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(IJIREV)**www.gaexcellence.com/ijirev**SYNERGISTIC MECHANISMS OF USER CO-CREATION
AND AI SCREENING IN PERSONALIZED CHEONGSAM
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Abstract:

This study integrates user co-creation and designer screening in AI-supported personalised Cheongsam design, where users are asked to express design requirements and the generated images from AI are of varying quality, cultural appropriateness, and structural feasibility. Related to this scenario, existing work has explored these activities individually and paid little attention to how these activities can be integrated and traced in one design process. To bridge this gap, we adopted a three-stage workflow involving consumers, a professional fashion designer and Midjourney. Specifically, users' requirements were first transformed into slot-based prompts. Finally, images were generated with fixed parameter settings and then reviewed and revised in turns concerning design coherence, cultural appropriateness, and manufacturing feasibility in preliminary discussions. We examined five co-creation cases using an interpretive multiple-case approach, involving five consumers and one professional fashion designer. Prompt changes, reasons for revision, design selections, and user feedback were recorded throughout the process. Across the five cases, structured prompt translation helped make user requirements more explicit and gave the designer and consumer a clearer basis for discussion. Keeping the main generation settings fixed while making small, targeted revisions also made it easier to compare successive outputs and refine the designs without repeatedly changing the overall direction. At the concept stage, designer checklist screening and user feedback were used to distinguish designs that could be retained, revised, or rejected. The study therefore presents a traceable co-creation workflow for AI-

assisted personalised Cheongsam design and shows how designer judgment can be incorporated into the generation and selection process when cultural and practical design constraints need to be considered.

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Keywords:

Personalised Cheongsam Design, User Co-Creation, Prompt Translation, Parametric AI Screening, Manufacturability and Compliance



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Introduction

The traditional Chinese cheongsam, a dress closely connected with Chinese dress culture, usually features a stand-up collar, an asymmetrical front placket, frog-shaped buttons, a fitted or semi-fitted silhouette, and side slits. These components have been modified over time by social, historical and technological developments, while remaining salient markers of the garment's cultural identity (Gao et al., 2024; Yang & Chang, 2021). Contemporary cheongsam design, however, must also respond to increasingly diverse expectations for personalisation. Wearers may describe what they want in terms of emotion, occasion, colour, fabric, or the garment's overall impression. Such descriptions may be meaningful to the user but are not always precise enough to guide specific design decisions. The changes to traditional features, too, must be judged with care: the more radical the change, the more likely it is to diminish cultural uniqueness, and the less appropriate the mixture of structural details, the more difficult it is to achieve in patterns or finished garments (Cheng et al., 2020; Huang, 2017).

Generative AI, particularly text-to-image systems, provides a practical way to explore personalised fashion concepts. From natural language descriptions, these systems can generate multiple visual directions that users and designers can compare early in the design process. The research demonstrates that users in AI-assisted co-creation communicate their preferences and contextual needs, while the designers interpret this important data, generate prompts, and review the generated results (Franzo et al., 2024). Moreover, the evidence may suggest that the relevance and diversity of the AI-generated image could depend on the structure and specificity of the user's prompt (De Rosa Palmi & Cetinic, 2024). Additionally, the findings indicate that text-to-image generation might support early design exploration and appears to reduce the time required to develop and compare initial concepts. Although this flexibility offers significant advantages, the results show it may not eliminate the critical problem of control. Research

shows AI-generated fashion images drift from user intention, present inconsistent garment structures, overstate cultural symbols, or introduce details difficult to convert into patterns and finished garments. Thus, designers and users still need to set design goals, understand cultural meaning, evaluate options, and make final decisions (Hosanagar & Ahn, 2024; Palani & Ramos, 2024). For this reason, designer supervision, iterative prompt revision, and human judgement remain necessary when using generative AI in the fashion design process (Ryjov et al., 2024).

