



Guiding AI-Assisted persona generation with Hofstede's cultural dimensions: a mixed-methods evaluation

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ABSTRACT

This study explores the potential of Generative Artificial Intelligence (GenAI) to create culturally diverse user personas that are representative and free from stereotypes. The research uses Hofstede's cultural dimensions, a framework that quantifies cultural differences across societies based on key values such as Power distance index, Individualism, Masculinity, Uncertainty avoidance, Long-term orientation, and Indulgence. These dimensions ensure that the generated personas reflect specific cultural traits, contributing to a deeper understanding of user needs in diverse cultural contexts. A mixed-methods approach was employed, combining qualitative narrative-driven persona creation with quantitative evaluation metrics assessed by User Experience/User Interface experts. The generated personas were evaluated using a framework that assessed credibility, coherence, and the accurate reflection of cultural dimensions, offering insights into stakeholder interactions with AI-generated personas. The findings suggest that GenAI can be a valuable tool for creating culturally diverse personas, contributing to investigating the potential and risks of using GenAI in design.

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1. Introduction

In a world where Artificial Intelligence (AI) technologies have become widely accessible, their influence is transforming nearly every domain from business (Soni et al. 2020), healthcare (Bajwa et al. 2021), higher-education (Crompton and Burke 2023) to Human-Computer Interaction (HCI) (Winograd 2006). Their rapid advancement has not only automated processes but also enhanced decision-making by identifying complex data patterns (Ghajargar et al. 2020). Within HCI design, AI plays a crucial role in optimising workflows, improving efficiency, and providing deeper insights into user behaviours, needs, and expectations. These capabilities have opened new possibilities for design innovation, particularly in areas that require a deep understanding of diverse user groups (Stige et al. 2023).

Among the most transformative developments of AI is Generative Artificial Intelligence (GenAI), a subset of AI capable of generating original content—ranging from text and audio to images and video—by leveraging advanced Machine Learning (ML) models (Mannuru et al. 2023; Mondal, Das, and Vrana 2023). Since the release of Chat Generative Pre-trained Transformer (ChatGPT) by OpenAI in late 2022, GenAI has demonstrated significant potential across multiple industries,

including education, business, and design (Fui-Hoon Nah et al. 2023). In the User Experience (UX) field, it has revolutionised processes such as data analysis, content creation, and image generation, enabling more personalised and adaptable workflows (Hsiao and Tang 2024; Takaffoli, Li, and Mäkelä 2024). However, one of the most intriguing applications of GenAI lies in its ability to generate user personas—a fundamental yet complex component of UX design.

Personas, i.e. fictional representations of target users, serve as valuable mental models that help designers empathise with end-users (Cooper 2004). They encapsulate behavioural patterns, motivations, and challenges within specific usage contexts, offering a structured approach to user segmentation. However, traditional persona development methods often suffer from limitations, particularly regarding cultural diversity and representation. Conventional approaches, whether qualitative or data-driven, risk reinforcing stereotypes due to biased assumptions (Turner and Turner 2011), limited sample sizes, or overly simplified characterisations of cultural differences (Cabrerero, Winschiers-Theophilus, and Abdellnour-Nocera 2016a; Hill et al. 2017; Ronkko 2005; Turner and Turner 2011). This issue is particularly problematic in globalised digital environments, where user

expectations, decision-making processes, and interactions with technology are deeply influenced by cultural backgrounds (I. Jensen et al. 2017).

Cultural diversity plays a pivotal role in UX design, as it directly impacts how users interpret, engage with, and trust digital products. Different cultural groups have distinct values, behaviours, and expectations, which can influence their interactions with technology. Hofstede's cultural dimensions theory (Hofstede 2010), one of the most widely used frameworks for understanding cultural variation, provides a structured approach to integrating cultural awareness into persona creation. This model categorises cultural differences along key dimensions, such as Individualism versus Collectivism, Power distance index, and Uncertainty avoidance, allowing for a more systematic representation of cross-cultural behaviours (Hofstede 2010). By applying Hofstede's framework, UX designers can create personas that go beyond national stereotypes and instead focus on the deeper cultural values that shape user interactions with digital products (Marcus and Gould 2000).

Despite the extensive scientific literature on persona development, there remains a significant research gap: little attention has been given to how structured cultural frameworks, such as Hofstede's dimensions, can be effectively integrated with GenAI to produce culturally diverse and non-stereotypical user personas.

Therefore, the experiment in the study involved using ChatGPT as the primary tool to generate culturally diverse user personas for 20 different countries, each characterised using Hofstede's cultural dimensions. The process started with a prompt that specified the role of a UX designer and detailed requirements such as demographic information, cultural traits, and narrative elements to ensure that each persona reflected country-specific behaviours and values. Once generated, the personas were evaluated by 10 UX/User Interface (UI) experts who assessed them based on a framework covering key metrics such as informativeness, believability, cultural correlation, stereotypicality, positivity, relatability, and consistency. This evaluation not only quantified the practical utility of the personas for design purposes but also examined whether the integration of Hofstede's framework helped mitigate cultural stereotypes while accurately capturing nuanced cultural traits.

This study aims to bridge this gap by exploring whether GenAI, exemplified by models like ChatGPT, can generate user personas that are not only representative of distinct cultural traits but also rich in narrative detail and free from overgeneralised stereotypes. We evaluate three questions and test them with pre-specified analyses:

- RQ1: *Fidelity.* Can a GenAI system, guided by Hofstede's cultural dimensions, generate user personas that faithfully capture cross-cultural traits rather than reproducing generic stereotypes?
- RQ2: *Utility.* Do AI-generated personas provide actionable insights, perceived credibility, and sufficient contextual richness to inform UX design decisions?
- RQ3: *Stereotype risk.* Does using GenAI reduce cultural stereotyping compared with traditional persona-creation practices, yielding more culturally nuanced representations?

By investigating these questions, the paper contributes to:

- C1: formalises a prompt-driven approach that aligns persona generation with Hofstede's dimensions;
- C2: empirically evaluates the fidelity and design utility of the generated personas;
- C3: analyses stereotyping risks and outlines safeguards for culturally sensitive use of GenAI;
- C4: distils practical guidelines for cross-cultural, user-centred design supported by GenAI.

The remainder of this article is structured as follows: in Section 2, an overview of GenAI, Large Language Models (LLMs), and Hofstede's cultural dimensions are provided, establishing the theoretical foundation for the study. In Section 3, existing literature on persona development methodologies and the role of cultural dimensions in design practices are reviewed. In Section 4, the study methods employed in this research are detailed, including the process of persona generation using ChatGPT and the integration of Hofstede's framework to ensure cultural relevance. In Section 5, the evaluation methodology for the study is discussed. Section 6 presents the study's findings, with quantitative and qualitative analyses of the generated personas based on expert evaluations. Finally, Section 7 critically examines the implications of the findings and addresses challenges such as stereotypicality. Conclusions and future work are described in Section 8.

2. Preliminaries

2.1. Generative AI and large language models

GenAI refers to AI systems capable of creating new and original content, including text, images, audio, and video, by using ML algorithms to identify underlying structures in existing data and generate outputs that mimic these learned patterns (Feuerriegel et al. 2024).

In the context of GenAI, LLMs are a subset of models specifically designed to work with language. A distinguishing characteristic is their ability to perform tasks through in-context learning (Min et al. 2022). This enables them to adapt and generate outputs for a wide range of tasks, such as creative writing (Gómez-Rodríguez and Williams 2023) and ideation (Girotra et al. 2023), solely based on the provided prompt. The integration of Large Language Models (LLMs) into UX design workflows marks a transformative shift in the field. The democratisation of AI tools fosters greater accessibility, allowing designers to handle complex tasks, such as analysing user data and prototyping AI-driven systems, without requiring specialised technical expertise (Ray 2023).

In UX design, persona creation is a vital step that involves synthesising research data into archetypal user representations to guide design decisions. Traditionally, this process has been resource-intensive, relying on manual analysis and interpretation of user data. However, LLMs can streamline this workflow by generating personas based on structured prompts that describe user demographics, behaviours, goals, and pain points (Salminen et al. 2024). By leveraging their ability to infer patterns from large datasets, LLMs produce diverse and contextually rich personas that can serve as a starting point for further refinement and validation.

This capability enables UX designers to rapidly explore persona variations and uncover insights that traditional methods may miss. LLM-generated personas can enhance inclusivity by addressing broader user scenarios and providing new perspectives for design teams to consider. These outputs are not intended to replace human judgment but to complement the designer's expertise by accelerating the initial stages of persona development.

Despite their potential, the integration of LLMs into UX workflows presents challenges, such as ethical considerations, that must be addressed. For instance, the introduction of biases in AI-generated personas require careful evaluation to ensure inclusivity and fairness (Chapman et al. 2008; McGinn and Kotamraju 2008; Salminen, Jansen, and Jung 2021). Additionally, the unpredictability of AI inferences and the complexity of system outputs necessitate new frameworks for evaluating and mitigating these issues.

2.2. Personas

Introduced initially to the HCI community by Cooper (Cooper 2003, 2004; Cooper, Reimann, and Cronin 2012; Cooper and Saffo 1999), personas are defined as

fictitious descriptions of the users' key traits, objectives, and intended outcomes, serving as hypothetical archetypes.

In UX design, personas are a widely used methodology that creates condensed user-profiles and usage scenarios to represent archetypical users of a product or system (ALjohani and Blustein 2015). In particular, they are created to assist designers in gaining a deeper understanding of users (Nielsen et al. 2015). The effectiveness of personas ultimately depends on their ability to evoke empathy (Miaskiewicz and Kozar 2011; Nielsen 2004), represent diverse user experiences, and guide design decisions without overgeneralising or misrepresenting user needs (Nielsen 2019). Their strengths lie in their ability to humanise design processes, enable empathic engagement, and facilitate communication among stakeholders (J. Grudin 2006; J. T. Grudin and Pruitt 2002). However, they have been criticised for issues such as lack of validation due to methodological weaknesses, inconsistency in their application, and their inherently subjective nature (Chapman and Milham 2006; Friess 2012; Nielsen 2019).

To compensate for these critical issues, the foundation of persona creation typically lies in data gathered from user studies. In literature, some studies (Faily and Flechais 2011; Salminen, Guan, Jung, et al. 2020) claim that personas must be grounded in empirical data. This approach for validating personas through established theories is common in HCI (Chapman et al. 2008; Salminen et al. 2017). Similarly, other research (Pruitt and Adlin 2006) claims that personas lack credibility if they are not associated with a methodological approach and a clear connection to reliable data. However, realistically, designers often tend to rely on their assumptions, prior experiences, and other available insights; therefore, the information used to create personas is not necessarily derived solely from user studies. This should not be considered a mistake: in fact, personas are not statistically representative but serve as contextual snapshots, offering a glimpse into user needs and behaviours (Nielsen 2011). Designers must be aware of personas' dynamic and context-specific nature, treating them as flexible tools rather than static representations. Moreover, striving to depict individuals and their contexts as dynamic—and, by extension, the personas themselves—can help mitigate the issue of generalisation that often arises with persona creation.

The study of persona creation encompasses a variety of methodologies, with distinct persona types arising from different criteria. Concerning the methodology and type of data, traditional qualitative personas, also known as 'persona profiles', rely on manually analysed

qualitative data such as interview notes or transcripts (Nielsen 2013). In contrast, mixed-method personas combine quantitative and qualitative data, integrating both automated and manual processes (Shin et al. 2024). The evolution of persona creation has shifted from qualitative approaches to increasingly automated, data-driven methods, as LLMs further advance this process by enabling tasks like cluster labelling and narrative generation, enhancing automation without losing interpretive depth. More on the methodology of persona creation will be explained in Section 4.

Researchers use various terms to describe personas created with computational tools, such as quantitative personas, data-driven personas, algorithmically generated personas, and LLM-generated personas. In general, data-driven personas rely on real user data, which can be either qualitative or quantitative (McGinn and Kotamraju 2008). Meanwhile, subtypes emphasise specific aspects: quantitative personas use numerical data (Salminen, Guan, Nielsen, et al. 2020), algorithmically generated personas highlight computational methods, and LLM-generated personas involve LLMs (S. Jung et al. 2025). With the advancement of AI technologies, the new term ‘AI persona’ has been coined (Holzinger et al. 2022).

Concerning design, the representations can be conveyed through textual descriptions, imagery, or a combination of both. Drawing from the depth of information provided, the study by Salminen et al. (Salminen, Guan, Nielsen, et al. 2020) categorises persona designs into (i) simple, (ii) moderate, and (iii) highly detailed layouts, the latter well provided with designs incorporating visuals, demographic data, quotes, and psychographic details to foster empathy.

