

Promoting user-centricity in short-term ideation workshops

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Participating in a short-term ideation workshop – based on design thinking principles – may increase the innovation capability of companies. We show how the persona methodology can be successfully applied to promote user-centricity in such ideation workshops. For this research, we observed 20 design teams of Swiss Small and Medium-sized Enterprises during 2.5-day standardized ideation workshops, and analyzed how they developed and used – in total 81 – personas as a design tool to inform their product and service development activities. We found that an iterative approach, which allows for frequent reality checks during the persona development process, in combination with diversely staffed design teams, who bring a broad range of expertise and experiences together, may compensate for the limited amount of time available for user research during short-term ideation workshops. Moreover, our study revealed two varying persona usage patterns, namely personas used as a reference point versus personas used as a starting point. These findings highlight personas as a valuable design tool to promote user-centricity during short-term ideation workshops in the early development phase of new products, services and business models.

Keywords: persona, ideation, prototyping, workshop, new product development and design

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1. Introduction

“Innovation has become nothing less than a survival strategy” (Brown & Katz, 2011) has become true for a lot of companies, and placing the user at the center of design is increasingly being recognized as a key success factor for innovation (LeRouge et al., 2013). Similarly, Gruber et al. (2015) acknowledge that human-centered design approaches seem to lead to a higher innovation performance. Design thinking is a promising methodology for companies that aim at increasing their innovation capability, and the participation in one single short-term ideation workshop that is based on design thinking principles may already increase the innovation capability of small and medium-sized enterprises (Heck 2017).

Design thinking can be described as the interplay between diverging phases of exploring problem and solution spaces, and converging phases of synthesizing and selecting (Lindberg et al., 2011). Brown and Wyatt (2010), on the other hand, conceptualize the design thinking as the overlapping spaces of inspiration, ideation, and implementation rather than a sequence of orderly process steps. While design thinking can be associated with characteristics such as thinking as a team in a social process, keeping the overview, and accepting ambiguity (Dym et al., 2005), Meinel and Leifer (2011) characterize it as a “human-centric methodology [that...] blends an end-user focus with multidisciplinary collaboration and iterative improvement to produce innovative products”. Gaining empathy with users is critical for translating observations into insights, and these in turn into products. LeRouge et al. (2013) as well as Long (2009) emphasize that design teams should establish this focus on the user already in the early phases of product development processes. However, Leifer and Steinert (2011) observe that this can be rather difficult, as it is often unclear who among the stakeholders the actual user is. Moreover, Brown and Katz (2011) suggest to focus on

“extreme” users in order to identify needs and insights at the edges, as extreme users consume, think, and live differently. For sharing a common understanding of the user needs throughout the development process, a user representation – a so-called *persona* – is required (Cooper 1999; LeRouge 2013).

Personas are hypothetical user archetypes that promote a shared understanding of user needs throughout the process of analysis, design, development and implementation of new products (Cooper, 1999; LeRouge et al., 2013). However, there exists little empirical research that details the persona methodology and provides evidence of its effectiveness. Therefore, the debate on the usefulness of the persona methodology is often one of “faith versus skepticism; claim versus counter-claim” (Long, 2009). The question of effectiveness and efficiency is particularly relevant in the context of resource and time constraints, as for example in short-term ideation workshops. While the development of data-driven personas requires one to two weeks, rough assumption-based personas can be developed in one day (Pruitt & Adlin, 2006).

As design thinking-based ideation workshops are a promising means to increase the innovation capability of companies, and user-centered design approaches often implement personas, this study aims at elucidating the potential and limitations of assumption-based personas as a design tool in workshops. In particular, this study has three goals. First, to understand the persona development process during short-term ideation workshops; second, to identify varying persona usage patterns; and third, to evaluate the utility and potential of the persona methodology with regard to the overall workshop performance. According to the five-step persona life cycle described by Pruitt and Adlin (2006), we compare the creation and use of personas in ideation workshops with more common research- and resource-intensive approaches. In 20 standardized 2.5-day ideation workshops, we observed how workshop participants created, used, and

evaluated the persona tool. We found that rather than by the total amount of time invested in the development of personas, the usefulness of the persona tool is determined by the number of raising iterations, which comprise critical feedback sessions and cross-validation in so-called “reality checks” of the diversely staffed workshop participants. Furthermore, we were able to identify two varying persona usage patterns, namely the use of personas as a reference point and the use of personas as a starting point. The former pattern describes that they are continuously used to evaluate the ideas and prototypes with regard to their needs, while the latter means that they only support the problem framing and refinement before the actual ideation activities; cf. Subsection 5.2 for a detailed description of the two patterns. However, we did not find a significant correlation between the time spent on the development of personas or their survival rate and the overall workshop performance.

The remainder of this paper is organized as follows; Section 2 covers a literature review regarding the benefits and challenges of working with the personas methodology and the typical persona life cycle. Section 3 describes our research design and research setting, i.e. the ideation workshops that we studied. In Section 4, we present our results along the persona life cycle. We discuss these results in Section 5 and conclude the paper with a reference to the limitations and an outlook for future research in Section 6.

2. Theoretical background

Personas are conceptual models or hypothetical archetypes of a targeted user group, but they do not cover every conceivable user (LeRouge et al., 2013; Pruitt & Grudin, 2003). These hypothetical user archetypes are typically based on thorough user research and promote a shared understanding of user needs throughout the process of analysis, design, development and implementation (Cooper, 1999; Long, 2009). Despite being fictional, personas need to be developed in realistic detail (Cooper, 1999). They have

several dimensions and are typically specified with names, photos, likes and dislikes, habits, backgrounds, expectations and needs (Blomquist & Arvola, 2002; LeRouge et al., 2013). Cooper (1999) argues that the more specific they are, the more effective they become. In this case, specificity relates to precision rather than accuracy (Cooper, 1999). Various visualization techniques are used to represent personas from simple sketches, through high-gloss pictures, mannequins, to role play with actors. Long (2009) finds that using pictures instead of illustrations increases their effectiveness, since designers are more likely to remember details and find it easier to build empathy for the persona.