Current research indicates that several key stages are interrelated, including AI-assisted fashion co-creation, text-based garment generation, parametric shape control, and human-machine collaboration. Furthermore, how these key stages interconnect reflects their integration within a single design workflow. However, existing evidence suggests that few studies have traced the entire process, from the user's initial description, through its translation into structured instructions, to the generation of visual proposals, including designer review and user validation. Research indicates that existing studies have paid limited attention to this aspect. Furthermore, operational rules can guide the iterative process, including when to modify specifications, which generative parameters should remain fixed, and how to document the rationale for retaining, modifying or rejecting a particular image. Because such documentation supports review of design decisions, research findings suggest these records can also facilitate validation, reflection, and workflow reuse in professional and educational contexts (Alexeeva et al., 2016). However, existing evidence suggests that this results in gaps in our understanding of how user requirement translation, AI-controlled generation, designer-driven selection and user feedback interact. The research findings indicate that these gaps do indeed exist within the traceable process of bespoke cheongsam design.

The study investigates the interaction mechanisms of user co-creation and AI-based screening in personalized cheongsam design. The “synergistic mechanisms” refer to the distinct roles of users, a professional designer, and generative AI in the processes of requirement translation, image generation, concept revision, and design outcome evaluation. “AI-based screening” doesn't mean the system is selecting the designs independently. Instead, the designer evaluates AI-generated concepts against predefined criteria, which are then subject to user feedback.

This study examined five cases of co-creation of personalised cheongsams, involving five consumers and a professional fashion designer, through a three-stage workflow. The findings indicate that, in the first stage, users' needs, emotional preferences, style, colour, structural requirements, fabric choices and various constraints were translated into slot-based prompts. Furthermore, in the second stage, images were generated using a set of fixed basic parameters. Evidence suggests that prompts were modified when semantic, structural, aesthetic or cultural deviations were identified. When deviations were identified, the prompts were modified. Nevertheless, the analysis revealed that, in the third stage, a checklist devised by the designer and user validation were employed to assess the designs' consistency, cultural relevance and preliminary manufacturability. Given that this workflow establishes these parameters, the relevant data may suggest that this three-stage process appears suitable for personalised design. Furthermore, the results may indicate that the checklist provides important criteria for evaluation. Based on the research findings, the validation may suggest that coherence and relevance are key factors. The validation results indicate that coherence is relevant. The study addresses three research questions:

- RQ1. How does the conversion of user requirements into slot-based prompts help communicate user intent during the co-creation of personalised cheongsam designs?
- RQ2. How do fixed generation parameters and trigger-based prompt modifications support the iterative refinement of AI-generated cheongsam concepts?
- RQ3. How does a designer-developed checklist support the preliminary assessment of design coherence, cultural relevance, and manufacturability?

The analysis follows user requirements from their initial description through prompt formulation, AI generation and revision to concept selection, with particular attention to the points at which designer judgement and user feedback enter the process.

Literature Review

User Co-Creation and Semantic Translation

Co-creation utilising artificial intelligence means that, during the design process, users transition from passive evaluators to active contributors. Furthermore, these research findings indicate that, through fashion co-creation, users can provide information regarding wearing contexts, emotional preferences, expectations regarding style, and significant cultural considerations, whilst designers are able to interpret this information and use it to guide design decisions (Franzo et al., 2024; Nair & Kumar, 2024). Furthermore, this clear division of roles is considered crucial in personalised clothing design. When users express their needs, their mode of expression indicates that they employ subjective and vague terminology rather than technical design specifications. It is precisely because users are unable to provide specific technical specifications that this division of roles is particularly important.

Translating natural-language descriptions into actionable design information remains a major challenge. Text-guided garment design systems show that linguistic descriptions can be linked to garment structures and surface characteristics, while parameterised shape-editing methods let designers control specific visual and structural variables through language (Ganeshan et al., 2024; He et al., 2024). Emotion–form mapping further suggests that affective vocabulary can be linked to visual and geometric characteristics to support design development (Mothersill & Bove, 2015). In addition, the specificity of user instructions influences the relevance and diversity of AI-generated images, suggesting that structured inputs may enhance both creative variation and user participation (De Rosa Palmini & Cetinic, 2024).

