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Structured Mapping of Obstacles in Persona Development: A Critical Analysis of Scientific Literature (2020–2025)

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Abstract

This article presents a structured mapping of methodological and contextual obstacles in persona development based on a qualitative content analysis of peer-reviewed scientific literature published between 2020 and 2025. Using Bardin's (2022) Content Analysis and the five-step model proposed by Jansen et al. (2022), this study critically identified and categorized the main obstacles reported in the literature at each stage of the persona creation process. Our analysis revealed four intersecting patterns: subjectivity and lack of methodological rigor; structural limitations related to time, cost, and resources; bias and exclusion of minority groups; and low organizational utility of the artifact. This study provides a critical, evidence-based diagnosis of the underlying causes of these obstacles and proposes a set of guidelines aimed at enhancing professional practice and advancing research on hybrid methodologies, bias mitigation, and the practical validation of personas.

Keywords

personas, methodological obstacles, bias, exclusion, persona validation, user-centered design

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Introduction

Personas have emerged as pivotal instruments across various domains, including design, user experience, communication, and marketing, as they humanize and provide detailed representations of target users. Despite their widespread adoption, practices of persona creation have faced recurring criticism regarding the personas' validity, representativeness, and organizational utility. This paper contends that the five-step model proposed by Jansen et al. (2022) for examining the three approaches to persona development—qualitative, quantitative, and mixed—offers an effective framework for identifying process obstacles, among other applications. However, no formal study based on these steps has systematically addressed these shortcomings, which has limited the development of solutions and weakened methodological rigor in applying the framework.

This study aimed to identify obstacles reported in the scientific literature (2020-2025) that hindered persona development at each stage of the process. To ensure methodological rigor, we applied Bardin's (2022) Content Analysis, emphasizing the systematic categorization of explicit obstacle-related statements to strengthen the validity of linking critiques to specific stages of the process.

To address this objective, the following section introduces the concepts, applications, and stages of persona development, drawing on Jansen et al.'s (2022) five-step model. The "Methods" section details the bibliographic research process and the use of Bardin's (2022) Content Analysis. The "Results" section presents the obstacles in each of the five stages. The discussion comprises two parts: the first analyzes intersecting patterns of methodological and structural shortcomings; the second investigates the theoretical and practical implications of the findings. The conclusion summarizes the main results, underscores the study's contributions, and recommends directions for future research.

Personas Concepts, Applications, and Development Stages

Historic Persona Creation

The concept of personas, historically rooted in theater and Jungian analytical psychology, gradually migrated to the fields of design and technology in the late twentieth century. Cooper (1999) was credited with formally systematizing persona use in software design by introducing the concept as a structured tool and consolidating it in works such as *The Inmates Are Running the Asylum*. Cooper used interviews to create representations of fictional users grounded in data and evidence. Scholars such as Pruitt and Adlin (2010), Pruitt and Grudin (2003), and Goodwin (2011) recognized Cooper as the principal architect of the approach of persona use in software and UX, while also noting earlier contributions that qualified his claim to original authorship.

Personas have become fictional yet plausible representations of groups of real users, constructed from qualitative and quantitative data to reveal relevant patterns of behavior, goals, and motivations (Cooper, 1999; Pruitt & Adlin, 2010; Goodwin, 2011). Rather than describing specific individuals, they have represented archetypes that aggregate common characteristics, enabling designers to draw meaningful inferences and guide decision-making throughout the design process.

Inspired by Jansen (2021), this study distinguishes between persona and persona profile. The persona is understood as a type, that is, an abstract category representing a group of users. The persona profile is understood as a token, namely a concrete instantiation of that category represented through individualized attributes such as name, age, goals, and interests.

Authors such as Pruitt and Grudin (2003) and Goodwin (2011) emphasized that personas derived their value from their capacity to serve as communicational and cognitive artifacts by aligning teams, fostering empathy, and inspiring user-centered solutions. However, Pruitt and Adlin (2010) warned against excessive simplification and argued that personas must be grounded in rigorous research to complement—not replace—other usability methodologies.

Contemporary debates have increasingly underscored the importance of methodological rigor in persona development, particularly in addressing the challenges of representativeness and validation as identified by Guan et al. (2023). The literature has emphasized the diversity of models and taxonomies, as well as persistent gaps in standardization, bias mitigation, and

practical application across sectors. In this context, scholars have advocated establishing guidelines for hybrid methods (qualitative and quantitative), strengthening integration between algorithmic and manual analyses, and expanding users' active involvement in the continuous validation of personas to ensure their utility and authenticity across diverse organizational and social settings.

