

Towards a Measurement Scale of Organizational Readiness for Personas

Joni Salminen

Qatar Computing Research Institute, Hamad Bin Khalifa University, Doha, Qatar; Turku School of Economics,
University of Turku, Turku, Finland, jsalminen@hbku.edu.qa

Lene Nielsen

Business IT, IT University, Copenhagen, Copenhagen, Denmark, lene@itu.dk

Soon-gyo Jung

Qatar Computing Research Institute, Hamad Bin Khalifa University, Doha, Qatar, sjung@hbku.edu.qa

Bernard J. Jansen

Qatar Computing Research Institute, Hamad Bin Khalifa University, Doha, Qatar, jjansen@acm.org

User studies have found persona application challenging. We argue that a potential reason for the challenges is the organization's readiness to apply personas. This research reports the on-going effort of developing the Persona Readiness Scale, a survey instrument for organizations' readiness for personas. The scale involves twenty-two items from seven dimensions: Need Readiness, Culture Readiness, Knowledge Readiness, Resource Readiness, Data and Systems Readiness, Capability Readiness, and Goal Readiness. Organizations can apply the current scale to evaluate their persona readiness but using the dimensions for statistical analyses requires further empirical validation.

CCS CONCEPTS • Human-centered computing~Human computer interaction (HCI)

Additional Keywords and Phrases: Persona adoption, Survey instrument, Personas, Psychometrics

1 INTRODUCTION

Personas are fictitious user types [11] that represent needs, wants, and circumstances of different user groups [33] that are considered important to be included in a design process by software developers, designers, marketers, or other stakeholders involved in user-centric decision making [37]. Prior research has shown that personas are widely applied in both research and industrial practices [1]. A recent review of the Human-Computer Interaction (HCI) literature has shown that personas are studied and deployed continuously [15].

Despite the importance and use of Persona in HCI, research has shown that there exists multiple organizational challenges, particularly with regards to adoption and active use of personas [14,17,30,41,43]. In the current work, we argue that many of these challenges can be attributed to organizations' lack of readiness in adopting personas in their everyday workflow. Readiness is used in this research as an overarching term to describe how prepared organizations are for persona adoption. It therefore, addresses the question: "Are we, as an organization, fully equipped to adopt personas?". According to our experience, despite its importance, this question is rarely asked. This aspect differs from the many maturity models in HCI (e.g. [47]) as it offers an insight into the readiness for starting with personas, rather than maturity of persona usage.

The non-adoption and inactive use of personas may relate to the lack of readiness in a broader organizational scheme of culture, capabilities, and clear articulation of goals and metrics for persona projects. To remedy this matter, the current work describes the development of a persona readiness scale (PRS) that can help organizations evaluate how equipped

they are in adopting personas. This scale can be used by organizations to evaluate how equipped they are to use and adopt personas in their everyday workflow.

While the question of readiness applies to all kinds of personas, including those created using qualitative [6] and quantitative [42] methods, if an organization decides to pursue algorithmically generated data-driven personas [2,3], this sets additional requirements for data science related competencies and resources. Yet, based on our encounters with practitioners, many organizations assume that since they have a social media account, they can automatically generate data-driven personas, which is an incorrect assumption. The organizations need more than that. From a holistic point of view, they need top management support, financial resources, a concrete plan to make use of personas, and so on. It is the measurement of these factors that the PRS addresses.

2 RELATED WORK

Criticism of personas is common and involves, e.g., the lack of methodological robustness, small sample sizes, lack of accuracy and precision, difficulty of evaluation, and unproven use cases and benefits [9,14,19,30,41,44]. More importantly, demonstrating real value from personas has proven to be difficult.

While there certainly can be methodological challenges in how personas are created [19], as well as challenges in terms of personas being vulnerable to overgeneralization and stereotypes [27,28], it is also true that personas are often not properly implemented [40,41]. For instance, Rönkkö et al. [41] report a case where applying personas to a software development project failed, specifically arguing that “*The problem was not with the user; socio-political factors in the branch in which the software was developed proved to be of much greater importance.*” (p. 112). This implies that organizational factors, such as participation, empowerment, and development of routines influence the success of persona projects [41]. This is also consistent with findings from empirical persona studies [14,30,36], which support the notion that organizational factors are highly influential for the eventual success or failure of persona projects. It may be that organizations, in some cases, are not ready for the adoption of personas.