These studies suggest that semantic-based translation may hold significant value in human–computer collaboration. However, the findings indicate that, to date, few studies have explored how users’ linguistic expressions regarding context, sentiment and style are translated into reusable instruction structures for fashion design. Furthermore, existing research suggests that ensuring traceability throughout the entire translation process is of particular importance. Multiple iterations may present significant challenges. Research indicates that a research gap exists. Nevertheless, this study aims to fill this gap by structuring user requirements into scenario-based instructions (including occasion, style, colour, structure, fabric and constraints).

Generative Artificial Intelligence and Controlled Design Iteration

Generative artificial intelligence has expanded the possibilities for rapid concept development in fashion design. With platforms that generate images from text, designers can quickly produce

multiple proposals, enabling early experimentation with silhouettes, colours, materials, and decorative details. A comparative study of generative platforms has demonstrated their potential for rapid design prototyping, whilst research on generative AI in visual merchandising for apparel retail has highlighted opportunities for faster ideation and broader visual exploration (Balasubramanian & Periyaswamy, 2025; Islam & Hasan, 2025).

However, the results are not always controlled or coherent. Artificial intelligence-generated design concepts can deviate from the original semantic intent, create inconsistencies in garment construction, reflect cultural stereotypes, or include details that are difficult to implement technically. Thus, research on hybrid intelligence points out that even if artificial intelligence is designed to foster creative divergence, the responsibility of the designer always entails the evaluation, revision and final convergence processes (Hosanagar & Ahn, 2024; Palani & Ramos, 2024; Ryjov et al., 2024). These findings support a designer-led approach: artificial intelligence is able to generate alternatives but cannot judge the quality of the design on its own. Furthermore, documenting the design process is important to guarantee the reusability and verifiability of AI-assisted design. Systematic documentation enhances transparency by recording the reasons why a proposal was modified, adopted or rejected, thereby facilitating retrospective reflection and collaboration (Alexeeva et al., 2016). However, in the field of fashion, there are few studies explaining how to control generation parameters within an iterative cycle, nor how a specific problem leads to a corresponding modification of the prompt. This study addresses this gap by fixing key parameters and adjusting the text only when it detects semantic, structural, aesthetic, or cultural discrepancies.

Designer-Led Screening and Preliminary Manufacturing Feasibility

The significance of bespoke cheongsam design extends far beyond mere visual originality. This garment's identity is shaped by a combination of culturally distinctive elements and structurally interdependent features. The stand-up collar, asymmetrical front placket, cricket-style fastenings, silhouette and the position of the slit collectively constitute the garment's cultural identity, whilst fabric properties, tailoring and structural details are the key elements that transform this design into a functional garment (Cheng et al., 2020; Gao et al., 2024; Huang, 2017; Yang & Chang, 2021). Whilst visually accurate AI-generated images do indeed reflect these components, they do not always highlight their structural relationships or reflect production requirements.

Consequently, designers must guide the screening process for generated concepts and verify their consistency, cultural relevance and suitability for further development. Checklist-based evaluation is a practical way to translate high-level design decisions into specific assessment criteria. A systematic documentation process helps to avoid situations where individual decisions are not recorded (Alexeeva et al., 2016; Konkar, 2015). Research on manufacturability analysis also indicates that design constraints should be clarified early to eliminate unsuitable concepts before detailed production development begins (Rangarajan et al., 2013; Tharakan et al., 2003). Although this research originates from the fields of product design and engineering, its principles can be applied to guide the preliminary assessment of the garment concept development process.

