Gamifying the low impact customer solution design

Mirja Kälviäinen[1], Kati Kumpulainen[2], Anna Palokangas[3], Enna Eloranta[4]

[1]LAB University of Applied Sciences
mirja.kalviainen@lab.fi
[2]LAB University of Applied Sciences
kati.kumpulainen@lab.fi
[3]LAB University of Applied Sciences
anna.palokangas@lab.fi
[4]LAB University of Applied Sciences
enna.eloranta@lab.fi

Abstract

The business requirements for environmental responsibility also cover the low environmental impacts for customer use process in addition to low production harm. The environmental impacts caused when the customer needs to search for, use and dispose of the business solution should also be decreased by sustainable business development. This paper describes the content and gamified learning solution for a Massive Open Online Course (MOOC) for small-scale businesses about low impact customer solution design. Since these businesses are unskilled in both user-driven design and service design, and the environmentally responsible customer behaviour tools are multifaceted, the creation of the learning material has applied gamified, step by step solutions. Gamified learning supports planning and problem solving for real-life contexts. Low impact customer solution tools such as canvases, design guidelines and ideation cards also point to game-based possibilities. The MOOC solution used canvas game-boards with stories and challenges to gradually build and interact with the customer solution. The navigation sections included the basics of dual responsibility business needs, a customer-driven approach, service design and communication. The basic canvases and tools included a dual loop for consumption-production systems analysis, customer personas for customer information role play and customer journeys for detailed solution design. The game setting tried to set boundaries to explore the complex systems content in a safe enough environment to promote engagement, self-confidence and control for the small-scale business managers. The MOOC-solution will be tested with small-scale business owners in the late spring and early autumn of 2023. The critical aspects in the material are comprehensibility, support for a customer-driven approach and a low impact customer solution design. The time use efficiency and usability for the busy business learners will be crucial features to follow and improve.

Author keywords

Sustainable service design; carbon handprint; gamified learning; Massive Open Online Course.

Introduction

Due to the threats of climate change and the drastic decline in biodiversity that relate to the abundance and overconsumption in developed countries and subsequent resource scarcity, the business requirements for environmental responsibility have shifted from merely reducing the environmental harm of production to including low environmental impact from the customer-user processes. Solutions to the ecological sustainability crisis require a reform of economic operation models including the low impact consumption patterns of everyday needs: accommodation, energy and water use, mobility, food and products and services. (Lettenmeier et al., 2019, p. 4-5). Around 70% of CO_2 emissions in developed countries are caused by the daily consumption of residential households (Salo & Nissinen, 2017, p. 3-12). Calculations for staying within the 1.5-degree global temperature rise indicate that the environmental impacts of consumption in developed countries should be reduced by 70% by 2030 and 90% by 2050 (Lettenmeier et al., 2019, p. 45). Businesses should support consumers in this necessity of consumption behaviour change.

Many businesses have made efforts to lower their production carbon footprint or other production impacts. Attention is now also being focused on the environmental handprint which points to the climate benefits, or the emissions avoided when the customer is using a product, process, or service. This perspective also traces the positive future effects on emissions instead of focusing on the current negative ones (Sitra, Carbon Handprint). The Finnish Upright project has started to calculate the net impact of companies (Upright project) reducing the handprint from the footprint. The net calculations urge companies to pay attention to their handprint effects, the environmental impact during the consumption process of the solution.

A Massive Open Online Course (MOOC) is being developed for small-scale businesses about issues and tools suitable for the low impact customer behaviour design. It is being created in two overlapping projects focusing on responsible and effective service and product development in the LAB University of Applied Sciences in Finland. The MOOC content includes systems thinking, customer-driven design principles with customer personas and customer journey, and the design

for behaviour change tools. In addition to the business interviews, benchmarks and expert consulting, the material applies earlier gathered and tested collections of customer-driven design tools for environmentally responsible solutions. The array of materials includes qualitative user research-based design guidelines, service design tools and cross-disciplinary, multifaceted environmentally responsible customer behaviour tools (Kälviäinen, 2022; Kälviäinen, 2021; Kälviäinen, 2019). The complex support material for customer-driven development of the low environmental impact customer solutions makes the course content demanding for the business managers suffering from time scarcity. For these reasons the MOOC content has been developed considering the possibilities provided by gamified learning and step by step approaches in coaching the manager-learners.