Additionally, according to Kaate et al. (2023), personas can be categorised based on the persona modality, which refers to the medium through which it is presented. Persona modalities include the (i) narrative persona, which uses storytelling to present a persona’s identity and challenges in a first-person voice, fostering emotional engagement; (ii) classic persona profile, which provides a structured overview with key details like demographics and behaviours, ensuring clarity and consistency; and, (iii) the deepfake persona employs AI-generated video avatars to present personas dynamically, enhancing engagement with audiovisual elements like expressions and tone. Different modalities offer unique advantages depending on the design process context, goals, and audience. Therefore, the choice of modality impacts the degree of empathy and engagement they elicit from designers. While narrative personas excel in storytelling and emotional engagement, classic persona profiles offer clarity and accessibility,

and deepfake personas push the boundaries of interactivity and realism.

2.3. Primary methods of persona creation

In the extensive body of research on persona creation, B. J. Jansen et al. (2022) identify three primary approaches to persona development, each distinguished by its predominant methodology and the type of data utilised: Qualitative persona creation (QUAL), Quantitative Persona Creation (QUANT) and Mixed-Methods Approach (MIXED).

In QUAL, data collection and analysis are predominantly carried out manually, relying on methods such as interviews, focus groups, and ethnographic observations (Dupree et al. 2016; Miaskiewicz, Sumner, and Kozar 2008). These methods generate rich, descriptive data that provide a deep understanding of user goals, emotions, and challenges. Through qualitative analysis techniques like thematic coding and narrative analysis, researchers can distil these insights into relatable and empathetic user profiles (Guo and Razikin 2015; Messgari, Okoli, and Ortiz de Guinea 2015). According to the study (B. J. Jansen et al. 2021), which maps and navigates persona literature to identify both strengths and weaknesses of each methodology, the qualitative method excels at capturing complex user behaviours, providing in-depth insights into motivations, emotions, and contextual nuances. Additionally, it enables empathy-driven design decisions and produces rich, narrative-driven personas that resonate with stakeholders. However, qualitative methods are time-consuming, often resource-intensive, and rely heavily on the interpretation of the researchers, which can introduce biases. Furthermore, findings may not always be generalisable to larger populations.

On the other hand, QUANT typically involves statistical analysis of large datasets, data mining, and automated tools such as APIs and analytics platforms, including online surveys, user logs, or social media analytics. The quantitative approach focuses on identifying patterns, trends, and user segmentation across large user populations, allowing researchers to identify broad trends and statistically significant patterns. Its strengths are scalability, precision, and repeatability. However, while quantitative methods provide breadth, they often lack the contextual richness and depth of qualitative data. They may fail to uncover underlying motivations or emotional drivers and can sometimes overlook important outliers (B. J. Jansen et al. 2021).

Lastly, the MIXED combines qualitative and quantitative methodologies, leveraging the strengths of each to create well-rounded personas. Quantitative data provide

statistical validity and broad patterns, while qualitative data provide depth, context, and empathy. Mixed methods offer a balanced approach, addressing both breadth and depth. They enable triangulation, enhancing the validity and robustness of findings. However, mixed-method approaches can be resource-intensive and require expertise in both qualitative and quantitative methodologies. They may also face challenges in integrating findings cohesively (B. J. Jansen et al. 2021).

2.4. Hofstede's cultural dimensions

Culture is a set of shared beliefs, social norms, and practices that shape a group's identity, influenced by geography, environment, and traditions passed through generations (Salminen et al. 2018). Culture is an essential consideration in the design of technology for a global population, and there has been research by the HCI community into cultural aspects of design (Putnam, Kolko, and Wood 2012) and evaluation (Sim, Horton, and Danino 2012). Hofstede defines culture as the collective programming of the mind that distinguishes members of one group from another (Hofstede 2010). Rather than signifying refinement or sophistication, culture reflects shared ways of thinking, feeling, and acting, making it highly relevant to the design and usability of websites and digital interfaces (Marcus and Gould 2000).

Hofstede's seminal research (Hofstede 2010), conducted between 1978 and 1983, involved detailed interviews with IBM employees from 53 countries. This work resulted in a model comprising five key dimensions of national culture, later expanded to six, which serve as the foundation for understanding cultural variation:

- (1) Power Distance Index (PDI): measures the degree to which less powerful members of a society accept and expect power to be distributed unequally. High PDI cultures favour hierarchical structures, while low PDI cultures prefer egalitarian designs.
- (2) Individualism vs. Collectivism (IDV): explores the extent to which individuals are integrated into groups. Individualistic cultures value personal achievement and independence, whereas collectivist cultures prioritise group goals and relationships.
- (3) Masculinity vs. Femininity (MAS): differentiates between societies driven by competition, achievement, and material success (masculine) versus those valuing care, cooperation, and quality of life (feminine).
- (4) Uncertainty Avoidance (UAI): indicates a culture's tolerance for ambiguity and uncertainty. High UAI

cultures prefer clear rules, structured navigation, and predictable user flows, while low UAI cultures are more comfortable with flexibility and experimentation.

- (5) Long-term vs. Short-term Orientation (LTO): examines the focus on future rewards versus respect for traditions and immediate results.
- (6) Indulgence vs. Restraint (IND): measures the degree to which societies allow free gratification of basic human desires related to enjoying life and having fun instead of regulating such gratification through strict social norms.

These dimensions provide a framework for evaluating cultural influences on human behaviour (Alsswey and Al-Samarraie 2021). In web design, cultural differences manifest in choices of symbols, colours, navigation structures, and interaction patterns (Dormann 2006; Marcus and Gould 2000). Understanding these differences enables designers to avoid the pitfalls of stereotyping while addressing user preferences authentically.

2.5. Rationale and framework-agnostic stance

In this study, we adopt Hofstede's cultural dimensions as a pragmatic scaffold to condition persona generation, as its specific framework provides widely used, country-level numerical indices with broad coverage and long-standing use in HCI. We use Hofstede primarily as a convenient way to parameterise culture. The contribution lies in exploring the LLM's ability to express cultural nuances when guided by structured descriptors. The pipeline is therefore framework-agnostic and can be instantiated with alternative or complementary models, including GLOBE (practices versus values across nine dimensions) (House et al. 2004), Inglehart-Welzel/World Values Survey (two societal axes) (Inglehart and Welzel 2005), and Schwartz's fundamental human values (individual value priorities aggregable to national means) (Schwartz 1992).

These foundations motivate our QUANT methodology, detailed in Section 4.

3. Related work

The use of GenAI to create personas has garnered increasing attention in literature. One study (Salminen et al. 2019) explored the challenges and opportunities of automatically generating persona profiles, identifying issues such as information clarity, consistency, and credibility, while emphasising the importance of visual elements in establishing authenticity. Research on

integrating GenAI into User Centred Design (UCD) processes has also provided valuable insights. A very promising study, albeit still unpublished, demonstrated that tools like ChatGPT can generate detailed personas and functional designs more efficiently than traditional methods. However, limitations remain, particularly in capturing nuanced user preferences (Huang et al. 2024). Note that while on the one hand, AI technologies offer great opportunities, on the other, they can lead to errors. For instance, designers can use AI tools without necessarily considering their broader implications, such as the risk of inherent biases. Therefore, AI-personas may mirror profiles based on data primarily sourced from the internet, potentially overlooking other realities. This limitation often arises from insufficient or outdated datasets, biased information, or misinformation (Marsden and Haag 2016). Another investigation (Nass Bauer 2024) involving design students revealed that while AI can assist with data analysis and idea generation, it often explores problems superficially, underscoring the need to balance AI's capabilities with human intuition and creativity. The study also noted the linear nature of AI interactions, contrasting with the non-linear, iterative processes typical of traditional design thinking. These studies collectively highlight both the promise and limitations of GenAI in persona creation and broader design processes. The technology shows potential in automating routine tasks and generating initial insights, but achieving deep contextual understanding and nuanced problem solving remains a challenge.

A considerable amount of research has focussed on different cultural theories, such as Hofstede and Hall's cultural dimensions as frameworks to create culturally aware designs in HCI (Sun 2012) and websites. One study (Eristi 2009) explores the impact of cultural factors on website design by utilising Hofstede's cultural dimensions to analyse the design elements of 15 university websites from various regions. The findings highlight how cultural values, such as Individualism against Collectivism, influence design decisions, emphasising the importance of culturally sensitive web design to facilitate global communication. Another study (Dormann 2006) investigates the effect of Hofstede's Masculinity-Femininity (MAS) dimension on website design and user perception. By comparing university websites from masculine (Italy) and feminine (Sweden, Denmark) cultures, it was found that feminine websites are often perceived as more aesthetically appealing and evoke positive emotions. In contrast, masculine websites tend to generate negative emotional responses. This research underscores the significance of aligning website design with cultural values to enhance the

overall user experience. In another study (Collazos et al. 2010), the authors integrated multicultural aspects into HCI education to address the lack of cultural considerations in interface design. They developed a master's program at the University of Lleida, adapting international usability guidelines to the needs of the Ibero-American market. Applying Edward Hall's high- vs. low-context theory, they analysed how communication styles influence user interaction, emphasising that HCI must go beyond a one-size-fits-all approach by incorporating cultural values, communication preferences, and user mental models. A critique (Ahmed, Mouratidis, and Preston 2009) of the predominantly Western-centric focus in website design research calls for approaches that consider high-power distance and high-context cultures, particularly in many Asian countries. Using Hofstede's and Hall's cultural dimensions, this research proposes design guidelines tailored to these settings, including incorporating hierarchical structures and honorific titles, providing valuable insights for creating culturally sensitive websites. Finally, one study (Dreamson et al. 2023) investigates persona design and its role in improving students' ability to understand and address the needs of their target users. It identifies a critical gap in existing frameworks for systematically conceptualising user needs, particularly regarding the two essential requirements of persona design: representativeness and empathy. To address this, the research proposes an alternative approach using different cultural dimensions, including Hofstede's, to help students systematically design personas embodying these qualities. The study examines how cultural dimensions can support representative personas and how various facets of engagement—cognitive, emotional, behavioural, and social—can contribute to empathetic personas.

Beyond GenAI, persona research has critically examined traditional methods and explored culturally sensitive approaches. A study (Cabrero, Winschiers-Theophilus, and Abdelnour-Nocera 2016b) critiques the use of personas in cross-cultural technology design, arguing that conventional methods often perpetuate biases and fail to represent diverse users accurately. It advocates for co-creation and User-created Personas (UCP) to ensure inclusivity and cultural relevance, particularly within non-Western contexts. Another paper (I. Jensen et al. 2017) highlights the challenges of developing international personas for globalised markets, critiquing the traditional mono-cultural approach and proposing a practice-based framework focussing on shared user behaviours rather than national stereotypes. This perspective shifts the emphasis from 'culture as being' to 'culture as doing', aiming to create personas

that better reflect global user practices. Additional research (Anvari et al. 2019) has investigated the educational implications of cross-cultural persona use, for example explored teaching user-centred conceptual design using holistic personas representing diverse cultural and learning styles. This method successfully engaged students in critical thinking and real-world design practices, even in the absence of direct user access. Specific studies have examined child-generated personas for cross-cultural design, privacy concerns in digital systems, and interactive systems tailored for diverse populations, further demonstrating the need for culturally aware design practices (Sim et al. 2019). Despite advancements in these areas, there is a clear gap in the literature regarding the use of GenAI to address cultural biases in persona creation. This gap is particularly critical given the increasing reliance on AI tools in design processes. By leveraging Hofstede's framework as a guiding standard, this study aims to evaluate whether GenAI can generate personas that are not only representative but also free from cultural stereotypes.

4. Method

We next outline the study design before describing the generation prompt and the evaluation rubric.

The decision to adopt a Quantitative Persona Creation (QUANT) approach in this study was guided by the nature of the data available and the objective of creating systematic, scalable, and data-driven personas. According to Salminen, Jung, and Jansen (2022), the QUANT relies on numerical data, computational models, and automated processes to derive persona profiles, and the use of an LLMs such as ChatGPT aligns with the quantitative paradigm because:

- Structured Numerical Data: the personas were generated based on Hofstede's cultural dimensions, which provide quantifiable indices for different cultural traits. This numerical input makes the process inherently data-driven rather than interpretive.
- Algorithmic Persona Generation: instead of manually crafting personas based on subjective insights, we leveraged AI-driven automation, where ChatGPT synthesised personas using predefined numerical cultural parameters.
- Scalability and Consistency: unlike qualitative methods, which require extensive time and effort, the quantitative approach enables rapid, repeatable, and standardised persona creation across multiple cultures.

The study aligns with the QUANT method, as it relies on structured numerical inputs rather than direct user engagement or qualitative observations. Given that LLMs process large-scale structured data, the decision to use this approach ensures objectivity, replicability, and reduced researcher bias. By adopting a quantitative, LLM-based method, this study contributes to the growing field of automated persona generation, demonstrating how AI can enhance UX research while ensuring a systematic and data-driven approach to cultural representation.

ChatGPT was chosen as the primary tool for persona generation, due to its demonstrated superior performance and adoption in scientific literature (de Winter, Driessens, and Dodou 2024). Similarly, the OpenLM.ai Chatbot Arena ranks OpenAI's models highly based on 2.8M+ user votes and benchmark metrics including MMLU¹. Compared to other LLMs, and specifically in the context of generating creative material, ChatGPT is considered generally more effective².

