# Conceptual Modeling Meets Customer Journey Mapping: Structuring a Tool for Service Innovation

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*Abstract*—**Customer experience has become the main differentiator for competition in the digital age. Customer Journey Mapping (CJM) is a technique that aims to understand the customer's decision process and experience by taking a customer perspective and modeling his/her different steps. CJM facilitates innovation by proposing new or improved services. In a joint research project, we aimed at creating a CJM approach that allows for the participation of a broad audience in the creation process that especially has no experience in CJM or modeling. When studying the related literature, it becomes clear that methodological guidance in CJM is absent. While there are domain specific modeling languages for CJM, these do not include an overarching framework of how they should be carried out in an organizational setting. In lieu of proposing "yet another modeling language", we present a framework for CJM that embeds a modeling approach in an overarching method. We utilized the Action Design Research method to tackle our problem with the particular focus on the participation of inexperienced personnel. Then, we generalized the learnings from the development process into methodological guidelines.**

*Keywords— Customer Journey Mapping, Conceptual Modeling, Action Research, Design Science*

## I. INTRODUCTION

Companies in the digital age are confronted with fierce competition originating both from the web and the physical world [1]. The value for the customer no longer stems primarily from products themselves, but from services [2]. As a consequence, the customer experience has become the main differentiator and has thus turned into a management priority [3].

Customer Journey (CJ) Mapping is a technique that aims to depict the customer's decision process by taking a customer perspective [4], [5] and, thus, gain a better understanding of the customer experience. The outcome of this technique is called a CJ map. CJ Mapping facilitates innovation by providing the basis for new or improved services [6]. Though linked to the field of service science [5], its established techniques are only applicable in a limited fashion to the CJ view [7]. For instance, the scope of CJ Mapping is larger compared to service design, as the whole CJ stands in focus instead of distinct services [8].

As modeling is a central and necessary part to *map* the CJ, modeling languages were introduced by various scholars [7], [9], [10]. Surprisingly, little attention is given to the modeling approach, viz. paying attention to the context and process surrounding the modeling itself – irrespective of the language. An overarching method for CJ Mapping is absent in the literature. This deficit is reflected in a "lack in common methodological guidance", which was voiced in a recent literature review [5]. In this regard, the presentation of new modeling languages provides little benefit.

In a joint research project with a practice partner, we took notice of this deficiency. We decided to address this gap while also investing the initial aim of the project: The development of a *participatory* CJ Mapping framework, enabling a broad group of personnel to take part in the CJ Mapping process. The rationale behind this was that due to the customer-centricity of CJ Mapping [1], [5], [9], e.g., customer-facing employees, service agents, or customers themselves should be deeply integrated into the approach. However, these groups typically have little experience in modeling, while excelling in knowledge about customer behavior gathered in the field. Summarizing the theoretical and practical motivation, this work is concerned with the research objective of *designing a framework for Customer Journey Mapping that promotes participation of non-modelers.*

We use the Action Design Research (ADR) method [11] which pools the strengths of Design Science Research, i.e., designing an artifact grounded in theory that solves a practical issue [12], and Action Research, i.e., developing theory and tools through the interaction of academics and practitioners [13]. Its aim is thus to create design knowledge by building and evaluating an IT artifact in an organizational setting [11]. The framework for CJ Mapping can be seen as an IT artifact [14]. ADR is composed of four stages: (1) Problem Formulation; (2) Building, Intervention, and Evaluation; (3) Reflection and Learning; and (4) Formalization of Learning. These are applied as follows.

Together with our practice partner, called "ServiceCo" here, we identified the lack of a framework for CJ Mapping (1). Over a period of seven months, the framework including the participatory modeling approach was developed iteratively in a series of meetings and workshops. This framework was then applied in a pilot study (2). By continuously reflecting the results, the knowledge base was extended (3). Through the insights gathered from the development of the framework, as well as its pilot study, we derived a formalized learning in form of methodological guidelines applicable to a broader class of problems (4).

Our contribution is twofold. First, research benefits from the methodological guidelines for CJ Mapping. Second, the practice can use the developed participatory framework for CJ Mapping in business entities that might be lacking modeling experts.

## II. RESEARCH BACKGROUND

This work strongly builds on (conceptual) modeling as the theoretical foundation, as the creation of a CJ map can be understood as a form of modeling [7], i.e., creation of a reduced, abstract representation of the real-world that serves a certain purpose cf. [15], [16].

To avoid any confusion that surrounds the term "model", we use the following definitions by Wand and Weber [17, p.

364] visualized in Fig. 1: A modeling grammar "provides a set of constructs and rules to model real-world domains." A modeling method provides the procedures in which a grammar is used. A modeling script is the product of a modeling process, i.e., a particular CJ map. The modeling context is the setting in which the modeling occurs. Here, we extend this by an overarching method in which the modeling is embedded. The overarching method also includes activities that are not part of the modeling per se but are related to it.

To give an example: The modeling method Service Blueprinting [2] and its corresponding modeling grammar is used to create a modeling script – a particular service blueprint. The modeling context represents e.g., a workshop setting in which the modeling takes place. The overarching method describes the overall procedure in which the blueprint is used and may include steps like data collection prior to modeling as well as utilizing the blueprint for further analysis.

*A. The Customer Journey as a Tool for Service Innovation*

The perception of value in a service interaction is shaped by experiences [18]. Perfecting this customer experience has become a priority in research and practice [1], [19]–[21]. A focal concept for this endeavor is the CJ [8], which consists of different touchpoints [22], [23]. The act of creating this CJ model script is called CJ Mapping [5] and is typically done for a fictional persona (i.e., an archetypal customer [24] ideally representing a customer segment) or a specific customer.

The purpose of a CJ map can be seen in the analysis of current experiences to identify areas of improvement (1) and the design of new experiences (2) [8]. Følstad and Kvale [5] underline this in their recent literature review by differentiating into the *as-is* modeling of a CJ (1) and the creation of a *to-be* CJ (2). Clearly, these activities do not need to be mutually exclusive and are part of a larger design process [5]: An *as-is* CJ (1) can be the trigger and input for the redesign of an existing service [25] while a new service can be designed based on a *to-be* CJ [23]. Both purposes result in (1) or entail (2) a service innovation. Rosenbaum et al. [9] showcase this by explicitly putting the service innovation as the resulting action in their visualization of a CJ. Papers concerning (1) are high in number compared to the ones about (2) [5]. Against this background, we distinguish data-driven CJ Mapping (i.e., mapping an *as-is* CJ based on quantitative data by using analytical techniques, cf. [26]) and the more creative persona-driven CJ Mapping (i.e., mapping an *as-is* or *to-be* CJ based on a persona that may utilize quantitative but especially qualitative data, cf. [7]). In order to foster innovation, the latter can be carried out in cross-functional teams [9].

