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Comparative Analysis of Web Design Performance: AI-Assisted Tools Versus Traditional Figma-Based Design

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ABSTRACT

This study compared the performance of traditional Figma workflows and AI-assisted Figma workflows in developing high-fidelity UI/UX prototypes among BSIT students of Quezon City University during the Academic Year 2025–2026. Using a descriptive-comparative within-subjects design, the study evaluated both workflows in terms of Design Quality (Functional Suitability, Usability, and Performance Efficiency) and Creative Output (Creative Autonomy, Innovation, and Ease of Workflow). Data were collected from 60 purposively selected respondents through a researcher-developed questionnaire and analyzed using weighted mean, standard deviation, Wilcoxon Signed-Rank Test, and Spearman's Rank-Order Correlation. Results showed that both workflows received positive evaluations; however, the traditional Figma workflow consistently obtained higher ratings. Significant differences were found in Functional Suitability, Usability, and Creative Autonomy, favoring the traditional workflow, while no significant differences were identified in Performance Efficiency, Innovation, and Ease of Workflow. Strong positive correlations were also observed between Design Quality and Creative Output in both workflows. The findings suggest that while AI-assisted tools improve workflow efficiency and convenience, traditional Figma workflows remain more effective in supporting usability, functional accuracy, and creative control. The study concludes that AI-assisted design tools are most effective when used as complementary technologies alongside human creativity and manual design expertise.

Keywords: creative output, design quality, prototyping performance, usability, workflow efficiency, web designs, artificial intelligence, Figma

INTRODUCTION

In the era of rapid digital transformation, web design has evolved from a purely manual process into a collaborative interaction between human creativity and computational intelligence. As 2026 continues to witness advancements in Artificial Intelligence (AI), its integration into graphic and web design workflows has become central to modern creative practices, significantly transforming how digital interfaces are conceptualized and developed (Chamorro-Premuzic, 2023). Industry-standard platforms such as Figma have expanded beyond traditional vector-based editing and prototyping, incorporating AI-assisted and automated functionalities that streamline the design process. According to Staiano (2020), proficiency in these advanced design platforms is essential for improving design quality and maintaining competitiveness in the modern professional environment.

The contemporary design landscape increasingly depends on generative AI-powered prototyping tools that can transform simple prompts into functional web and mobile interface designs (Bustamante-Orejuela et al., 2026). Traditionally, designers manually created each component of a User Interface (UI) within Figma, allowing for greater creative precision and customization, although the process required substantial time, effort, and technical expertise. The emergence of AI-assisted technologies has introduced new opportunities to improve workflow efficiency by automating repetitive tasks and generating layouts through generative models (Sun, 2026).

Despite these technological advancements, concerns continue to arise regarding the limitations of AI and its implications for human-centered design. Mester and Toth (2025) highlight that although AI contributes significantly to productivity and automation, it also introduces challenges associated with accountability, incorrect decision-making, and privacy concerns. As society transitions toward Web 4.0, the relationship

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between humans and machines is becoming increasingly interconnected; however, this integration also raises issues related to algorithmic bias and digital inequity, potentially excluding marginalized communities from equitable digital experiences (Mester & Toth, 2025).

Moreover, while AI enhances operational efficiency, it often lacks the ability to fully understand complex human emotions, behaviors, and contextual nuances. This creates a significant challenge in modern web design, where visually appealing interfaces may fail to deliver meaningful and user-centered experiences. Saita (2024) emphasizes that AI-generated outputs frequently lack deep user empathy, resulting in interfaces that are aesthetically refined yet functionally limited. Consequently, Staiano (2021) argues that mastery of traditional design principles and manual prototyping tools remains crucial in developing sophisticated, highly usable, and user-focused digital products.

Although numerous studies have examined the broader role of AI in shaping future web technologies, a notable research gap persists regarding the direct comparison between AI-assisted workflows and traditional Figma-based design approaches. Existing literature primarily focuses on the technical capabilities of generative tools and theoretical discussions in design education, with limited emphasis on practical usability assessments. Quiñonez-Ku et al. (2024) stress the importance of evaluating prompt-driven designs against established smart mobile application design standards. It remains uncertain whether the efficiency offered by AI-driven automation compromises design quality, usability, and the intentional creativity of designers, which is often obscured by the technical “black box” nature of AI systems.