Nielsen and Storgaard-Hansen [35] mention lack of organizational maturity as a root cause for persona failure. Seidelin et al. [48] present preliminary evidence of the association between persona success and UX maturity. Furthermore, one of the participants in a user study by Billestrup et al. [5] argues that the lack of maturity was blocking the organization’s adoption of personas: “*I would like to introduce personas in my current employment but the company needs to be at a higher level of maturity before it would make sense.*” (p. 256). This quotation contains insightful thinking in that personas require certain prerequisites from the organization. This is often ignored with the logic of “*Let’s create personas and then think what we can do with them.*”

The differences in persona readiness can possibly explain the divergent views in the literature, wherein some authors argue that personas are *not* applicable [41] while others argue they *are* applicable [35]. If organizational readiness for personas indeed varies and affects the successfulness of a project, the logical question is, how can we measure this readiness? In this effort, readiness and maturity models regarding UX and related applications [10,13,26,47] can offer inspiration for the development of a persona-specific readiness scale.

From this starting point, we begin our process for the development of the PRS, an instrument for measuring organizational readiness for persona adoption. The scale considers qualitative, quantitative, and mixed-method personas, with slight adaptation of questions for each.

3 METHODOLOGY

3.1 Strategy for Scale Development

We begin by investigating technology readiness and maturity scales from HCI, Information System Sciences, and general Computer Science literature so as to identify constructs and items (i.e., statements, questions) that researchers have developed to measure the readiness/maturity of an organization to adopt user-centered technologies, such as big data, analytics, UX tools, or applied machine learning. The premise is that the readiness for such technologies reflects the readiness for other customer-centric design methods, such as personas. As personas contain specific considerations (as discussed in Section 2.2), these scales may not be directly applicable to the context of personas, and a new scale developed specifically for personas is needed.

3.2 Literature Searches

Following this premise, the search strategy was based on first defining seed terms that are likely to result in finding relevant scales to inspire the development of our scale. These seed terms were as follows:

+ technology, analytics, “big data”, “artificial intelligence”, “data science”
+ readiness, maturity
+ scale, instruments

The concept of readiness is similar to that of maturity [5], which is why we used both terms. The seed terms were combined into separate search phrases (e.g., +technology +readiness +scale), resulting in 20 of such combinations. Searches with these phrases were then conducted in Google Scholar and Science Direct. In total, Google Scholar yielded 2,734,310 results for all the searches combined, while Science Direct yielded 158,582 results. We reviewed only the top results for each search phrase because of the vast number of articles located. The breakdown of the number of results per search and the number of screened results can be found in the Supplementary Material¹. In total, we screened 2,979 articles.

3.3 Screening Procedure

The screening was done by reviewing the abstract texts. Here, we looked for indications that the article develops a technological readiness or maturity scale. Based on the screening, 52 articles were identified as candidates. The corresponding full-text articles were then downloaded and reviewed for inclusion or exclusion. The exclusion criteria were:

- (1) is not a peer-reviewed full article (e.g., a thesis or workshop paper) (n=5 articles matching the criterion)
- (2) does not develop a scale for technology readiness or maturity (n=1)
- (3) does not focus on organizations (but, e.g., on users or consumers) (n=1)
- (4) does not contain actual measurement items (but a conceptual analysis or framework only) (n=32)
- (5) does not contain a full list of items (but only examples) (n=3)

In addition, two articles were not available to download, and one article contained a duplicate scale already included from the same authors. In total, 45 articles were excluded (87%), with seven articles (13%) remaining. The Supplementary Material shows the included and excluded articles, along with the reasons for exclusion.

¹ https://www.dropbox.com/s/me5il5v72pxd96e/supplementary%20material_chi%20lbr.xlsx?dl=0

3.4 Development of Constructs and Items

We then recorded each construct (i.e., the phenomenon that the study measures) and item (i.e., a statement or question for organizational decision makers) from the qualified seven articles in a spreadsheet. The identified constructs (n=42) and items (n=155) were used as inspiration to create the Persona Readiness Scale. This process included (a) removing redundant items that refer to the same idea and (b) modifying/rewriting the items so that their content is relevant for the concept of persona readiness. The inspirational constructs and items, along with their assessment of relevance for personas, can be seen in the Supplementary Material.

4 THE PERSONA READINESS SCALE

Table 1 shows the seven dimensions of the PRS. Each dimension is discussed in the following subsections.

Table 1: The dimensions of PRS. Dimensions (e) and (f) vary based on if the purpose is to measure qualitative or quantitative persona readiness, as these have specific requirements regarding data structures and skills needed [42].