We piloted Gemini for persona generation; however, in our trials, ChatGPT yielded more nuanced, creative personas, particularly in capturing cultural nuances. The flexibility and depth offered by the latter in capturing intricate personality traits, cultural nuances, and behavioural patterns were unmatched during our trials³.

The selection of ChatGPT is further validated by its widespread adoption in LLM-generated persona systems in prior literature. For instance, CloChat (Ha et al. 2024), PersonaGen (Zhang et al. 2023) and PersonaCraft (S. Jung et al. 2025) all utilise GPT models from OpenAI to develop dynamic and engaging personas. These precedents highlight ChatGPT's effectiveness and reliability in this domain. Additionally, the connection between ChatGPT and Hofstede's cultural dimensions has been specifically explored in research (Masoud et al. 2025), who developed a Cultural Alignment Test (Hofstede's CAT) to quantify alignment between LLMs and cultural values.

Hofstede's cultural dimensions were used as part of the prompt provided to the GenAI, offering a quantifiable method for representing the cultural values of each country. It was chosen as the foundation for this study due to its extensive application across diverse fields (Alqarni 2022; Dhital 2023; Escandon-Barbosa, Salas-Paramo, and Rialp-Criado 2021). However, it serves purely as a methodological structure for persona creation and can be replaced with alternative cultural models depending on the research context and objectives. Specifically, the dimensions of Power distance index, Individualism vs. Collectivism, and Uncertainty avoidance were selected as the most critical for creating user personas, in this case for a fast-food website. These

dimensions were chosen because they directly influence user expectations, behaviours, and decision-making processes when interacting with digital platforms. Mainly, Power Distance reflects how users from different cultures perceive and respond to authority or hierarchy, which can impact their preferences for formal versus casual tone and structured versus flexible navigation within the website. Individualism vs. Collectivism is vital for understanding whether users prioritise personal preferences or community-driven choices, influencing features such as personalised recommendations or group-ordering functionalities. Uncertainty avoidance gauges how comfortable users are with ambiguity, impacting their expectations for clear instructions, structured processes, and transparency in information such as pricing or delivery times (Chessim, Liu, and Frommholz 2023, 2022).

The personas were designed to reflect culturally relevant behaviours and values that affect user engagement with fast-food websites by focussing on these dimensions. We gathered data from the Hofstede Insights website, which provides detailed assessments of Hofstede's cultural dimensions for various nations⁴. This approach ensures that the personas are grounded in cultural characteristics that shape how users interact with digital interfaces and make decisions in this context.

4.1. Creation of user personas using AI

For the creation of the personas, the GenAI model was provided with a prompt in which the role of ChatGPT was clearly specified, and the prompt began with the instruction:

Persona Creation following Hofstede's cultural Dimensions.

Act as a UX designer. You are tasked with redesigning the various websites of a famous fast-food chain that sells hamburgers in 20 different countries. The website must present various information on the products sold, such as descriptions, prices, menus, etc. It must also include additional information such as the brand's history, contacts, etc.

Objective: the goal is to create diverse and culturally relevant user personas that reflect the values and behaviours of individuals in each country. Based on Hofstede's cultural dimensions described in the attached file, create a set of user personas for each country. These personas will help inform the website redesign process, ensuring a user-centred approach that caters to each target audience's specific needs and preferences.

Develop one user persona for each of the following countries considering the dimensions score in the parenthesis:

- Malaysia (PDI: 100; IDV: 27; MAS: 50; UAI: 36; LTOWVS: 47; IVR: 57);
 - Netherlands (PDI: 38; IDV: 100; MAS: 14; UAI: 53; LTOWVS: 67; IVR: 68);
 - Slovakia (PDI: 100; IDV: 57; MAS: 100; UAI: 51; LTOWVS: 53; IVR: 28);
- [..]

For each persona, present the following information:

- Name: The persona's given name. It should reflect standard naming conventions and cultural backgrounds in the target country.
 - Surname: The persona's family name. Pay attention to cultural variations in surname usage and structure.
 - Age: The persona's age. Consider age demographics and generational differences within the culture.
- [..]

The 20 countries, [Table 1](#), were listed alongside their cultural dimension. The prompt then continued with additional requirements for structuring the personas, including details such as name, surname, age, occupation, country, background, goals, motivations, and frustrations. It was also requested that the descriptions of background, personality, motivations, goals, needs, and frustrations be expanded into cohesive narratives rather than presented as bullet points, ensuring the personas were detailed and coherent. Additionally, the LLM was instructed to reference Hofstede's cultural dimensions data for each country to verify the accuracy and consistency of the extracted information⁵.

The prompt was crafted following established guidelines in literature (Salminen et al. 2024) and refined through comparison with alternative prompts that failed to produce the desired results. The aim was to generate personas that accurately reflected the cultural characteristics outlined in Hofstede's model, ensuring the AI could understand and apply these dimensions effectively. The generated personas were assessed based on their alignment with the provided cultural data and their utility for UX design, particularly in informing the development of user-centred, localised experiences. Section 5 provides a more detailed evaluation.

For the study, a total of 20 countries from Hofstede's cultural dimensions dataset were selected to ensure a diverse and balanced representation. The selected countries can be found in [Table 1](#). The selection process was as follows: six countries with high values for each of

Table 1. Countries and Hofstede's Dimensions.

Country	PDI	IDV	MAS	UAI	LTOWVS	IVR
Malaysia	100	27	50	36	47	57
Netherlands	38	100	14	53	67	68
Slovakia	100	57	100	51	53	28
Uruguay	61	60	38	98	28	53
Japan	54	62	95	92	100	42
Mexico	81	34	69	82	23	97
Austria	11	77	79	70	47	63
Colombia	67	29	64	80	6	83
Sweden	31	87	5	29	52	78
Singapore	74	43	48	8	67	46
Iran	58	23	43	59	30	40
Pakistan	55	5	50	70	19	0
Italy	50	53	70	75	39	30
Argentina	49	51	56	86	29	62
USA	40	60	62	46	50	68
Spain	57	67	42	86	47	44
Venezuela	81	26	73	76	0	100
Israel	13	56	47	81	47	0
Denmark	18	89	16	23	59	70
China	80	43	66	30	77	24

the six dimensions, with one country representing a high score in each dimension, highlighted in magenta. Similarly, six countries with low scores in each dimension were chosen, with one country per dimension, marked in blue. Additionally, four countries were included for exhibiting medium values in at least two of the three key dimensions for this study—Power distance, Individualism vs. Collectivism, and Uncertainty avoidance—indicated in orange. Lastly, four countries were selected to represent a combination of one high and one low value for the prioritised dimensions, shown in light blue. This methodology ensures a comprehensive and systematic exploration of cultural diversity within the context of the selected dimensions.

The selection of the 20 countries was informed by Hofstede Insights⁶, which provides the most up-to-date indices for Hofstede's six cultural dimensions. A maximum-variation sampling strategy was adopted to ensure coverage of the full spectrum of cultural variability. For each dimension, at least one country with a high score and one with a low score was included, supplemented by medium and mixed-value cases. This approach follows established practices in cross-cultural HCI research (Marcus and Gould 2000; Reinecke and Bernstein 2011), where contrasting high/low exemplars are employed to highlight cultural influences on interface design. Accordingly, the selected countries offer a balanced and representative set of cultural profiles for testing the generative AI-based persona creation process.

4.2. Stability check (embedding-based similarity)

To account for the probabilistic nature of LLMs, for each country, 20 personas were generated using the same prompt to analyse the consistency of the produced text.

To measure the personas' similarities, each text was transformed into a numerical vector via the all-MiniLM-L6-v2 model⁷, leading to a total of 400 embeddings. Successively, the similarity between each text and every other text generated for the same country was calculated using the cosine similarity metric, which measures how similar two vectors (in this case, texts) are. If the similarity score is close to 1, the texts are very similar, whereas if it is close to 0, the texts are very different.

While Hofstede indices parameterised cultural inputs in this study, the cultural scaffold is replaceable. Country-level frameworks (e.g. GLOBE House et al. 2004; Inglehart–Welzel/WVS Inglehart and Welzel 2005; aggregated Schwartz values Schwartz 1992) can directly seed persona attributes via numeric thresholds or categorical labels (e.g. high/low Uncertainty Avoidance; Self-Expression vs Survival). The LLM generation procedure and expert evaluation remain unchanged; only the conditioning descriptors differ, preserving comparability while enabling triangulation across cultural theories.

Section 6 will discuss the results of the generation of the personas and the similarity check.

5. Evaluation

To investigate the LLM's ability to authentically represent cultural diversity and to evaluate the quality of the GenAI personas, 10 expert evaluators in the field of UX and UI were asked to participate in the study. The selection criteria required at least three years of professional or academic experience in UX/UI design, direct familiarity with persona creation and evaluation, and involvement in cross-cultural or AI-supported design projects. The experts' experience ranged from 3

to 12 years ($M = 6.1$, $SD = 2.7$), representing both academic researchers and industry practitioners. The evaluation employed a standardised rubric and a short briefing on the cultural-dimension constructs to promote consistent criteria across raters. By engaging UX experts rather than individuals from the represented cultural contexts, we maintained a focus on evaluating the AI-driven persona generation process and its alignment with established UX methodologies. This approach allowed for a more objective assessment of the personas' quality and usefulness in a professional UX context, which is crucial for determining their potential adoption in real-world design processes.

The ten evaluators were recruited through the professional network of the University of Milano-Bicocca, which hosts a dedicated educational track in Human-Computer Interaction and UX/UI design. Indeed, this academic context facilitated contact with both researchers specialised in persona design and practitioners actively working in the field, ensuring a diverse range of expertise while maintaining a strong connection to academic research standards. This process yielded a balanced expert panel capable of providing informed, critical feedback on both the technical and practical aspects of the AI-generated personas.

As such, it was deemed more relevant to engage experts for this evaluation rather than individuals from the cultural context the personas represent. Including participants from the cultural context could have shifted the focus of the study, potentially calling into question Hofstede's cultural dimensions model rather than focussing on the AI-driven persona generation process. Therefore, by concentrating on expert evaluations, we ensured that the assessment remained aligned with real-world practices in UX/UI design, and this methodology allowed us to critically examine the quality and effectiveness of AI-generated personas without introducing confounding factors from cultural analysis.

The experts were provided with the cultural dimension descriptions⁸ and data of the selected countries to

guide their evaluation, and they scored each persona following a framework from literature (Salminen et al. 2024) for the evaluation of the LLM-generated personas. As shown in Table 2, subjective perception-based metrics were identified to evaluate the quality of these personas mainly related to informativeness, believability, cultural correlation, stereotypicality, positivity, relatability and consistency of the personas. More specifically, the experts were asked to evaluate the personas using a 7-point Likert scale (1=not at all, 7=very much) for questions such as 'Does the persona description contain adequate information to design an app or system to address the persona's needs' (for informativeness). Note that they were not informed that the personas were computer-generated; they were simply told that the research was on user personas. The variables of the framework were specifically tailored to align with the data provided by our generated personas, and in particular, a question has been added asking the evaluators to assess whether there is cultural correlation between Hofstede's cultural dimensions and the generated personas. Furthermore, they were invited to record observations if deemed appropriate⁹.

Thus, evaluation of the AI-generated personas involved both a qualitative and a quantitative method. The former was based on the answers to the specific question addressed to the evaluators, as well as other eventually provided comments, whereas the latter relied on the collected quantitative scores. Beyond descriptive summary statistics (mean and standard deviation), hypotheses testing was performed focussing on the 'stereotypicality' and 'cultural correlation' dimensions to address this study key questions on the capability of GenAI to produce culturally relevant personas while avoiding stereotypes. Correlation coefficient was computed to assess the linear relationship between these two dimensions, and a paired t-test with null hypothesis stating that the mean difference in their scores for each persona is null was conducted. Moreover, a further investigation was executed to examine whether the scores of the two dimensions

Table 2. Subjective perception-based metrics adopted to evaluate the personas.