This study seeks to examine the comparative effectiveness of human-led creativity and AI-assisted automation in web design performance. Specifically, it aims to determine whether generative AI tools significantly enhance creativity and productivity or whether they introduce structural limitations that hinder the development of high-fidelity, user-centered prototypes. Central to this investigation is the emergence of Web 4.0, where AI functions not merely as a supporting tool but as an intelligent collaborator within the creative design process (Mester & Toth, 2025).

The incorporation of generative AI into User Interface and User Experience (UI/UX) design workflows has transformed traditional manual component creation into a more iterative, prompt-based approach. According to Quiñonez-Ku et al. (2024), AI-driven prototyping tools can rapidly convert conceptual ideas into high-fidelity prototypes; however, these outputs often require extensive human refinement to satisfy professional usability standards. This indicates that while AI improves efficiency, it may simultaneously obscure the designer’s intentionality and creative control. Similarly, Mester and Toth (2025) argue that AI-assisted systems are most effective in automating repetitive layout and structural tasks, while the core elements of creativity, originality, and emotional connection remain fundamentally dependent on human designers.

Nevertheless, AI-generated designs continue to face structural and contextual limitations. Saita (2024) explains that AI frequently struggles to interpret cultural nuances and complex human-centered considerations, leading to interfaces that prioritize appearance over practical usability. Therefore, expertise in traditional design methodologies remains essential. Staiano (2021) further emphasizes that deep knowledge of interface prototyping tools such as Figma, particularly its advanced manual controls, is necessary to transform basic AI-generated templates into polished and user-centered digital products. As a result, the current state of web design is characterized by the ongoing balance between automated efficiency and human-driven precision.

To address the identified research gap, this study proposes a comparative evaluation of web design performance using AI-assisted tools and traditional Figma-based approaches. The research will employ interactive genetic algorithms and generative design frameworks to assess variables such as design efficiency, usability, and creative output.

The significance of this study lies in its potential contribution to both academic and professional design practices. By identifying the strengths and limitations of human-centered and AI-augmented design methodologies, the research aims to provide a foundation for developing a hybrid design framework that maximizes efficiency while preserving the creativity, originality, and human insight essential for effective digital communication.

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Statement of the Problem

This study aims to evaluate and compare the effectiveness of AI-assisted prototyping tools versus traditional Figma-based workflows in terms of design performance, prototyping quality and user centered usability. Specifically, it seeks to determine if the automation provided by generative AI enhances creative efficiency or introduces structural limitations that affect the final high-fidelity output.

Specifically, this study seeks to answer the following questions:

What is the level of design quality of high fidelity prototypes produced by both AI assisted and traditional Figma workflows in terms of:

a. Functional Suitability;

b. Usability; and

c. Performance Efficiency;

Is there a significant difference in the assessment of the respondents on the level of design quality between AI assisted and traditional workflows in terms of the aforementioned variables?

What is the level of creative output and professional satisfaction among designers using these methods in terms of:

a. Creative Autonomy

b. Innovation

c. Ease of Workflow

Is there a significant relationship between the level of design quality of high-fidelity prototypes produced by both AI assisted and traditional Figma workflows and level of creative output?

Related Studies

The continuous advancement of Artificial Intelligence (AI) and Model-Driven Development (MDD) has significantly transformed the field of software and web development, shifting development practices from labor-intensive manual processes toward intelligent automation. Recent advancements in generative AI and deep learning technologies have enabled the automation of User Interface and User Experience (UI/UX) workflows, allowing designers and developers to rapidly produce high-fidelity prototypes with improved efficiency (Malik et al., 2023; Namoun et al., 2024). Existing literature increasingly examines the capacity of AI-driven tools to either augment or partially replace traditional manual design methods (Priefer et al., 2021). Although studies consistently acknowledge the substantial efficiency benefits offered by AI and MDD, debates remain regarding their effects on usability, structural quality, creativity, and the preservation of essential human design skills. A synthesis of current literature suggests that while AI significantly accelerates prototyping and development processes, comprehensive comparative evaluations remain necessary to determine whether AI-assisted workflows can truly achieve the same level of usability, structural integrity, and creative autonomy associated with traditional human-centered design approaches.