The effectiveness of the persona method has depended directly on the rigor applied during its creation process. Consequently, systematizing its stages has become essential to researchers and practitioners in defining consistent, transparent, and replicable methodological procedures. Jansen, Salminen, and Jung (2022) presented a conceptual framework comprising five stages, widely regarded as one of the most comprehensive and up-to-date syntheses of the persona creation process. This framework outlined the artifact's lifecycle and clarified the differences, strengths, and limitations of the three predominant methodological approaches: qualitative, quantitative, and mixed.

Proposed Persona Creation

Unlike Cooper's pioneering proposals, the model developed by Jansen et al. (2022) provided a comparative and verifiable systematization, structuring the process into distinct phases and introducing objective criteria for methodological selection based on project context. This framework empowered practitioners to manage the diversity of available approaches, ensuring greater coherence and transparency in the application of the method.

The authors of this paper outlined the five stages in the persona creation process: defining the purpose, collecting data, analyzing data, identifying representative users, and constructing persona profiles.

In the first stage, the team defines the persona's purpose (framing purpose). This initial phase, common to all methodologies, aligns the project's strategic objectives with subsequent decisions, thereby ensuring coherence and maintaining focus throughout the process.

In the second stage, the team gathers data through qualitative, quantitative, or mixed methods. The qualitative approach (QUAL) employs manual methods such as interviews, focus groups, and questionnaires, typically with small samples. The resulting data are descriptive and unstructured (such as texts and transcripts). In contrast, the quantitative approach (QUANT) relies on structured data drawn from analytics platforms, large-scale online surveys, or customer relationship management (CRM) systems, with collection largely automated. The mixed approach (MIXED) combines both strategies, often starting with automated collection of quantitative data and subsequently enriching it with qualitative information.

In the third stage, the team analyzes the data. Within the qualitative approach, researchers examine demographic and behavioral characteristics using techniques such as grounded theory and open and axial coding to identify thematic patterns. In the quantitative approach, they apply statistical and computational methods, such as regression and clustering, to detect correlations and form groupings within large datasets. The mixed approach combines qualitative and quantitative techniques to align results and ensure robust inferences.

In the fourth stage, the team identifies representative user segments. Within the qualitative approach, researchers define these segments through data discursive interpretation. In the quantitative approach, algorithms generate segments, producing a predetermined number of relevant clusters. The mixed approach begins with algorithmically generated segments, which are subsequently refined using qualitative data to enhance interpretive validity and contextual sensitivity.

Finally, in the fifth stage, the team creates a set of persona profiles, transforming the segments into complete representations with attributes such as name, image, quotations, and interests. The result is a set of plausible persona profiles that synthesize behavioral patterns and inform design decisions.

Jansen et al.'s (2022) proposal was valuable because it accomplished the following: (a) guiding methodological choices in accordance with the project context; (b) offering a comprehensive synthesis for evaluating the strengths and limitations of different approaches; (c) establishing a practical framework that integrates objectives, resources, and analytical rigor; and (d) making

methodological trade-offs explicit, acknowledging that although the mixed approach has been theoretically more robust, it has also entailed greater operational investment and technical complexity.

Although comprehensive, for the authors of this paper, implementing the five stages demanded innovative strategies for integrating qualitative insights with statistical algorithms as well as additional time, funding, and technical expertise. Nevertheless, Jansen et al.'s (2022) framework served as an integrative and operationalizable reference, which the authors adopted as the analytical axis for systematically mapping critiques in recent scientific literature.

Methods

This study employed a qualitative bibliographic approach with a descriptive-analytical orientation, grounded in Bardin's (2022) Content Analysis. This approach enabled systematic mapping of critiques in the literature on obstacles affecting persona development. Our analysis targeted obstacles linked to Jansen et al.'s (2022) five steps, which served as the main categories: defining the purpose, collecting data, analyzing data, identifying representative users, and constructing persona profiles. Each stage presented distinct shortcomings, including strategic misalignment, representativeness gaps, interpretive subjectivity, omission of relevant segments, and reliance on stereotypes.

For the purposes of this study, an obstacle was defined as any explicit statement in the reviewed literature indicating a limitation, challenge, weakness, risk, bias, methodological deficiency, or practical difficulty associated with persona development. The term obstacle has been used broadly to encompass both methodological shortcomings attributable to development teams and contextual constraints inherent to the environments in which persona projects are conducted. The objective was not to quantify the prevalence of each issue nor to require cross-study corroboration before inclusion. Instead, each occurrence was treated as a valid unit of analysis and subsequently categorized according to Jansen et al.'s (2022) five-step model. Recurrence across studies was considered during the interpretative synthesis of patterns rather than as a criterion for initial inclusion.