2.1 Benefits of working with personas

In product design, personas are used to ensure that design teams keep focusing on the user, to inform the design process, to communicate user requirements, and to share insights within and outside their team (Cooper, 1999; Jacobs et al., 2008; Long, 2009). Personas are especially helpful in the early phases of product design (Long, 2009). They help design teams to make better design decisions and communicate more effectively about users (Long, 2009; Matthews et al., 2012). Personas should thus be made part of the design team, for instance, by engaging them in role plays or Q&A (Long, 2009). While Matthews et al. (2012) conclude that personas are more effective for communication than for design, Long (2009) argues that student teams who worked with personas developed products with superior usability characteristics. This shows that the discussion about the utilization and usefulness of personas is still controversial.

2.2 Challenges of working with personas

Chapman and Milham (2006) argue that there exist both methodological issues (e.g. data quality) and practical issues (e.g. selection of personas) that make the persona

methodology a questionable tool for product design. Furthermore, personas often are abstract, impersonal, misleading, and distracting (Matthews et al., 2012). As a consequence, they do not become an integral part of the design process in many cases (Blomquist & Arvola, 2002). It seems to be necessary for a design team to see the relationship between the data and the emerging persona in order to believe in the value of the tool (Matthews et al., 2012; Pruitt & Grudin, 2003). This indicates that those using the personas should engage in the user research and the creation of the personas themselves, even though developing and working with personas is a resource-intensive process and their creation requires considerable time and effort for data collection, analysis, and documentation (Long, 2009; Pruitt & Adlin, 2006). Nevertheless, the time and effort is well spent, since Long (2009) argues that scaled-back or low-budget versions of personas might do more harm than good.

2.3 Developing of and working with personas

Chang et al. (2008) describe several ways of developing personas and using them during the design process. The common way of developing personas is based on the extensive work by Cooper (1999) and Pruitt and Adlin (2006). Personas should be based on sound user research that includes both quantitative data from market research as well as qualitative data from ethnographic research (Pruitt & Grudin, 2003). Design teams typically observe and interview a larger number of real users and condense their insights into an abstract representation of that particular user group (LeRouge et al., 2013). This research-driven approach reduces the risk of inventing details or relying too heavily on a gut feeling (Jacobs et al., 2008). Yet, Chang et al. (2008) note that personas are often based on the assumptions and experiences of the designers. This is why Pruitt and Adlin (2006) refer to this type of personas as *assumption-based personas*.

Following the belief that personas need to be based on sound user research, Pruitt and Adlin (2006) distinguish between the team who develops the personas and the actual users of the personas (i.e. designers, engineers, etc.). Moreover, they present the persona life cycle as a tool that helps to structure user-centered thinking along the design process. The persona lifecycle starts with “*family planning*”, which is followed by “*conception and gestation*”, “*birth and maturation*”, “*adulthood*”, and ends with “*lifetime achievement and retirement*” (Pruitt & Adlin, 2006). As we structure our findings and the subsequent discussion along these persona lifecycle phases, these phases are detailed in the following.

- (1) **Family planning:** This is the research and analysis phase in which a problem is identified and the resources to solve it are determined. This includes the definition of the team that is working with the personas, the ensuring of the support of key individuals, the identification of relevant data sources, and an initial data gathering.
- (2) **Conception and gestation:** This is the actual persona development phase. Based on data, the team creates a set of personas that combine facts and fiction. The key challenge is to define how much fiction and storytelling is required to make the persona real and engaging.
- (3) **Birth and maturation:** This phase marks the transition from the creation of personas to their use. The personas are introduced to the product team (including product development, product and project management, marketing, etc.) that will use them during their design and development activities.
- (4) **Adulthood:** This is the key phase of the persona life cycle. Personas help the product team to focus on user needs and to make informed design and

development decisions. The challenge is to ensure that the personas provide the right information to the right people at the right time.

- (5) **Lifetime achievement and retirement:** This is the time to have a “post-mortem” talk about the benefits of working with the personas. What could be improved? What should stay the same? What needs to be adjusted? The answers to these questions provide inputs for the next persona development effort.

3. Research design

In this paper, we investigate the potential and limitations of assumption-based personas as a design tool in short-term ideation workshops, conducted with real design teams working on company-specific, business-relevant challenges regarding the development activities of new products, services, or business models. Within this semi-controlled environment, we focused on identifying correlations between persona-related workshop activities and performances measures. In order to combine both qualitative and quantitative data in a mixed-method approach (Creswell, 2013), we observed the ideation workshops, talked to the participants as well as the facilitators, and analyzed questionnaire data.

The workshops were conducted with teams of Swiss Small- and Medium-sized Enterprises (SMEs) in a company-external ideation space called “*Mobiliar Forum Thun*” (MFT). Prior research showed that ideation workshops have a positive long-term impact on the innovation capability of companies (cf. Heck 2017). In particular, they have three distinct outcomes. First, the workshop participants develop concrete (and tangible) new product ideas. Second, the participants learn about new ideation and prototyping methods. And third, they benefit from an intense team-building experience, which leads to a high motivation (Heck et al., 2014).