*B. Modeling Grammar for Customer Journey Mapping*

CJ Mapping simplifies the high complexity of customer experience by dividing into distinct touchpoints [5], [27] which are the most important construct for modeling the CJ in extant literature cf. [7], [9], [28]. The touchpoints are ordered chronologically and thus form a sequence. In this way, it is similar to a process from a customer viewpoint [5]. Consequently, general purpose modeling languages (GPML) like BPMN or UML may also be applied [28] but lack the domain specificity featured by domain-specific modeling languages (DSML). The possibility of a complex control flow featured in process modeling languages is not used in DSML related to the CJ cf. [7], [9], [28].

The touchpoint concept itself is subject to an increasing body of research cf. [3], [27], [29]. It can be seen as an encounter or episode of contact between a company and a customer [29]. Besides, not every touchpoint is equally important for the customer experience [9], [27]. Some are critical (e.g., the unboxing of a product), while others are insignificant. The former are called "Moments of Truth" [30] in the literature signifying that these strongly influence the customer experience.

Presumed that the touchpoints compose the CJ [22], the question arises what attributes adequately represent a touchpoint. Existing attributes include (among others) the channel, communicative elements such as the initiator of the contact, requirements of the customer, customer actions, employee actions, employee support, or the emotional state [7], [9], [31].

As previously stated, every CJ is linked to a single customer or persona whose actions are modeled. The concept of personas goes back to Cooper [32], who presents them as an alternative representation and communication of customer needs [33]. Its underlying idea is to incorporate user-centricity in design processes by accurately describing the designated user (persona) beforehand. Their benefits include a focus on a particular audience and requirements prioritization in design processes [33]. The link to the CJ can be established by scenario-based design [34]: A persona is the starring role in the scenario which can be interpreted as the customer journey [35].

*C. Modeling Methods for Customer Journey Mapping*

After having introduced the relevant parts of the grammar, the modeling method describes how to use it to produce a modeling script. The typical form for a CJ is a diagram [5]. The modeling proceeds by describing the touchpoints chronologically. In dedicated CJ Mapping methods, a horizontal axis is used as a timeline, while the vertical axis is used to represent various attributes [5]. In line with this, Rosenbaum et al. [9] create a tabular and text-based representation. Halvorsrud et al. [7] provide a promising method around an intuitive graphical notation which was evaluated by experienced modelers in a case with a predefined story. Their method also includes the analysis of deviations between a planned and an actual CJ.

Methods that were developed for a different use case, such as Service Blueprinting [2], [36], provide a structured approach but show deficiencies: The scope is too narrow, as a CJ does not focus on a single service provider. Other methods like Multilevel Service Design [10] or customer experience modeling [37] focusing primarily on service systems (or customer experience, respectively) instead of the CJ. Lastly,
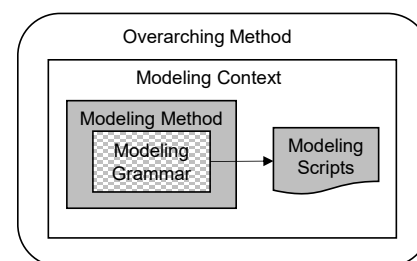


Fig. 1. Modeling Research Framework based on [17]

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corresponding methods to GPML contain drawbacks in CJ Mapping as their main benefit of being known to many modelers does not take effect at inexperienced modelers and their constructs are very abstract. Unsurprisingly, DSML for CJ Mapping outperform GPML in terms of methodical adequacy [38].

*D. Modeling Context for Customer Journey Mapping*

Surrounding the modeling method is the modeling context, which describes the situation in which the modeling occurs. Følstad and Kvale [5] provide a detailed view of the modeling context (subsumed under "method" in their article). By analyzing their 45 contributions, an overview of existing modeling contexts is achieved. In general, two types of modeling contexts can be identified: On the one hand, there are participatory settings like workshops, where multiple persons engage in modeling activities. On the other hand, there are isolated modeling contexts in which a modeling expert works on previously collected data. While the former is especially suited for persona-driven CJ Mapping, the latter has a better fit to data-driven CJ Mapping.

*E. Overarching Methods for Customer Journey Mapping*

CJ Mapping entails different steps that include but are not limited to modeling. Yet, there may also be different steps of modeling, for instance, the modeling of a persona followed by the modeling of the customer journey for this persona, which produces different model scripts (cf. Fig. 1). Besides, one can think of a data collection step in the beginning and an analysis step afterward, so that the input for the modeling is given and the created CJ can have an impact on the company's services, respectively. However, as of now, there is little to no research on this process, which may be a reason for the lack of methodological guidance voiced by Følstad and Kvale [5].

One exception is the work of Moon et al. [6], which is presenting a data-driven "design process for a Customer Journey map" in a case study. While their focus is on the creation of the CJ map itself, they also describe their overarching method in terms of data collection and the use of the CJ map for service design: Through a large-scale ethnographic study, they collect over 1000 user dairies. This data is then used to create CJ maps that are subsequently analyzed and clustered into 25 categories of CJ maps. Finally, they investigate how new business opportunities can be discovered by an "active" or "passive" approach. The former is characterized by altering the CJ map, while the latter aims at solving pain points identified in the existing CJ map. In a way, this approach corresponds to the *to-be*, respectively *as-is*, CJ mentioned earlier. Their case study was conducted by experts and thus no participatory approach was taken. This

also explains the complex modeling method and grammar used.

## III. BUILDING, INTERVENTION, AND EVALUATION

The global operating BPO provider ServiceCo stands in the center of the ADR approach. Within the tides of the digital transformation, the classic labor-driven BPO business loses ground due to automatization. ServiceCo, thus, became more consultative and in order to depart from being solely a provider of working power for predefined services, new tools were required. To identify additional business at existing clients and explore new opportunities, a consulting product around the CJ was formed. In a quick shot, a persona-driven CJ Mapping was put in place but lacked a proper design for use in the ServiceCo organization. In particular, a participatory approach was required, making use of the experience of customer service agents, which lack modeling expertise. As we wanted to focus on the results of CJ Mapping instead of training modeling experts, a rather intuitive approach was needed so that a one-day workshop was possible.

The lack of a framework for CJ Mapping became apparent when investigating the academic literature. The existing contribution of Moon et al. [6] was not fitting due to a data-driven approach. As a consequence, we developed a new framework for participatory CJ Mapping. Here, a framework is understood as an organizing structure [39] not only covering the mapping of the CJ but also proceeding and succeeding activities. The framework is structured according to the elements in Fig. 1.