The corpus consisted of peer-reviewed, fully accessible articles published between 2020 and 2025, which were selected for their relevance to persona construction, use, or critique in fields such as design, information systems, health, and education. We excluded texts lacking a clear methodological description, gray literature, books, dissertations, theses, duplicate records, studies outside the thematic scope, and studies with insufficient data. The search covered major databases, including Google™ Scholar™ and Scopus™, using strategic queries including terms such as "criticism," "limitations," "challenges," and "issues" to identify studies that critically examined the method. After screening, we selected 66 documents from Google Scholar and 50 from other sources, totaling 116 texts with relevant units for analysis.

Our analysis followed Bardin's three phases: pre-analysis, material exploration, and treatment of results. During the exploration phase, we extracted each critique verbatim from the texts and organized the critique into analytical tables to facilitate coding and comparison. In the final stage, we synthesized and compared the data, applied double peer validation to ensure consistent categorization, and identified recurring obstacle patterns, which are presented in the "Results" section.

Building on this framework, we organized the study's analysis into three stages. First, we mapped obstacles reported in the literature and aligned them with Jansen et al.'s (2022) five-step model. Next, we performed a cross-sectional analysis to detect recurring patterns across multiple stages of persona creation. Finally, we interpreted the findings and discussed theoretical and practical implications while offering recommendations for academic research and professional practice in user-centered design and product development.

Results

This section presents the findings from a systematic mapping of scientific literature published between 2020 and 2025. The obstacles reported in the literature were identified and categorized according to the five steps of persona development.

Defining Purpose (Objectives and Alignment)

Table 1 outlines the authors' findings of obstacles related to personas' strategic value, their organizational acceptance, and the precise definition of project scope and alignment.

Table 1. Obstacles in Stage 1: Defining Purpose

Central Obstacle	Detailed Description	References
Lack of engagement and trust	The absence of stakeholder and future user involvement in the creation process generated distrust in the artifact and resistance to its adoption.	Salminen et al. (2020); Jansen et al. (2022)
Misuse to justify decisions	The artifact was employed to reinforce existing team biases, justifying pre-existing or poor decisions, thereby deviating from its original purpose as an exploratory tool.	Kerr and Kelly (2024); Muzammel et al. (2025)
Misalignment and superficial focus	Designers tended to concentrate on design objectives and superficial problems, neglecting the core purpose of understanding the user. Algorithmic methodologies may have produced personas that fail to reflect intervention goals.	Wang, Chen, and Tang (2021); MacArthur et al. (2025, citing Jansen et al., 2021)
Limited scope/irrelevance	The design scope was often narrow, excluding non-human stakeholders (a limited anthropocentric view). Additionally, creating national personas was deemed irrelevant when targeting global markets.	Amarnath and Manjunath (2020); Talgorn and Ullerup (2023)
Senescence and validation obstacle	The persona lifecycle was neglected, allowing personas to persist even after they no longer accurately represent their target users. Criticism also included the lack of practical testing to verify their intended purpose.	Kerr and Kelly (2024); Husain et al. (2024)
Inexperience and methodological gaps	Novice developers struggled to apply the technique due to the variety of methodologies and insufficient knowledge to integrate complex approaches.	Karolita et al. (2023); Jansen et al. (2022); Teixeira and Zaina (2022)

Collecting Data

Table 2 maps the authors' findings of criticisms concerning data sample acquisition, selection, quality, quantity, representativeness, and engagement.

Table 2. Obstacles in Stage 2: Data Collection

Central Obstacle	Detailed Description	References
Time, cost, and resource constraints	The process was expensive and time-consuming, often resulting in the exclusion of relevant data from persona descriptions or the creation of generic personas due to the lack of primary data.	Karolita et al. (2023); Nielsen Madsen (2025); Wang, Luo, and Yang (2021); Jansen et al. (2022)
Sampling bias and representativeness	Overrepresentation of specific subgroups occurred (such as young secular Jewish students), or reliance on survey data introduced self-selection bias (only highly engaged users participated).	Xu and Lee (2020); Ben-Yehuda et al. (2021); Molléri and Marculescu (2025); Hsu et al. (2025)

Central Obstacle	Detailed Description	References
Use of secondary data and insufficiency	Frequent use of secondary rather than primary data, combined with generally small sample sizes, led to validation deficiencies. Persona construction may have failed due to insufficient or non-rigorous data.	Weinhadl et al. (2022); Wang et al. (2021); Bae et al. (2022)
Access barriers and exclusion	Difficulty accessing the target population (such as users with low literacy or former inmates) and language barriers in focus groups excluded participants.	Dias Canedo et al. (2024); Husain et al. (2024); Dominello et al. (2025, citing Knowles et al., 2018)
Obstacle in engagement and continuity	High turnover within the sample (such as recovering patients) created methodological flaws. Lack of user motivation hindered recruitment efforts.	Souza et al. (2022); Teka et al. (2017, citing Karolita et al., 2023)

Analyzing the Data

Table 3 maps the authors' findings of explicit criticisms related to data processing, interpretation, and synthesis, including the use of biases and algorithms.