The teams that we observed were diverse in nature and were staffed with 10 to 15 employees who represent a broad range of departments and functions (as a prerequisite for conducting the workshop). Usually, the CEO or a member of the management board participates in order to point out the importance of the workshop for the future of the company. It may happen that companies complement their teams with external guests such as artists or industry experts who broaden the range of experiences and perspectives considered.

3.1 Research setting

The ideation space that we studied, the Mobilier Forum Thun, is located at a refurbished medieval castle in the Bernese Alps, Switzerland. Rittiner and Steinert (2016) characterize such external ideation spaces as creative spaces, which “are equipped with an abundance of tools and material that facilitate various visualization and prototyping techniques to promote fast learning in the early stage of new product development and design.” These ideation spaces have three distinctive, but related functions. As escape spaces, they allow design teams to abscond from an overwhelming daily business. As creative spaces, they facilitate various visualization and prototyping activities to support the process of ideation and concept definition. And as support spaces, they enable a frictionless conduct of ideation workshops, such that the team and the facilitator can fully concentrate on the design task.

Aside from the spatial aspects, the MFT features a distinct workshop concept. Every workshop is facilitated by one out of three trained workshop moderators who guide the workshop and, if necessary, tailor the workshop concept to the needs of the participating company. This workshop concept consists of three interrelated phases (cf. Figure 1, and Heck et al., 2015). In the first phase entitled “*identifying the right questions*”, the participants (in sub-teams of 3-5 participants) explore the business

environment of their company, draw a stakeholder map, select the most relevant stakeholders, elaborate on them by creating personas, and identify the needs and pains of these personas by exploring their customer journeys. These insights are then summarized in a user or problem statement. These user statements provide the input for the second phase, which is called “*identifying promising solutions*”, in which the participants iteratively ideate new solutions, prototype the solutions, and test them. This phase ends with a final presentation of the most promising solutions, i.e. the workshop results. The third phase, called “*getting things done*”, includes the preparation of an action plan for the transfer of the workshop results to the company, as well as the final reflection about the workshop, the ideation space, and the newly acquired methods.

Following an iterative process, all three phases consist of several input, working, and presentation sessions. At the end of each iteration, the sub-teams present their outcomes to the others and receive qualified feedback for further improvements and refinements. The feedback sessions are supported by the application of various feedback roles that are symbolized by catchy artifacts: Goggles represent the user’s perspective, a red heart symbolizes “the fan” and encourages to positive aspects to be highlighted, while a hard hat represents “Bob, the builder” and invites the team members to build on prior feedback and to constructively elaborate on the idea or solution presented (Heck, 2017).



Figure 1: Ideation workshops at “Mobiliar Forum Thun” follow the three phases of (1) identifying the right questions, (2) identifying promising solutions, and (3) getting things done.

3.2 Data collection

In order to achieve the first goal of this paper, we observed the persona raising activities of the participants and wrote a detailed workshop diary with timestamps, took hundreds of pictures, and videotaped the presentation/feedback/discussion sessions during the first workshop phase. Second, we videotaped the final presentations of the participants, in order to capture whether the personas survived throughout the workshop progress. Third, the final reflection of the participants was recorded at the end of each workshop. Furthermore, we collected their assessment of the overall workshop performance by sending them an online-questionnaire about two weeks after the workshops (cf. Heck et al., 2016).

3.3 Data sample

The data sample comprises the observation and evaluation of 20 ideation workshops of 2.5 days that took place during spring and autumn 2015. We were able to study how the participating design teams “raised” 81 personas in total, how the participants utilized them during the design process, and how they finally reflected about the application of the persona method. In order to assess the workshop performance, we collected the responses of the participants after 18 workshops through an online-questionnaire that covers their demographics as well as several aspects of the workshop such as the ideation space, the facilitation, the workshop concept, etc.

3.4 Data analysis

Based on our workshop diary, which included timestamps, we counted the number of persona raising iterations ($\text{Raising\#} = 1, 2, 3, \dots$) and measured the time that was spent to raise them ($\text{RaisingD} = [\text{min}]$). Although several personas were raised during the first workshop phase, only a part of them survived until the end of the second workshop phase. A persona survived if it was part of a role-play during the final presentation or if the solution explicitly addressed the personas’ needs. We assessed and coded the survival rate based on the videos of the final presentations ($\text{SurvivalRate} = [0-1]$). Moreover, we transcribed the recordings of the final reflections and analyzed whether the participants referred to the persona methodology or user-centricity in general. We coded the reflection of the participants ($\text{Reflection} = _, 1, 2, 3$) of the workshops as follows: Workshops with “only positive reflections” from the participants = [3], workshops with both “positive and negative reflections” = [2], workshops with “only negative reflections” = [1], and workshops with “no reference” = [0]. In order to assess the relationship between persona usage and workshop performance ($\text{Performance} = [0-$

6]), we calculated the workshop performance according to Heck et al. (2016) based on items regarding the workshop process, i.e. workshop efficiency and its results, i.e. workshop effectiveness using the data from the online-questionnaire (cf. Table 1). Moreover, we extracted the demographic attributes of the participants in the dimensions of gender, age, hierarchical level, and disciplines in which they work, calculated for each of these four dimensions the respective (workshop-specific) diversity ($\text{dimensionD} = 1 - \text{Sum}(a^2)$, with fraction a of each attribute measured; cf. Blau's Index (1977) according to Harrison & Klein, 2007), and summarized these four dimension diversities in the overall team diversity ($\text{TeamD} = \text{mean dimensionD}_i$). The following two calculation examples are to show the workshop-specific gender diversity: One workshop had four female participants, five male participants, and one participant did not disclose his/her gender, i.e. $\text{GenderD} = 1 - (\text{female } 0.4^2 + \text{male } 0.5^2 + \text{blank } 0.1^2) = 0.58$. However, we also had a workshop with only male participants, i.e. $\text{GenderD} = 1 - (\text{female } 0^2 + \text{male } 1^2 + \text{blank } 0^2) = 0$.