The framework was developed in iterative workshops lead by the core ADR team, which consisted of a researcher in the field of information systems and a consultant from ServiceCo. Additional participants from ServiceCo joined workshops at times to foster additional exchange of views. In each workshop, a prototype was discussed and revised, which laid the basis for the subsequent workshop. Continuous evaluation of the prototype on a real case in between the workshops assured practicability. The framework was finally applied in a pilot study. Fig. 2 shows the complete ADR process and the following presents the outcomes of the *Building, Intervention, and Evaluation* stage.

*A. Overarching Method*

The overarching method constitutes the highest level of the framework and is surrounding all actions related to CJ Mapping. Modeling is a major activity, yet not the only one. There are other, preceding and succeeding activities existing. Fig. 3 shows the overarching method consisting of eight steps and divided into three segments: Pre-Workshop, Workshop, Post-Workshop. The workshop is the fitting organizational
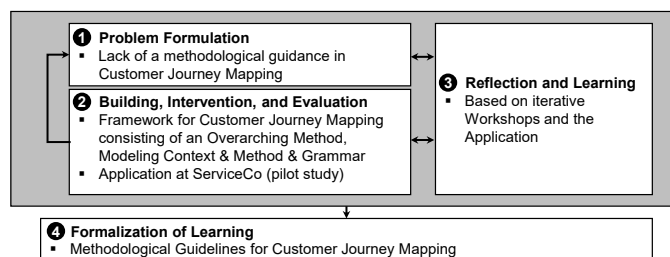
Fig. 2. Action Design Research Process and Outcomes based on [11], [41]

framework here, as its defining characteristic is to create something novel in a limited time frame with a small group size [41]. Especially the constructing aspect demarcates it from other small-sized organizational frameworks such as to a seminar or colloquy [41]. A division of the participants into groups of 4-8 persons is found reasonable as the size should allow for "productive co-operation as a group." [41] A member of a group is either a coach or a participant. A coach (i.e., a consultant in the case of ServiceCo) has deeper background knowledge in the method so that potential questions from the participants can be answered quickly.

*1) Prepare Workshop:* The initial step encapsulates the opening activities at the beginning of a CJ Mapping initiative. This includes a definition of the goal of the workshop, its scope, and the composition of the participants. As the origin of the initiative is likely on a strategic level [9], yet executed on the operational level, the goals need to be set at the beginning. Related to this decision is the scoping, which may include a certain customer segment (reflected in a persona) or the scenario in which the CJ is placed. Further, the composition of the workshop is linked to the scope meaning that the participants should be knowledgable at the respective topic. This means that participants can be customers in the described scope, front-line employees, or the responsible back-office personnel. With the goals, scope, and participants in mind, the workshop can be prepared content-wise. Supporting activities (e.g., selecting, and inviting the participants) need to be carried out in addition.

*2) Collect Data:* The second step aims at compiling the information available for the upcoming workshop. A workshop is always limited in time and thus relying on preparation. This can include the interview of customers (in case they are not among the participants) [5], market research (how the competitors act), the collection of internal documents, or customer data [8], [22]. The extent of this step may vary significantly, e.g., when the goal is to explore new possibilities, there may be deliberately less information provided in the workshop and hence less data collection beforehand. The reason for this is that detailed information provided ex-ante would bias the creative process as the participants would focus on the utilization of available information.

*3) Train Participants:* This third step marks the beginning of the workshop. Following standard workshop methods, a round of introduction may start the event which is followed by a presentation of the agenda, goal, and procedure. The aim of this step is to equip the participants with the necessary knowledge for understanding the task and enabling them to *apply* the modeling method. An application of the modeling method stands in focus as opposed to in-depth learning. This is why the modeling method should be self-explanatory to a large degree, thereby minimizing the time necessary for training.

*4 & 5) Model Persona & Model Customer Journey:* The modeling steps will be described in the following sections in a detailed manner. Both steps are carried out as group work in the workshop. The aim of step 4 is to create the persona as a first model script, which will then be used to model the CJ.

The following fifth step constitutes the central part of CJ Mapping. Related publications focus on this step in an isolated manner cf. [7], [9], [28]. Yet, "the most important work for service design begins after the creation of the Customer Journey Map." [6, p. 510] The resulting second model script (CJ map) is used in the following steps as a basis for the identification of areas of improvement.

*6) Identify Moments of Truth:* Some touchpoints are critical and hence call for more effort in optimizing the underlying services, while others are insignificant for the customer experience. The identification of these Moments of Truth is conducted via a voting mechanism. As the CJ map, which consists of a sequence of touchpoints, is existing at this point in the workshop, each group member receives tokens for voting the touchpoints with a high negative and positive influence on the customer experience. The former are used in the subsequent step, while the latter serve as feedback for strengths in the current mode of operation.

*7) Work out Innovation Potential:* Building on the identified negative Moment(s) of Truth, this last step within the workshop seeks to address the issues identified previously by reflecting on the design of new services or their improvement. This conforms to the "passive" approach described by Moon et al. [6]. Every group works out one or more innovation potentials. At ServiceCo, a schema is given to the groups to structure their proposal in the form "We believe (new experience) will solve (need/opportunity) triggered by (solution) results in (new attitude/result)" where a solution refers to a service which is offered by ServiceCo to its client company.

At the end of the workshop, all groups present their CJ map, Moment(s) of Truth and innovation potentials. The coaches wrap-up the workshop and document the results for the following step.

*8) Assess Innovation Potential:* The last step takes place in the aftermath of the workshop. The rationale behind this temporal shift is that the workshop is the wrong organizational framework for a thorough assessment of the innovation potentials identified in the workshop. This is due to the fact that detailed information about the particular touchpoint, its service and dependencies are necessary in order to assess the feasibility of the innovation potential. At
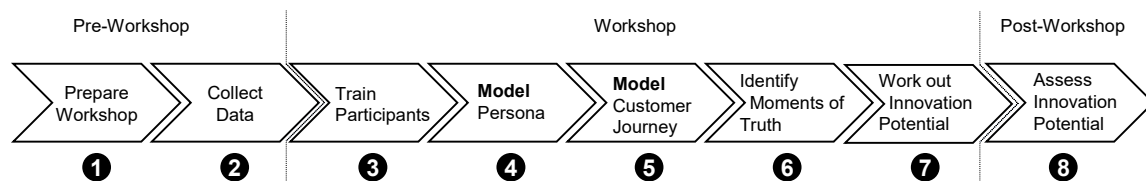


Fig. 3. Overarching Method for Customer Journey Mapping.

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ServiceCo, the additional need for an internal review is necessary, as the modeled CJ belongs to the client company and the business interests of ServiceCo and the client need to be in favor of the innovation.