Readiness dimension	Description
(a) Need readiness (NR)	Operational, tactical and strategic need for personas. Also an indicator to measure perceived usefulness, and importance of personas
(b) Culture readiness (CR)	Commitment to understand users, user-centricity in decision making, empathetic thinking
(c) Knowledge readiness (KR)	Basic understanding of the concept of personas and knowledge of their applications in real use cases
(d) Resource readiness (RR)	Resource availability: finances, people, training
(e) Data and systems readiness (DR)	<i>Quantitative</i> : active collection, volume, variability, veracity, velocity of user data. <i>Traditional</i> : focus groups, interview transcripts, analysis of pain points, needs, and wants
(f) Capability readiness (BR)	<i>Quantitative</i> : technical competence on algorithms, databases, and data science, expertise on user segmentation. <i>Qualitative</i> survey methods, qualitative research, such as ethnography or interviews
(g) Goal readiness (GR)	Measurement of performance, metrics defined, implementation plan with real use cases

4.1 Need Readiness (NR)

NR implies that the organization has an awareness of the benefits of personas, which is not always the case [17,30,36], as negative connotations may be associated with personas [44] and management support may be lacking [35]. These benefits are also accepted as feasible or lucrative for the organization; i.e., the feasibility of implementation [22]. In other words, there is a recognized “need” for personas. This perceived need for technology can vary depending on the organizational level [25]: senior management may perceive personas important for strategic decisions; middle management for tactical decisions; and operational staff (e.g., software developers, designers, and user support) for operational (daily) decisions. This dimension and its items are inspired by the Strategic Readiness (SR) [25], Managerial Acquiescence (MA) [39], and Urgency to Change (UC) [22] constructs in related literature.

4.2 Culture Readiness (CR)

CR expresses the commitment to understanding users (user-centric orientation [23]) in general and valuing empathy as part of the user-centric decision-making process. The importance of empathy arises from the persona literature [11,16,29,35], where the consensus is that empathy is, on the one hand, enhanced by personas and, on the other hand, results in more user-centric (and therefore better) design and product development choices. This dimension and its items are inspired by the Organizational Culture Readiness (OC) [22], Cultural Readiness (CL) [25], Culture (CU) [4], Customer Orientation (CO) [23], Market Orientation (MO) [54], and Developmental Culture (DC) [23] constructs in related literature.

4.3 Knowledge Readiness (KR)

KR involves basic understanding of the concept of personas among the team members and experience in applying personas for real use cases. The lack of experience can be detrimental for persona application [45,46], simply because questions, doubts, and lack of reference examples hinder a decision maker's ability to make use of personas in a meaningful way. Lack of clarity on what personas are is a prime proponent to making them appear abstract, impersonal, and untrustworthy to decision makers [30]. This dimension is inspired by the Cognitive readiness (CG) [25] and Employee Engagement (EE) [39] constructs in related literature.

4.4 Resource Readiness (RR)

RR relates to the availability of crucial resources for the persona project, including persona creation, evaluation, and implementation. This may be conducted by in-house personnel or an external consultancy. Lifecycle thinking of personas [1] is important, as organizations might not properly follow-through with persona application after their creation [40,41]. Moreover, the organization needs an appointed point of contact with the responsibility to ensure the success of the persona project, including their creation, application, and updating for the organization's needs. This person is sometimes characterized as "persona champion" [31,51]. Finally, training is provided for the team members not familiar with personas. This dimension and its items are inspired by the Resource Readiness (RR) [25], Employee Involvement (EI) [22], Partnership Readiness (PR) [25], Facilitating Conditions [50], and Training (TA) [4] constructs in related literature.

4.5 Data and Systems Readiness (DR)

DR refers to activities supporting the creation of high-quality personas [8,9]. This is characterized by the continuous collection of user data that corresponds with the big user data characteristics of volume, variability, veracity, and velocity [49]. The data has to satisfy the requirements of creating truthful and diverse persona sets that contain complete information to be helpful for team members' decision-making tasks (the "rounded persona" principle [34]). The exact data requirements depend on the applied persona creation approach [19]. For quantitative personas, this dimension and its items are inspired by the IT readiness (IT) [25], Technology compatibility (TC) [54], and Technological Orientation (TO) [23] constructs in related literature.