Currently, there is no AI-assisted workflow specifically developed for the design of bespoke cheongsams; such a workflow should incorporate tracking capabilities to integrate user validation, cultural assessment, design consistency and preliminary manufacturability into the

process. This paper addresses this gap by proposing a designer-led checklist that classifies each concept as 'Accepted (Pass)', 'Requires Modification (Revise)', or 'Rejected (Fail)', while involving users in the final validation process. The combination of semantic transformation, controlled generation and designer-led selection forms the theoretical basis for the three-stage workflow explored in this study.

Methodology

This study, which employs a scientific research approach combined with an interpretative multi-case study methodology, lays the groundwork for the development of an actionable workflow. Furthermore, this workflow connects consumers, professional designers and the key Midjourney image-generation platform. Moreover, this designer-led model of AI collaboration demonstrates that users can articulate design intent, whilst AI assists with visual exploration. Furthermore, the findings suggest that designers can interpret, evaluate and optimise the generated concepts (Hevner et al., 2004; Hosanagar & Ahn, 2024; Palani & Ramos, 2024; Peffers et al., 2007). The sample comprised five consumers and one designer. Nevertheless, these five case studies are better suited to in-depth process tracking and cross-case comparisons rather than statistical generalisation. However, they do illustrate differences in wearing contexts, style preferences, structural requirements and material expectations. As all participants provided informed consent, the research team has removed personally identifiable information from the recordings. Furthermore, the findings indicate that participants need to provide specific wearing contexts and suggest three to five terms relating to emotional, semantic or stylistic aspects. This study excluded unauthorised replicas and impractical requirements. In addition, the findings suggest that each participant can complete an initial online interview lasting approximately 35–45 minutes. The data also showed that interviews lasting 16–25 minutes, conducted following the first and second design iterations, could confirm changes in design preferences and constraints. Given the evidence suggesting the need for a third design iteration, it was necessary to conduct an additional 10–15-minute validation interview. Nevertheless, each case required approximately 80–100 minutes, whilst more complex cases could take up to 120 minutes. Requirements are categorised into six broad types. However, designers may use a controlled vocabulary to convert these requirements into slot-based prompts. Furthermore, researchers may use the same version of Midjourney throughout the study. Given the use of identical core generation settings, each round may yield between six and eight images. Additionally, each case appears to comprise an initial generation round, followed by up to two rounds of targeted revisions. The initial output is labelled v0. The study findings also indicate that outputs following the first and second rounds of targeted revisions can be labelled v1 and v2, respectively. Despite these observations, the process may still follow the sequence: image generation, designer review, user feedback, targeted revisions, and checklist-based convergence. However, the data suggests that semantic drift, structural inconsistencies, cultural stereotypes, intellectual property issues or initial manufacturing problems may arise. In light of these findings, designers may undertake iterative revisions by clarifying the prompts. Furthermore, the results suggest that reinforcing negative prompts may be important. Nevertheless, adjusting the weighting of reference images where applicable also appears to be crucial. Core parameters remain unchanged. Moreover, evidence may indicate that only the relevant prompt slots and reference image control parameters need to be modified.

Additionally, at the end of each generation round, the study may assess the alignment of the concept with user intent. Given that design coherence, cultural adaptability and initial manufacturing feasibility have been taken into account, checklist-based screening may provide

a systematic basis. However, the research findings suggest that each proposal can be categorised as ‘approved’, ‘requires modification’ or ‘rejected’. Furthermore, the research may indicate that prompts, core generation settings, revision triggers, user feedback, screening decisions, and the rationale for retaining or discarding outputs are all significant. The study documented a complete version history. In light of relevant literature (Alexeeva et al., 2016), traceability of design decisions may be achievable. Nevertheless, reflective thematic analysis and cross-case comparisons can still identify recurring patterns in semantic transformations. Furthermore, the findings suggest that designer interventions, user feedback and the confirmation of design preferences, as well as design convergence, may be of significant importance (Braun & Clarke, 2021). Furthermore, the credibility of the study is enhanced through triangulation of interview transcripts, prompt versions, generated images, checklist results and participant feedback. The article includes anonymised excerpts. Notwithstanding the above considerations, labelling all AI-generated images as ‘generated by Midjourney’ would demonstrate transparency.