The assessment of the innovation potential may contain the definition of relevant KPIs that measure the impact, the calculation of the business case, or technical analysis to estimate the development costs of a new service. These exemplary activities are not suited for completion in the workshop, yet necessary to achieve support for the realization of the innovation.

The following two subchapters complete the framework by describing the modeling approach.

*B. Modeling Grammar and Method*

Steps 4 and 5 in the previously described overarching method deserve special attention as they create the model scripts that are the characterizing result of CJ Mapping. While the persona and CJ map are two separate model scripts, both should not be considered in isolation, as the persona is the subject of the CJ. This is why we propose one integrated modeling approach, which is currently absent in the literature. However, the use of isolated modeling approaches (e.g. [7], [34]), is not ruled out, although integration is strongly recommended based on our experience during development.

The overall objective of the grammar and method is to support the participatory approach so that the modeling is simple and does not act as a deterrent for inexperienced participants. Our work with practice in this project has shown that unskilled modelers are unable to cope with the abstract GPML or existing DSML for CJ Mapping. This is not surprising, as they were either created and tested in an environment with experienced modelers (e.g., [7]) or built for use in an environment where training in the language is seen as a prerequisite. Connecting these different approaches for persona and CJ modeling would even add complexity. Thus, as a sub contribution, we design a DSML that integrates persona and CJ modeling for a participatory approach. This is carried out in three steps [17], [42]: First, we define an abstract syntax in a metamodel. Second, we propose a concrete syntax. Finally, we apply it.

The grammar is depicted in Fig. 4 as an entity-relationship model [43]. The two boxes around the entity-relationship model highlight the use of the entity types in the respective steps of the overarching method, while the grey coloring distinguishes explicit, i.e., actively modeled, from implicit, i.e., not actively modeled, constructs: As the CJ is consisting of sequentially ordered touchpoints, the touchpoints are used to describe the CJ and the CJ itself is not modeled. A persona is linked to a CJ but may be reused in multiple CJs. The facet and generic touchpoint attribute are also not explicitly modeled, but support the structuring of the touchpoint and persona attributes. Due to focus on attributes and the similar structure of the grammar, discrepancies between modeling the persona and the CJ are alleviated.

A touchpoint or persona attribute is here understood as a combination of a label and a value, so that "Action": "Book flight" would be one possible attribute for a touchpoint. However, in case the value includes the label, this can be shortened to, e.g., "22 years old" instead of "Age" : "22".

The modeling of the persona is characterized by defining attributes and arranging them in *facets*. The facets were developed in the workshops and are seen as a proposal. There are six different facets: personal facts (1), the character traits (2), likes (3), frustrations (4), the preferred communication channels (5), and the brand relationships (6). While 1-4 aim at describing the person, 5-6 are more concerned with the role of the customer. Each facet can have multiple attributes. As an example in the airline industry, (1) may include attributes like "student", "22 years old", where (2) may list "extrovert", "creative". (3) and (4) cover aspects like "traveling" or "money issues", respectively. (5) shows how to reach the persona (e.g., "Whatsapp") and (6) may list "bought last flight because of low prices."

The touchpoint itself is also described by attributes. In the course of this research project, these attributes were subject to many discussions. Managing the balancing act between high expressiveness and expedience regarding the particular use case lead to the conclusion that the attributes should not be fixed. Instead, it should be possible for the workshop organizers to define the set of attributes when preparing the workshop, thereby allowing for more flexibility. However, through iterative development, it became clear that a certain set of attributes is useful for CJ Mapping in general. These are called *generic touchpoint attributes*. It is recommended that all these types should be present in the used attribute set although their concrete instantiations might differ. These five generic attributes are presented in the following.

First, it is always required to describe the *step* that the customer takes, which is comparable to a narrative and also featured in other languages (cf. [7], [28]). This may be the "noticing of an ad", the "booking of a flight", or the "driving to the airport". At some touchpoints, the customer is using a *service* of the company, which is captured in the next attribute. The goal behind the inclusion of this information is, that CJ mapping as a service innovation technique must provide the links to the service architecture of the company to know in where to locate innovation measures.

What is more, *context* information of the touchpoint can be added as an attribute. While Halvorsrud et al. [7] use a list of symbols to cover contextual factors, we decided that the sheer amount of symbols would overwhelm the participants and also limit their creativity. These context attributes may include the channel of the touchpoint or the surrounding environment of the customer in terms of things or people. The intention behind these is to paint a clearer picture of the circumstances at the certain touchpoints. The right degree of detail depends on the case, as e.g., a CJ for an online retailer
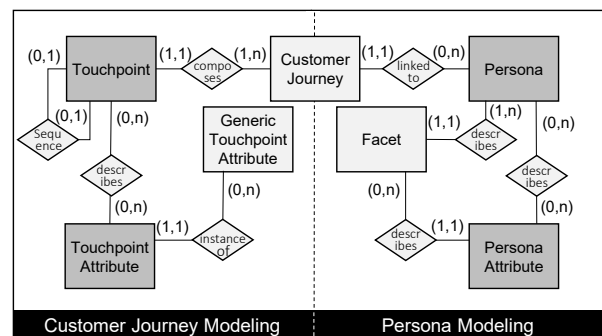


Fig. 4. Modeling Grammar Meta-Model

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might not require the same description of the environment as a CJ used at a brick and mortar retailer.

As a happy customer is likely a satisfied customer and customer satisfaction is key for a good customer experience, *emotions* are also captured in an attribute. It can include textual descriptions in form of thoughts "interesting ad, I need a vacation anyway" and/or a scale capturing the degree of happiness or frustration. The rationale behind the latter is to capture the emotional ups and downs during the journey [44] that can later be used for the identification of the Moments of Truth.

Lastly, there should be an attribute holding a form of *result* or finding in order to either reflect on the customers' behavior at the touchpoint (i.e., whether the expectations were met or not) or the gained business insights through modeling this touchpoint. This information is essential for finally working out innovation potential and are depicted very explicit in the work of Rosenbaum et al. [9].

Another rationale behind this listing of generic attributes is that the modelers are guided through the modeling of each touchpoint by filling out the attributes in the given order. As the CJ can be visualized in a tabular form (cf. [45]), every column corresponds to one touchpoint and the sequence of touchpoints can be realized by moving from left to right. Fig. 5 illustrates this by an example for an airline where arrows behind the attributes are added to depict the procedure during the modeling. In the example, a customer fails to check-in due to a need for printing out the booking confirmation.

The used touchpoint attribute set in Fig. 5 conforms to the generic touchpoint attributes. The context is split into three separate attributes and the emotional attribute has the label *Feeling* for illustrating the flexibility. It is not mandatory to have each attribute present at every touchpoint (cf. *People* at Touchpoint 1) and there can be multiple values for each attribute (cf. *Things* at Touchpoint 2). As the inheritance of touchpoint attributes adds unnecessary complexity to the model, the participants in the workshop are only confronted with the used attribute set. The mapping of generic touchpoint attributes to used touchpoint attributes is decided by the workshop organizers before the workshop as well as additional graphical annotations for the attributes (cf. *Results*).