Traditional UI/UX design processes require extensive iterative development, detailed planning, and multidisciplinary technical expertise (Malik et al., 2023). These requirements often result in prolonged development cycles and increased susceptibility to repetitive design errors. To address these challenges, researchers and practitioners have increasingly adopted automated and AI-driven frameworks. Studies on Model-Driven Development reveal that automated systems are capable of generating up to 90% of software codebases, enabling developers to focus more on system architecture and higher-level problem solving rather than low-level implementation tasks (Priefer et al., 2021). Furthermore, empirical findings indicate that

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developers utilizing automated infrastructures can achieve productivity levels approximately 5.8 to 11.7 times greater than those relying on conventional manual development approaches (Priefer et al., 2021). Similarly, generative AI technologies, particularly Large User Interface Models (LUIMs), demonstrate significant potential in streamlining front-end development activities and accelerating interface generation (Namoun et al., 2024). Collectively, these studies indicate that the growing adoption of AI-assisted design is primarily motivated by the need to minimize time-consuming manual processes and reduce inefficiencies associated with repetitive "clone-and-own" UI development practices (Priefer et al., 2021).

Despite the efficiency gains associated with AI-driven development, concerns regarding usability and design quality continue to dominate current scholarly discussions. On one hand, automation contributes positively to software quality assurance by enforcing coding standards and minimizing structural inconsistencies, with studies showing a reduction in code style violations by approximately 2.4 times through automated systems (Priefer et al., 2021). On the other hand, recent evaluations of AI-generated user interfaces reveal notable shortcomings in addressing essential usability dimensions such as effectiveness, efficiency, learnability, and user satisfaction (Namoun et al., 2024). Existing AI design tools often lack sufficient understanding of established UI/UX principles, user-centered methodologies, and contextual human empathy (Namoun et al., 2024). This contrast demonstrates that while automation can strengthen structural consistency and technical standardization, AI-generated outputs still depend heavily on human intervention and intuition to achieve meaningful usability and user-centered functionality (Priefer et al., 2021; Namoun et al., 2024).

The integration of Generative AI (GenAI) into design workflows also introduces significant psychological and creative implications. Although AI-powered platforms such as Figma AI enable designers to allocate more attention to strategic and conceptual thinking (Kamnerddee et al., 2024), scholars have raised concerns regarding design fixation, reduced originality, and the production of generic outputs (Akça, 2026). Research conducted by Fu et al. (2024) indicates that while GenAI tools can stimulate divergent thinking among novice designers, they do not substantially improve designers' overall self-efficacy and may even create resistance toward AI-assisted collaboration. Consequently, the role of designers is gradually evolving from direct creators into curators and evaluators of AI-generated content (Akça, 2026). This evolving relationship positions AI as a collaborative partner across multiple dimensions of creativity, including Product, Person, Process, and Press (Dahibhate, 2021; Valderrama et al., 2024). Nevertheless, current generative technologies still demonstrate limited capability in fostering continuous UI/UX innovation and deeper creative exploration without human oversight (Namoun et al., 2024). These findings emphasize that excessive reliance on AI systems may hinder the development of foundational design competencies, reinforcing the importance of maintaining creative autonomy and mastery of core design principles.