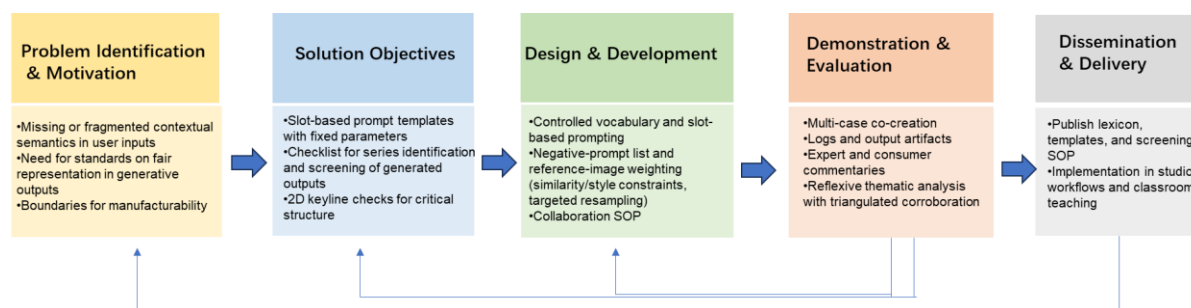


Figure 1: Design Science Research Framework for User Co-Creation and AI Screening in Personalised Cheongsam Design

Source: Illustrated by the author

Results and Analysis

Structured Translation of User Requirements

We completed five personalised Cheongsam co-creation cases using a standardised design process under fixed Midjourney parameters. The participants differed in age, occupation, wearing context, aesthetic preference, structural requirements, and material expectations. Table 1 summarises the principal requirements and restrictions identified in the initial interviews.

Table 1: Summary of Participant Requirements and Design Constraints

Case profile	and Wearing context	Style colour preferences	and Structural requirements	Material and detail preferences	Design constraints
A researcher 40s	Winter New Year gathering	Traditional and modern; wine red or maroon; refined details	Mandarin collar; knee-length; low side slit; suitable for long boots	Warm stretch fabric; metallic buttons pearl	Avoid bright red, high sequins, logos, fur; or maintain

Case profile	and Wearing context	Style colour preferences	and Structural requirements	Material and detail preferences	Design constraints
B teacher 30s	Summer professional event and commuting	1930s influence with modern details; fog blue, or Morandi green	Low mandarin collar; straight or slightly fitted silhouette; medium slit	gemstone details Lightweight silk, cotton or linen, ramie; minimal frog buttons	warmth and mobility Avoid glossy satin, strong colour contrast, sequins, and overly formal styling Avoid heavy embroidery, intense colour blocking, glossy surfaces, and complex construction.
C civil servant 20s	Formal event	Dignified and restrained; graphite grey, oatmeal, or mist blue	Straight or slightly fitted silhouette; small slit; comfortable for sitting	Durable fabric; concealed zipper and buttons	Avoid dense floral decoration, excessive frog buttons, lace, heavy fabrics, and tight-fitting
D undergraduate 20s	Campus photography	Hong Kong retro style with modern tailoring; black, white, and cool grey	Straight or slight A-line silhouette; optional panel construction	Stretch fabric; restrained metallic details; geometric motifs	Avoid high gloss, heavy embroidery, tight fitting, excessive decoration, and difficult construction.
E undergrad 20s	Casual event with mild formality	Contemporary street style; mid-calf length; beige piping	Mid-calf length; clean silhouette	Denim panelling; modern metallic frog buttons	

Source: Illustrated by the author

Users initially described their needs using contextual, emotional and stylistic expressions, employing terms such as 'festive', 'understated', 'professional', 'retro', 'cool', and 'suitable for daily commutes'. These descriptions could not be directly translated into image generation, as they did not specify the garments' visual or structural constraints. The professional designer therefore translated these needs into structured input fields.