### C. Modeling Context

The two modeling steps in the overarching method take place in the same context, namely the workshop. Modeling in a workshop setting is by no means a novelty. Its key element is the co-design of an artifact which, in this case, is the persona and CJ abstracted as model scripts. Co-design is seen as
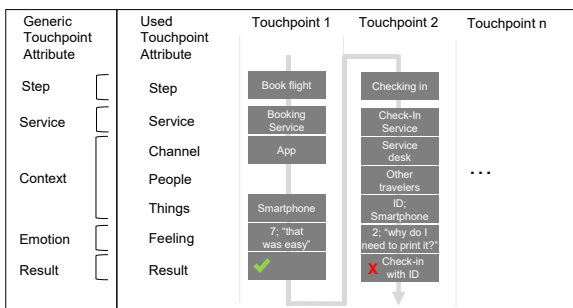


Fig. 5. Customer Journey Modeling Example and Generic Attribute Mapping

"creative cooperation during design processes." [25] Due to the organization of the workshop into groups including a coach, a guiding function is implemented. Otherwise, the risk of going in the wrong direction is too high.

Regarding the physical context of modeling, a paper-based approach is applied. Each group models its persona or CJ map on movable walls, which are prepared to represent the required structure. This means, that the facets of the persona, as well as the structure of the CJ map with the used attribute labels of the touchpoints (cf. right part of Fig. 5), are prepared on the canvas. Colored post-it notes are used for the touchpoint and persona attributes, which are visualized by the grey boxes in Fig. 5.

One key advantage of the modeling grammar and method is that it can be applied without software tool support. As there are few rules to be enforced, it is applicable to perform the modeling physically on the canvas. Another benefit of this is that it lowers the defensiveness of the participants towards modeling, as we found that it embodies a more creative approach instead of being constrained by a complex modeling grammar and method.

### D. Application

A pilot study was conducted at the end of 2018. The client was a public institution for water sports located in Germany and in its sector one of the largest players in Europe. Due to the fact that the study was conducted with one of ServiceCo's clients (referred to as ClientCo), a non-disclosure agreement limits the publishing of results from the study. However, details are provided to the possible extent.

Two consultants, who were trained in the method lead the study from ServiceCo perspective. The client had already established outsourcing with ServiceCo so that internal documents of ClientCo were available. In the course of workshop preparation (1) the decision was made to focus on two customer segments for ClientCo, namely senior citizens and middle-aged swimmers. Data collection (2) was conducted through the screening of internal documents. The overall goal of the workshop was to analyze the CJ for the two segments in a descriptive way. Hence, the steps concerning innovation potential (7 and 8) had to be excluded. While this limits the conclusiveness of the pilot study, it still demonstrates its applicability for the modeling of a persona and CJ along subsequent activities.

Workshop participants were six employees of ClientCo and the account manager of ServiceCo. The workshop was conducted in German and lasted six hours. The two consultants of ServiceCo acted as coaches and a single group was formed. The participants were aged between 35 and 50. An operations manager, a customer experience manager, three front-line employees, and the account manager were attending as participants. None of them had experience in modeling or CJ Mapping.

The training of participants (3) started with an extended introduction round including expectation management and a short icebreaker. Afterward, the goal of the workshop was introduced to the participants, which was obtaining "business insights" for a better understanding of the customer as well as the improvement of services for the two named customer segments. No particular scenario was predefined. The following introduction to CJ Mapping was presented swiftly by the consultants. By using a continuous example of a

fictional case, the participants saw how the persona and CJ map was created before subsequently starting steps (4) and (5).

As there was one group but two personas and corresponding CJ maps, steps 4-6 were completed two times by the group. The facets of a persona were slightly adjusted as part of the workshop preparation. "Likes" was changed to "Needs and Goals" to be more specific towards ClientCo's offering instead of personal interests. The group had no issues with understanding or handling the task and attached 25, resp. 23 attributes to the two personas that were nearly evenly distributed among the six facets.

Before engaging in the CJ Modeling (5), the participants were introduced to the method and attributes. As shown in Table 1, the used ones correspond to the generic attributes but show differences on a detailed level. First, their label was partly adjusted but this is also due to the fact that the method was developed in English, but the workshop was conducted in German. Hence, the German labels were translated again for this paper and explain e.g., the label "action" for the generic attribute "step". While this may seem pedantic as the meaning is essentially the same, the rationale behind this is that one should be open to changing labels and details in order to comply with for instance the understanding of terms in an organization. Complementary to the label, the participants were given a question to be answered by the attribute.

The generic *emotion* attribute was split into two attributes. First, there was a textual description of the emotional state of the persona. Second, the participants were asked to draw an "emotional journey" [44] ranging from 0 (unhappy) to 10 (happy) thereby giving an immediate indication of the emotional state throughout the CJ.

TABLE I.    USED TOUCHPOINT ATTRIBUTES IN THE PILOT STUDY

| Generic Touchpoint Attribute | Used Touchpoint Attribute | |
|---|---|---|
| | *Label* | *Question* |
| Step | Action | What does the persona do? |
| Context | Contact point | With what or whom does the persona get in contact? |
| Service | Service | Which service is used by the persona? |
| Emotion | Emotion | What is the emotional response of the action? |
| | Emotional Journey | |
| Result | Insight | Are there insights for the company from this touchpoint? |

The modeling method was conducted from top to bottom (i.e., starting with *action* and ending with *insight* for each touchpoint chronologically). It was observed that nearly all attributes were filled at each touchpoint. The CJ maps covered the entire customer process starting from the preparatory activities (packing of bags at home, getting to the water sports facility) over the main activities around ClientCo's services to the terminating activities (going back home).

The *insight* was left empty especially at the end of the CJ. One possible explanation for this is that the last touchpoints bring the "story" to an end and thereby showing less field of action for the company. The participants completed the modeling task with ease, thereby corroborating the applicability of the modeling method among non-modelers. In

total, the group created CJ maps consisting of 15, respectively 13, touchpoints for the two personas.

The identification of the Moments of Truth (6) was conducted after a short introduction to the task. The group identified multiple similar negative Moments of Truth in their CJ maps while the positive ones stood out more clearly.

As stated earlier, the workshop did not explicitly include step 7. However, based on the *insights* at the touchpoints, the group created the basis for subsequent analysis of innovation potential. Particularly the negative Moments of Truth had multiple *insight* attribute values attached, thereby indicating that new knowledge about the issues was gathered. Examples for these insights are for instance the lack of information on the website, missing feedback mechanisms, or the awareness of environmental responsibility. While these may sound like platitudes at first sight, the link to the respective touchpoint creates a more viable innovation potential, as the field of action is clear.