The learning requirements leading to gamified MOOC idea

The MOOC development so far has consisted of 17 small-scale regional business manager interviews carried out in spring 2022. The businesses demonstrated a lack of customer-orientation but interest in customer understanding. Customer-orientation was interpreted in a narrow way and included aspects such as feedback surveys, or customer encounter feedback. There was a lack of customer studies and customers were not involved in the co-development of products or services. Service design theory suggests providing extended understanding about the pre-, during- and post-stages of the customer journey for the developing customer experience (Stickdorn et al., 2018, 112). Many businesses saw questions of environmental responsibility as big and challenging and experienced difficulties in environmental responsibility communications. There was intimidation around these issues, and in communication a fear of becoming accused of greenwashing.

The needs of these small-scale businesses in terms of the content, structure, and scope of the learning materials indicated that usable material should be easy to obtain from a digital platform and should contain targeted information from experts in the field. The businesses hoped for plain language usage, explanations of important concepts and examples from their own business fields. Practical, easy-to-use tasks to apply on a company-by-company basis were hoped for.

The drafting of the material and learning guidance further happened though business benchmarks in spring 2022 and a series of lectures and co-design training sessions during the spring and autumn 2022. The participant companies in the training sessions requested for memory lists and having practical examples of the solution parts. Additionally, needs for the course to be engaging, innovative, pleasurable, and encouraging were stated. This also meant variation in the material format including videoclips. It was also observed how some of the participating companies were advanced in their environmentally sustainable activities while some were beginners.

The requirements for the guidance for design, ease of use despite the complexity of the materials, needs for engagement and requests for special, business field applicable materials led the MOOC creation group to seek inspiration from gamified learning solutions. These seemed to offer support in coping with the systemic and applied learning demands. Results from gamified learning solutions compared to other non-traditional ones point to learning support for planning, problem solving,

imagining real-life situations and creativity (Safapour et al., 2019, 284). Psychological tools for behavioural change have also been found to overlap with gamified learning in environmentally low impact solutions design and in other behaviour change demanding solutions (Kälviäinen, 2021; Bucher, 2020).

Gamified learning involves ways of applying game-oriented thinking to achieve learning engagement through stories, autonomy, meaningful content, challenges, interaction, feedback, and the feeling of achievement. A game setting can provide boundaries to explore content on complex systems in a safe enough environment to enhance self-confidence and control (Kapp, 2012, 15-16). The participating managers of the small-scale businesses hoped for engagement support among other pressing duties and when facing complex content. One support means was a meaningful storyline that interacted with their own business case and development goals. Autonomy, as well as variable levels of knowhow concerning environmentally sustainable business aspects, in addition to specific business needs were met through level-based solutions where the basic learning route was complemented by opportunities to go deeper into specific business or knowledge needs.

The grounds for using gamification rose also from the nature of the game type of tools at hand: canvases describing systems, visual process descriptions, design guidelines and ideation cards. The aim of the gamification was to apply the basic features of games such as game boards, a story, and a challenge so that they unfold gradually and support remembering, a sense of control, decision making, mastering and a sense of achievement. The idea of selecting a customer role persona for a gamer was applied to support the customer-driven perspective. It seemed important not to add other means of gamification to avoid any extra cognitive load.

To avoid cognitive load the whole material in the MOOC was divided into smaller sections, where the interaction for the learner's own business case could be built in small steps through tasks and supporting examples. This tutorial approach of giving first some simple tasks and repeating them by increasing the variation and effort level gradually also points to gamified solutions. Specific business examples were added to the tasks and further support was provided by videos in which selected experts from consultancies and businesses shared their own development perspectives, or the learner was shown how to use the canvas tools. Since in a service design process there are no right answers, memory list types of materials were used at the end of each section for the learners to check if they had considered the provided design instructions. The gamification development led also to ensure the content section titles were visible all the time so that the learners could navigate back when they needed to check information from the earlier sections. This feature is also important as it supports iteration in design thinking.

