this study, the authors examined the application of digital marketing platforms for consumer engagement in sustainability in the net zero energy transition in the German building sector. The study provided further insight into the relationship between these platforms, consumer experience and consumer engagement behaviour. According to the exploratory empirical findings, awareness and research are the most important stages of the consumer experience, that are influenced by digital marketing platforms. In terms of digital marketing platform strategies, this paper proposes the concept of sustainable marketing and the model of digital consumer experience with the emphasis on simplicity, reachability, transparency and personalisation. This provides companies with more strategic support for their digital marketing strategies to achieve consumer engagement.

In addition, the study examined how consumer values influence engagement behaviours in sustainability in the net zero energy transition in the German building sector. The results showed that utilitarian, safety and self-expression values are ranked as the top priorities. Hence companies should pay serious attention to these core values and apply easy-to-be-understood communication to meet these values. Besides, environment, social values, quality of life and ethics are consumer values that contribute to engagement behaviors. This study also indentified that seeking information, sharing and helping are the most influential engagement behaviours in digital marketing channels. By understanding the key values that drive consumer behaviour, businesses and policymakers would customize their digital marketing strategies to foster awareness, commitment and participation in sustainable practices. These efforts can enhance adoptions of green solutions, facilitating a boarder shift towards accelerating the transition to a net zero energy future in the construction sector.

Limitations and future research

The study has several limitations. The first limitation is that the factors that stimulate the interaction between digital marketing platforms and consumer engagement are only from the perspective of companies. Hence, future research could be conducted from the perspective of consumers. Further research could also investigate the impact of security, self-expression, quality of life and ethics on engagement behaviour not having been assessed in this study. A future quantitative study is suggested to investigate the nature of relationships between the concepts under study, the weight of the factors, possible moderating and/or mediating effects and a cause-effect analysis with engagement behaviours as the dependent variable.

Furthermore, future research could extend the scope of social science approaches as indicated by the suggestions of the following researchers. Specifically, "there is a lack of studies regarding stakeholders' involvement in Net-zero projects" (Terenzi, Locatelli, Winch, 2024). Beyond the perspectives of consumers/citizens and businesses, mid-level actors such as – local authorities, service providers, trusted local actors, educational settings, businesses, local employers, community infrastructure, social housing providers etc – play a crucial role in driving societal change towards net zero policies (Bickersrtaff, et al., 2024). These actors facilitate the transition process between top-down and bottom-up policies (Bickersrtaff, et al., 2024). Futhermore, Sovacool, Iskandarova and Geels (2023) emphasize the significance of relevant social groups including designers, engineers, system builders, national and local politicians, industry associations, unions, universities, research institutes, community groups, environmental not-for-profit organisations in net zero industrial projects. Consequently, a future study could examine the roles of these ecosystem stakeholders in adopting consumer engagement strategies supported by digital marketing within the building setor in Germany.

8 REFERENCES

- ANON: Digital consumer experience strategy: six key areas to focus your efforts. USA, 2024.
- ARJANG, A., UTAMI, E.Y. and REDJEKI, F.:Utilization of Social Media and Online Platforms in Improving Customer Engagement of Fashion SMEs in Bali. *West Science Business and Management*, 2(01), pp.29–36. Indonesia, 2024.
- BĂNICĂ, B., PATRÍCIO, L. and MIGUÉIS, V.:Citizen engagement with sustainable energy solutions – understanding the influence of perceived value on engagement behaviors. *Energy Policy*, 184, p.113895. EU, 2024.
- BHUVANESWARI, B.V.: A study on consumer behaviour towards digital marketing in ramanathapuram district. *Positive School Psychology*. Vol. 6, No. 3, pp. 7384 – 7390. India, 2021.
- CATLIN, J.R., LUCHS, M.G. and PHIPPS, M.:Consumer Perceptions of the Social Vs. Environmental Dimensions of Sustainability. *Journal of Consumer Policy*, 40(3), pp.245–277. USA, 2017.