The workshop ended with a summary and feedback round. The participants valued that the workshop was "well-structured" and included "ideas for improvement."

## IV.    DISCUSSION OF METHODOLOGICAL GUIDELINES FOR CUSTOMER JOURNEY MAPPING

ADR suggests that generalized outcomes should result from the fourth stage of the method (formalization of learning, cf. Fig. 2) [11]. The problem instance is generalized into a class of field problems (lack of methodological guidance in CJ Mapping) as well as the solution instance (the particular framework for CJ Mapping presented in chapter 3) is reconceptualized into a class of solutions. This class encapsulates frameworks for CJ Mapping *in general* and the following presents methodological guidelines for their implementation. Their goal is to assist when undertaking a CJ Mapping initiative not bound to the context of this research. The guidelines, shown in Table 2, are ordered by occurrence in a CJ Mapping initiative and discussed in the following.

TABLE II.    METHODOLOGICAL GUIDELINES FOR CUSTOMER JOURNEY MAPPING

| # | Guideline | Concerning |
|---|---|---|
| 1 | Choose the right organizational framework for your Customer Journey Mapping initiative. | Method |
| 2 | Define the scope and goal precisely and invite participants / build a team based on this decision. | Method |
| 3 | Integrate the modeling of a persona and the customer journey. | Modeling |
| 4 | Specify the required breadth and depth for the modeling of the touchpoints. | Modeling |
| 5 | Consider the trade-off between the expressive power of modeling grammar and method vs. expedience. | Modeling |
| 6 | Prepare the utilization of the results. | Method |

### A.    Choose the Right Organizational Framework for Your Customer Journey Mapping Initiative

This paper describes the situation at ServiceCo and focused on a workshop setting where it is capitalized on the knowledge of front-line employees. Depending on the purpose of the CJ Mapping initiative, there can be other suitable organizational frameworks. Thus, the organizational framework needs to be chosen with respect to the purpose. In

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addition, the available resources are critical in this decision: The available data, expert knowledge, or time constraints affect the decision for the organizational framework.

For instance, if a large set of customer log data is to be analyzed (cf. [28]), experts would be able to work on it individually or in a small team. Consequently, they would utilize a different overarching method than presented here. The focus of this work to workshop-based approaches is perhaps the simplest way to conduct CJ Mapping as very little prerequisites in terms of resources are needed: A small amount of available data can be substituted by diverse participants, personas can be created in the workshop and the time consumption is moderate. Certainly, it needs to be noted that the results of the simple approach might not be as reliable as more sophisticated approaches (cf. [6]).

Further, the desired degree of creativity in the results is important to consider. As people with different backgrounds working together in a workshop inevitably bring more views on the problem than a single person, it is likely that the workshop setting will bring up more creative results. Alternatively, if a very accurate description of an as-is CJ is desired, a single expert working on a data-driven CJ Mapping approach might be preferable.

### B. Define the Scope and Goal Precisely and Invite Participants / Build a Team Based on This Decision.

When the decision for the organizational framework is made (cf. Guideline 1), one needs to consider carefully the precise goal and scope within the organizational framework. Otherwise, CJ Mapping entails the risk of creating a CJ map that is not needed in the organization and hence not used. This can be counteracted with the definition of the scope and goal. Note that goal and purpose are not used synonymously here: Whereas the purpose is bound to the initiative in general, the goal is linked to the CJ Mapping itself and thus more specific.

As an example from the airline industry, the purpose of the CJ Mapping initiative can be the improvement of the onboarding services (raised by a large number of complaints). Assuming that a workshop setting shall be used, the workshop goal and scope need to be more precise in order to get the right level of detail in the results. As an example, the customer segments could be scoped through deciding which types of personas shall be modeled (like it was done in the pilot study). Another mechanism is to focus on a particular stage of the customer journey (e.g., focusing on the CJ before the booking).

Based on the scoping and goal definition, the participants of the workshop should be invited. The same applies to set up the team beforehand. This way, it is assured that the right people – as part of the available resources – actively take part.

### C. Integrate the Modeling of a Persona and the Customer Journey

When developing personas in the course of CJ Mapping, the persona is the subject of the CJ. Thus, their creation should be integrated modeling-wise and method-wise. First, their modeling grammar and method should be similar, so that the workshop participants can be trained easily in the application. We exhibited this by strongly relying on attributes in both modeling methods and using a common modeling grammar. Second, the methodological coherence of the overarching method benefits when the development of the CJ and persona are geared to each other instead of being two separate issues.

### D. Specify the Required Breadth and Depth for the Modeling of the Touchpoints

The mapping of the CJ is carried out by modeling the sequence of touchpoints. Here, breadth refers to the coverage of *aspects* through attributes, while depth describes the level of detail within these aspects. With an aspect, we mean virtually any property of a touchpoint that can be captured in an attribute. Striking a balance between these two qualities is required, as the modeling operates under limited resources (time- and knowledge-wise). This is why not every aspect should be captured in an attribute and every relevant aspect should be presented in a meaningful level of detail. What needs to be covered is dependent on the particular case. For instance, the aspects relevant for the improvement of a booking service at an airline are different from the aspects relevant to the improvement of a check-in at a hotel. Clearly, the used modeling grammar needs to be flexible in this regard.

One instrument for a meaningful specification of breadth and depth presented in this work is the set of attributes chosen for the modeling of touchpoints. As the attributes are chosen beforehand with knowledge of the use case, *the attribute coverage of aspects* can control for the breadth. Further, *the level of detail* of an attribute can also be controlled by the label of the attribute. On the one hand, a touchpoint attribute labeled "Things used" will provoke more leeway (and hence details covered) than its subset "IT-Devices used". On the other hand, the touchpoint attributes "people" and "location" result in two completely different modeled *aspects*, which increase the breadth. It is noted that the presented modeling grammar and method in this paper incorporated this guideline.

### E. Consider the Trade-Off between the Expressive Power of the Modeling Grammar and Method vs. its Expedience

One should be aware that the results of CJ Mapping will not be comparable to e.g., a full specification of a business process. It is in the nature of things that the CJ is not as structured as a business process and, thus, less precision and expressive power are needed for an expedient model representation.

The involvement of less experienced modelers calls for a simple modeling grammar and method in order to assure a steep learning curve. This simplification will inevitably lessen the expressiveness in favor of easier training on the use of the grammar and method. Increasing complicatedness e.g., by adding model constructs or syntax requires more time for training and thus decreases simplicity to use.

