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Persona's Role in the Design of Future Technologies by Academics and Practitioners

Parisa Saadati[1][0000-0002-0525-4654], José Abdelnour-Nocera[1,2][0000-0001-7935-7368] and Torkil Clemmensen[3] [0000-0002-0934-2336]

[1] University of West London, UK
parisa.saadati@uwl.ac.uk,abdejos@uwl.ac.uk
[2] ITI/Larsys Portugal
[3]Copenhagen Business School
tc.digi@cbs.dk

Abstract. Automation and the introduction of Industry 4.0 interactive technologies have imposed novel challenges and burdens on academics and industrial practitioners. Developing systems for future workplaces need sufficient knowledge and understanding of the trends and technological developments and their viability from both industry and academic experts before introducing the general population. Utilizing co-design ideation workshops supported by various design tools can provide better ideation for designing future scenarios. We conducted a qualitative study to analyze academics' and industrial practitioners' points of view on persona as a design tool during a conference workshop. These participants empirically test the co-creation of personas and find conceptual differences between the groups in their tool use. We used pre and post-workshop surveys and workshop transcripts to code and clustered our findings. The conclusion is that the differences in academics' and industrial practitioners' perspectives and use of design tools for ideation are substantial but combined in a team can lead to designing positive experiences in future workplaces.

Keywords: Future technologies, Personas, Design, Academics, Practitioners.

1   Introduction

Automation and the introduction of Industry 4.0 interactive technologies in industrial work systems have brought new ambiguities in the challenges and burdens on interactive systems designers. The analysis presented in this article has been developed to elicit different perspectives from academics and industry practitioners in understanding the nature and influence of using personas as a design tool in professional design work for future technologies. Industry practitioners seldom use tools [1] validated by academics [2]. Instead, they use a collection of their own tools, methods, and systems to externalize their ideas [3]. Industry practitioners may use material with qualities that challenge their idea's accurate representation and externalization [4]. In comparison, academics create more insights on selecting and evaluating design ideas as fundamental skills. In

practice, the success of the industry practitioners is based on experience rather than theoretical knowledge [2].

Using tangible design tools can establish a shared 'language' through physical form when verbal communication fails due to professional terminology and misalignments between different professional working cultures [1, 5, 6]. Using these design tools is often developed on a trial-and-error basis, resulting in low engagement, trust, and interaction with the participating stakeholders [1]. On the other hand, there are different views on using these design tools among academics and industry practitioners. Using these design tools enables innovation and success in designing interaction designs [2]. Personas in co-design projects have begun to include users and others in either persona inceptions or assemblies or deployment. Personas in co-design are typically used as objects of conversation in design and validation [7]. In this paper, we ask the research question: *What are the main differences in academics' and industrial practitioners' views on common design tools for ideation?* We empirically test the co-creation of personas and find conceptual differences between the groups in their tool use.

2 Workshop and Methods

We investigated a selection of design tools with particular attention to personas for co-designing [8] workshops for future scenarios. The selection criteria for these tools are based on suitability with the work domains of the designer, namely Industry 4.0, and automation, and convenience for the type, space, and duration of the workshops. To gather this input, we conducted a 5-hour online workshop in one of the International Conferences on Co-Designing Personas for User Experience and Engagement in Automation. Consistent with the goal of the workshop, participants discussed:

- A more robust understanding of how design tools can be used by practitioners and academics to ideate and co-design emergent future technologies.
- Presenting different views on using idea management workshops as a fundamental practice for future scenarios for industry practitioners and academics.

The participants in this workshop were 3 industry practitioners from different companies, 1 doctoral student, 3 active researchers, and 1 post-doctorate researcher. All participants were either from an HCI background or were knowledgeable as an active working in this discipline. All participants had experience in developing and utilizing personas in the research or real scenarios. The first author of this paper served as the workshop facilitator. We employed the Nominal Group Technique [9] for data collection during the workshop. This method is a structured method for group brainstorming that encourages contribution from everyone and quicker decision-making on the relative important issue, problem, or solutions.