Table 3. Obstacles in Stage 3: Data Analysis

Central Obstacle	Detailed Description	References
Lack of rigor and manual subjectivity	Manual aggregation techniques were criticized for their increasing lack of rigor and reliance on subjective judgments. Teams often replaced actual data with personal assumptions.	Korsgaard et al. (2020); Rasca et al. (2023); Weinhadl et al. (2022); Muzammel et al. (2025)
Algorithmic bias and error amplification	Pre-existing biases and errors in the data could have been amplified during persona creation. Bias was intrinsic to both qualitative and quantitative methodologies.	Lazik et al. (2025); Jansen et al. (2022); Dominello et al. (2025)
Difficulty in integration and inconsistency	Combining data collection and analysis techniques (mixed methods) complicated the interpretation of conflicting results, making it challenging to form a coherent and cohesive profile.	Nielsen et al. (2021); Jansen et al. (2022)
Methodological and algorithmic limitations	Algorithmic methods may have been excessively complex, or clustering algorithm selection may have occurred with minimal documented analysis. Uncritical use of LLMs introduced risks of inconsistency and inaccuracy.	MacArthur et al. (2025); Ditton et al. (2022); Koga (2023)
Obstacle of contextualization/interpretation	Purely quantitative analysis may have led teams to overlook relevant signals present only in qualitative contexts. Team confusion regarding focus and data interpretation hindered meaningful analysis.	Boyle et al. (2022); Dhaundiyal et al. (2020)

Identifying Representative Users

Table 4 presents the authors' findings of criticisms of the definition, grouping, and standardization of user segments, as well as the treatment of diversity and minority groups.

Table 4. Obstacles in Stage 4: Identification of Standard Users

Central Obstacle	Detailed Description	References
Manual subjectivity and inconsistency	Manual segmentation was subjective and led to different solutions among professionals (PDs). Teams may have subjectively prioritized a single behavioral dimension.	Korsgaard et al. (2020)
Exclusion of minorities and homogenization	Differences (racial or sexual) were often treated as outliers and removed to produce central users representing the majority, resulting in a homogeneous representation.	Lazik et al. (2025); Mikhlina and Saukkonen (2023); L. Tricco et al. (2018)
Omission of key segments	Teams may have initially failed to define relevant segments, such as omitting crucial stakeholders (like parents or family members of young users).	Ben-Yehuda et al. (2021)
Algorithmic limitations and overlap	Algorithmic methods may have failed to capture interesting outliers and risk, generating useless clusters. There was also a risk of overlap between user types and personas, indicating segmentation obstacles.	MacArthur et al. (2025); Dibaj et al. (2021); Korsgaard et al. (2020)
Legal and ethical constraints	Requirements for transparency, data privacy, and personal integrity (GDPR) created challenges in workforce grouping, potentially leading to uniformity and erosion of diversity.	Mikhlina and Saukkonen (2023)

Constructing Persona Profiles

Table 5 shows the authors' findings of explicit criticisms of the final persona artifact, including issues of quality, clarity, realism, usability, and bias.

Table 5. Obstacles in Stage 5: Persona Profile Creation

Central Obstacle	Detailed Description	References
Inconsistency and lack of realism/authenticity	Information within the profile (such as demographic data) may have conflicted. The final profile was often perceived by target users as inauthentic or unrealistic.	Salminen et al. (2020); Weinhadl et al. (2024); Adler et al. (2024)
Stereotypes, oversimplification, and idealization	Persona creation was often superficial or shallow, frequently based on stereotypes or corporate/design idealizations.	Lazik et al. (2025); Grillo and Polidoro (2023); Günes (2023); Weinhadl et al. (2024)
Usability and communication obstacle	Narrative or unstructured formats were inefficient for quick consumption, leading to misinterpretation. Including irrelevant details (such as hobbies or pets) distracted from core requirements.	Karolita et al. (2024); Teixeira and Zaina (2022)
Designer dependency and lack of rigor	Profile quality depended on the designer's skill and intuition, as no infallible methodology existed. Manual verification of names or traits for authenticity was costly at scale.	Kerr and Kelly (2024); Jung et al. (2021)

Recurring Patterns

The systematic and interpretative analysis of obstacles across the five steps of persona development—purpose, data collection, analysis, segmentation, and profile—drew on explicit critiques in the scientific literature published between 2020 and 2025. The literature revealed four intersecting patterns of shortcomings that compromised the validity, methodological rigor, and practical utility of the final artifact.