Table 1. Performance evaluation from the perspective of the workshop participants; cf. Heck et al. (2016).

Dimension	Items on Likert scale (1 'total disagree' - 6 'totally agree')
Process / Workshop Efficiency	The workshop duration was reasonable.
Results / Workshop Effectiveness	The workshop goals were clear and plausible.
	The workshop methodology fits its goals.
	You could develop concrete solutions for your challenges.

4. Results

The results are presented in two parts. The first part covers the raising, use, and evaluation of personas (Subsections 4.1 to 4.3.). To structure the first part, we map Pruitt and Adlin's (2006) persona life cycle on to the three ideation workshop phases. By doing so, we are able to compare and contrast the development and use of assumption-based personas during the ideation workshops with the traditional, more

research-intensive approach. The first workshop phase, “*identifying the right questions*”, covers the first and second persona life cycle phases “*family planning*” and “*conception and gestation*”. There is no equivalent for Pruitt and Adlin's (2006) third lifecycle phase “*birth and maturation*” in the ideation workshops observed. The second workshop phase, “*identifying promising solutions*”, corresponds to the fourth lifecycle phase of “*adulthood*”. The final workshop phase, “*getting things done*”, meets the fifth lifecycle phase of “*lifetime achievement and retirement*”. Figure 1 provides an overview of the three workshop phases. Figure 2 highlights the corresponding workshop tasks to each of the three workshop phases, as well as their observed occurrence. By mapping out the various transition proportions among the workshops tasks, we are able to show the non-linear character of the workshop progress (cf. Figure 2).

The second part of the results points out the iterative persona development process, demonstrates the diversity of the participants, and details their evaluation of the persona methodology along with the correlations of these measures with the overall workshop performance (Subsections 4.4 and 4.5).

4.1 Raising personas for identifying the right questions

4.1.1 Family planning

Based on a business environment analysis (cf. Figure 3), the participants draw a stakeholder map (cf. Figure 4 on the left) and identify the three to five most relevant stakeholders (stakeholder clustering, cf. Figure 4 on the right) for further investigation. The stakeholder mapping and analysis is usually performed in tandems, i.e. teams of two participants, in 1-2 iterations (mean 1.25) of about 43 min. each. Either a stakeholder mapping or an explicit stakeholder analysis is the preceding task of the persona creation (cf. Figure 2). Following the user-centered approach, the participants

then elaborate on the key stakeholders by developing personas. At this stage of the workshop progress it already becomes apparent whether the emerging personas will represent (i) extreme users, i.e. whether they will be used for exploration of the problem and solution space, or (ii) mass market users, i.e. whether they will be used for the development of products/services/business models for exploitation.

The participants evaluate this approach throughout positively, as reflection statements such as *“the user perspective, that you empathize with the person and [you] develop solutions that really benefit this person”* (participant in workshop E) or *“what I have learned here is that the requirements are personified through the personas”* (participant in workshop A) demonstrate.

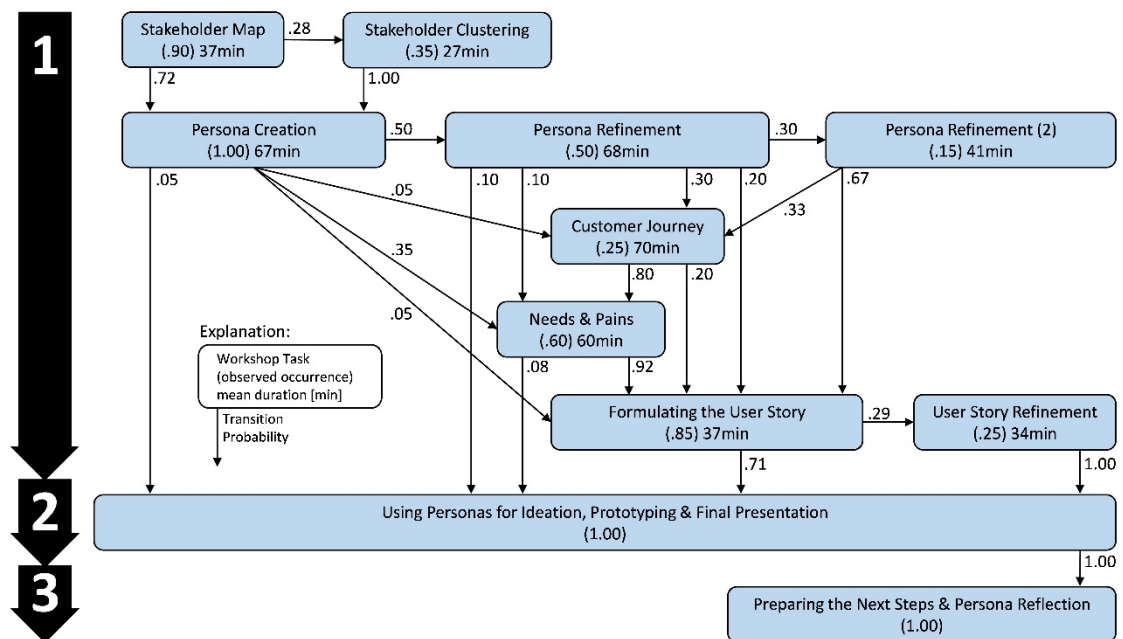


Figure 2. Task sequence on workshop level (according to the 3 workshop phases, indicated by black arrows on left). Each blue box represents one workshop task. The number in parentheses represents the fraction of workshops in which this task was conducted, i.e. “stakeholder map (.90)” means that 90% of the workshops conducted the task “stakeholder mapping”. The mean duration of each task is given in minutes. The number along each arrow which connects two tasks describes the observed transition proportion, i.e. the subsequent task of “stakeholder map” was in 28% the “stakeholder clustering” and in 72% “persona creation”.