Variable	Definition
Informativeness for design [persona perception]	Does the persona description contain adequate information to design an app or system to address the persona's needs?
Believability [persona perception]	Does the persona appear realistic, i.e. lifelike, like an actual person that could exist?
Cultural correlation [persona perception]	Do the personas effectively represent Hofstede's cultural dimensions in alignment with their country of origin?
Stereotypicality [persona perception]	Does the persona appear stereotypical?* Stereotypes are related to a widely held but fixed and oversimplified image or idea of a particular type of person or thing Is the person depicted in a positive light?
Positivity [persona perception]	
Relatability [persona perception]	Is the persona relatable? Relatability is the quality of being easy to understand or feel empathy for
Consistency [persona perception]	Is the persona consistent?* A consistent persona does not have conflicting information (for example, if the description said 'he is a happy personality' but later said, 'because he is often sad')

exhibited systematic variations across geographic regions, potentially revealing regional biases in the GenAI's performance. The hypothesis was that, while AI might generally avoid stereotypicality and preserve cultural correlation in the persona creation, there could still be disparities across regions, reflecting differences in the underlying training data or data coverage for specific areas. To explore this, the 20 countries were grouped into geographic subregions according to the United Nations Statistics Division (UNSD) geoschema¹⁰ (e.g. Japan → East Asia, Uruguay → South America, Italy → Southern Europe). Given the initially selected countries for the persona generation, in total, eleven geographic subregions were analysed, though it should be noted that some subregions (i.e. Eastern Europe and Central America) included only a single country, whereas others were not represented at all (e.g. all the African subregions). Welch's independent t-tests (Welch 1947) were performed to compare the mean stereotypicality and cultural correlation scores of each subregion against the mean on each of these dimensions of all the other subregions combined. This choice was motivated by the presence of unequal sample sizes and potential variance heterogeneity across subregions, conditions under which the standard Student's t-test may yield inaccurate results. Welch's t-test does not assume equal variances and is generally recommended for comparing group means when these assumptions are violated, thereby providing a more robust statistical inference in such cases (Delacre, Lakens, and Leys 2017; Ruxton 2006). Cohen's d was used to assess the magnitude of the differences observed between each subregion's mean scores and the global average, providing a measure of practical relevance that complements statistical significance. However, given the imbalance in the subregions representation, this measure will have to be interpreted with caution, as it may be influenced by the limited and uneven sample sizes of the subregions.

We report quantitative and qualitative findings in Section 6.

6. Results

ChatGPT successfully generated 20 personas, one for each of the targeted countries, incorporating demographic details, behavioural traits, user goals, pain points, and physical appearance descriptions. A summary of its demographic details can be found in Table 3; full personas are in the Appendix and two examples of the generated user personas can be found below. To account for the probabilistic nature of LLMs, cosine

Table 3. Demographic Information for Personas.

Country	Name	Surname	Age	Occupation
Malaysia	Azman	Ahmad	35	Small Business Owner
Netherlands	Eva	van Den Berg	28	Graphic Designer
Slovakia	Ján	Horváth	45	Factory Supervisor
Uruguay	Carolina	Fernández	33	School Teacher
Japan	Huruki	Tanaka	41	Office Manager
Mexico	Fernanda	López	29	Marketing Specialist
Austria	Lukas	Schmid	37	Software Developer
Colombia	María	Gómez	32	Nurse
Sweden	Linnea	Eriksson	26	Environmental Scientist
Singapore	Wei Ling	Tan	30	Financial Analyst
Iran	Ali	Rezaei	38	University Lecturer
Pakistan	Ayesha	Khan	25	Teacher
Italy	Marco	Rossi	34	Architect
Argentina	Sofia	Martínez	27	Journalist
USA	David	Johnson	40	Marketing Director
Spain	Alba	Lopez	31	Event Planner
Venezuela	Diego	Fernández	33	Entrepreneur
Israel	Yael	Cohen	29	Software Engineer
Denmark	Mikkel	Hansen	35	UX Designer
China	Li	Wei	40	Business Owner

similarity was computed for personas iteratively generated for the same country. Similarity scores ranged from 0.67 to 0.82, with an average similarity of 0.74 ($SD = 0.05$). This result suggests that, given the same prompt, generated personas are, on average, similar to each other, which provides safeguards for reproducibility. Similarity scores for each country can be visualised in Figure 1.

Persona for Colombia

Name: María

Surname: Gómez

Age: 32

Occupation: Nurse

Country: Colombia (Medellín)

Background: María works as a nurse in a bustling hospital in Medellín, Colombia. She is deeply committed to her patients and takes pride in her ability to care for others. María lives with her parents and her younger brother, as family is central to her life. She spends her free time dancing salsa, exploring the city's lively markets, and enjoying homemade meals with her family. María values warmth, loyalty, and maintaining close relationships.

Personality: María is caring, outgoing, and resilient. She thrives in environments that prioritise human connection and authenticity.

Motivation: María is motivated by her passion for helping others and her desire to make meaningful connections. She seeks services that are approachable and reflect her values of warmth and togetherness.

Goals: María uses the website to find affordable meal deals for her family and friends. She appreciates promotions that cater to gatherings and options that

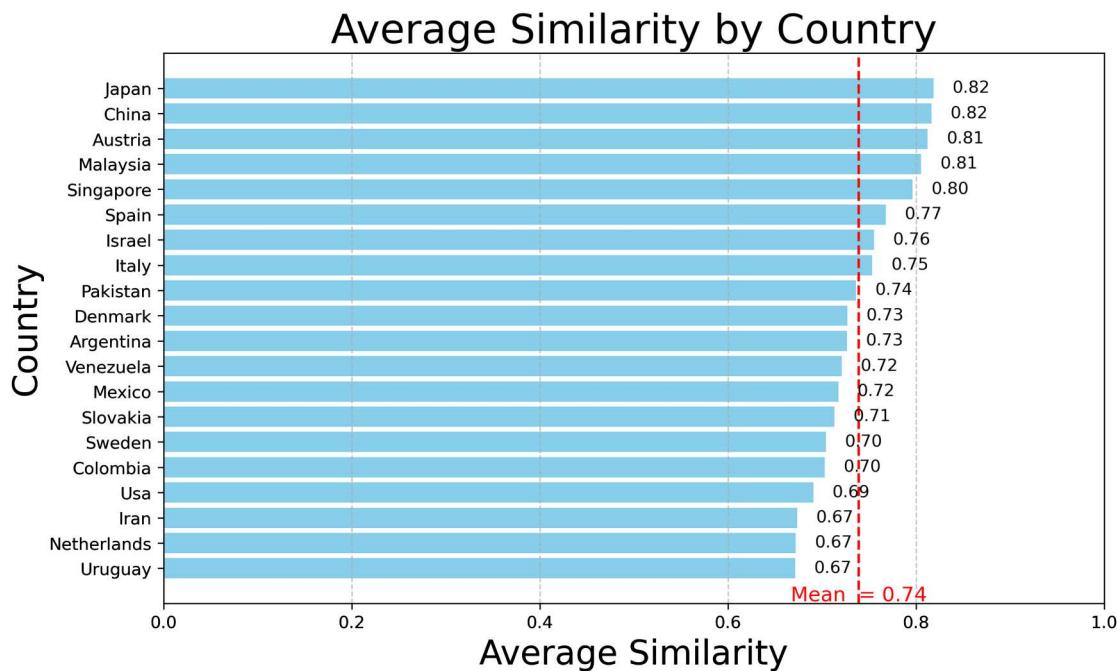


Figure 1. Bar chart representing similarity scores, in descending order, for each of the 20 countries. The dashed red line indicates the overall mean similarity score across countries.

align with Colombian tastes.

Needs: The website should include personalised promotions, visually vibrant designs, and an easy-to-use interface that highlights group deals and family meals.

Frustrations: María dislikes when websites lack cultural relevance or feel impersonal. She also gets frustrated by complicated interfaces that make browsing difficult.

Style/Appearance: María's wardrobe is vibrant and practical, often wearing colourful dresses and comfortable flats that allow her to move easily throughout her day.

Quote: 'Family and community are what life is all about.'

Cultural Dimensions (Hofstede Values):

PDI: 67; IDV: 29; MAS: 64; UAI: 80; LTOWVS: 6; IVR: 83

a modern apartment with his partner and enjoys a fast-paced lifestyle. David grew up in a small Mid-western town before moving to the East Coast to pursue his career. He loves discovering new restaurants, attending sports events, and travelling. Personal achievement and convenience are central to his values, and he seeks services that align with these principles.

Personality: David is ambitious, pragmatic, and results-oriented. He values efficiency and innovation, always seeking the best options for his busy schedule.

Motivation: David is motivated by his career goals and the need to maximise his time. He seeks brands that offer high-quality, convenient solutions that fit seamlessly into his lifestyle.

Goals: David uses the website to order meals during work hours or to plan meals for his social gatherings. He values efficiency and innovation in the UX.

Needs: The website should emphasise convenience, offer delivery options, and include clear pricing and ordering processes. A responsive mobile design is essential.

Frustrations: David gets annoyed by slow-loading pages, complicated interfaces, or lack of clarity in promotions.

Style/Appearance: David prefers business casual attire, often wearing tailored blazers with chinos and loafers.

Persona for USA

Name: David

Surname: Johnson

Age: 40

Occupation: Marketing Director

Country: USA (New York City)

Background: David Johnson is a marketing director working in the bustling city of New York. He lives in

Quote: "Time is money, so make it simple and efficient."

Cultural Dimensions (Hofstede Values):
PDI: 40; IDV: 60; MAS: 62; UAI: 46; LTOWVS: 50; IVR: 68

In the following subsections, we present results for the quantitative and qualitative analyses, respectively.

6.1. Quantitative results

The quantitative evaluation of the AI-generated personas focussed on assessing their quality across the dimensions described in [Table 2](#), based on the scores provided by UX experts¹¹. [Table 4](#) reports the average scores of the variables, which are discussed below:

- Informativeness for Design: personas received an average rating of **6.15** (± 0.77), suggesting that the personas provided very useful insights for the design process.

Table 4. Mean and Standard Deviation for Each Variable.

Variable	Mean	Standard Deviation
Informativeness for Design	6.147	0.765
Believability	6.122	0.725
Cultural Correlation	5.970	0.808
Stereotypicality	3.584	1.165
Positivity	6.259	0.801
Relatability	6.066	0.700
Consistency	6.383	0.798

- Believability: the personas were rated as highly credible, with an average score of **6.12** (± 0.73).
- Cultural Correlation: the cultural alignment of personas with their respective target demographics was moderate to high, averaging **5.97** (± 0.81), indicating a reasonable but not flawless representation of cultural dimensions.
- Stereotypicality: the average rating of **3.58** (± 1.16) highlights that while some personas leaned on stereotypes, this was not excessive overall.
- Positivity: the positive reception of personas was evident, with a mean score of **6.26** (± 0.8).
- Relatability: an average score of **6.07** (± 0.7) underscores relatively high relatability to the target audience.
- Consistency: the consistency metric averaged **6.38** (± 0.79), the highest among all the mean scores, reflecting very good coherence in persona presentation.

Results can be visualised in [Figure 2](#), which shows the distribution of the scores of the 7 variables. All the distributions tend to be similar in their range, with values mainly concentrating between 5 and 7. The distribution of 'stereotypicality' stands out as not only it has the widest range of values, but these are mostly spread from 2 to 5, being therefore characterised by lower scores compared to the other variables.

Correlation coefficient was computed between the scores collected on the variables 'stereotypicality' and 'cultural correlation' to assess their linear relationship.

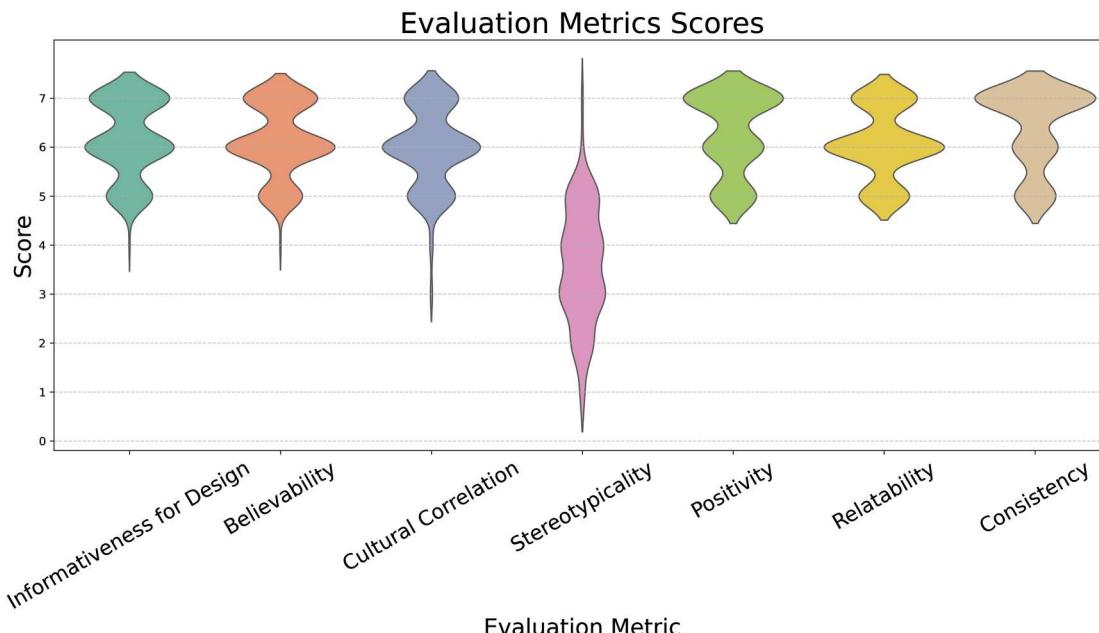


Figure 2. Scores distribution across the perception-based evaluation metrics. Stereotypicality is the dimension whose distribution remarkably differs from all the others, as not only it has a wider range of variation, but it also mostly spreads between scores of 2 and 5. The other dimensions are characterised by scores in the range of 5 to 7.