Six categories of user information were collected: the context of wear, emotional and stylistic preferences, colour preferences, structural requirements, material expectations and explicit restrictions. These categories were then grouped into four executable design parameters: colour and mood ranges, structural thresholds, material and sheen limits, and negative constraints.

In Case A, the data may suggest that the requirement to demonstrate 'both charming and understated' characteristics could be achieved through the use of burgundy or brown rather than a bright vermilion, combined with the understated surface details and a subtle side slit. Moreover, in Case B, the findings appear to indicate that the description 'suitable for the daily commute' might be realised through a straight or slightly fitted silhouette, a low stand-up collar, the breathable fabric and a subtle sheen. Furthermore, in Example D, the evidence could demonstrate that the requirement for 'vintage yet refined (vintage cool)' characteristics may be achieved through a cool-toned colour scheme, a straight or slightly flared silhouette, the understated geometric patterns and subtle metallic details. Given that these cases present significant variations, the results might suggest that each design approach could establish different aesthetic outcomes. Cases show distinct design strategies achieve requirements.

Structured input fields helped clarify the relationships among context, style, colour, structure, materials, and constraints. It also enabled the designer and the user to confirm the intended design constraints prior to image generation. These results indicate that semantic translation based on input fields reduced ambiguity and facilitated clearer communication of the user's intentions, thereby addressing research question 1 (RQ1).

Controlled Divergence and Trigger-Based Revision

Our analysis of the prompt version history revealed a recurring, controllable process of divergence and convergence across all five case studies. This process comprises: image generation with fixed parameters; designer review; identification of trigger points; targeted prompt revisions; re-generation; and user validation. Figure 2 illustrates the empirical mechanism derived from these five case studies.



Figure 2: Empirical Mechanism of Controlled Divergence and Convergence in Personalised Cheongsam Co-Creation

Source: Illustrated by the author

During the iterative process, we observed that Midjourney's core parameters remained unchanged. Each case involved the generation of 6 to 8 images per round, with a maximum of three rounds of iteration. Revisions were made only when specific issues were identified. Key triggers included semantic deviations, structural inconsistencies, inappropriate material or surface appearance, excessive ornamentation, styles that were too formal or mature, and cultural or intellectual property concerns.

However, rather than rewriting the entire prompt, the designers modified only the affected sections. Typical interventions included: specifying garment length, limiting the height of slits, reducing fabric sheen, specifying a lighter or warmer fabric appearance, reducing the density of embellishments, reinforcing negative prompts, and replacing patterns that might be associated with the brand with abstract patterns. Prompt elements consistent with the user's intent were retained.

These five case studies demonstrate that the various applications of this process are all relevant. Furthermore, Case A demonstrates that enhancing the visual warmth, incorporating more youthful design details and modifying the shape of the hem all played a significant role. The small polka-dot pattern was part of the original Case B design but was removed in revision because it made the overall look visually crowded. The final proposal for Case C retained the formal, neutral color direction, but added modern tailoring, short sleeves and a subtle sheen to the fabric. These modifications made the design suitable for a formal setting but without the typical Cheongsam appearance. In Case D, the fishtail hem was removed, and the heavy looking fabric effect was replaced by a lighter silk like texture which brought the proposal closer to the intended design direction. The Case E rework concentrated on the denim color, the garment length, the frog-style fastenings and decorative details. The elements were reworked to provide a more modern take whilst still keeping recognizable Cheongsam features. In the cases the designer did not depend on repeated random regeneration to explore different design directions. Instead, the main generation settings remained constant and only specific prompt elements were modified when the designer or user saw a semantic, structural, esthetic or cultural problem. The strategy allowed each iteration to correct an identified problem without affecting other aspects of the design. The five cases thus show how fixed generation parameters and targeted prompt revisions enabled the stepwise refinement of AI-generated concepts in response to RQ2.