While an experienced modeler easily applies a complex grammar and method thereby creating a comprehensive model script, it must also be readable and understandable by the addressee of the results. Apart from that, there is another issue when considering less experienced modelers: They need to learn the language in order to create a model script in the first place. It is hence not only a question of the "literacy" of the consumer but also the "craftsmanship" of the modeler.

Clearly, the presented approach focuses on a simple modeling grammar and method as it was the intention of ServiceCo. Organizations should strive for one standard with a reasonable expressiveness, which is still expedient for the intended producers and consumers of the model.

### F. Prepare the Utilization of the Results.

CJ Mapping is no end in itself. While a CJ initiative likely has a triggering event or decision and consequently a purpose,

it needs to be specified what results are needed (cf. Guideline 2) as well as their form (cf. Guideline 4, 5). While CJ Mapping itself only fosters the service innovation, the final decision of changing a service is made subsequently. In this sense, it is a tool for decision support. Thus, it should also be prepared in a way, that decision-makers can utilize it. This means that the results should be condensed into a small report making the case for the service innovation.

In addition, results can also be utilized apart from the aspect of service innovation. In the literature, an increase in stakeholder empathy with the customer [46] or general communicative purposes about the customer process in the company [5] are named. Especially the latter can be seen as the root of the colorful and shiny CJ *posters* that played their part to the buzz surrounding the word "Customer Journey". While one can question their contribution towards a deep understanding of the subject matter, it cannot be neglected that a bit of self-marketing is done in the organization with CJ Mapping. Certainly, this should not be the only purpose of a CJ initiative. But if CJ Mapping is conducted, the utilization of the results in this way is a low hanging fruit.

## V. CONCLUSION AND OUTLOOK

During a joint research project with the global professional service provider ServiceCo, we aimed at designing a Customer Journey Mapping approach that capitalizes on the knowledge of a broad range of people in the organization. When studying the literature, it became clear that no approaches have been proposed hitherto that attend to the case. To address these circumstances, the Action Design Research method was used.

A participatory framework for Customer Journey Mapping was developed that strongly builds on conceptual modeling theory. However, complex modeling methods raise high barriers to adoption among non-experienced modelers. It is not feasible to train all people to become full-fledged modelers, nor worthwhile. Against this background, we focused on a simple, yet theoretically sound modeling approach that integrates the modeling activities in an overarching method.

In cooperation with ServiceCo, a series of iterative workshops were performed to design the artefact. The framework was successfully applied to a large public institution for water sports. Solving this problem instance is indeed only one part of the contribution to practice. Moreover, the framework enables practitioners to conduct Customer Journey Mapping with ease due to its coverage of activities before and after the modeling along the simple modeling grammar and method which in sum may flourish the use of Customer Journey Mapping in more organizations – be it B2C or B2B businesses.

The contribution to research is the formalization of learning into generally applicable methodological guidelines for Customer Journey Mapping which were the results of the development process.

The guidelines contribute to research by addressing the voiced lack of methodological guidance in CJ Mapping. Further, the scientific community benefits from the first transfer of Conceptual Modeling theory [17] into Customer Journey Mapping and is shown how an integrated modeling approach can look like. The proposed guidelines contribute to the development of Customer Journey Mapping approaches in organizational contexts not touched in this Action Design Research project. Additionally, the guidelines may be used to foster research on embedding Customer Journey Mapping in the decision processes of an organization by pointing out pitfalls that have been uncovered during the development.

Every work comes with its limitations. We do not claim that the framework is fitting to all varieties of CJ Mapping as it was developed for persona-driven CJ Mapping and with focus on the participation of non-modelers. However, our impression of working with ServiceCo is that this constitutes a major use case. Besides, it must be noted that the reliability of the results calls for additional applications. For now, a single application has been conducted with the framework. Steps 7 and 8 of the overarching were not part of this application and need to be investigated further. However, during the development process, full coverage was achieved. Lastly, the framework, as well as the guidelines, focus on a workshop setting.

Regarding future research, the shortcomings of this work should be lessened by further applications of the method along evaluation which paves the way towards general applicability. While the guidelines proposed in this work diminish the lack of methodological guidance, additional research is required to provide a solid base for Customer Journey Mapping and to further spread its usage. As the understanding of the key concept of a Customer Journey – the touchpoint – is varying significantly among the different research fields, more clarity is needed to sharpen the definition of generic attributes. Lastly, data-driven Customer Journey Mapping requires additional methodological guidance.

A great part of this work was dedicated to conceptual modeling which perhaps is not the first thing that comes to mind when thinking about the "Customer Journey". It is nonetheless a kind of model. Thus, in respect of the amalgamation of scientific disciplines in the course of the digitalization, new techniques should capitalize on the existing knowledge base – even from an alien discipline.

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## REFERENCES

[1] K. N. Lemon and P. C. Verhoef, "Understanding Customer Experience Throughout the Customer Journey," *J. Mark.*, vol. 80, no. 6, pp. 69–96, Nov. 2016.

[2] M. J. Bitner, A. L. Ostrom, and F. N. Morgan, "Service blueprinting: A practical technique for service innovation," *Calif. Manage. Rev.*, vol. 50, no. 3, pp. 66–94, 2008.

[3] C. Homburg, D. Jozić, and C. Kuehnl, "Customer experience management: toward implementing an evolving marketing concept," *J. Acad. Mark. Sci.*, vol. 45, no. 3, pp. 377–401, May 2017.

[4] S. Holmlid and S. Evenson, "Bringing Service Design to Service Sciences, Management and Engineering," 2008, pp. 341–345.

[5] A. Følstad and K. Kvale, "Customer journeys: a systematic literature review," *J. Serv. Theory Pract.*, vol. 26, no. 6, pp. 840–867, 2017.

[6] H. Moon, S. H. Han, J. Chun, and S. W. Hong, "A Design Process for a Customer Journey Map: A Case Study on Mobile Services," *Hum. Factors Ergon. Manuf. Serv. Ind.*, vol. 26, no. 4, pp. 501–514, Jul. 2016.

[7] R. Halvorsrud, I. M. Haugstveit, and A. Pultier, "Evaluation of a modelling language for customer journeys," in *2016 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*, 2016, pp. 40–48.

[8] L. G. Zomerdijk and C. A. Voss, "NSD processes and practices in experiential services," *J. Prod. Innov. Manag.*, vol. 28, no. 1, pp. 63–80, 2011.

[9] M. S. Rosenbaum, M. L. Otalora, and G. C. Ramírez, "How to create a realistic customer journey map," *Bus. Horiz.*, vol. 60, no. 1, pp. 143–150, 2017.

[10] L. Patrício, R. P. Fisk, and J. Falcão E Cunha, "Designing multi-interface service experiences: The service experience blueprint," *J. Serv. Res.*, vol. 10, no. 4, pp. 318–334, 2008.