The workshop was unfolded as follows: (1) most participants presented the findings of their contribution, while others could ask questions and discuss their opinion on utilizing personas in the design process; (2) the facilitator shared a personas template [10] and invited the participants to co-design two personas for a defined scenario while raising any issues they considered relevant; (3) the persona template allowed the participant

to share and cluster their ideas under each relevant heading and voted on new features; (4) finally, we clustered similar insights/findings under the initial categories presented in Tables 1, 2 and 3.

3   Workshop Result

In **Error! Reference source not found.**, we summarize the observation, workshop survey, recorded discussion, and findings related to use and popularity of persona based on three criteria: how both types of academics and industry practitioners used the tools, how they valued the design tools and how the design tool is applicable is in their fields.

Table 1. Main differences between the academics and industry practitioners' point of view on using Personas as a common design tool.

	How designers used the tool	Value	Applicability of the design tool
Industry practitioners	To generate assumption-based personas based on field observations or design within the operation team.	Fast spreading, valuable and easy tool to use before the design process or during the design iterations. Also applicable for testing the systems.	Personas provide narratives for different types of users based on clusters of behaviors for design inspiration.
Academics	To generate both data-driven and assumption-based personas. They are preferably using data-driven personas.	Can provide insights by capturing the different behaviors without expressing a defined personality or socio-demographics.	Persona can be used alongside other user stories and user scenarios to understand users' final designs better.

In **Table 2**, participants' disagreements were grouped and outlined from the transcripts under the initial categories we have created. We also added the participants' insights from the post-workshop survey to this table.

Table 2. Academics and industry practitioners' disagreements on the designing personas.

Academics	Industry practitioners
Data driven persona vs proto personas	
Incorrect practices on personas by industry. 3 votes	Proto personas and reverse engineering as a common practice. 4 votes
Helpfulness of personas in designing future scenarios	
Co-designing for future scenarios better than the current ones. 6 votes	Not easy to create personas for new segments. 2 votes
The number of personas to design	
Businesses should prioritize the number of personas. 3 votes	No particular number to follow; the team will decide on this number. 4 votes
Type of data collection for personas	

Data for personas can come from different sources and forms. (Various votes and ideas)	Using segmentation in busy domains is impossible, but alternative sources are available. (Agreement on some of the alternative sources)

Table 3. Academics and industry practitioners' agreements on the designing personas.

Insights agreed
Personas can be used in iterative design and for testing the systems.
A.I. personas should consider future scenarios, specifically for technologies with livelihood about their jobs and work alongside the human worker (e.g., Robots, A.I. engines).
Photo personas can transfer pre-conceptions about the users to the developers, or they can touch cultural sensitivity.
Data collection is not always accessible, but having a context, situation, obstacles, and a scenario is essential for co-designing personas.
A shared, engaging environment that people can design together is important for co-designing the personas and increasing practicable personas.

4   Conclusion

We explored empirical differences in academics' and industry practitioners' perspectives and the use of persona as a design tool for ideation of future scenarios. To do this, we analysed the collected data from a conference co-design workshop for future scenarios in different platforms and environments. Our findings support other studies findings of the dissimilar views between academics and industry practitioners' for idea generation process and design tools [2].

Our analysis indicated that while these two groups may, on the behavioural level, use common design tools in the same fashion, there are important differences between them in the thinking, ideation, prototyping, and overall design process. We can see how practitioners follow a 'reverse engineering' approach using design tools such as personas in terms of thinking and ideation. Similarly, as discussed in the workshop, industry practitioners will 'try' design tools (e.g. Proto-persona) with more confidence in the workshops once concrete details about scenarios and examples from other domains were presented. In contrast, academics' preferred initial approach was to think of the available data, principles, and conceptual models before engaging in ideation and applied design practice.

The identified differences may have implications for how to feed information to industry decision-makers. Specifically, we can argue that (1) there is a need to involve both academics and industry practitioners in co-design ideation workshops for emergent future systems, (2) design tools usage should be linked explicitly to specific contexts, scenarios, or situations to provide decision information relevant to the specific domain and environment, (3) using data-driven design tools based on the current trends and events may facilitate consensus about a design reality, and the facilitators of co-design ideation workshops have a critical role in leading the various designers and the overall session to an optimal outcome.

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