Several recent studies provide methodological foundations for evaluating the effects of AI-assisted workflows on productivity, creativity, and usability. Lively et al. (2023) integrated AI-generative tools into a web design course and utilized self-report survey instruments with Likert-scale measures to assess student perceptions. Their findings revealed that AI tools consistently improved workflow speed while maintaining acceptable levels of output quality (Lively & Hutson, 2024). Similarly, Fu et al. (2024) employed a within-subjects experimental design in which participants completed design tasks both with and without AI support. Results indicated that AI-assisted outputs were perceived as more creative; however, they did not significantly improve perceived usefulness or usability. These findings directly support the need to further examine the relationship between AI-driven efficiency and actual interface effectiveness. Complementing these studies, Dahibhate (2023) found that human-generated designs achieved higher ratings in originality and authenticity, emphasizing the continuing importance of creative autonomy in design evaluation. Furthermore, Choudhury et al. (2025) confirmed that AI technologies now support nearly all phases of the UI/UX design lifecycle, thereby validating the use of complete high-fidelity Figma prototypes as appropriate measures for comparative evaluation.

Overall, the literature demonstrates that the integration of AI into UI/UX design presents a significant trade-off between efficiency and human-centered quality. Existing studies consistently agree that AI-assisted tools substantially reduce the time and effort required to develop prototypes and interfaces (Malik et al., 2023; Namoun et al., 2024), while also improving structural consistency through automated coding and design enforcement mechanisms (Priefer et al., 2021). However, strong evidence also indicates that current AI systems remain limited in independently achieving usability standards and human-centered design quality without

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substantial human guidance (Namoun et al., 2024). Additionally, concerns regarding creativity, design intuition, skill preservation, and professional autonomy continue to shape discussions surrounding AI adoption in design practices. Although prior studies have validated the effectiveness of comparative experimental methods and self-report Likert instruments in evaluating AI-assisted workflows (Fu et al., 2024; Lively et al., 2023), there remains a lack of research directly comparing traditional human-led Figma design and Figma AI-assisted design using a unified evaluation framework across multiple performance dimensions. This gap in the literature highlights the need for a controlled and comprehensive comparative study focused specifically on evaluating prototype quality, usability, creativity, and efficiency between human-centered and AI-assisted web design workflows.

METHODOLOGY

Research Design

This study employed a descriptive-comparative research design using a within-subjects survey approach. The study aimed to assess the self-reported perceptions of Bachelor of Science in Information Technology (BSIT) students regarding their actual experiences using two distinct web design workflows: (1) the traditional Figma workflow utilizing only manual design tools within Figma without generative AI assistance, although the use of external design references was permitted; and (2) the AI-assisted Figma workflow utilizing the generative AI capabilities integrated within the Figma platform. Since all participants evaluated both workflows using the same evaluation instrument, the design enabled a direct comparison of the two approaches based on the respondents' firsthand experiences. This type of self-report evaluation is widely utilized in AI-assisted design research, particularly in studies examining workflow efficiency, usability, and creative performance (Lively & Hutson, 2024; Fu et al., 2024).

Both workflows were evaluated using a researcher-developed questionnaire based on a four-point Likert scale ranging from Strongly Disagree to Strongly Agree. The use of a four-point scale follows the forced-choice principle, which intentionally removes neutral responses in order to encourage more definitive participant evaluations (Lively & Hutson, 2024). The instrument was designed to measure two primary constructs: Design Quality and Creative Output. Design Quality was evaluated using three sub-criteria: Functional Suitability, Usability, and Performance Efficiency. Meanwhile, Creative Output was assessed through Creative Autonomy, Innovation, and Ease of Workflow. These constructs were selected because of their direct relevance to UI/UX evaluation and AI-assisted design assessment.

The Design Quality dimensions, particularly Functional Suitability and Performance Efficiency, were anchored on the ISO/IEC 25010 software quality framework, which emphasizes software functionality, efficiency, and overall system quality (Namoun et al., 2024; Priefer et al., 2021). The Usability dimension focused on human-centered design principles that are frequently underrepresented in AI-generated interfaces (Namoun et al., 2024). On the other hand, the Creative Output dimensions were grounded in the theoretical framework proposed by Fu et al. (2024), particularly regarding designer autonomy, creativity, and divergent thinking in AI-assisted environments.