The section themes created were:

1. The environmental sustainability pressures for businesses and a presentation of the different types of customer groups for sustainable consumption. Tasks include an analysis of the current business situation and a selection of a baseline customer persona role.
2. A customer-driven approach for service solutions with the presentation of the customer journey tool, sustainable consumer trend information and research information about different motivational and behav-

ioural consumer segments. Condensed instructions to carry out qualitative customer research. The tasks include application of the customer journey into the learner's own business offering, its environmental consumption impact areas and developing the stereotyped customer persona into a more realistic business customer for the solution.

3 Service and product redesign instructions about how to avoid environmental consumption impacts, barriers and hindrances to this, and drivers for sustainable consumption. The basic customer journey canvas is elaborated in a form that integrates behaviour change psychology with the drivers for sustainable consumption. Tasks include rethinking the activities where customers produce environmental harm and redesigning the customer journey considering the behavioural psychology features of customer motivation, capabilities, and opportunities in the service moments of pre-, during and post service phases.

4 Communication about the solution with justified, transparent, understandable, and motivating way. The tasks include planning the suitable communication for the selected customer persona and creating a campaign to differentiate the solution in the markets.

The systemic development idea described as a double loop canvas

In addition to regional business interviews a benchmark analysis was conducted in the spring of 2022 scanning national Finnish and international product and service development solutions that support customers' environmentally responsible activities. A systemic double loop canvas was created by analysing these examples to support a modelling the low-impact consumption and production system (Figure 1). It describes the actions of the company and the customer in parallel demonstrating the possibilities and the consequences of dual responsibility for businesses.
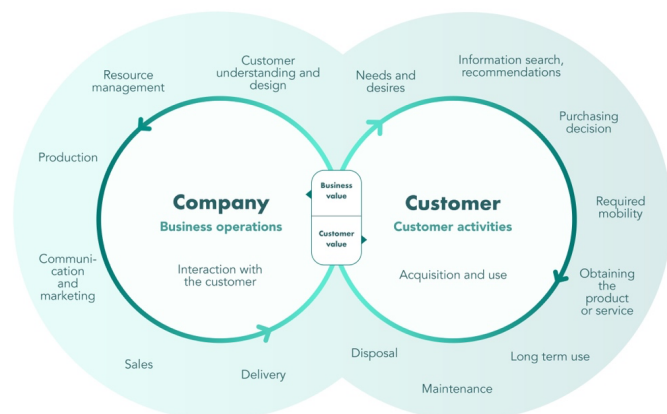

Figure 1. Double loop description of the consumption and production system (figure by Enna Eloranta and the project group 2022).

The idea in the new solution development is to consider first the customer-users, and to point the service moments when the solution can reduce the environmental impact of the customer. This indicates how to change the offering towards low consumption. The idea is to only then analyse the demands of low impact customer-orientated solutions on production. A comparable double loop is used in the United Nations' Sus-

tainable Development goals number 12 Sustainable Consumption and Production pointing to the unsustainable patterns of consumption and production as root causes of the triple planetary crises of climate change, biodiversity loss and pollution (United Nations). The circular economy business solutions point to the need for systemic change in consumption-production systems where many of the solutions are based on services-based processes to reach the outcome of reducing the use of materials and keeping them in closed use circles. With product solutions these include sharing platforms, products as services and product lifecycle extensions. (Sitra & Deloitte 2022). With the consumption-production systems and circular economy solutions it is important to notice that a systemic change towards low, adequacy-based consumption models is necessary in addition to ensuring efficiency of these systems. (Bengtsson et al., 2018).