4.6 Capability Readiness (BR)

BR involves technical competence to operate systems and data required for data-driven persona generation [20]. This includes knowledge on algorithms, user data structures, databases, external data sources such as APIs [20,21], as well as sound understanding of user segmentation principles and how these relate to statistical techniques such as dimensionality reduction [18] that is often used for persona generation [2,3]. As with data, the exact required capabilities depend on the persona creation approach (qualitative, quantitative, or mixed [32]) applied. For quantitative personas, this dimension is inspired by Big Data Capability (BC) [23], Data Analysis Expertise (DA) [4], Analytical Skills (AS) [38], and IT & Data Skills (DS) [38] constructs.

4.7 Goal Readiness (GR)

GR refers to the tracking of performance outcomes. If personas are left unattended after their creation, the effort put into the project can easily become wasted [7,9]. Personas also need to support the achievement of the team's goals to make the team receptive to personas [40,48]. For these reasons, performance metrics (e.g., marketing outcomes, user satisfaction) are required to gauge the success of the persona project. The metrics should be aligned with an implementation plan (i.e.,

a list of campaigns/projects/activities/programs where personas are to be applied, along with a description of who and by whom), and tangible numerical goals (e.g., deploying personas will improve the surveyed user satisfaction by 15% within six months of the introduction of the finalized personas). This dimension is inspired by the Measurement System Readiness (MS) [22], Policy Orientation (PO) [54], and Communication and Policy Application (CP) [4] constructs.

4.8 Measurement Items

Table 2 shows the twenty-two items of the PRS. The scale interpretation is discussed thereafter.

Table 2: Items of the PRS. Items marked with [D] are optional for qualitative personas, whereas items marked with [T] are optional for quantitative personas. Items with either are required. Mixed-method personas [37] may utilize all statements.

Need	Culture	Knowledge	Resource	Data and system	Capability	Goal
• NR01: Our organization needs personas.						
• NR02: We consider personas important.						
• NR03: Personas would be useful for us.						
• NR04: We need personas now.						
• CR01: User understanding is crucial for us.						
• CR02: Empathy is required for understanding users.						
• KR01: Most of the people in our organization know what a persona is.						
• KR02: Most of the people in our organization have used personas in their work.						
• KR03: We know how to use personas.						
• RR01: We have a person in our organization who is strongly advocating for personas.						
• RR02: We have a dedicated budget for persona creation and implementation.						
• RR03: Training is available for team members not familiar with personas.						
• DR01: We actively collect user data. [D]						
• DR02: We have extensive user data, including behavioral and demographic information.						
• DR03: Our user data is frequently updated. [D]						
• DR04: Our user data is rich, including user interviews or written feedback. [T]						
• BR01: We have data science expertise. [D]						
• BR02: We have advanced know-how on user segmentation.						
• GR01: We have a plan for implementing personas after their creation.						
• GR02: We have quantitative goals for persona use.						
• GR03: We have clearly defined use cases for personas.						
• GR04: We have defined quantitative metrics to measure the results of persona use.						
Notes: We == our organization. ‘User’ can be replaced by ‘customer’.						

4.9 Interpreting the Scores

As stated, the PRS includes 22 statements. The implementation of PRS can be done using a standard Likert Scale, with options ranging from Strongly Disagree (1) to Strongly Agree (5). Given this, the maximum number of “points” an organization can achieve using the scale is $22 \times 5 = 110$. The minimum score, in turn, is $22 \times 1 = 22$. This leaves a range of $110 - 22 = 88$ points in between. Dividing these points evenly across three classes, the interpretation would be as follows:

- 22–51 points indicates **Low Persona Readiness**
- 52–81 points indicates **Mediocre Persona Readiness**
- 82–110 points indicates **High Persona Readiness**

Regarding future research, it would be highly interesting to investigate how many organizations fall into each category, and if indeed, as it is claimed in the literature [1,24], personas are broadly accepted in the industry.

In the following, we provide indicators that characterize the extreme cases of low and high persona readiness.

Organizations with low persona readiness:

- Do not perceive a need for personas. Do not consider personas important. Do not think personas would be useful.
- Do not think user understanding is crucial. Do not think empathy is needed for understanding users, defining requirements, and making product decisions.
- Do not understand the concept of personas. Do not have a clear picture of applying personas in real use cases.
- Do not have a “champion” for personas. Do not have a budget for persona creation and implementation. Do not provide training for team members about personas.
- Do not actively collect user data. Do not have much user data. The user data is dated. The user data is shallow.
- Do not have data science expertise. Do not have advanced user segmentation know-how.
- Do not have a plan for implementing personas after their creation. Do not have goals for persona use. Do not have clear use cases. Do not have defined quantitative metrics for goal attainment.