To ensure consistency in data collection, all participants were provided with the same set of survey questions for both workflow evaluations. The instrument was administered uniformly to all 60 respondents, and all evaluations were based on participants' prior experiences with both traditional and AI-assisted Figma workflows. Consequently, participant profiling became essential to establish the credibility and reliability of the responses collected. Initially, the researchers considered implementing counterbalancing procedures to minimize potential order effects. However, due to academic time constraints and submission deadlines, counterbalancing was not feasible. As a result, all respondents evaluated the traditional Figma workflow before proceeding to the AI-assisted workflow. The researchers acknowledge that this fixed sequence may have introduced order bias and therefore constitutes a limitation of the study (Field, 2018; Fu et al., 2024).

Data Gathering

Target Population

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The target population of this study consisted of BSIT students enrolled at Quezon City University during the Academic Year 2025–2026. Based on institutional estimates, the BSIT population comprised approximately 2,882 students. BSIT students were selected as respondents because their academic training and coursework provide sufficient exposure to UI/UX design concepts and industry-standard tools such as Figma, making them suitable evaluators of both traditional and AI-assisted design workflows.

Sampling Method and Sample Size

This study utilized purposive sampling, a non-probability sampling technique in which participants are selected based on specific qualifications and characteristics relevant to the objectives of the research (Creswell & Creswell, 2018). The use of purposive sampling ensured that all selected respondents possessed the technical knowledge and practical experience necessary to evaluate both web design workflows effectively.

The minimum required sample size was initially set at 30 participants based on the power analysis guidelines established by Cohen (1988), which indicate that a sample size of 30 is generally adequate to achieve a statistical power of 0.80 for detecting medium-sized effects at an alpha level of 0.05 in paired-sample analyses. To strengthen the reliability of the findings and improve the robustness of the statistical analysis, the study ultimately included a total of 60 participants.

Research Instrument

The primary data collection instrument used in this study was a researcher-developed questionnaire administered through Google Forms, consistent with methodologies employed in prior AI-assisted design studies (Lively & Hutson, 2024). The survey instrument consisted of three major sections: (1) respondent profiling, (2) evaluation of the traditional Figma workflow, and (3) evaluation of the AI-assisted Figma workflow. A four-point Likert scale was utilized throughout the instrument to implement the forced-choice response model and eliminate neutral responses (Lively & Hutson, 2024).

The respondent profiling section verified whether participants satisfied the inclusion criteria for purposive sampling while also collecting demographic and technical background information related to Figma proficiency and familiarity with AI-assisted design technologies. This ensured that respondents possessed adequate technical competence to critically evaluate both workflows (Creswell & Creswell, 2018).

The evaluation sections for both workflows contained 30 items distributed across six evaluation criteria. Three criteria focused on Design Quality: Functional Suitability, Usability, and Performance Efficiency. The remaining three criteria focused on Creative Output: Creative Autonomy, Innovation, and Ease of Workflow. Each criterion consisted of five survey statements.

The Functional Suitability and Performance Efficiency items were developed based on the ISO/IEC 25010 software quality standards, which emphasize system quality, efficiency, and operational effectiveness (Namoun et al., 2024; Priefer et al., 2021). The Usability items measured the degree to which the interfaces reflected human-centered design principles often lacking in AI-generated systems (Namoun et al., 2024). Meanwhile, the Creative Output items were adapted from the conceptual framework proposed by Fu et al. (2024), particularly concerning creative autonomy, innovation, and divergent thinking within AI-assisted design environments.

Prior to data collection, the questionnaire underwent face validation by faculty experts to assess the appropriateness of the language, structure, and contextual relevance of the instrument for third-year BSIT students (Creswell & Creswell, 2018). Furthermore, the instrument's validity was reinforced through its grounding in established UI/UX evaluation frameworks and existing literature on AI-assisted design assessment (Namoun et al., 2024; Lively & Hutson, 2024).

Statistical Treatment of Data

The data collected from the 60 respondents were analyzed using statistical techniques appropriate for ordinal data derived from a four-point Likert scale. The selected statistical methods were aligned with the research questions and objectives of the study.