4.1.2 Conception and gestation

The participants who now are organized in sub-teams of three to five use whiteboards or brown paper to draw their personas (cf. Figure 5 on the left). Then they define some basic, yet specific information about their persona, such as a name, demographics, character traits, preferences and wishes, etc. In the following iterations, the teams elaborate the personas' needs and pains (need-finding) and distil their insights in a short user story. Even though these personas are mostly assumption-based, some teams increased their validity by conducting some telephone interviews with real stakeholders (in cases of known extreme users) or a brief survey in the pedestrian zone in the close-by city center of Thun (in cases of mass market personas).

As these tasks aim at gaining empathy with ones persona, one team member was encouraged to present the interim result after each working session from the persona's point of view on stage ("*Hi, I'm Sven...*", cf. Figure 5 on the right). For some participants, it was very difficult to adopt the position of their persona and they kept presenting from the third-person perspective ("*This is Sven. He is...*"). These interim presentations allow for a "*reality check*" of the assumptions by the other sub-teams, whose feedback facilitated a deeper exploration of the problem space, i.e. the persona's needs and pains, and helped them to refine their insights. By working intensively on the completeness, coherence, depth, and appearance of the persona, it was sometimes perceived as an additional "team member".

On average, the teams spent 201 min. in up to 6 iterations (mean 3.60, SD 1.11) on the development of their 3-5 personas (mean 4.05), which involved the tasks of creating the personas, potentially refining it once or twice, analyzing its customer journey, defining its needs and pains, and formulating a concise user story, which is then used as an input for the upcoming ideation and prototyping activities.

The participants made both positive and negative reflection statements with regard to the persona conception and gestation. A positive example: *“The personas made an impression on many participants. On me, too. Why? Because those were our own personas. I have been in touch with personas several times in the past. However, I have always been introduced to personas that someone else developed. From a present-day perspective, I must say that it was difficult to empathize with those personas. Therefore, it never made sense to me. But [in this workshop] it started to make sense. I have seen how to develop them and to empathize with them. And this is great. And this is what I take home”* (participant in Workshop E). A negatively connoted statement was for example: *“We invested a lot of time into the persona definition. There is certainly more behind it, but I could not understand it. We invested a lot of time and, yes, eventually we focused on the persona, but we could have done that faster”* (participant in Workshop A). Notably, the participants of Workshop A invested only 147 min. in the conception of the persona which is remarkably less time than the average.



Figure 5: Creating a persona within a sub-team of 3-5 participants, and presenting the interim results to the whole team the during a presentation/feedback/discussion session.

4.2 Using personas for identifying promising solutions

4.2.1 Birth and maturation

In the persona life cycle described by Pruitt and Adlin (2006), this phase marks the transition from persona creation to persona usage. As the sub-teams that develop the personas continue to work with them, this transition is not necessary. In a few workshops, however, the team composition changed after the first workshop phase, “*identifying the right questions*”. But due to the iterative workshop approach, all participants had been introduced to and commented on all personas. Therefore, they were never actually faced with personas with which they were not familiar.

4.2.2 Adulthood

In adulthood, the personas guide the workshop participants through the ideation and prototyping activities in the second workshop phase. While Figure 6 (A) shows the final persona “Sven”, Figure 6 (B) shows the result from the first ideation activity that was directly performed on the persona. At the final presentation, one of the participants dressed as “Sven” and played the persona in a short role play to present the product that the team had developed (cf. Figure 6, C). However, the presence and influence of the personas during adulthood varied from one workshop to another. As indicated earlier, some of the personas became “active team members”, while others merely served as starting point for the second workshop phase, “*identifying promising solutions*”. In the first case, when the persona became an active team member, it constantly informed the design process, as for instance our example persona “Sven” did. In this case, the team who created the persona typically acted out the persona during the interim presentations. In consequence, the teams who provided feedback addressed the persona directly and provided their feedback from the persona’s point of view, too, for instance with the

applied feedback roles. In the second case, the personas faded gradually away or dropped out of the design process one by one. That typically happened when a team focused heavily on specific technical details of their new solution (product/service), and the personas became either obsolete or irrelevant for the design process. Sometimes, personas also “died” because of a lack of resources, i.e. after each presentation and feedback session, the teams made a situation-specific and conscious decision on which personas they wanted to focus in the following design process, i.e. the remaining workshop time. We also observed cases in which a particular persona and its identified needs became so important that the participants decided to work with two or even three sub-teams on solutions for this particular persona. Their other personas were simply dropped.

In total, only 31 of the 81 created personas survived the second workshop phase until the final presentation, which results in a survival rate of 38%. Even though the survival rate is not significantly correlated with the workshop performance, it was a topic in the reflections by the participants. Some participants positively acknowledged the help of the personas during the second phase: *“We had several characters and each one had different needs that were relevant for the application”* (participant in Workshop A) or *“All in all, it was very inspiring. The whole set-up with the three personas that we defined in the beginning. You always had to compare your ideas with these three guys. Really good”* (participant in Workshop K). Other participants regretted that the personas lost influence during adulthood, especially with regard to the effort that had been spent on their development: *“What I found odd, and I mentioned that before, is the immersion with the personas, but ignoring later on what actually defines them”* (participant in Workshop F) or *“I wonder whether our evaluations consequently referred to the*

personas. This suddenly got lost along the way. It is a pity that we made such a huge effort just to lose touch with the personas” (participant in Workshop H).