In turn, **organizations with high persona readiness:**

- Perceive a need for personas. Consider personas important. Think personas would be useful for them.
- Believe user understanding is crucial. Believe empathy is needed for understanding users, defining requirements, and making product decisions.
- Understand the concept of personas. Have a clear picture of applying personas in real use cases.
- Have a “champion” for personas. Have a budget for persona creation and implementation. Provide training for team members not familiar with personas.
- Actively collect user data. Have much user data, including behavioral and demographic information on the users. The user data is updated. The user data is rich, including user interviews or written feedback.
- Have data science expertise. Have advanced user segmentation know-how.
- Have a plan for implementing personas after their creation. Have quantitative goals for persona use. Have defined clear use cases. Have defined quantitative metrics for goal attainment.

5 DISCUSSION AND IMPLICATIONS

5.1 Theoretical Implications

Systematic analysis of persona adoption and active use is missing from the HCI literature, with major focus being on persona creation and application on isolated projects that, in many cases, report conflicting findings. Some prior studies report positive effects from persona use [6,35,44], while others report negative [30,40,41] or neutral [14] effects. Here, we proposed that organizational readiness could explain the conflicting findings. Thus, attention should be paid to organization-wide adoption of personas. According to this logic, the chances of success can be improved by assessing the persona readiness of the organization. We propose that this assessment should be carried out *before* moving to persona creation; so the steps of a persona project are:

Persona readiness assessment → (Persona readiness improvement) → Persona creation → Persona deployment → Persona monitoring

The constructs of PRS are based on several previous scales [4,22,25,39,54]. Our main contribution is adapting those constructs to the context of personas, which has not been done before.

5.2 Practical Implications

Knowing the current state of persona readiness of a given organization can help locate points of improvement. Addressing these points before even starting the persona creation can increase the likelihood of success for the persona project. As persona creation is costly, time-consuming, and resource-intensive [52,53], any activities that improve the prospect of success should be undertaken when pursuing persona projects.

An example: an organization ranks relatively high on other dimensions except for goal readiness. A further examination reveals that a plan for deployment and metrics (GR01, GR04) are especially low. The organization now directly knows to address these shortcomings to increase their persona readiness.

In particular, stakeholders such as **(a) design consultancies/service providers** offering persona services to organizations and **(b) organizations themselves** can use the PRS, along with the suggested scoring system, to gauge their persona readiness before launching costly projects. The scale can help identify specific areas of improvement (e.g., regarding current persona knowledge in the organization, adequacy of financial resources, and if there is a plan for the implementation, along with concrete goals and success metrics).

It is crucial to deploy the scale at multiple levels of the organization to avoid siloed thinking, a problem related to personas. Especially when personas are owned by marketing and used by design, then communication does not necessarily flow both ways [12]. To avoid such cases, the PRS should be deployed across departments. The PRS should also be deployed across different organizational positions involved with user-related decisions, and the top management (or the management level responsible for resource allocation) should complete the PRS as well. The number of people taking the PRS depends on the size of the organization. For a startup with a handful of people, there cannot be many respondents. For a large multinational, however, tens of people can take the survey depending on their involvement with user/customer decision making.

When multiple people in the organization complete the PRS, the scores will be assigned based on the average ratings given by all the respondents (see Section 4.9 for interpreting the scores).

Finally, increasing an organization's persona readiness is not self-evident. It may take considerable effort to improve the persona readiness and overcome elements of friction and resistance [48], such as perceiving personas as irrelevant tools [30], lacking management support, and creating a supportive culture [48].

5.3 Future Work

The next research step includes conducting a pilot study to (a) clarify that the statements in the PRS make sense to participants (clarity, content), and (b) test that the items load appropriately to the proposed dimensions (factor analysis). Once the reliability and validity of the scale have been established, it can be used to investigate persona readiness at multiple levels: how ready organizations are, *in general*, for personas; how readiness differs by *industry or domain of application*; and how ready *a specific organization* is to take on a persona project. However, the simple scoring scheme proposed in Section 4.9 can be used for scale deployment in its current form (assuming an equal importance of each dimension).

6 CONCLUSION

In this work, we proposed a persona readiness scale. The scale has seven dimensions and twenty-two items, and it accommodates qualitative, quantitative, and mixed-method personas. Organizations can administer the scale directly or with the help of UX design agencies. Future research is needed to empirically assess the validity and reliability of the scale.

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