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Weighted Mean and Standard Deviation were utilized to determine the levels of Design Quality and Creative Output for both the traditional and AI-assisted workflows across all evaluation criteria. These statistical measures addressed Research Questions 1 and 3 by describing the central tendency and variability of participant responses (Field, 2018). The computed mean scores were interpreted using the following scale: 3.26–4.00 as Strongly Agree/Very High, 2.51–3.25 as Agree/High, 1.76–2.50 as Disagree/Low, and 1.00–1.75 as Strongly Disagree/Very Low. This interpretation framework is consistent with prior AI design perception studies utilizing Likert-scale mean analysis (Lively & Hutson, 2024).

The Wilcoxon Signed-Rank Test was employed to determine whether significant differences existed between participant evaluations of the traditional and AI-assisted workflows across all sub-criteria, thereby addressing Research Question 2. The Wilcoxon Signed-Rank Test is an appropriate non-parametric statistical technique for paired ordinal data in situations where assumptions of normality cannot be guaranteed (Field, 2018). The selection of this statistical procedure is also supported by the comparative framework utilized by Fu et al. (2024) in evaluating AI-assisted and non-AI design environments.

To examine the relationship between Design Quality and Creative Output across both workflows, the Spearman's Rank-Order Correlation Coefficient (ρ) was used in response to Research Question 4 (Field, 2018). Spearman's correlation is appropriate for ordinal datasets because it does not require interval-level measurement or normally distributed variables (Field, 2018). The interpretation of correlation strength followed Cohen's (1988) classification criteria: weak correlation ($\rho < 0.30$), moderate correlation ($0.30 \leq \rho < 0.50$), and strong correlation ($\rho \geq 0.50$). The use of this relationship analysis is theoretically supported by the findings presented by Fu et al. (2024).

All inferential statistical analyses were conducted using a significance level of $\alpha = 0.05$, which is the standard threshold commonly adopted in social science, behavioral, and design-oriented research studies (Field, 2018; Cohen, 1988).

RESULT AND DISCUSSION

Level of Design Quality of High-Fidelity Prototypes

This section presents findings for Research Question 1, which examines the level of design quality of high-fidelity prototypes produced by both AI-assisted and traditional Figma workflows across three criteria: Functional Suitability, Usability, and Performance Efficiency. All 60 respondents evaluated each workflow using a four-point Likert scale. Mean scores are interpreted as follows: 3.26–4.00 (Very High), 2.51–3.25 (High), 1.76–2.50 (Low), and 1.00–1.75 (Very Low).

Table 1. Level of Design Quality: Traditional Figma vs. AI-Assisted Workflow (n = 60)

Criteria	**Traditional Figma**			**AI-Assisted**		
Design Quality	**M**	**SD**	**Interpretation**	**M**	**SD**	**Interpretation**
Functional Suitability	3.40	0.45	Very High	3.01	0.62	High
Usability	3.41	0.46	Very High	3.12	0.63	High
Performance Efficiency	3.28	0.46	Very High	3.20	0.51	High

Functional Suitability

The results presented in Table 1 indicate that the traditional Figma workflow obtained a mean score of 3.40 (SD = 0.45) for Functional Suitability, interpreted as Very High. This finding suggests that the participants strongly agreed that manual design workflows enabled them to accurately translate functional requirements into their final user interface designs. Respondents perceived that traditional design methods allowed them to logically organize interface functions, properly align design components with project requirements, and effectively evaluate the functional appropriateness of each element within the interface.

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In comparison, the AI-assisted workflow obtained a mean score of 3.01 (SD = 0.62), interpreted as High. Although respondents generally agreed that AI-assisted tools were capable of generating functionally appropriate outputs, the level of confidence was noticeably lower than that observed in the traditional workflow. The higher standard deviation recorded in the AI-assisted condition (SD = 0.62) compared to the traditional workflow (SD = 0.45) further indicates greater variability in participant perceptions regarding the functional reliability of AI-generated interfaces.

These findings support the observations of Namoun et al. (2024), who reported that current AI-driven interface generators still struggle to fully capture and implement functional requirements without substantial human guidance and intervention. The results suggest that while AI-assisted tools can support interface generation, participants remained uncertain about the consistency and reliability of AI-generated designs in meeting the intended functional requirements of the project.