Designer-Led Screening and Preliminary Design Convergence

To explore how designers might evaluate AI design proposals, we asked the designer to rate each AI-generated proposal on how well it matched the user's intention, how coherent it was as a design, and how culturally appropriate and initially manufacturable it was. The designer then labelled each proposal one of three outcomes: "pass", "revise" or "fail". A "pass" meant that the designer considered the proposal reasonable for further design development. A "revise" rating indicated that the designer had identified specific issues they could address by revising the prompt or design direction. A "fail" meant that the proposal significantly conflicted with the user's overall intended direction or with the cultural requirements of Cheongsam design and basic garment structure. Across the five cases, these criteria gave the designer and users a common basis for discussing why a proposal should pass and proceed, or why it needed further revision. Design coherence also recurred as a reason for revision when a proposal's visual elements did not work together coherently.

The designers examined whether these proposals aligned with users' intentions by comparing each proposal with the wearing scenarios, emotional expectations, and stylistic preferences users expressed. Moreover, the designers evaluated whether the designs demonstrated coherence by ensuring harmony among silhouette, colour, fabric, decorative elements, and garment details within each proposal. Furthermore, the designers may establish that the designs appeared culturally appropriate, taking care that they could avoid oversimplifying the distinctive elements of the cheongsam or reducing them to stereotypical visual symbols. Nevertheless, the designers might assess that the preliminary production feasibility demonstrated visual appropriateness of the collar style, the front placket fastening, the brooch fastening, the garment proportions, the slit placement, the fabric texture and the structural details. The assessment shows final production feasibility. In light of this evaluation, the designers could examine that the developed concepts appeared sufficiently coherent and structurally sound, thereby providing that this analysis may establish a basis for further design development.

The findings demonstrate that all five cases required revision after the initial round of image generation. Moreover, the data may suggest that after targeted revisions were made, the designer and users accepted the v2 proposal in each case as suitable for further development. Furthermore, the results could indicate that the combination of designer-led screening and user validation created a documented basis for each decision. Additionally, the evidence shows that the prompt version history recorded the problem that triggered each revision, the prompt slot that was affected, the change that was made, the user's response, and the reason why an output was retained, revised, or rejected. Data show that the cases used the checklist effectively. Given that the checklist was applied across the five cases, the findings may demonstrate that it helped the designer identify specific problems and determine the next revision step at the concept stage. Nevertheless, these significant findings appear to address RQ3 by showing how a designer-developed checklist, used together with user feedback, supported the preliminary evaluation and selection of AI-generated Cheongsam concepts. In light of the evidence, the results could suggest that this approach may establish a key framework for the design process. Therefore, the study might indicate that the combination of the structured checklist and user validation could provide important support for concept development. Research shows that the method proves effective overall.

Discussion

The study explored the coordination between user co-creation and designer-led screening in AI-assisted Personalized Cheongsam design. First, the research results show that user participation does not mean that natural language descriptions are directly typed in image generation platforms. Professional designers step in as critical translators instead, transforming the needs of context, emotion, style and structure into prompts that can be acted upon. This result adds to the wider discussion of human-AI co-creation by identifying semantic translation as the primary process connecting user intent with generative exploration (Franzo et al., 2024; Palani & Ramos, 2024). Second, the study has shown that the controlled divergence is due to the synergy of fixed generation parameters and strategic textual edits. Instead of repeatedly generating unrelated alternatives, the designer identified specific semantic, structural, material, decorative or cultural problems and modified only the affected prompt fields. This process preserved useful characteristics from earlier outputs while gradually guiding the concepts toward convergence. Third, designer-led checklist screening provided a traceable basis for evaluating consistency with user intent, design coherence, cultural appropriateness, and