The advanced layers are provided with two triple loop canvases that make it possible to model the multi-level operations of co-working companies, distribution companies and platform companies offering recycling or customer peer-to-peer services. The loop canvases form the basic canvases or game boards that orientate the business learner to the learning content so that their own customer offerings and production form the starting point with an analysis of the current situation. The loop canvases also provide the vision for the learning so that the initial learning story provides a promise of returning to the production-distribution part of the loop when the customer-orientated design is completed. The loop models help businesses to build a system-based flow understanding of how their services and products offer different service moments and interactions with the possibilities to reduce the environmental impacts of customer use and how then these solution shifts change the related production-distribution activities.

According to the executed training sessions, the loop-based canvases seem to work well to concretize the current situation and in demonstrating the meaningful transformation possibilities within the limits of the current resource situation and collaboration possibilities of the small-scale businesses. The loops also help to change the business perspective from business-centred environmental sustainability to include the customer journey and customer value point of view and even to ask the big questions of adequacy-based consumption. This question is if the customer needs can be satisfied in totally new, low consumption ways.

Game roles from the customer-user perspective

An important notion in transformative design towards low-impact environmental consumption has been to consider how to help businesses meet these challenges of every-day consumption behaviour. A basic understanding of the user-driven development process should begin from an understanding of customer motivation and activities. The customer persona tools help to consider the consumption activities and journeys with the business offerings (Stickdorn et al., 2018, 41-42). The idea in the MOOC is to ask the business owners to put themselves in the roles of their customers and start the learning and solution creation process in the customer's shoes.

The customer section provides information of changing consumption trends. A change towards environmentally responsible desires and increasing consumers' expectations in terms of sustainable choices was clearly visible in 2022 (Ac-

centure Interactive, 2022; Euromonitor International, 2022; Greene & Korkman, 2022). Greene and Korkman (2022) illustrate the changes in the product relationships globally highlighting the consumption shift from the satisfaction of needs and desires to adequacy-based consumption, although still emphasizing the pleasure of consuming. It is relevant to notice the consistent findings in consumer research about the nature-positive attitudes of consumers towards environmental responsibility, but in practice evidence of the lack of responsible actions and behaviours (White & Habib, 2018, p. 9).

In Finland and internationally customer research has demonstrated that there are different types of consumer motivations and actions on the questions of environmental sustainability. Customers expect companies to support their own changing needs for low-impact consumption and to provide products and services based on their sustainability values. By combining information from several earlier studies, a chart of different consumer profiles was created to support the MOOC learner to see the solution from the customers' perspective (Kälviäinen 2022, p.80-103; Kaitosalmi et al., 2021; Salonen et al., 2014). In the first section of the material a four-fold field chart provides the learner with four rather stereotyped personas to represent some different types of sustainable consumers (Figure 2).
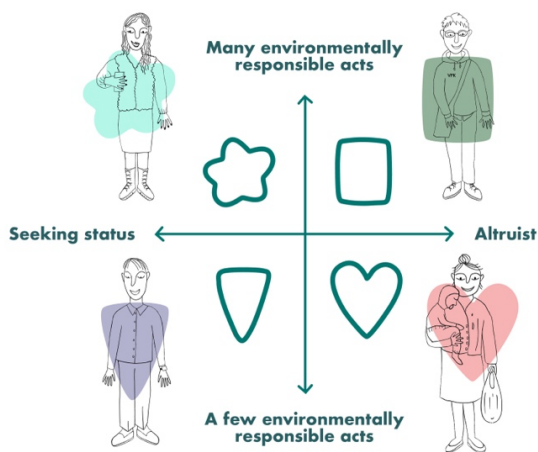

Figure 2. A four-fold field for different consumer profiles and consumer persona examples for environmentally sustainable consumption (figure by Enna Eloranta and the project group 2022).