Usability

With respect to Usability, the traditional Figma workflow achieved a mean score of 3.41 (SD = 0.46), interpreted as Very High, whereas the AI-assisted workflow obtained a mean score of 3.12 (SD = 0.62), interpreted as High. The higher rating for the traditional workflow indicates that participants perceived manually designed interfaces as more effective in supporting human-centered design principles, maintaining visual hierarchy, and ensuring intuitive interaction design. Participants also believed that traditional workflows provided greater flexibility in applying established UI/UX guidelines and incorporating user empathy into the design process, factors identified by Namoun et al. (2024) as essential components of effective interface usability.

Although the AI-assisted workflow also received a favorable evaluation, the lower mean score suggests that respondents perceived AI-generated interfaces as comparatively less usable than manually designed interfaces. Furthermore, the higher standard deviation for the AI-assisted workflow (SD = 0.62) indicates inconsistencies in participant perceptions, wherein some respondents considered AI-generated interfaces highly usable while others expressed reservations regarding their usability and interaction quality.

These findings are consistent with the conclusions of Namoun et al. (2024), who emphasized that existing AI-assisted design systems still face limitations in addressing critical usability dimensions such as effectiveness, learnability, and user satisfaction. The results imply that while AI-assisted tools are capable of producing usable interface prototypes, human involvement remains essential in refining usability and ensuring user-centered interaction design.

Performance Efficiency

In terms of Performance Efficiency, both workflows produced relatively similar results. The traditional Figma workflow obtained a mean score of 3.28 (SD = 0.46), interpreted as Very High, while the AI-assisted workflow achieved a mean score of 3.20 (SD = 0.51), interpreted as High. The minimal difference between the two scores suggests that participants perceived both workflows as effective in supporting efficient interface development.

The strong performance of the AI-assisted workflow may be attributed to the automation capabilities of generative AI tools, which significantly reduce the time and effort required during the prototyping process. This observation aligns with the findings of Priefer et al. (2021), who reported that automation technologies substantially decrease development costs and improve workflow efficiency. Meanwhile, the favorable evaluation of the traditional workflow indicates that participants still valued the efficiency associated with manual control and precision during the design process.

Notably, Performance Efficiency exhibited the smallest difference between the traditional and AI-assisted workflows among all measured Design Quality dimensions. This finding suggests that AI-assisted tools have become increasingly effective in improving workflow speed and reducing repetitive design tasks. The results further support the findings of Lively and Hutson (2024), who concluded that AI-assisted technologies significantly enhance workflow efficiency and accelerate design production processes.

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Significant Difference Between AI-Assisted and Traditional Workflows

Research Question 2 examined whether statistically significant differences exist in how respondents assessed both workflows across all six criteria. Given the ordinal nature of Likert-scale data, the Wilcoxon Signed-Rank Test was used at a significance level of $\alpha = 0.05$ (Field, 2018).

Table 2. Result of the Wilcoxon Signed-Rank Test Conducted

Criterion	Trad. M	AI M	W	p-value	Decision (α=0.05)
Functional Suitability	3.40	3.01	169.000	0.0002	Significant
Usability	3.41	3.12	189.000	0.0049	Significant
Performance Efficiency	3.28	3.20	204.000	0.1701	Not Significant
Creative Autonomy	3.34	3.14	207.000	0.0175	Significant
Innovation	3.32	3.17	215.500	0.0638	Not Significant
Ease of Workflow	3.33	3.29	256.500	0.6663	Not Significant

Table 2 presents the results of the Wilcoxon Signed-Rank Test conducted to determine whether significant differences existed between the traditional Figma workflow and the AI-assisted workflow across the six evaluation criteria. Significant differences were identified in Functional Suitability ($p = 0.0002$), Usability ($p = 0.0049$), and Creative Autonomy ($p = 0.0175$), where the traditional workflow consistently obtained higher mean scores than the AI-assisted workflow. These findings suggest that participants perceived traditional manual design processes as more effective in accurately translating functional requirements, maintaining usability standards, and preserving creative control. The results support the findings of Namoun et al. (2024), who emphasized that AI-generated interfaces still struggle to independently satisfy complex usability and functional requirements without substantial human intervention. Similarly, the lower rating for AI-assisted workflows in Creative Autonomy aligns with the observations of Fu et al. (2024) and Akça (2026), who noted that AI-assisted systems may reduce the designer's sense of originality and independent creative decision-making.