preliminary manufacturing feasibility. The findings therefore clarify that AI screening in this study was not an autonomous system function, but a form of human judgment applied to AI-generated proposals. Together, these mechanisms reduced ambiguity in user requirements, avoided unnecessary regeneration, and made design screening and revision decisions more explicit and traceable. From a practical perspective, the workflow provides a reusable approach for professional studios and fashion design education. It can potentially be transferred through structured requirement translation, targeted revision, designer-led screening and version-history documentation, which can be adapted to other personalized fashion design contexts. The transparency and teachability of AI-assisted design can be improved by setting structural constraints before decorative exploration, pairing negative instructions with positive alternatives, limiting the number of generation rounds, and documenting each trigger, revision and decision. Cultural sensitivity should also be part of semantic translation, generation and evaluation, rather than a final visual check. Cultural identity was conveyed through proportion, structure, materials and restrained details, with excessive sheen, high slits, stereotypical decoration and brand-associated motifs being restricted. However, the study was restricted to five consumers, one professional designer and one generative platform. The checklist was based on the judgment of one designer, and preliminary manufacturing feasibility was evaluated from visual concepts without pattern development, prototyping, fitting, or production testing. Future studies should include larger participant groups, other designers, other generative platforms and physical garment development to test the transferability of the workflow and its technical feasibility.

Conclusion

This study examined the synergistic mechanisms of user co-creation and designer-led screening in AI-assisted personalised Cheongsam design. We developed and evaluated an operational workflow connecting five consumers, a professional designer, and the Midjourney platform through an interpretive multiple-case approach. The workflow integrated semantic translation, controlled image generation, trigger-based prompt revision, checklist screening, and user confirmation. Based on the cross-case findings, we drew the following conclusions.

- 1) Slot-based prompt translation supported the clearer communication of user intentions. Contextual, emotional, stylistic, structural, material, and restrictive requirements were converted into executable prompt fields covering colour and mood ranges, structural thresholds, material and sheen limits, and negative constraints. This process reduced ambiguity and established clearer design boundaries before image generation, thereby addressing RQ1.
- 2) The fixed generation parameters allowed the designer to make small, targeted revisions between versions while keeping the overall visual direction stable. When a problem was encountered, the designer changed only the prompt fields that were affected, rather than generating a totally different set of alternatives. Such edits addressed particular issues of meaning, garment structure, fabric, decoration, cultural appropriateness, or intellectual property. The unaffected prompt elements were left untouched, so the designer was able to keep useful features from previous outputs and iteratively improve each proposal according to the user feedback. This approach supported a more focused development from initial concept to selected design and provided evidence for RQ2 across the cases.
- 3) Designer-led checklist screening, together with user feedback and confirmation of final selections, provided a traceable basis for concept-stage evaluation. The generated

proposals were assessed for user intention consistency, design coherence, cultural appropriateness, and preliminary manufacturing feasibility, and classified as Pass, Revise, or Reject. For all five cases the Pass decision was made by v2. This indicates suitability for further design development rather than proved production feasibility, thus answering RQ3.

The main contribution of this study lies in the proposal of a reusable and traceable collaborative design workflow, comprising location-based prompt templates, controlled modification procedures, checklists developed by designers, and a version history protocol. These structured elements have laid the foundations for future application to other bespoke fashion design scenarios. They demonstrate that users, designers and artificial intelligence can generate synergistic effects in the field of bespoke fashion design, whilst preserving human judgement and cultural sensitivity. However, this study is limited to five case studies, a single professional designer and a single generative platform; it does not address the practical stages of patternmaking, prototype production, fittings or production testing. In future research, this workflow should be validated with a wider group of participants, a larger number of designers, other generative platforms and through the practical development of garments, in order to assess its feasibility and technical validity beyond the conceptual stage.

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Author Contribution Statement: All authors contributed significantly to this manuscript. [GuoHui] was responsible for the conceptualisation, methodology, and overall supervision of the study. [ZhangYaQian] handled data collection, analysis, and interpretation of results. [Rose Dahlina Rusli] contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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