In summary, the recurring patterns were these:

- **subjectivity and the erosion of methodological rigor**
- **feasibility constraints and structural resource limitations**
- **biases, exclusion, and representativeness obstacles**
- **deficiencies in artifact utility and organizational adoption**

The following subsections examine each pattern through a cross-analysis of the previously mapped categories.

Subjectivity and the Crisis of Methodological Rigor

The compromise of methodological rigor emerged as the most consistent pattern, occurring primarily during data analysis and segmentation.

The first issue involved inherent subjectivity and inconsistency. Scholars such as Korsgaard et al. (2020) and Rasca et al. (2023) widely criticized manual techniques for aggregating and segmenting qualitative data because they lacked rigor and depended on subjective judgments. This lack of analytical rigor led to segmentation inconsistencies. The literature demonstrated that manual segmentation produced different solutions from one designer to another, depending on the specific methodological details (Korsgaard et al., 2020).

The second issue involved interpretative bias. Teams often substituted empirical data with personal assumptions (Muzammel et al., 2025), and the quality of the final profile frequently depended on the designer's skill and intuition rather than a definitive methodology (Kerr & Kelly, 2024). Scholars commonly regarded persona construction as subjective, informal, and lacking scientific rigor (Weinhadl et al., 2022). As this paper's section, "Construction of Persona Profiles," demonstrated, a dependence on designer intuition can undermine the authenticity and consistency of the resulting profiles.

The third issue involved complexity and inadequate preparedness. Teams' insufficient technical knowledge exacerbated the crisis of rigor (Karolita et al., 2023). Jansen et al. (2022) criticized the overwhelming diversity of methodologies and the limited understanding of how to integrate them, emphasizing the absence of consolidated guidelines for implementing hybrid methods. Even automated approaches lacked rigor in selecting clustering algorithms, with scant documented analysis of the rationale behind those selections (Ditton et al., 2022). This paper's section, "Implications for Researchers," reaffirms this methodological gap as a priority for future research.

Feasibility and Structural Resource Limitations

Organizational obstacles related to time, cost, and technical resources have been structural and have influenced the process from defining the purpose to collecting data.

The first barrier involved cost and time constraints. Researchers frequently reported persona construction as expensive and time-consuming (Karolita et al., 2023), which often resulted in the exclusion of relevant data from persona descriptions. Moreover, MacArthur et al. (2025) emphasized that critics viewed manual data collection methods as resource-intensive, making their application difficult in contexts with limited budgets.

The second obstacle involved insufficient data. Resource constraints restricted data collection, forcing reliance on secondary sources or small samples (Weinhadl et al., 2022). This limitation led to the development of ambiguous and superficial profiles, undermining the methodological potential of personas.

Another challenge arose from neglecting resource planning during the initial stage. The literature identified an obstacle in planning when defining the purpose, as evidenced by the fact that only 16% (N = 9) of the reviewed articles considered and documented resource allocation

(Guan et al., 2023). Scholars cited this omission as a key reason teams cannot apply the technique in practice, primarily due to insufficient time and financial resources.

Finally, the high cost of applying the artifact in practice has remained a significant barrier. High operational costs have weakened implementation feasibility, rendering the use of personas economically unsustainable in many organizational contexts (Cui et al., 2021). As noted in the section, "Creation of Persona Profiles," this constraint has further discouraged organizational adoption of the artifact, even when its utility was widely recognized.

Bias, Exclusion, and Threats to Representativeness

Biases and the exclusion of diversity constituted critical patterns that persisted from data collection through user segmentation, ultimately producing biased profiles.

The first issue involved homogenization in segmentation. During the identification of standard users, the methodology often failed to capture diversity, treating differences such as race or gender identity as outliers and removing them to construct central users who represent only the majority (Lazik et al., 2025). Tricco et al. (2018) demonstrated this exclusion by noting the insufficient representation of non-binary students, which resulted in personas confined to male and female categories. Dominello et al. (2025) underscored that segmentation has frequently overlooked socially significant factors, including religion, race and ethnicity, and socioeconomic status.