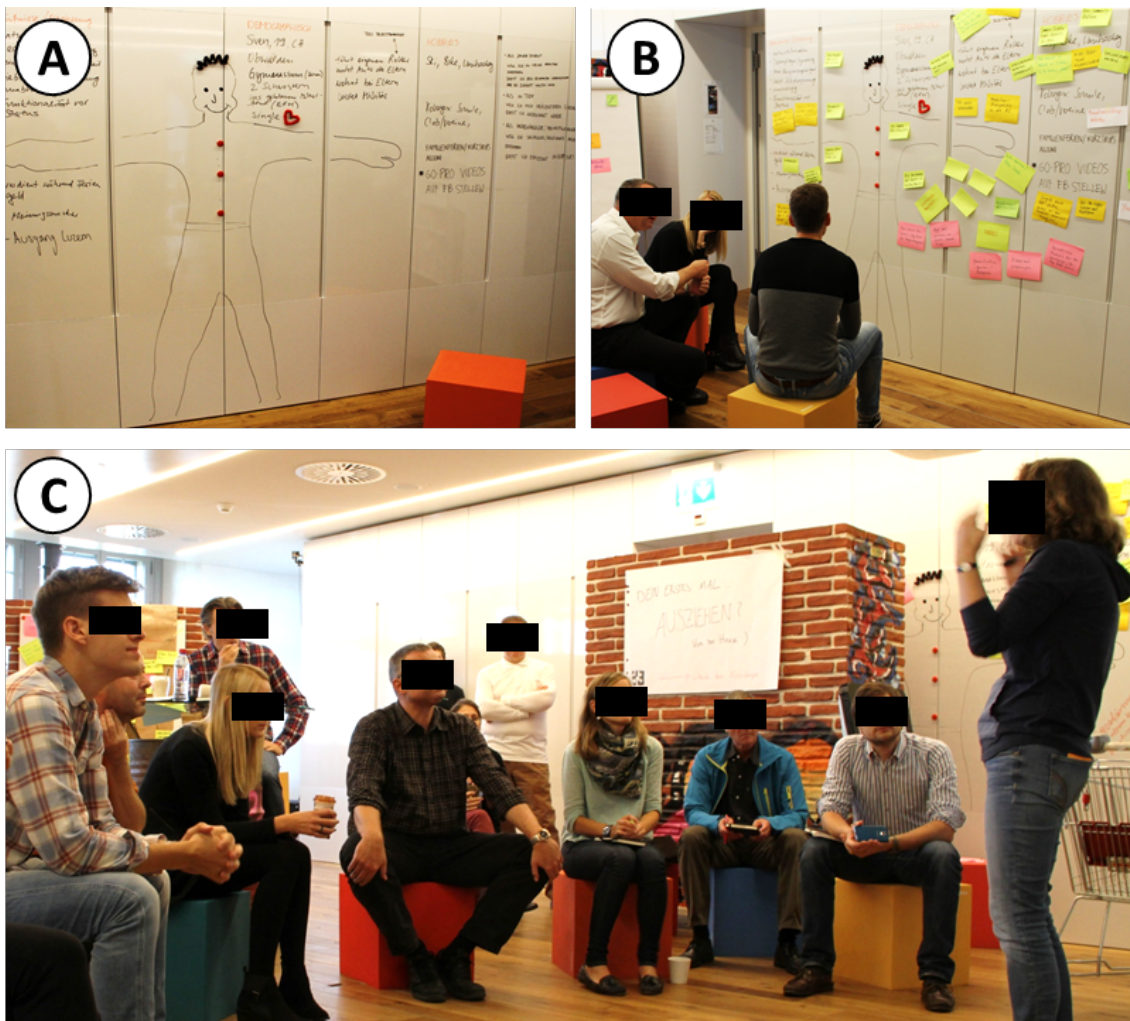


Figure 6: The life cycle of “Sven” (A) at the end of conception, (B) during ideation, and (C) in the final presentation.

4.3 Reflecting about personas and getting things done

4.3.1 Lifetime achievements and retirement

Aside from establishing a tangible project vision and the preparing of result transition into the company, this workshop phase involves the assessment of the workshop results. At the very end of their ideation workshops, the participants reflected on the workshop process and its outcomes. In 11 out of 20 workshops, the participants explicitly

mentioned the persona tool, or at least referred to the concept of user-centricity in general. We coded these statements according to the persona lifecycle phase that they addressed (cf. Figure 7). As Figure 7 shows, 78% of the statements were positively connoted and 22% negatively. One of the most valuable lifetime achievements of personas is when the participants learn how important user-centricity is for successful product development: *“What I certainly take home is the persona methodology. I think that this makes it easier for us to look at our work from a different perspective, the perspective from a potential user. Typically, we just take our own company perspective”* (participant in Workshop C). Another lesson is the fact that the persona method unfolds its full potential if the participants actively work with their persona, i.e. if the personas become “team members” in order for us to learn about their true benefit: *“I have been intrigued by what [the personas] Karsten, Anna, Florence and Eugene achieved due to the fact that they joined us. Through that I took an entirely new perspective myself. In the beginning, when you introduced the tool, I would not have expected what this causes”* (participant in workshop B). With hindsight, i.e. at the end of the workshop, the participants recognized the value of the tool, which is reflected in the entirely positive statements on the overall use of personas during the ideation workshops (cf. Figure 7).