There is a very weak positive linear correlation between the two variables, $r(195) = .06$, $p = .38$. This means that, as there is an increase in the personas adherence to Hofstede's cultural dimensions, the level of 'stereotypicality' does not show a tendency to either increase or decrease, suggesting a good capacity of the LLM of building personas that respect cultural diversity as postulated through Hofstede's cultural dimensions, without falling into stereotypical representations. The associated $p = .38$ proves insufficient evidence to conclude that a significant linear relationship exists between 'cultural correlation' and 'stereotypicality'.

A paired t-test was eventually conducted to assess whether the mean difference between the pair of scores assigned to each generated personas on the two variables is zero. $p < .001$, indicating that there exists a statistically significant difference between the scores of 'cultural correlation' and 'stereotypicality' each persona was evaluated with, and that this difference is unlikely due to chance. Therefore, the results suggest that the

LLM generated personas with lower stereotypicality while maintaining cultural alignment.

Analysis of 'stereotypicality' and 'cultural correlation' at UNSD geographic subregions level consisted of Welch's independent t-tests to assess, for each of the two dimensions, whether the mean score of each subregion was not different from the mean of all other subregions combined.

The results for 'stereotypicality' revealed no statistically significant differences for any geographic subregion, with $p > .05$ for all the 11 subregions. However, certain trends emerged. Southern Europe had the lowest mean score ($M = 3.20$, $SD = 1.00$) compared to the other subregions mean score ($M = 3.63$, $SD = 1.18$), with a marginally non-significant difference ($t(25) = -1.77$, $p = .089$) and a medium negative effect size ($d = -0.39$). This suggests that personas for Southern Europe were less stereotypical compared to the global average, which may warrant further investigation into this observed difference. Conversely, East Asia ($M = 3.90$, $SD = 1.25$) and Southeast Asia ($M = 3.84$, $SD = 0.95$)

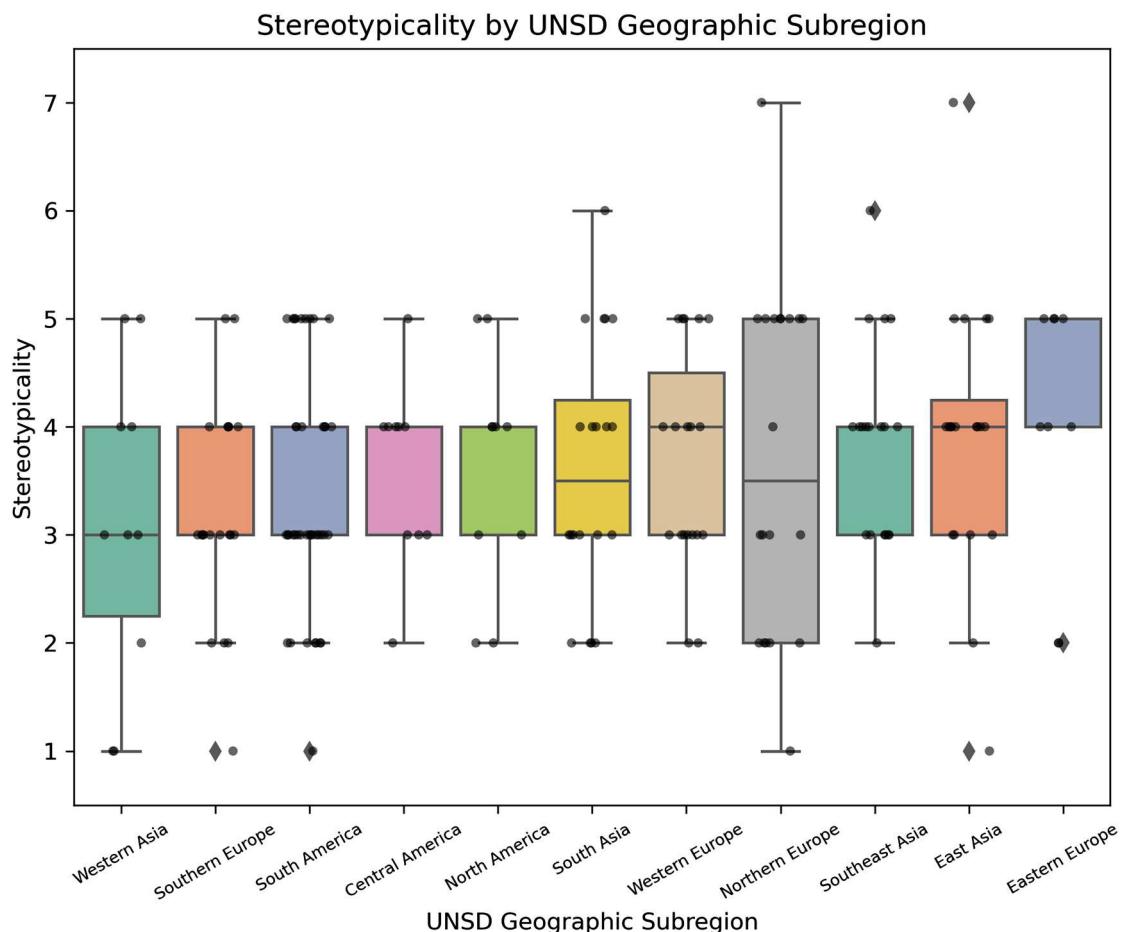


Figure 3. Scores distribution for 'stereotypicality' across the UNSD geographic subregions. Eastern Europe shows the highest median stereotypicality score, while Northern Europe exhibits the widest interquartile range, indicating greater variability. East Asia is the subregion having the highest number of outliers, suggesting a few extreme cases within the dataset.

had the highest stereotypicality mean scores relative to the global mean ($M = 3.55$, $SD = 0.96$). While the differences were not statistically significant ($t(22) = 1.20$, $p = .24$ and $t(24) = 1.21$, $p = .24$, respectively), medium positive effect sizes were observed ($d = 0.29$ and $d = 0.27$, respectively) suggesting these higher scores could have practical implications. These findings might reflect limitations in the diversity or quality of the training data for these regions or an inherent bias in how personas are constructed for East and Southeast Asia. Other subregions, including South America ($t(63) = -1.16$, $p = .25$), Western Asia ($t(9) = -1.09$, $p = .30$), Eastern Europe ($t(8) = 1.04$, $p = .32$), and Northern Europe ($t(21) = 0.35$, $p = .72$), did not significantly differ from the global mean, with small to medium effect sizes ($d = -0.20$ to 0.37). North America, Central America, and South Asia had the smallest effect sizes ($d < 0.02$), indicating minimal differences from the global mean and little evidence of bias for these subregions.

Scores distributions across the eleven identified subregions for ‘stereotypicality’ can be visualised in Figure 3.

For ‘cultural correlation’, no significant differences were observed across subregions. Northern Europe had the highest mean score ($M = 6.20$, $SD = 0.70$) with a positive medium effect size ($d = 0.34$), whereas Southeast Asia ($M = 5.68$, $SD = 1.00$) and South America ($M = 5.95$, $SD = 0.88$) had slightly lower mean scores with small negative effect sizes ($d = -0.35$ and $d = -0.03$). However, $p > .10$ for all subregions, and the effect sizes were generally small to negligible, suggesting that ‘cultural correlation’ scores were consistent across regions. Subregions such as East Asia ($M = 6.00$, $SD = 0.65$), Western Europe ($M = 6.11$, $SD = 0.66$), and South Asia ($M = 5.95$, $SD = 0.83$) demonstrated mean scores nearly identical to the global average ($M = 5.96$ and $SD = 0.82$, $M = 5.95$ and $SD = 0.82$, and $M = 5.97$ and $SD = 0.81$, respectively), further supporting the conclusion that the GenAI does not display significant geographic bias for this metric. This consistency suggests that personas across regions were culturally relevant without disproportionately favouring or disadvantaging any specific subregion.

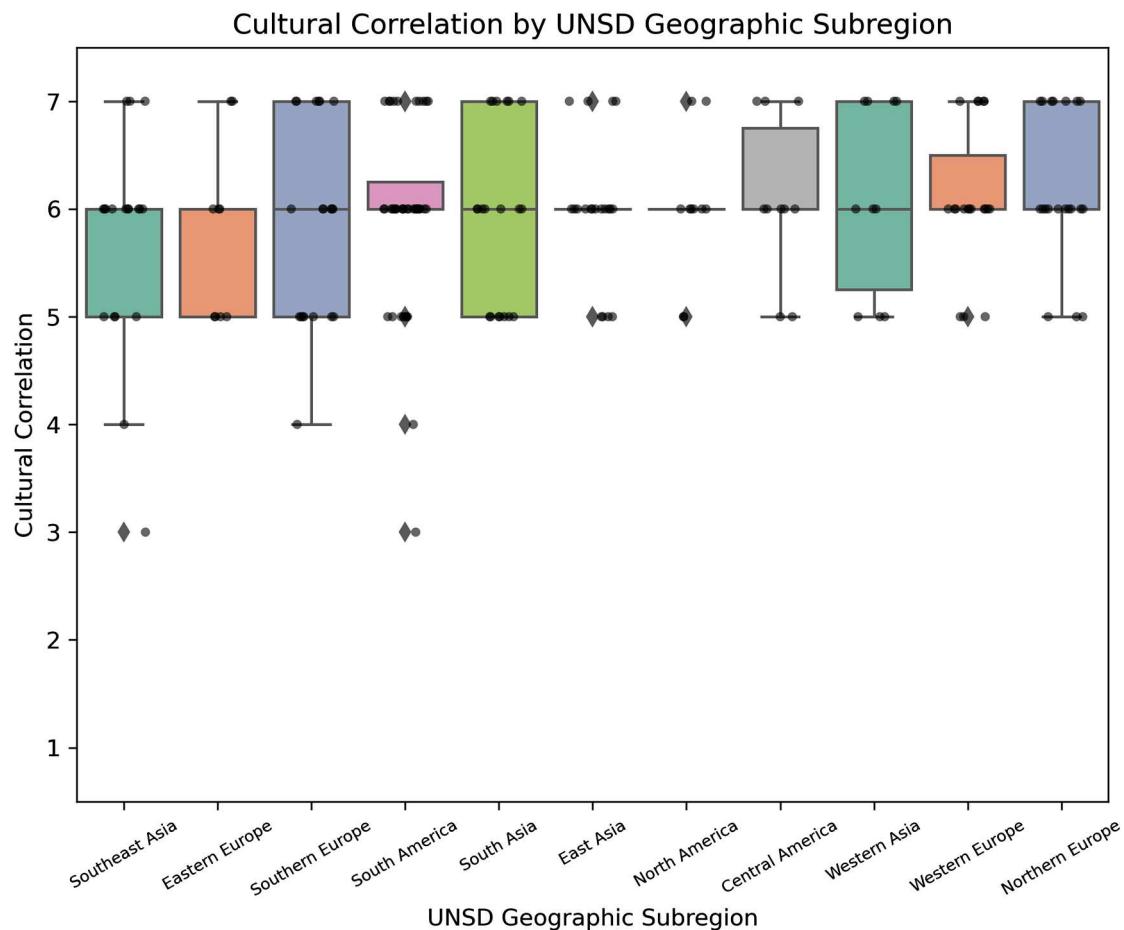


Figure 4. Scores distribution for ‘cultural correlation’ across the UNSD geographic subregions. East Asia and North America have the smallest interquartile ranges, whereas South America shows the highest variability.

'Cultural correlation' scores distributions across the eleven identified subregions are depicted in Figure 4.