[11] Sein, Henfridsson, Purao, Rossi, and Lindgren, "Action Design Research," *MIS Q.*, vol. 35, no. 1, p. 37, 2011.

[12] Hevner, March, Park, and Ram, "Design Science in Information Systems Research," *MIS Q.*, vol. 28, no. 1, p. 75, 2004.

[13] G. I. Susman and R. D. Evered, "An Assessment of the Scientific Merits of Action Research," *Adm. Sci. Q.*, 1978.

[14] A. Hevner, S. March, and J. Park, "Design Science in Information Systems Research," *MIS Q. Manag. Inf. Syst.*, vol. 28, no. 1, pp. 75–105, 2004.

[15] H. Stachowiak, *Allgemeine Modelltheorie*. Springer, 1973.

[16] J. Becker and R. Schütte, *Handelsinformationssysteme*. mi-Wirtschaftsbuch, 2004.

[17] Y. Wand and R. Weber, "Research Commentary: Information Systems and Conceptual Modeling— A Research Agenda," *Inf. Syst.*, vol. 13, no. 4, pp. 363–376, 2002.

[18] A. L. Ostrom, A. Parasuraman, D. E. Bowen, L. Patrício, and C. A. Voss, "Service Research Priorities in a Rapidly Changing Context," *J. Serv. Res.*, 2015.

[19] C. Shaw, Q. Dibeehi, and S. Walden, "Customer Experience," *Harv. Bus. Rev.*, vol. 82, no. 2, pp. 116–126, 2010.

[20] D. C. Edelmann and M. Singer, "Competing on Customer Journeys," *Harv. Bus. Rev.*, vol. 93, no. 11, pp. 88–100, 2015.

[21] E. Huré, K. Picot-Coupey, and C. L. Ackermann, "Understanding omni-channel shopping value: A mixed-method study," *J. Retail. Consum. Serv.*, vol. 39, no. August, pp. 314–330, 2017.

[22] L. G. Zomerdijk and C. A. Voss, "Service Design for Experience-Centric Services," *J. Serv. Res.*, vol. 13, no. 1, pp. 67–82, Feb. 2010.

[23] L. Patrício, R. P. Fisk, J. Falcão e Cunha, and L. Constantine, "Multilevel Service Design: From Customer Value Constellation to Service Experience Blueprinting," *J. Serv. Res.*, vol. 14, no. 2, pp. 180–200, May 2011.

[24] D. Saffer, *Designing for Interaction*. Berkeley, CA: Pearson, 2010.

[25] M. Steen, M. Manschot, and N. De Koning, "Benefits of Co-Design in Service Design Projects," vol. 5, no. 2, pp. 53–60, 2011.

[26] F. K. Lehnert, "Customer journey mining : combining user experience research techniques and data mining to capture a holistic customer journey," Technische Universiteit Eindhoven, 2018.

[27] M. Heuchert, B. Barann, A.-K. Cordes, and J. Becker, "An IS perspective on omni-channel management along the customer

journey: Development of an entity-relationship-model and a linkage concept," in *MKWI 2018 - Multikonferenz Wirtschaftsinformatik*, 2018.

[28] C. Bartelheimer, J. H. Betzing, I. Berendes, and D. Beverungen, "Data-driven Customer Journey Mapping in Local High Streets: A Domain-specific Modeling Language," *39th Int. Conf. Inf. Syst.*, pp. 1–8, 2018.

[29] S. Baxendale, E. K. Macdonald, and H. N. Wilson, "The Impact of Different Touchpoints on Brand Consideration," *J. Retail.*, vol. 91, no. 2, pp. 235–253, 2015.

[30] L. P. Carbone and S. H. Haeckel, "Engineering Customer Experiences," *J. Mark. Manag.*, vol. 3, no. 3, pp. 18–19, 1994.

[31] A. Crosier and A. Handford, "Customer journey mapping as an advocacy tool for disabled people: A case study," *Soc. Mar. Q.*, vol. 18, no. 1, pp. 67–76, 2012.

[32] A. Cooper, "The Inmates are Running the Asylum," 2012.

[33] T. Miaskiewicz and K. A. Kozar, "Personas and user-centered design: How can personas benefit product design processes?," *Des. Stud.*, vol. 32, no. 5, pp. 417–430, 2011.

[34] J. Grudin and J. Pruitt, "Personas , participatory design and product development: An infrastructure for Engagement," *Proc. PDC*, 2002.

[35] S. Clatworthy, "Service innovation through touch-points: Development of an innovation toolkit for the first stages of new service development," *Int. J. Des.*, vol. 5, no. 2, pp. 15–28, 2011.

[36] G. L. Shostack, "Service Positioning through Structural Change," *J. Mark.*, vol. 51, no. 1, p. 34, Jan. 1987.

[37] J. Teixeira, L. Patrício, N. J. Nunes, L. Nóbrega, R. P. Fisk, and L. Constantine, "Customer experience modeling: From customer experience to service design," *J. Serv. Manag.*, vol. 23, no. 3, pp. 362–376, Jun. 2012.

[38] U. Frank, "Domain-specific modeling languages: Requirements analysis and design guidelines," in *Domain Engineering: Product Lines, Languages, and Conceptual Models*, 2013.

[39] R. C. Nickerson, U. Varshney, and J. Muntermann, "A method for taxonomy development and its application in information systems," *Eur. J. Inf. Syst.*, 2013.

[40] F. Plenter, E. Fielt, M. von Hoffen, F. Chasin, and M. Rosemann, "Repainting the Business Model Canvas for Peer-To-Peer Sharing and Collaborative Consumption," *Twenty-Fifth Eur. Conf. Inf. Syst.*, vol. 2017, pp. 1–16, 2017.

[41] G. Westhoff and A. Drougas, *Content Design and Methodology of Seminars, Workshops and Congresses*. Council of Europe, 2002.

[42] R. Mannadiar and H. Vangheluwe, "Domain-specific engineering of domain-specific languages," p. 1, 2011.

[43] P. P.-S. Chen, "The Entity-Relationship-Model: Toward a Unified View of Data," *ACM Trans. Database Syst.*, vol. 1, no. 1, pp. 9–36, 1976.

[44] T. Brown, *Change by design: How Design Thinking Transforms Organizations and Inspires Innovation*. 2009.

[45] M. S. Rosenbaum, M. L. Otalora, and G. C. Ram??rez, "How to create a realistic customer journey map," *Bus. Horiz.*, vol. 60, no. 1, pp. 143–150, 2017.

[46] F. Segelström, *Stakeholder Engagement for Service Design: How service designers identify and communicate insights*. Linköping University Electronic Press, 2013.