In Figure 2 the upper parts' consumers perform many environmentally responsible acts and the lower parts' consumers do little. The left parts represent consumers who are concerned with themselves and their own status or image and the right parts those who care about the benefits for the close people or even for the whole planet. The provided stereotyped persona in the left upper corner is a young person who leads an eco-chic life using small, trend-based sustainable solutions. In the right upper corner is an adult student who is deeply committed to environmentally sustainable solutions. In the left lower corner is a technology orientated elderly man interested in status-related environmentally sustainable technology solutions, and in the lower right corner is a mother who seeks family benefits and does some environmentally sustainable acts connected to them.

For the learner, in the first learning section it is possible to select one persona closest to their own customer group to start up the customer-driven learning. The personas are also

marked with symbols providing links in the following steps to practical examples concerning each persona. In the second customer-driven section the learner is guided to create a persona or personas that more accurately resemble their own realistic business customers. As a check list the stereotyped personas provide examples of how to create a customer persona and what could be important to find out as customer understanding for the different phases of the consumer journey.

The customer journey as the canvas and process for the design steps

The specific tool to design an offering that supports customers to reduce their environmental impact is a customer journey. This provides a system of service moments where the different possibilities to reduce the individual environmental burden can be designed. Already via the loop canvases in the first section the business managers can mirror their current customer journey against the phases of pre- (finding, choosing, accessing), during (learning to use and using) and post- (disposing, recommending) service. In the second section they are asked to move their offering mapping to a customer journey canvas (Stickdorn et al., 2018, 44-53). This analysis points out the environmental impact areas the customer journey entails in their business. In the third section they start to use relevant consumer advice on low environmental impact to design the new customer journey. The advice is presented from studies of consumer-based carbon emissions and as advice collections attached to a carbon footprint calculator (Salo & Nissinen, 2017; Impiö et al., 2020). The means to reduce emissions due to consumption include reductions of accommodation, mobility, food, and product related environmental impacts (Salo & Nissinen, 2017, p. 14–22). Many of these occur not only in the core service use but in the pre- and post-service use phases.

The gap between consumers' environmentally positive attitudes and less responsible choices and behaviour is influenced by the motivational consumer interests, the pressures of busy everyday life, emotional biases in decision-making, and the lack of necessary individual capabilities (Kälviäinen 2022, p. 155–162). The overflow of choice and marketing in the saturated markets make information about responsible solutions difficult to find and understand, and the messages may be contradictory and confusing (Kälviäinen 2022, p. 180-195). Consumers need service solutions that are interesting, easy to find and understand, are smoothly integrated into their daily lives, and offer suitable support, help and rewards in the required habit changes (Kälviäinen, 2022, p. 209–211). Behavioural psychology explains this using the COM-B model, where the factors of capabilities, opportunities, and motivation all come together supporting a person to behave in a certain way (Mitchie et al. 2011; Bucher, 2020, 116-122).

Figure 3 explains the consumer journey with COM-B factors where the required support for crossing the barriers and providing support can be embedded for a new, low impact customer journey covering the pre-, during-, and post-service stages. On customer journeys and the related service moments and touchpoints, it is possible to integrate interventions to the solutions to both overcome obstacles and utilize customer interests related to them (Kälviäinen, 2022, p. 6). The new customer journey should be made suitable for the customer persona created. Figure 3 is layered with the consumer profile symbols marked examples of service moments and touchpoints suitable for each customer type.
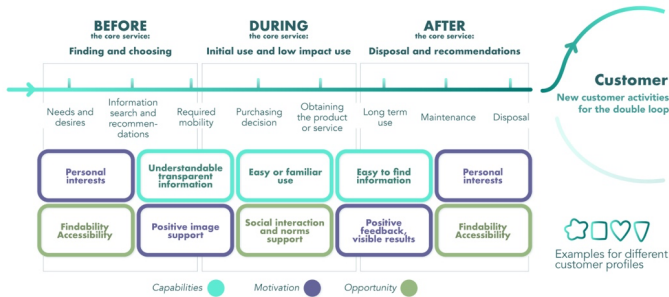
Figure 3. The customer journey with the COM-B model containing service moments
and symbols for customer persona related examples
(figure by Kälviäinen and the development team 2022).