6.2. Qualitative results

Together with the answers to the question proposed to assess cultural correlation between Hofstede's dimensions and the generated personas, further comments were provided by the evaluators. These provided feedback particularly on cultural traits, stereotypical elements, which are reported in the following. The last element refers to the specific question each evaluator was addressed:

- Cultural strengths: several personas were noted for strong cultural alignment, such as the personas representing Malaysia which was frequently praised for the cultural dimensions being respected such as Collectivism and respect for tradition (e.g. halal certification, family focus). An evaluator commented: *cultural correlation is good, there is a clear representation of collectivism, hierarchical appreciation (clear website design and the need for clear information) and an appreciation for tradition whilst maintaining flexibility.* Additional comments reinforced this view: *the Malaysian persona aligns with expectations. Even the user journey felt respectful of communal decision-making.* Similarly, the Dutch persona accurately reflected high levels of Individualism and a desire for high quality of life (e.g. sustainability, fresh products), consistent with Dutch cultural traits according to Hofstede, with a comment reporting that *the emphasis on personal choice, sustainable food, and minimalism feels aligned with Dutch values.*
- Cultural Weaknesses: some personas faced criticism for weaker cultural correlations, such as Wei Ling Tan (Singapore), who was criticised for an overemphasis on career-driven behaviour while under-representing Singapore's cultural complexity (e.g. balance of tradition with modernity). In fact, an evaluator commented: *Slightly stereotypical, with a noticeable focus on a career-oriented lifestyle, emphasising 'working long hours' and being 'motivated by a desire for career success and maintaining strong family ties'.* Another evaluator suggested: *it's missing the unique blend of traditional Chinese, Malay, and Indian cultural values that coexist in Singapore. There's a lack of cultural layering.*
- Stereotypical elements: some personas, such as the Pakistani and the Japanese, were often described as overly reliant on collectivist and tradition-oriented traits, which evaluators found predictable and quite stereotypical. Other comments highlighted that

some personas were heavily reliant on stereotypes in regards to their free-time activities and personalities. For example, one evaluator commented on the personas from Sweden saying: *Perhaps even a bit overly consistent: in the goals, it is stated that she visits the website to check the company's environmental policies and I feel this a bit too much. Additionally, it seems somewhat stereotypical, particularly regarding the 'fika'.* In contrast, other personas were considered not at all stereotypical, such as the personas from Spain, Venezuela or Israel: *the Spanish persona felt vibrant and modern, without falling back on flamenco and siesta tropes. That was refreshing.*

- Correlation between 'cultural correlation' and 'stereotypicality': a moderate correlation was noted between high 'cultural correlation' and increased 'stereotypicality', for instance, personas like Carolina Fernández (Uruguay) and Marco Rossi (Italy) were criticised for cultural accuracy achieved through generalised cultural markers (e.g. references to tango and football in Argentina or art and cuisine in Italy). This suggests that while GenAI effectively uses cultural frameworks to inform persona creation, it risks reinforcing stereotypes by overemphasising culturally iconic traits. As one evaluator put it: *in this case, it's like AI is good at hitting the 'brand identity' of a country, but not its people.*

Some positive insights included balance of specificity and cultural traits: personas such as Diego Fernández (Venezuela) struck a balance by incorporating unique personality traits alongside cultural references, enhancing authenticity without being overly stereotypical and evaluators noted that many personas provided actionable insights for design, particularly when Hofstede's dimensions were directly tied to user needs (e.g. structured navigation for high Uncertainty avoidance cultures).

Evaluators also highlighted challenges and limitations to these personas, such as over-generalisation and under-representation of cultural complexity. Several personas relied heavily on tropes, undermining their relatability. This was particularly evident in personas like Sofia Martínez (Argentina), who was tied to stereotypes of tango and football, and some personas simplified cultural dimensions, failing to capture nuanced behaviours or multidimensional aspects of certain cultures.

7. Discussion

Despite the good results, moderate scores for 'stereotypicality' (3.58/7) reveal limitations in AI's ability to

avoid overgeneralisation. While many personas exhibited strong cultural correlations, qualitative feedback from UX/UI experts highlighted instances where cultural traits were reduced to clichés.

The quantitative evaluation analysis revealed areas for improvement in AI persona generation. One of the primary challenges is mitigating stereotypes, although the correlation coefficient between 'stereotypicality' and adherence to Hofstede's cultural dimensions, as well as paired t-test results, suggest positive performance by the AI in generating culturally diverse and overall non-stereotypical user personas. Analysis at the subregional level provided additional insights, revealing no statistically significant geographic biases in either 'stereotypicality' or 'cultural correlation' across the 20 countries studied. However, certain trends emerged, indicating that variations might still exist in the AI's training data or its modelling processes. These findings warrant further investigation into the generalizability of these insights and the underlying factors, which may include the availability of less diverse or nuanced training data for certain regions, leading to personas that do not feel as representative of the complexity of those cultures. Nonetheless, limited evidence of stereotypicality bias was observed in the personas generated within this study.

The qualitative feedback from UX/UI experts further emphasised both the strengths and weaknesses of AI-generated personas. Many evaluators praised the personas for their strong cultural alignment and practical design insights. However, criticisms were also noted, such as the overemphasis on career-driven traits in the Singapore persona, which failed to capture the balance between tradition and modernity that characterises the region's cultural identity.

As the focus of the evaluation was on aspects such as credibility and coherence rather than factual correctness (Salminen et al. 2024), it is important to note that the personas generated by ChatGPT are derived from the model's broad knowledge of cultures and Hofstede's dimensions, which were given in the prompt. Beyond the evaluations conducted by UX/UI experts, no additional measures were taken to confirm the factual accuracy of the personas. For scenarios where personas are intended to inform real-world decision-making, validating the factual accuracy of personas generated by a general-purpose language model like ChatGPT is strongly recommended. This can be achieved either by independently verifying the generated content or by fine-tuning or adapting the model using factual, context-specific data prior to persona generation (Salminen et al. 2024).

Another potential threat in this study is related to the fact that Large language models can exhibit stylistic

convergence (Anderson, Shah, and Kreminska 2024), risking 'meta-personas' with reduced between-persona distinctiveness. To address this threat in practice, we recommend prompt-time mitigation: designers can explicitly require divergence across core attributes (e.g. goals, constraints, life stage/occupation, contexts of use, information and channel preferences, and pain points), disallow repeated phrasing and recycled examples, and, where appropriate, generate multiple drafts under varied narrative frames and stochastic settings (e.g. temperature, random seeds) before selecting the most distinctive candidates. These measures are intended to preserve cultural alignment while increasing variety, and they complement the quantitative and qualitative checks discussed in the paper.

It should be stressed that the use of national indices risks essentialising culture and under-representing within-country heterogeneity and intersectional factors. However, in this work, as explained in Section 2.5, the cultural framework is instrumental rather than normative: we anchor prompts for clarity and replicability, but our findings concern the conditional expressiveness of the LLM. We encourage replications of our work that swap Hofstede for GLOBE (House et al. 2004), WVS (Inglehart and Welzel 2005), or aggregated Schwartz values (Schwartz 1992), and that layer Hall and Trompenaars cues (Trompenaars and Hampden-Turner 1997), to test robustness and capture design-relevant nuance beyond any single framework.

Finally, we acknowledge a limitation regarding the evaluation process, which relied on a set of experts based in Italy and affiliated with a single institution. Although a standardised rubric and a concise construct primer were used to support consistent judgements, this single-site composition may still introduce regional or institutional bias and thus limit the generalisability of the findings. To strengthen external validity, future work should recruit across multiple institutions and countries, ideally including cultural 'insiders' and native speakers for the target personas, and consider reporting inter-rater reliability.

Our findings align with prior AI-driven and data-driven persona research in three main ways. First, we confirm the value of automation at scale: automatically generated personas can be produced rapidly and consistently, supporting early design exploration (S. G. Jung et al. 2018; Salminen, Guan, Jung, et al. 2021). Second, as in earlier work, expert judgement remains essential: practitioners can reliably assess credibility and usefulness, and their qualitative notes add context that metrics alone cannot capture (B. J. Jansen et al. 2022). Third, we echo prior concerns about bias and validity: automation reduces labour but does not remove

the need for methodological safeguards and transparent reporting (Chapman and Milham 2006).

8. Conclusion and future work

This study explored the application of GenAI for developing user personas based on Hofstede's cultural dimensions, aiming to provide a data-driven approach to persona creation while reducing stereotyping. Our findings suggest that AI-generated personas can enhance efficiency in persona development and offer diverse perspectives that might otherwise be overlooked in traditional qualitative methods. However, while our approach presents promising opportunities, it also comes with certain limitations that should be addressed in future research.

A key strength of this approach lies in its ability to rapidly generate culturally informed personas at scale, offering UX researchers a time-efficient alternative to traditional persona development. The personas generated by ChatGPT successfully incorporated critical cultural dimensions such as Individualism versus Collectivism, Power Distance Index, and Uncertainty Avoidance. For instance, the persona for Colombia highlighted community-oriented values consistent with its high Collectivism score, while the persona for the United States emphasised individual achievement and convenience, reflecting its high Individualism score.

To fully realise the potential of GenAI in persona creation, future research should focus on refining the technology to address its current limitations. This includes expanding training datasets to capture a broader spectrum of cultural nuances, developing methodologies to minimise stereotypes, and fostering dynamic human-AI collaboration. By leveraging these improvements, designers can achieve a balance between cultural fidelity and individuality, ensuring that AI-generated personas are both representative and authentic.

Further advancements should prioritise enhancing model interpretability and refining data sources to improve the credibility of AI-generated insights. Integrating feedback loops, where UX professionals iteratively refine AI-generated personas, could strengthen the synergy between AI automation and human expertise.

Another promising avenue is the incorporation of multimodal data, such as behavioural analytics, user interviews, and ethnographic studies, to enrich persona attributes beyond text-based AI outputs. By blending AI-generated insights with empirical user data, a more holistic and reliable approach to persona creation can be achieved.

Finally, as AI technologies continue to evolve, future research should assess the comparative strengths of different generative models (e.g. GPT, diffusion models, reinforcement learning-based AI) in persona development. Understanding these differences will enable researchers and designers to make more informed decisions when leveraging AI for UX research.

By striking a balance between automation and human oversight, AI-generated personas can be refined into a practical and ethical tool for UX professionals, ensuring their role as a valuable asset in culturally informed design processes.

Notes

1. openlm.ai/chatbot-area/
2. huggingface.co/spaces/lmarena-ai/chatbot-area-leaderboard
3. <https://cremarco.github.io/GenPersonas/>
4. www.theculturefactor.com
5. <https://cremarco.github.io/GenPersonas/Hofstede/>
6. www.theculturefactor.com/country-comparison-tool
7. huggingface.co/sentence-transformers/all-MiniLM-L6-v2
8. <https://cremarco.github.io/GenPersonas/Hofstede/>
9. <https://cremarco.github.io/GenPersonas/prompt/>
10. unstats.un.org/unsd/methodology/m49/
11. <https://cremarco.github.io/GenPersonas/evaluation/>

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Appendix. User personas

This appendix includes the full set of user personas generated using ChatGPT, designed to reflect culturally relevant traits based on Hofstede's cultural dimensions. They were created as part of an evaluation of AI's ability to produce diverse, representative, and non-stereotypical user profiles.

Persona for Malaysia

Name: Azman

Surname: Ahmad

Age: 35

Occupation: Small Business Owner

Country: Malaysia (Kuala Lumpur)

Background: Azman Ahmad was born and raised in Kuala Lumpur, Malaysia. He runs a successful traditional food stall in the city, which serves classic Malaysian dishes like nasi lemak and satay. His education was modest, completing high school before diving into the family business. Outside of work, Azman enjoys spending time with his extended family, watching local football matches, and participating in community mosque events. He is deeply connected to his cultural roots, with values steeped in respect for tradition, community, and family. His weekends often involve large family gatherings where food plays a central role in fostering connection and celebration.

Personality: Practical, respectful, and community-oriented.

Motivation: Maintaining cultural connections and providing for his family.

Goals: Use the website to check menus and plan family meals, valuing clear information on halal certification and group promotions.

Needs: A dedicated halal certification section, bilingual menu details, and mobile-friendly design.

Frustrations: Overly complex websites or those lacking culturally relevant information.

Style/Appearance: Casual and traditional, often wearing a batik shirt with khakis.

Quote: "It's important to find a place where the whole family feels welcome and the food respects our traditions."

Cultural Dimensions (Hofstede Values): PDI: 100; IDV: 27; MAS: 50; UAI: 36; LTOWVS: 47; IVR: 57

Goals: Quickly check new menu items, nutritional information, and seasonal offers.

Needs: Emphasis on sustainability, quick access to product details, and digital ordering features.

Frustrations: Cluttered websites lacking transparency.

Style/Appearance: Casual, sustainable clothing with a minimalist aesthetic.

Quote: 'I appreciate it when brands keep things simple and stay true to their values.'

Cultural Dimensions (Hofstede Values): PDI: 38; IDV: 100; MAS: 14; UAI: 53; LTOWVS: 67; IVR: 68

Persona for Slovakia

Name: Ján

Surname: Horváth

Age: 45

Occupation: Factory Supervisor

Country: Slovakia (Bratislava)

Background: Ján has worked in manufacturing for over 20 years and now oversees a team at a factory in Bratislava. He is a hardworking, family-oriented man who lives in a suburban neighbourhood with his wife and two children. Ján values tradition and discipline, ensuring that his children grow up with a sense of responsibility and respect for Slovak culture. In his free time, he enjoys hiking in the mountains and attending local folk music festivals.

Personality: Disciplined, practical, and goal-oriented.

Motivation: Providing stability for his family and maintaining cultural pride.

Goals: Use the website to find affordable meal options for his family and promotions suited for family outings.

Needs: Family meal deals, product quality emphasis, and clear pricing.

Frustrations: Websites lacking transparency or difficult-to-find promotions.

Style/Appearance: Functional clothing, such as flannel shirts and durable trousers.

Quote: 'A simple and honest experience is all I need.'

Cultural Dimensions (Hofstede Values): PDI: 100; IDV: 57; MAS: 100; UAI: 51; LTOWVS: 53; IVR: 28

Persona for Netherlands

Name: Eva

Surname: van den Berg

Age: 28

Occupation: Graphic Designer

Country: Netherlands (Amsterdam)

Background: Eva lives in a vibrant apartment in Amsterdam, where she enjoys the freedom and creativity that her work as a freelance graphic designer offers. She has a strong network of friends and colleagues and often participates in community events like art exhibitions and cycling meetups. Eva values individuality, equality, and sustainability, often choosing brands that align with her eco-conscious lifestyle.