The second issue concerned sampling bias in data collection. This bias emerged when the sample disproportionately consisted of young adults from the United States (Xu & Lee, 2020) or when specific subgroups were overrepresented (Terlouw et al., 2022). Heavy reliance on survey data can also introduce self-selection bias, restricting representativeness to the most engaged users (Molléri & Marculescu, 2025). As discussed in the section, "Collecting Data," these limitations have compromised persona validity by constraining sample diversity.

The third issue involved stereotypes and idealization. Persona profiles have been highly vulnerable to team biases, as designers often projected their own expectations onto these profiles. Lazik et al. (2025) found that generated personas were stereotypical, depicting individuals as unrealistically successful and exclusively oriented toward corporate roles. Moreover, Günes (2023) criticized the process for producing idealized figures that reflect the aspirations of the system or the designer rather than users' realities. As noted in the section, "Construction of Persona Profiles," this idealization has undermined the authenticity of the final artifact. Research also revealed a pervasive neglect in the literature to address or mitigate stereotypes in persona construction (Guan et al., 2023).

Obstacles to Artifact Utility and Organizational Adoption

Usability obstacles and misalignment between personas and organizational workflows during the purpose-definition stage can weaken the artifact's effectiveness, fostering institutional distrust and accelerating methodological obsolescence.

The first issue involved a lack of actionability and trust. Obstacles in defining the persona's purpose were frequently associated with insufficient organizational involvement. Salminen et al. (2020), citing Long (2009), contended that non-participation in the creation process eroded organizational trust in personas. Consequently, the artifact was often perceived as neither actionable nor useful for guiding decisions, which fostered resistance to adoption (Salminen et al., 2020). As noted in the section, "Defining Purpose," the absence of stakeholder engagement weakened the artifact's legitimacy and hindered its integration into decision-making processes.

The second issue involved misuse and power dynamics. Insufficient methodological rigor, combined with alignment to internal interests, often resulted in the inappropriate use of the artifact. Kerr and Kelly (2024) argued that teams frequently employed personas to justify preexisting decisions and to reinforce established views rather than challenge decisions and views with empirical evidence. This instrumentalization can distort an artifact's exploratory purpose and undermine its critical role in the design process.

The third issue involved inefficiencies in communication format. The presentation of the persona profile can significantly compromise its utility. Critics argued that the narrative format was overly implicit, requiring additional time to interpret and increasing the risk of multiple interpretations or biases (Karolita et al., 2024). Moreover, including irrelevant details such as

hobbies or pets can distract from core development requirements (Teixeira & Zaina, 2022). As noted in the section "Construction of Persona Profiles," these presentation choices have diminished a profile's clarity and applicability, thereby hindering its adoption by multidisciplinary teams.

Finally, the issue of artifact senescence, which is the gradual obsolescence of an artifact over time, arose. A persona can outlive its usefulness and continue to be used even after it no longer accurately represents its target users. This obstacle to manage the persona's lifecycle can gradually undermine its practical purpose (Kerr & Kelly, 2024). The lack of formal mechanisms for continuous review and validation can accelerate the artifact's obsolescence, as discussed in the section, "Implications for Researchers."

Discussion: Theoretical and Practical Implications

The systematic mapping of obstacles in persona development ("Results" section) and the cross-sectional analysis of their patterns ("Recurring Patterns" section) yields direct implications for both academic research agendas and the professional practices of design and development teams.

Implications for Researchers

Recent literature (2020–2025) reveals significant gaps in which methodological rigor and analytical depth remain insufficient.

The first issue involves the development of rigorous hybrid methods. The primary gap stems from the lack of consensus on the optimal approach for persona construction: quantitative, qualitative, or mixed (Cobecka & Pieczka-Wgorkiewicz, 2025). Although integrating multiple methods is common practice, combining distinct techniques often creates challenges in interpreting conflicting results (Jansen et al., 2022), underscoring the imperative for clear guidelines and protocols to ensure cohesive integration of mixed data. As discussed in the section, "Subjectivity and the Crisis of Methodological Rigor," the absence of consolidated guidelines compromises analytical consistency and the replicability of studies.

The second issue involves rigor and transparency in both algorithmic and manual analysis. Developing tools and techniques that reduce subjectivity and strengthen rigor in manual analyses is essential (Korsgaard et al., 2020), and it will simultaneously improve transparency in algorithmic methods. Research should prioritize the systematic documentation and justification of clustering algorithm selection (Ditton et al., 2022), a process that is currently often delegated to individual designer discretion (Rasca et al., 2023). Most automated approaches rely on a narrow and poorly justified set of algorithms (Ditton et al., 2022). This methodological gap, as highlighted in the section, "Subjectivity and the Crisis of Methodological Rigor," underscores the critical importance of protocols that guide algorithm selection and provide robust technical justification for computational methods.