Advanced level customer-driven tools for service moments and touchpoints are additionally offered based on psychological advice on decision making heuristics and biases that can be used to support behavioural change (Kälviäinen 2022, pp. 22-30; Lockton, 2018). The vast amount of these materials is edited to a minor range and offered in a form where advice is attached to suitable pre-, during- and post-service phases. The pre phase is important for raising interest and the last ones for the formation of new habits. The selection considers the need to build support for behavioural change as a process (Kälviäinen, 2021).

The feedback for the new solution design is offered in the form of guidelines for low impact, customer-driven solutions (Kälviäinen, 2022, pp. 217-219). These guidelines serve as memory cards to check if the solution fulfils the advice given. At the end of the design section the results are further transported to the initial loop canvas, where the consequences of the change in the customer journey can be applied to the production or distribution of the offering.

The fourth learning section for communication uses the achieved design solution as the basis. The step-by-step analysis reminds managers that the information about environmental impacts should be based on true actions and described as factual information. Some of the consumer segments will be interested in this. The customer-driven part for communication reviews the drivers and ways of informing the different types of customers with consumer profile symbols indicated examples. Finally, it proposes ways of carrying out campaigns for differentiation and provides examples of these.

Conclusion: The critical points of the learning material

The main content for the MOOC is challenging as it needs a combination of customer understanding, environmentally responsible possibilities for consumption, and the creation of customer journeys with the needs to encourage psychology-based behavioural change. It is especially challenging for small-scale businesses that struggle even with developing their production-centred environmentally sustainable responsibilities. To ensure the ease-of-use, and a smooth and functional whole the MOOC course will be tested together with a set of regional small-scale businesse managers before the launch in the autumn of 2023. Based on the results, the further development of the support material will be carried out during autumn 2023.

Considering the MOOC-material aims and learning with it, as the conclusion of the work so far, several critical perspectives can be stated. The requirements from the small-scale businesses suggested finding ways of supporting them in suf-

ficiently easy ways despite the complexity of the challenge of the dual responsibility. The comprehensibility of the content has been tackled by trying to build up a step-by-step development story that would make sense from the business managers' point of view. The value for the business in it has been emphasised. Each of the steps is supported by visual canvases that are gradually built to be more complex and are in this way filled in during the development. Examples are offered to support understanding the content.

The, for many small-scale companies, challenging customer-driven attitude is supported by dedicated material, examples and tasks. In addition to basics of it, the low impact customer solutions provide a further challenge because they might require customers to do something they are partly reluctant or too lazy to do. The materials have tried to support the attitude change towards customer-orientation and provide for the customer information and examples attached to the customer personas in the learning and design process.

Support for low impact customer solution design has been the central focus of the learning material. The material has been tested with different types of companies participating during the compiling process. The viability of the material used comes partly from the fact that it contains materials from a long period of development and use with design students and company cases (Kälviäinen 2022). The independent setting in which business managers should be able to use the tools for redesign of their varying business offerings is a new one. These learners do not necessarily possess design skills, and it sets further demands for the usability of the material. The step-by-step redesign process and the usefulness of the different canvases, visualisations and supporting examples can only be verified when the materials are further mirrored against different companies and their customer profile needs.

Time issues for small-scale companies are also central. The editing of the material has considered how to keep the content short enough and further editing should be done on the points where the material and tasks prove to be too time consuming. The time perspective also includes basic usability and ease of navigation.

The aim of creating the learning material has been to support small-scale businesses to identify their own starting points and resources, and to take advantage of consumers' growing interest in environmentally responsible everyday life. The input of regional small-scale businesses in environmentally sustainable transitions is of importance. They are especially influential in local transformative processes, as their offerings typically support consumers in their everyday consumption habits. The support for the small-scale businesses' dual environmental responsibility is important, and it should be made easy and meaningful for them to use. Increasing their customer-driven environmental design expertise strengthens their force to activate the local green transitions for sustainable consumption.

Acknowledgments

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