Personality: Creative, open-minded, and independent.

Motivation: Personal growth, convenience, and sustainability.

Persona for Uruguay

Name: Carolina

Surname: Fernández

Age: 33

Occupation: School Teacher

Country: Uruguay (Montevideo)

Background: Carolina lives in Montevideo and teaches primary school children, fostering a love for learning and cultural heritage in her students. She is passionate about education and community service, often volunteering at local organizations. Carolina values tradition and enjoys spending Sundays with her family over asado, a traditional Uruguayan barbecue. She has a small but close-knit group of friends with whom she often shares mate, a cherished cultural ritual.

Personality: Carolina is nurturing, patient, and deeply empathetic. She places great value on relationships and

stability, often seeking out experiences that allow her to connect with others.

Motivation: Carolina is motivated by her love for her family, her students, and her community. She seeks services that are reliable, culturally considerate, and family-friendly.

Goals: Carolina uses the website to find meal options for school events or family gatherings. She values clear navigation and culturally relevant promotions.

Needs: The website must include details about local menu options, promotions for groups, and accessible customer support. Trust and familiarity are key for her.

Frustrations: Carolina dislikes websites that lack a human touch or feel overly commercial. She also finds overly complicated interfaces frustrating.

Style/Appearance: Carolina's style is modest and practical, often wearing comfortable blouses and slacks suited to her teaching role. She favours local brands and traditional designs.

Quote: 'It's the small, thoughtful touches that make all the difference.'

Cultural Dimensions (Hofstede Values): PDI: 61; IDV: 60; MAS: 38; UAI: 98; LTOWVS: 28; IVR: 53

with websites that do not respect local cultural values or fail to provide clear information.

Style/Appearance: Haruki typically wears a suit for work and more casual but neatly arranged attire on weekends. His style reflects his meticulous and orderly nature.

Quote: 'Respect and attention to detail are what make an experience truly satisfying.'

Cultural Dimensions (Hofstede Values): PDI: 54; IDV: 62; MAS: 95; UAI: 92; LTOWVS: 100; IVR: 42

Persona for Mexico

Name: Fernanda

Surname: Lopez

Age: 29

Occupation: Marketing Specialist

Country: Mexico (Mexico City)

Background: Fernanda is a marketing specialist working in a fast-paced advertising agency in Mexico City. She lives in a lively neighbourhood with her two younger siblings, whom she helps support. Fernanda is highly social and loves celebrating life's moments, whether it's a family gathering or a night out with friends. She enjoys exploring Mexico City's vibrant food scene, taking part in festivals, and embracing the colourful traditions of her culture.

Personality: Fernanda is energetic, optimistic, and warm. She values relationships and experiences that allow her to connect with others and celebrate her cultural heritage.

Motivation: Fernanda is motivated by her desire to balance her career aspirations with her family obligations and personal enjoyment. She seeks services that bring people together and celebrate the joy of living.

Goals: Fernanda uses the website to organise social gatherings with friends or family. She looks for deals that cater to groups and exciting promotions like festive or limited-time menus.

Needs: The website must highlight promotions, include engaging visuals that reflect Mexican culture, and provide easy access to group ordering options. Mobile accessibility is key for her on-the-go lifestyle.

Frustrations: Fernanda dislikes websites that feel generic or lack warmth and personality. She also gets frustrated when promotions are hard to find or poorly advertised.

Style/Appearance: Fernanda loves bold colours and modern interpretations of traditional Mexican designs. Her style is a mix of vibrant dresses, statement accessories, and casual jeans for everyday wear.

Quote: 'Life is about creating memories with the people you love.'

Cultural Dimensions (Hofstede Values): PDI: 81; IDV: 34; MAS: 69; UAI: 82; LTOWVS: 23; IVR: 97

Persona for Japan

Name: Haruki

Surname: Tanaka

Age: 41

Occupation: Office Manager

Country: Japan (Tokyo)

Background: Haruki Tanaka lives in a small apartment in Tokyo with his wife and two children. He works as an office manager at a medium-sized corporation, where he is known for his attention to detail and dedication to maintaining a harmonious work environment. Haruki values tradition, discipline, and order, traits instilled in him from a young age through his upbringing. His free time is spent attending his children's school events and engaging in cultural activities such as tea ceremonies and visits to local shrines.

Personality: Haruki is reserved, diligent, and respectful. He thrives in structured environments and appreciates clarity and predictability. While he values modern conveniences, he is cautious and prefers services that demonstrate respect for tradition and quality.

Motivation: Haruki is motivated by his desire to support his family and uphold cultural values. He seeks services that reflect care, precision, and an appreciation for Japan's unique traditions.

Goals: Haruki uses the website to explore seasonal or limited-edition menu items and to find family-friendly dining options. He values services that streamline the dining experience, such as pre-ordering or table reservations.

Needs: The website must include a clear and visually appealing menu with seasonal items highlighted. Information about family-oriented meal sets and kid-friendly options would also be beneficial.

Frustrations: Haruki dislikes websites that are overly busy or lack intuitive navigation. He also feels uncomfortable

Persona for Austria

Name: Lukas

Surname: Schmid

Age: 37

Occupation: Software Developer

Country: Austria (Vienna)

Background: Lukas lives in Vienna, Austria, with his partner and their dog. As a software developer, he appreciates precision and functionality, which extends to his daily life. Lukas enjoys visiting coffeehouses, exploring museums, and skiing in the Alps during winter. He grew up in a family that encouraged critical thinking and a focus on personal achievement. Lukas values efficiency, equality, and quality in every aspect of his life.

Personality: Lukas is analytical, independent, and pragmatic. He prefers well-structured systems and values clear, concise communication. He appreciates quality over quantity in all his choices.

Motivation: Lukas is motivated by his desire to find practical solutions and services that complement his busy lifestyle. He seeks brands that respect his time and deliver consistently high-quality experiences.

Goals: Lukas uses the website to place online orders, check out new offerings, and explore options for healthy or locally sourced ingredients. He values features that save him time and effort.

Needs: The website should be sleek, intuitive, and optimised for quick navigation. Information about ingredients, nutritional value, and sourcing practices is essential to him.

Frustrations: Lukas finds it frustrating when websites are overly flashy without providing meaningful functionality. He dislikes poor usability or lack of transparency in product descriptions.

Style/Appearance: Lukas opts for minimalist and functional clothing, often wearing tailored shirts, jeans, and sneakers. His style is understated yet modern.

Quote: 'Efficiency and quality go hand in hand.'

Cultural Dimensions (Hofstede Values): PDI: 11; IDV: 77; MAS: 79; UAI: 70; LTOWVS: 47; IVR: 63

cater to gatherings and options that align with Colombian tastes.

Needs: The website should include personalised promotions, visually vibrant designs, and an easy-to-use interface that highlights group deals and family meals.

Frustrations: María dislikes when websites lack cultural relevance or feel impersonal. She also gets frustrated by complicated interfaces that make browsing difficult.

Style/Appearance: María's wardrobe is vibrant and practical, often wearing colourful dresses and comfortable flats that allow her to move easily throughout her day.

Quote: 'Family and community are what life is all about.'

Cultural Dimensions (Hofstede Values): PDI: 67; IDV: 29; MAS: 64; UAI: 80; LTOWVS: 6; IVR: 83

Persona for Sweden

Name: Linnea

Surname: Eriksson

Age: 26

Occupation: Environmental Scientist

Country: Sweden (Stockholm)

Background: Linnea Eriksson lives in a cozy apartment in central Stockholm. She works for an environmental organisation focussed on sustainability initiatives. Linnea grew up in a family that prioritised equality and environmental stewardship, values she carries into her professional and personal life. She enjoys fika (coffee breaks), spending time outdoors, and practicing yoga. Linnea values minimalism and functionality in everything she does, preferring brands that align with her eco-conscious lifestyle and respect her individuality.

Personality: Linnea is independent, thoughtful, and progressive. She values simplicity and sustainability and avoids anything she perceives as wasteful or overly commercial.

Motivation: Linnea is driven by her commitment to environmental causes and her desire to live a balanced and fulfilling life. She seeks brands that share her values and offer practical, eco-friendly solutions.

Goals: Linnea visits the website to explore sustainable menu options and learn about the company's environmental practices. She appreciates easy access to nutritional information and seasonal, locally sourced items.

Needs: The website must highlight sustainable practices, include clear and concise information, and offer a modern design. Mobile-friendly functionality and a clean layout are essential.

Frustrations: Linnea dislikes websites with cluttered designs, lack of transparency, or excessive advertising. She avoids brands that fail to prioritise sustainability.

Style/Appearance: Linnea wears minimalist and sustainable clothing, often opting for neutral tones and simple cuts. Her wardrobe includes ethical brands and second-hand pieces.

Quote: 'A thoughtful and simple approach makes everything better.'

Cultural Dimensions (Hofstede Values): PDI: 31; IDV: 87; MAS: 5; UAI: 29; LTOWVS: 52; IVR: 78

Persona for Colombia

Name: María

Surname: Gómez

Age: 32

Occupation: Nurse

Country: Colombia (Medellín)

Background: María works as a nurse in a bustling hospital in Medellín, Colombia. She is deeply committed to her patients and takes pride in her ability to care for others. María lives with her parents and her younger brother, as family is central to her life. She spends her free time dancing salsa, exploring the city's lively markets, and enjoying homemade meals with her family. María values warmth, loyalty, and maintaining close relationships.

Personality: María is caring, outgoing, and resilient. She thrives in environments that prioritise human connection and authenticity.

Motivation: María is motivated by her passion for helping others and her desire to make meaningful connections. She seeks services that are approachable and reflect her values of warmth and togetherness.

Goals: María uses the website to find affordable meal deals for her family and friends. She appreciates promotions that

Persona for Singapore

Name: Wei Ling**Surname:** Tan**Age:** 30**Occupation:** Financial Analyst**Country:** Singapore (Singapore City)

Background: Wei Ling Tan works as a financial analyst in the bustling financial district of Singapore. She lives with her parents in a high-rise apartment, a common arrangement in her culture. Wei Ling is career-focussed and spends her weekdays working long hours. On weekends, she enjoys shopping, trying new restaurants, and exploring Singapore's vibrant cultural scene. While she values tradition, Wei Ling also embraces modernity and innovation, often seeking efficient solutions to balance her busy lifestyle.

Personality: Wei Ling is ambitious, pragmatic, and sociable. She values harmony and efficiency and appreciates services that cater to her need for convenience.

Motivation: Wei Ling is motivated by her desire for career success and maintaining strong family ties. She looks for brands that are modern, reliable, and culturally respectful.

Goals: Wei Ling uses the website to quickly find promotions, menu items, and delivery options. She values efficient digital tools that save her time and effort.

Needs: The website must provide clear navigation, quick ordering features, and promotions tailored to busy professionals. A clean and professional design is key.

Frustrations: Wei Ling gets frustrated when websites are slow, poorly designed, or lack clarity in promotions and menus.

Style/Appearance: Wei Ling dresses in smart-casual attire, favouring tailored dresses and blouses paired with sleek accessories. Her style is modern and polished.

Quote: 'Efficiency and professionalism are what I value most.'

Cultural Dimensions (Hofstede Values): PDI: 74; IDV: 43; MAS: 48; UAI: 8; LTOWVS: 67; IVR: 46

Persona for Iran

Name: Ali**Surname:** Rezaei**Age:** 38**Occupation:** University Lecturer**Country:** Iran (Tehran)

Background: Ali Rezaei is a university lecturer in Tehran, specialising in Persian literature. He grew up in a close-knit family that emphasised education and cultural heritage. Ali is passionate about poetry, music, and history, often incorporating these interests into his lectures. Outside of work, he enjoys attending cultural events and spending time with his wife and daughter. Ali values tradition and intellectual engagement, seeking brands that respect his culture and offer thoughtful experiences.

Personality: Ali is intellectual, reserved, and respectful. He appreciates thoughtfulness and cultural depth in the experiences he seeks.

Motivation: Ali is motivated by his dedication to preserving cultural traditions and providing a rich upbringing

for his daughter. He looks for brands that align with these values and demonstrate respect for local customs.

Goals: Ali uses the website to discover culturally relevant menu items and learn about promotions suitable for family outings. He values clear communication and detailed product descriptions.

Needs: The website should highlight halal certifications, include localised content, and offer a professional and respectful design. Family meal deals and seasonal promotions would appeal to him.

Frustrations: Ali dislikes websites that lack cultural sensitivity or fail to provide clear and detailed information.

Style/Appearance: Ali's style is traditional yet modern, often wearing neatly tailored shirts and trousers. He values practicality and elegance.

Quote: 'Tradition and quality should go hand in hand.'