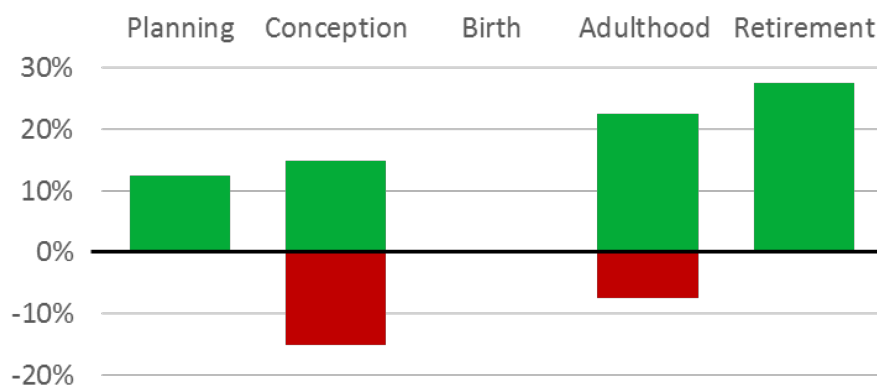


Figure 7. Distribution of the coded statements along the five phases of the persona life cycle by Pruitt and Adlin (2006). In total, 78% of the statements were positively connoted and 22% negatively.

4.4 Influence of the persona methodology on the overall workshop performance

In order to analyze the value of the persona tool in more detail, we correlated the number of iterations during the development of the personas (in Workshop Phase 1), the time spent on their development (also in Phase 1), their survival rate (at the end of Phase 2), the coded participants' reflections (at the end of Phase 3), as well as the overall workshop performance based on the answers in the online questionnaire (weeks after the workshop; cf. Table 2).

Whether and how participants commented on the persona methodology is not correlated to the general perception of the workshop performance. This finding is underlined by the fact that the participants provided critical feedback on the persona tool in workshops with a good performance, too. Moreover, there is no significant correlation between persona survival rate (.280) or the time spent on persona development (.053) and the workshop performance. Neither is there a significant correlation between the persona survival rate and the raising duration (.424). However, the number of iterations during persona development is significantly positively correlated with the time spent on persona development (.487*) and the persona survival rate (.451*). Furthermore, the number of iterations is significantly positively correlated with the overall workshop performance (.477*).

4.5 Diversity of the workshop participants

From online-survey responses of the participants, we know that 72% are male, 25% female, while 3% did not disclose their sex (GenderD: mean .32, SD .22). Their age is distributed as follows: 4% less than 25 years, 28% between 25 and 34 years, 31% between 35 and 44 years, 27% between 45 and 54 years, 6% between 55 and 64 years, whereas 3% did not disclose their age (AgeD: mean .62, SD .11). Regarding the

hierarchical positions of the participants within the companies, 6% were CEOs, 8% were members of the management board, 19% were active in the middle management, 24% were team leaders, 27% were functional specialists, 13% said they worked on other levels, and 4% did not disclose their hierarchical position (HierarchyD: mean .68, SD .11). Moreover, they worked in the following company departments, functions and disciplines: 28% R&D, 15% sales, 6% administration, 6% production, 3% procurement, 1% finance, and 35% in “other areas”, such as project management, after sales, marketing, technical consulting, human resources, services, analytics, innovation management, corporate development, etc., while the rest did not disclose the disciplines in which they worked (DisciplineD: mean .66, SD .09). However, the resulting team diversity TeamD does not significantly correlate with any of the persona-related workshop process and performance measures stated above (cf. Table 2).

Table 2. Pearson correlations of number of raising iterations, raising duration, survival rate, coded reflection statements, overall workshop performance, and team diversity, incl. Mean and (SD), * significant at $p < .05$; 2-tailed; cf. Heck (2017).

	Raising#	RaisingD	SurvivalRate	Reflection	Performance	TeamD	Mean	(SD)
Raising#	1						4.85	(1.04)
RaisingD	.487*	1					245.5	(71.5)
SurvivalRate	.451*	.424	1				.38	(.32)
Reflection	.230	.171	.138	1			2.55	(.69)
Performance	.477*	.053	.280	.138	1		5.12	(.26)
TeamD	.015	-.069	.369	-.222	-.187	1	.57	(.07)

5. Discussion

Despite the facts that the teams spent little time on the development of their personas and that the personas are based on assumptions and experience rather than extensive user research, the persona methodology can be successfully applied as a design tool in short-term ideation workshops. In our analysis, we focused first on the persona

development in an iterative process with several work, presentation, feedback and reflection cycles (up to six iterations), that were conducted by diverse teams consisting of people with different expertise and experiences. Second, we observed different patterns of how the personas were used during the workshops.

5.1 Developing personas in short-term ideation workshops

The persona development process in ideation workshops covered the same steps as those described in the persona life cycle by Pruitt and Adlin (2006). The only exception is the *birth and maturation* phase, as the workshop participants who develop a persona typically use it. This omission seems to be a true advantage over the difficulties that other research identified when personas were transferred from a persona-creating to a persona-using team (e.g. Blomquist & Arvola, 2002; Pruitt & Grudin, 2003), as it is necessary for a design team to see the relationship between the data and the emerging persona in order to believe in the value of the tool (Matthews et al., 2012).

Furthermore, a notable difference exists in the time spent on their development. The teams that we observed just spent a few hours (mean 201 min., SD 67 min.) on the developing of their personas. Compared to the 1-2 weeks for real data-driven personas or at least one full day for assumption-based personas (Pruitt & Adlin, 2006), this seems to be insufficient at first glance. However, we were able to identify a measure that correlates with a successful persona development and application in short-term ideation workshops.