The third issue concerns the demand to address bias and stereotyping. There is a pervasive obstacle to account for the risks associated with stereotyping. More than half of the reviewed articles (59%) omitted any discussion of stereotypes or assessment of the social impact of personas (Guan et al., 2023). Future research agendas should prioritize actively mitigating homogenization caused by segmentation (Lazik et al., 2025) and developing methods that capture diversity, including critical social factors such as religion, race and ethnicity, and socioeconomic status, which remain basically underrepresented (Dominello et al., 2025). As noted in the section, "Bias, Exclusion, and Threats to Representativeness," the exclusion of minority groups and reliance on stereotypes compromise both the personas' representativeness and social legitimacy.

Finally, the fourth issue concerns the adoption and lifecycle of the artifact. The literature lacks studies examining the active involvement of users—such as patients—in persona creation, rather than merely treating them as sources of information (Souza et al., 2022). Future research should address the problem of artifact senescence (Kerr & Kelly, 2024) by proposing guidelines for managing the persona lifecycle to prevent their institutionalization as outdated representations disconnected from users' realities (Kerr & Kelly, 2024). This gap, as discussed in the section, "Obstacles to Artifact Utility and Organizational Adoption," underscores the importance of systematic practices for the ongoing updating and validation of personas.

Implications for Practitioners

The obstacles reveal recurring methodological and organizational challenges, highlighting critical areas where heightened vigilance and enhanced methodological rigor are essential to ensure the effectiveness of the approach.

The first issue is prioritizing rigor over convenience. Teams should resist the temptation to rely on insufficient or exclusively secondary data (Weinhadl et al., 2022), recognizing that such practices produce ambiguous and superficial personas and ultimately fail to actualize the methodological potential of the process (Weinhadl et al., 2022). As noted in the section, "Feasibility and Structural Resource Limitations," resource constraints do not justify methodological shortcuts that compromise artifact validity. It is equally essential to avoid using personas as tools to legitimize pre-existing decisions or as instruments to reinforce internal biases and power structures (Kerr & Kelly, 2024). This practice, highlighted in the section "Obstacles to Artifact Utility and Organizational Adoption," erodes the exploratory and critical role of personas in the design process.

The second issue involves ensuring representativeness from the data collection stage. Teams must prevent sampling bias toward specific subgroups (Xu & Lee, 2020) and avoid excluding participants due to language barriers or limited access to vulnerable populations (Dias Canedo et al., 2024). This commitment to inclusion should extend to the identification of standard users, ensuring that minority groups are neither removed nor homogenized (Lazik et al., 2025). As noted in the section, "Bias, Exclusion, and Threats to Representativeness," excluding diversity weakens both the legitimacy and the personas' real-world applicability.

The third issue concerns maximizing the usability and clarity of the persona profile. The profile should be structured for efficient consumption, avoiding lengthy and unstructured narrative formats that are inefficient and susceptible to misinterpretation and bias (Karolita et al., 2024). Irrelevant details such as hobbies or pets must be removed, as they distract from core development requirements (Teixeira & Zaina, 2022). As noted in the section "Obstacles to Artifact Utility and Organizational Adoption," clarity and conciseness in the profile are critical factors for its adoption by multidisciplinary teams.

Finally, designers must avoid projecting their own expectations onto the persona profile. Practitioners should remain alert to the risk that the final profile reflects an idealized individual shaped by system or designer assumptions rather than the reality of the target user (Günes, 2023). The profile should be validated with real users to ensure authenticity and representativeness (Weinhadl et al., 2024). This practical validation is frequently neglected, as noted in the section, "Obstacle to Artifact Utility and Organizational Adoption," but is essential for safeguarding the artifact's credibility and utility.

Final Considerations

This study mapped documented critiques of obstacles affecting persona development at each stage of the process, based on literature from 2020–2025 and Jansen et al.'s (2022) five-step model.

To address the research problem, we applied Bardin's (2022) Content Analysis to systematically identify and categorize the obstacles. Findings show that obstacles in persona development arise less from conceptual limitations of the artifact and more from methodological shortcomings, implementation challenges, resource constraints, and contextual conditions affecting the development process.