- CEVHER, M.F.: Digital Marketing and Customer Experience Strategy: Leveraging Digital Channels for Marketing and Customer Engagement. In: F. Mızrak, ed. *Advances in Business Strategy and Competitive Advantage*. [online] IGI Global. pp.149–167. USA, 2024.
- CHEN, J.-S., TSOU, H.-T., CHOU, C.Y. and CIOU, C.-H.: Effect of multichannel service delivery quality on customers' continued engagement intention: A customer experience perspective. *Asia Pacific Journal of Marketing and Logistics*, 32(2), pp.473–494. Asia, 2019.
- DADABAEVA, R. and JAMOLIDDINOV, F.: Digital marketing as an element of sustainable development: trends, challenges and opportunities. *Digital models and solutions*, 3(1), pp.65–79. Uzbekistan, 2024.
- VAN DOORN, J., LEMON, K.N., MITTAL, V., NASS, S., PICK, D., PIRNER, P. AND VERHOEF, P.C.: Customer Engagement Behavior: Theoretical Foundations and Research Directions. *Journal of Service Research*, 13(3), pp.253–266. USA, 2010.
- DURMUS SENYAPAR, H.N.: Sustainability marketing strategies for the energy sector: Trends, challenges, and future directions. *Environment and Social Psychology*, [online] 9(5). Turkey, 2024.
- ELKINGTON, J.: *Cannibals with forks: the triple bottom line of 21st century business*. Conscientious commerce. Gabriola Island, BC ; Stony Creek, CT: New Society Publishers. USA, 1998.
- GHAFFARIANHOSEINI, A., DAHLAN, N.D., BERARDI, U., GHAFFARIANHOSEINI, A., MAKAREMI, N. and GHAFFARIANHOSEINI, M.: Sustainable energy performances of green buildings: A review of current theories, implementations and challenges. *Renewable and sustainable energy reviews*, 25, pp.1–17. USA, 2013.
- INGLEHART, R.: Post-Materialism in an environment of insecurity. *American Political Science Review*, Vol. 75 (4), pp. 880- 900. USA, 1981.
- JAYSAWAL, R.K., CHAKRABORTY, S., ELANGOVA, D. and PADMANABAN, S.: Concept of net zero energy buildings (nzeb) – A literature review. *cleaner engineering and technology*, 11, p.100582. USA, 2022.
- KOMENDANTOVA, N.: Transferring awareness into action: A meta-analysis of the behavioral drivers of energy transitions in germany, austria, finland, morocco, jordan and iran. *energy research & social science*, 71, p.101826. Germany, 2021.
- Mjakuškina, S., Kavosa, M. and Lapiņa, I., 2019. Achieving sustainability in the construction supervision process. *journal of open innovation: technology, market, and complexity*, 5(3), p.47.
- MJAKUŠKINA, S., KAVOSA, M. and LAPIŅA, I.: Achieving Sustainability in the Construction Supervision Process. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(3), p.47. Latvia, 2019.
- NASR, J.: Detailed greenhouse gas emissions figures for 2022: Emissions fell by 40 per cent compared to 1990 – EU climate protection targets met. [Text] Umweltbundesamt. Available at: <https://www.umweltbundesamt.de/en/press/pressinformation/detailed-greenhouse-gas-emissions-figures-for-2022> [Accessed 25 July 2024]. RASTOGI, T., AGARWAL, B. and GOPAL, G.: Exploring the nexus between sustainable marketing and customer loyalty with the mediating role of brand image. *Journal of Cleaner Production*, 440, p.140808. USA, 2024.
- SMALIUKIENĖ, R. and MONNI, S.: A step-by-step approach to social marketing in energy transition. *Insights into Regional Development*, 1(1), pp.19–32. Lithuania, 2019.
- TERENZI, M., LOCATELLI, G. and WINCH, G.M.: *Projects as Vectors of Change: A Transition Toward Net-Zero Sociotechnical Systems*. UK, 2024.
- SWEENEY, J.C. and SOUTAR, G.N.: Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), pp.203–220. Australia, 2001.
- TECHNAVIO: Construction Market Analysis Germany – Size and Forecast 2024-2028. [online] Available at: <<https://www.technavio.com/report/construction-market-industry-in-germany-analysis>> [Accessed 25 July 2024]. UK, 2024.
- TERENZI, M., LOCATELLI, G., & WINCH, G. M. *Projects as vectors of change: a transition toward net-zero sociotechnical systems*. UK, 2024.
- WANG, X., WANG, Y., LIN, X. AND ABDULLAT, A.: The dual concept of consumer value in social media brand community: A trust transfer perspective. *International Journal of Information Management*, 59, p.102319. USA, 2021.
- WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT: *Our common future*. Oxford paperbacks. Oxford ; New York: Oxford University Press. USA, 1987.
- YIN, R.K.: *Case study research: design and methods*. 3rd ed ed. Applied social research methods series. Thousand Oaks, Calif: Sage Publications. USA, 2003.