The workshop approach with multiple iterations of working and presentation phases with feedback and discussion sessions offers several opportunities for “reality checks” and leads to further refinements and improvements of the created personas. Our results show that the different sub-teams present their personas up to 6 times (mean 3.60, SD 1.11) and receive feedback from the other sub-teams. Moreover, the results

show that an increasing number of persona-raising iterations is positively and significantly correlated with workshop performance (0.477*), while just spending more time on persona development (raising duration) does not correlate with workshop performance (0.053). However, with our research design we were not able to entirely rule out potential background variables such as the team's general commitment, its ability to provide and receive feedback, or the company-specific design challenges that influence both persona-raising iterations and workshop performance.

The intention of staffing the workshops with diverse participants was to bring in a broad variety of experience and expertise. This should ensure the development of not only detailed, but first and foremost realistic personas. In addition to the 3-5 participants who actually created a persona, another 9-12 workshop participants validated them. These "reality checks" reduce the risk of inventing unnecessary details or relying too heavily on a "gut feeling" (Jacobs et al., 2008) and therefore have an effect similar to that of more extensive user research. We considered the participants' diversity in gender, age, hierarchical level, and working discipline, and we found no significant correlations between the resulting team's diversity and the workshops' process and performance measures. While this might be inconsistent with the mainstream belief that "diversity matters", it corroborates the recent findings by Tekleab et al. (2016) where neither the diversity of gender, race, age, or functional diversity significantly correlate with team performance. Moreover, the workshops lasted only 2.5 days, which might be too short for the participants to adjust to different mind sets, personalities, and mental models from other professional educations.

5.2 Working with personas in short-term ideation workshops

Our results indicate that there exist two rather different usage patterns of personas, namely personas as a reference point and personas as a starting point. In the first case,

when personas are used as reference point, they become active members of the design team. The personas are constantly used to evaluate the ideas and prototypes with regard to their needs and pains, e.g. by acting out the targeted use-cases of the new products/services during the interim presentations, and/or by applying the tangible feedback roles (e.g. the goggles symbolising the user perspective) after these presentations in the feedback and discussion sessions. As described above, this persona usage pattern is reflected by positively connoted statements regarding the persona “adulthood” (cf. Subsection 4.2.2). In the second case, when personas are used as a starting point, they only support the framing and refinement of the problem before the actual ideation and prototyping activities in the second workshop phase. This pattern occurs, for example, when the team decides to drop one of the personas in favor of focusing its resources on the remaining personas/promising solutions. This is typically an informed, i.e. with the best knowledge at that point of time, and consciously taken decision in the fuzzy front end of a product development process. This pattern also occurs when the personas are forgotten during the ideation and prototyping phase, e.g. when the “persona-owning” sub-team starts to focus too heavily on specific aspects of their solutions, such as technical details. Interestingly, these situations were reflected by negatively connoted statements regarding the persona “adulthood” with hindsight (cf. Subsection 4.2.2). Towards the end of the workshop, the participants regretted that they lost touch with their personas. Either, because they put their effort in developing the personas without perceiving a direct benefit from having done so, i.e. they wasted time and resources. Or, because with hindsight they see the value of the persona methodology whereas they had not seized the opportunity to consistently adopt this user-centered design approach. During ideation and prototyping, however, they did not even realize that they had lost sight of the potential users’ needs and pains – something

that happens all too often in new product development and design.

Whether the personas survived until the final presentation in the second workshop phase or whether they got lost during the workshop does not have a significant correlation with the overall success of the workshops (cf. Table 2). Neither of the usage patterns seems to have a particularly positive or negative impact on the evaluation of the workshops. It might depend on the challenges faced by the companies, the situations of the markets (B2B or B2C), or the forthcoming products or services how important and applicable the approach of user-centricity is in general, and the application of personas in particular. However, the iterative approach again and again provides the chance to critically reflect on the persona application. If the product design is heading in the “right” direction, i.e. it implicitly addresses user needs, it might be less important to apply personas “explicitly”, for instance by acting them out in role plays, in the development process. Moreover, the sorting out of personas can be the result of a resource-efficient process which, in turn, would be desirable in an industrial context. Thus, it is possible to achieve convincing workshop results with either approach, using personas as a reference point or using them as a starting point only.

6. Conclusion

In this paper, we investigated the question of whether the persona methodology is a valuable design tool to promote user centricity during short-term ideation workshops in the early development phase of new products, services, and business models.

With an empirical approach, we identified an iterative workshop approach which allowed for frequent reality checks as a valuable means in the persona development process that may compensate for the limited amount of time available for user research during short-term ideation workshops. Moreover, rather diversely staffed design teams were considered to bring in a broad range of expertise and experiences. In addition, our

study revealed two varying persona usage patterns, namely personas used as a reference point versus personas used as a starting point.

The following aspects were beyond the scope of this research. First, we did not collect the detailed evidence necessary to reveal the interplay between the personas and the ideas that emerge during the workshops. Such insights would allow to better tailor the persona methodology to the workshop challenges that range from end-user-oriented service developments in B2C markets to high-tech product developments in B2B markets. Second, a closer look at the challenges and questions that arise during the creation of assumption personas might help to improve the persona methodology by providing helpful templates or giving homework upfront. Third, potential background variables regarding team composition and diversity, and the scope and complexity of the workshop challenges could be taken into consideration.

Future research is needed to investigate the advantages and disadvantages of the different persona usage-patterns, as we did not find any evidence of superiority of one pattern over the other with regard to overall workshop performance. In general, these observations raise the question of whether the concepts of extreme user personas and mass market personas is somehow linked to these two patterns. Do for example extreme user personas direct the ideation and prototyping towards more technology-oriented solutions, while mass market personas provoke more obvious solutions that are closer to actual offerings? While further research will address such detailed questions, this study builds a strong case for promoting user-centricity by working with personas in short-term ideation workshops.

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