The synthesis reveals four key intersecting obstacles:

- **Subjectivity and the erosion of methodological rigor**: This issue manifests in the absence of objectivity in manual techniques, criticized by Korsgaard et al. (2020) and Rasca et al. (2023) for lacking rigor, and in the dependence on the designer's skill and intuition for data analysis and segmentation (Kerr & Kelly, 2024).
- **Feasibility constraints and structural resource limitations**: The process is frequently costly and time-consuming, often resulting in the exclusion of relevant data from persona descriptions (Karolita et al., 2023). Moreover, most studies fail to allocate

resources during the planning phase (Guan et al., 2023), which compromises the practical feasibility of applying the method.

- **Biases, exclusion, and representativeness obstacles**: These patterns result in the exclusion of minority groups and the erosion of diversity during the segmentation phase (Lazik et al., 2025). Scholars observe that relevant social factors, such as religion, race/ethnicity, and socioeconomic status, are often omitted from segmentation (Dominello et al., 2025), thereby undermining personas' representativeness and social legitimacy.
- **Deficiencies in artifact utility and organizational adoption**: This issue stems from profiles being perceived as lacking actionable value, fostering resistance to adoption (Salminen et al., 2020). It also involves the misuse of personas to justify pre-existing decisions and neglect of lifecycle management, often termed senescence (Kerr & Kelly, 2024). These gaps highlight the need for systematic, ongoing validation and updating of personas.

The primary contribution of this study is delivering a structured and verifiable mapping of the causes of obstacles in persona construction, organized by methodological steps (Jansen, 2022). By doing so, the study converts the method's generic critique into a practical and precise diagnostic framework, which holds significant potential to strengthen professional training and inform future research.

This study has two main limitations. First, its time frame (2020–2025) ensures data currency but excludes earlier critiques. Second, it omits gray literature such as books, theses, and dissertations in favor of peer-reviewed articles. This choice guarantees rigor, but it may limit contextual insights often found in industry reports and informal academic sources.

The findings indicate clear directions for future research:

- **Rigor and transparency**: Establishing definitive guidelines and protocols is urgent to ensure rigor in mixed-method integration and to address challenges in interpreting conflicting results (Nielsen et al., 2021; Jansen et al., 2022). As discussed in the section "Implications for Researchers," this urgency stems from the lack of methodological consensus.
- **Bias mitigation**: Future research should prioritize developing methods to actively mitigate bias and stereotypes, which is a gap evident in over half of the reviewed studies (Guan et al., 2023). As noted in the section, "Bias, Exclusion, and Threats to Representativeness," recurring issues such as homogenization and minority group exclusion demand systematic attention.
- **Practical validation**: Researchers must create metrics to assess the practical effectiveness of personas to verify whether they achieve their intended purpose and develop lifecycle management guidelines to prevent artifact senescence (Kerr & Kelly, 2024). This often-neglected issue (Husain et al., 2024) reinforces the recommendations in the section, "Implications for Practitioners," particularly the imperative to validate with real users.
- **Focus on co-creation**: Future studies should explore the active involvement of patients and users as personas' co-creators (Souza et al., 2022), rather than as passive information providers, which represents a significant gap in the literature. This participatory approach can enhance the personas' authenticity and social relevance, as discussed in the sections "Bias, Exclusion, and Threats to Representativeness" and "Implications for Researchers."

In sum, this study underscores the necessity of a critical, methodologically robust approach to persona development, demonstrating that effectiveness depends more on practical application than on theoretical design. By exposing recurring obstacles and proposing corrective guidelines, it advances both professional practice and academic research. Recognizing these weaknesses is essential to making personas genuinely useful, inclusive, and aligned with real user and organizational demands.

Tips for Usability Practitioners

1. Prioritize methodological rigor over convenience when planning persona projects. Avoid relying only on secondary or insufficient data, and resist using personas to justify pre-existing decisions so the artifact remains exploratory with a critical role in the design process.
2. Plan data collection to ensure representativeness and inclusion from the beginning. Design recruitment strategies that prevent sampling bias, that address language and access barriers, and that avoid excluding vulnerable or minority groups that will later be represented in persona profiles.
3. Structure data analysis and segmentation as explicit, documented procedures. Define how qualitative coding, quantitative algorithms, or mixed methods will be applied, and record the steps and choices made so that other practitioners can understand and replicate the segmentation work.
4. Design persona profiles for quick, unbiased use by multidisciplinary teams. Remove decorative or irrelevant details, favor concise formats over long narratives, and highlight goals, constraints, and contextual factors that directly support design and product decisions.
5. Validate persona profiles with real users and maintain an explicit lifecycle. Invite users and stakeholders to review whether personas feel authentic, revise any stereotyped or idealized traits, and schedule regular updates so that personas continue to reflect current user realities.

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