Cultural Dimensions (Hofstede Values): PDI: 58; IDV: 23; MAS: 43; UAI: 59; LTOWVS: 30; IVR: 40

Persona for Pakistan

Name: Ayesha**Surname:** Khan**Age:** 25**Occupation:** Teacher**Country:** Pakistan (Lahore)

Background: Ayesha Khan lives in Lahore and teaches at a local school. She is deeply involved in her community and family, often helping organise family events and religious celebrations. Ayesha places great importance on tradition and family values while aspiring to bring positivity to her students' lives. Her hobbies include cooking, reading, and spending time with her extended family.

Personality: Ayesha is caring, patient, and community-focussed. She values relationships and looks for services that reflect respect for tradition and togetherness.

Motivation: Ayesha is motivated by her desire to support her family and make a positive impact on her community. She seeks services that are family-friendly and culturally respectful.

Goals: Ayesha uses the website to find meal options for family gatherings and promotions that cater to groups. She values culturally relevant content and clear communication.

Needs: The website should include halal certifications, easy navigation, and group deals. A warm and family-oriented design would resonate with her.

Frustrations: Ayesha dislikes impersonal or overly commercial websites that fail to reflect cultural values.

Style/Appearance: Ayesha's style is modest and traditional, often wearing brightly coloured shalwar kameez with simple accessories.

Quote: 'Family is at the heart of everything I do.'

Cultural Dimensions (Hofstede Values): PDI: 55; IDV: 5; MAS: 50; UAI: 70; LTOWVS: 19; IVR: 0

Persona for Italy

Name: Marco**Surname:** Rossi**Age:** 34

Occupation: Architect

Country: Italy (Milan)

Background: Marco Rossi lives in the stylish city of Milan, where he works as an architect specialising in residential design. Growing up in a culturally rich environment, Marco developed a deep appreciation for art, food, and tradition. He enjoys attending art exhibits, exploring local cafés, and hosting dinners with friends where homemade Italian dishes take centre stage. Family remains a cornerstone of his life, and he values relationships that are warm and genuine.

Personality: Marco is creative, sociable, and passionate. He has a refined taste and values experiences that are elegant yet rooted in tradition. He enjoys expressing himself through his work and seeks out brands that reflect authenticity.

Motivation: Marco is motivated by his love for beautiful design and the desire to maintain meaningful relationships. He appreciates services that offer quality, tradition, and a sense of sophistication.

Goals: Marco uses the website to find menu options for casual meals or hosting gatherings. He values the ability to explore new dishes while ensuring they align with Italian culinary preferences.

Needs: The website should have a sleek, visually appealing design with an emphasis on quality ingredients and authentic flavours. Highlighting regional specials or seasonal items would appeal to him.

Frustrations: Marco dislikes websites that are visually uninspiring or fail to convey a sense of care and authenticity.

Style/Appearance: Marco's style is modern yet timeless, often wearing tailored suits or casual chic outfits with an attention to detail.

Quote: 'Simplicity and authenticity are the essence of good taste.'

Cultural Dimensions (Hofstede Values): PDI: 50; IDV: 53; MAS: 70; UAI: 75; LTOWVS: 39; IVR: 30

relevance.

Goals: Sofia visits the website to find menu options for gatherings with friends and to explore promotions that align with her active lifestyle. She also appreciates culturally inspired seasonal offerings.

Needs: The website should emphasise cultural authenticity, offer group-friendly promotions, and provide a clean and easy-to-navigate interface.

Frustrations: Sofia gets frustrated when websites feel overly generic or lack local flavour and relevance.

Style/Appearance: Sofia's wardrobe is relaxed yet stylish, favouring flowing dresses and denim jackets with vibrant scarves or accessories.

Quote: 'Everything is better when shared with the people you care about.'

Cultural Dimensions (Hofstede Values): PDI: 49; IDV: 51; MAS: 56; UAI: 86; LTOWVS: 29; IVR: 62

Persona for USA

Name: David

Surname: Johnson

Age: 40

Occupation: Marketing Director

Country: USA (New York City)

Background: David Johnson is a marketing director working in the bustling city of New York. He lives in a modern apartment with his partner and enjoys a fast-paced lifestyle. David grew up in a small Midwestern town before moving to the East Coast to pursue his career. He loves discovering new restaurants, attending sports events, and travelling. Personal achievement and convenience are central to his values, and he seeks services that align with these principles.

Personality: David is ambitious, pragmatic, and results-oriented. He values efficiency and innovation, always seeking the best options for his busy schedule.

Motivation: David is motivated by his career goals and the need to maximise his time. He seeks brands that offer high-quality, convenient solutions that fit seamlessly into his lifestyle.

Goals: David uses the website to order meals during work hours or to plan meals for his social gatherings. He values efficiency and innovation in the user experience.

Needs: The website should emphasise convenience, offer delivery options, and include clear pricing and ordering processes. A responsive mobile design is essential.

Frustrations: David gets annoyed by slow-loading pages, complicated interfaces, or lack of clarity in promotions.

Style/Appearance: David prefers business casual attire, often wearing tailored blazers with chinos and loafers.

Quote: 'Time is money, so make it simple and efficient.'

Cultural Dimensions (Hofstede Values): PDI: 40; IDV: 60; MAS: 62; UAI: 46; LTOWVS: 50; IVR: 68

Persona for Argentina

Name: Sofía

Surname: Martínez

Age: 27

Occupation: Journalist

Country: Argentina (Buenos Aires)

Background: Sofía Martínez is a journalist based in Buenos Aires, known for her inquisitive nature and passion for storytelling. She grew up in a lively household where debates about politics, football, and tango were common. Sofía loves her city's vibrant energy, often spending her free time in cafés, bookstores, and local markets. She values family and friends, enjoying the long conversations and connections over traditional asado meals.

Personality: Sofía is outgoing, curious, and empathetic. She thrives on connection and seeks experiences that feel personal and meaningful.

Motivation: Sofía is driven by her love of discovery and her desire to maintain strong relationships. She values brands that feel authentic and engage her with local

Persona for Spain

Name: Alba

Surname: López

Age: 31**Occupation:** Event Planner**Country:** Spain (Barcelona)

Background: Alba López is an event planner in Barcelona, where she orchestrates weddings, corporate events, and cultural festivals. She comes from a large family and enjoys weekly Sunday lunches filled with lively conversation and delicious food. Alba loves the vibrant culture of Barcelona, from its art to its cuisine. She values creativity, spontaneity, and personal connections.

Personality: Alba is warm, sociable, and creative. She thrives on energy and enjoys experiences that are both vibrant and well-organised.

Motivation: Alba is motivated by her passion for creating unforgettable moments. She seeks brands that are fun, dynamic, and culturally engaging.

Goals: Alba uses the website to explore menu options for events and find group promotions. She values engaging content and visually appealing designs.

Needs: The website should highlight festive menu options, promotions for groups, and clear, colourful visuals. It must feel vibrant and culturally relevant.

Frustrations: Alba dislikes websites that lack personality or are overly complicated.

Style/Appearance: Alba's wardrobe is colourful and trendy, often featuring flowing dresses, bold accessories, and comfortable yet stylish footwear.

Quote: 'Every moment is an opportunity to create something beautiful.'

Cultural Dimensions (Hofstede Values): PDI: 57; IDV: 67; MAS: 42; UAI: 86; LTOWVS: 47; IVR: 44

Needs: The website should be lively and visually engaging, featuring local flavours and promotions for gatherings. Mobile-friendly functionality and a dynamic design are essential.

Frustrations: Diego gets frustrated by dull, unresponsive websites that fail to capture a sense of energy and celebration.

Style/Appearance: Diego prefers casual but stylish clothing, often wearing brightly coloured shirts, jeans, and sneakers. His style reflects his vibrant personality.

Quote: 'There's always a reason to celebrate—big or small.'

Cultural Dimensions (Hofstede Values): PDI: 81; IDV: 26; MAS: 73; UAI: 76; LTOWVS: 0; IVR: 100

Persona for Israel

Name: Yael

Surname: Cohen

Age: 29

Occupation: Software Engineer

Country: Israel (Tel Aviv)

Background: Yael Cohen lives in Tel Aviv and works as a software engineer at a tech startup. She enjoys the city's dynamic environment, balancing her career with her love for outdoor activities, including beach volleyball and hiking. Yael grew up in a household that emphasised open communication and critical thinking, which she carries into her professional life. She values innovation, collaboration, and cultural diversity.

Personality: Yael is analytical, straightforward, and adaptable. She thrives in fast-paced environments and values experiences that are efficient and forward-thinking.

Motivation: Yael is motivated by her drive to succeed in her career and her love for exploring new ideas and technologies. She seeks services that are modern, reliable, and innovative.

Goals: Yael uses the website to find convenient and quick meal options for her busy schedule. She also looks for promotions that align with her active lifestyle.

Needs: The website should focus on functionality, quick ordering, and mobile accessibility. A clean and professional design with transparent pricing is key.

Frustrations: Yael dislikes overly complicated websites that waste her time or fail to provide clear information.

Style/Appearance: Yael's wardrobe is casual and sporty, often wearing athletic wear or comfortable jeans paired with sneakers.

Quote: 'Efficiency and innovation make everything better.'

Cultural Dimensions (Hofstede Values): PDI: 13; IDV: 56; MAS: 47; UAI: 81; LTOWVS: 47; IVR: 0

Persona for Venezuela

Name: Diego

Surname: Fernández

Age: 33

Occupation: Entrepreneur

Country: Venezuela (Caracas)

Background: Diego Fernández lives in Caracas, where he runs a small tech startup. Despite the challenges of the local economy, he is optimistic and driven to create opportunities for himself and his community. Diego values family, often spending weekends with his parents and siblings over long, festive meals. He also enjoys going out with friends to dance and celebrate life's small victories. His approach to life is vibrant, spontaneous, and fuelled by a strong sense of community.

Personality: Diego is charismatic, energetic, and resilient. He thrives on social connections and enjoys engaging in lively, celebratory experiences.

Motivation: Diego is motivated by his desire to succeed professionally while maintaining strong personal relationships. He looks for brands that celebrate life, are approachable, and foster a sense of joy.

Goals: Diego uses the website to plan casual outings with friends or order food for family celebrations. He values promotions that cater to groups and options that align with local tastes.

Persona for Denmark

Name: Mikkel

Surname: Hansen

Age: 35

Occupation: UX Designer

Country: Denmark (Copenhagen)

Background: Mikkel Hansen lives in Copenhagen, where he works as a UX designer for a global tech company. He values Denmark's egalitarian culture and enjoys a balanced lifestyle. Mikkel spends his free time cycling, visiting minimalist design stores, and enjoying hygge moments with friends and family. He values simplicity, functionality, and equality in all aspects of his life.

Personality: Mikkel is thoughtful, practical, and inclusive. He seeks experiences that are straightforward, user-friendly, and aesthetically pleasing.

Motivation: Mikkel is motivated by his desire to balance his career and personal life while enjoying meaningful experiences. He looks for brands that reflect simplicity and functionality.

Goals: Mikkel uses the website to find convenient meal options for workdays or relaxed dinners with friends. He values clear, intuitive navigation and a minimalist design.

Needs: The website must prioritise simplicity, transparency, and easy ordering. An understated, modern design is important.

Frustrations: Mikkel dislikes websites that are cluttered or overly promotional, as they disrupt his need for simplicity.

Style/Appearance: Mikkel's style is minimalist and modern, often wearing neutral-toned shirts and chinos with clean sneakers.

Quote: 'Keep it simple and practical, and you'll always get it right.'

Cultural Dimensions (Hofstede Values): PDI: 18; IDV: 89; MAS: 16; UAI: 23; LTOWVS: 59; IVR: 70

Age: 40

Occupation: Business Owner

Country: China (Shanghai)

Background: Li Wei runs a successful import-export business in Shanghai, balancing the fast pace of the city with a deep respect for family traditions. He lives in a multi-generational household and takes pride in supporting his family. Li enjoys exploring local cuisine, engaging in tea ceremonies, and attending cultural events. While he embraces modern advancements, he holds onto values such as loyalty, respect, and perseverance.

Personality: Li is ambitious, disciplined, and family-oriented. He values practicality and tradition while appreciating modern convenience.

Motivation: Li is motivated by his desire to ensure his family's success and maintain a harmonious life. He seeks brands that reflect quality, respect for tradition, and innovation.

Goals: Li uses the website to find family-oriented meal options and promotions that suit group outings. He values services that combine modern convenience with cultural sensitivity.

Needs: The website should highlight promotions for families, emphasise cultural relevance, and provide a seamless and efficient experience. A mobile-friendly design is crucial.

Frustrations: Li dislikes websites that lack clear navigation or fail to respect cultural values and preferences.

Style/Appearance: Li's style is professional yet understated, often wearing business-casual attire like tailored shirts and slacks.

Quote: 'A balance of tradition and innovation creates the best experience.'

Cultural Dimensions (Hofstede Values): PDI: 80; IDV: 43; MAS: 66; UAI: 30; LTOWVS: 77; IVR: 24

Persona for China

Name: Li

Surname: Wei