In contrast, no statistically significant differences were observed in Performance Efficiency ($p = 0.1701$), Innovation ($p = 0.0638$), and Ease of Workflow ($p = 0.6663$). These findings indicate that participants perceived both traditional and AI-assisted workflows as relatively comparable in terms of workflow speed, innovative potential, and overall ease of use. The absence of a significant difference in Performance Efficiency supports the findings of Lively and Hutson (2024), who reported that AI tools can improve workflow speed and reduce repetitive design tasks. However, the results also suggest that traditional workflows remain sufficiently efficient, particularly for users already familiar with manual Figma design processes. Similarly, the lack of significant difference in Innovation implies that both workflows are capable of supporting creative idea generation and design exploration.

Overall, the findings demonstrate that while AI-assisted workflows provide competitive advantages in efficiency and workflow convenience, traditional Figma workflows continue to perform better in areas requiring human-centered judgment, usability refinement, and creative autonomy. The results suggest that AI tools currently function more effectively as supportive technologies rather than complete replacements for human designers. Consequently, the integration of AI into UI/UX design may be most beneficial when combined with human creativity and manual oversight, allowing designers to leverage automation while maintaining control over functional accuracy, usability, and creative quality.

Level of Creative Output and Professional Satisfaction

This section presents the findings for Research Question 3, which examines the perceived level of creative output and professional satisfaction of BSIT students when they use traditional Figma and AI-assisted workflows. The analysis is based on three criteria: Creative Autonomy, Innovation, and Ease of Workflow. The mean scores are

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interpreted using the same scale: 3.26–4.00 (Very High), 2.51–3.25 (High), 1.76–2.50 (Low), and 1.00–1.75 (Very Low).

Table 3. Level of Creative Output and Professional Satisfaction: Traditional Figma vs. AI-Assisted Workflow (n=60)

Criteria	**Traditional Figma**			**AI-Assisted**		
Creative Output	**M**	**SD**	**Interpretation**	**M**	**SD**	**Interpretation**
Creative Automation	3.34	0.44	Very High	3.14	0.52	High
Innovation	3.32	0.46	Very High	3.17	0.53	High
Ease of Workflow	3.33	0.47	Very High	3.29	0.49	High
Overall Mean	3.33	0.42	Very High	3.20	0.47	High

Table 3 presents the level of Creative Output and Professional Satisfaction between the traditional Figma workflow and the AI-assisted workflow across the dimensions of Creative Autonomy, Innovation, and Ease of Workflow. The results show that the traditional Figma workflow consistently obtained higher mean scores in all criteria, with an overall mean of 3.33 (SD = 0.42), interpreted as Very High, compared to the AI-assisted workflow, which obtained an overall mean of 3.20 (SD = 0.47), interpreted as High. These findings indicate that participants generally perceived traditional manual design processes as more effective in supporting creativity, originality, and professional satisfaction during interface development.

Among the evaluated dimensions, Creative Autonomy showed the largest difference between the two workflows, with the traditional workflow obtaining a mean of 3.34 compared to 3.14 for the AI-assisted workflow. This suggests that participants felt greater control, independence, and ownership over their designs when using manual Figma tools.

The findings support previous studies by Fu et al. (2024) and Akça (2026), which emphasized that while generative AI can accelerate idea generation, it may also reduce the designer's sense of originality and creative freedom. Similarly, the Innovation criterion revealed higher ratings for the traditional workflow, indicating that respondents still viewed human-centered design approaches as more capable of producing unique and meaningful outputs despite the creative assistance provided by AI-generated suggestions.

In terms of Ease of Workflow, both workflows received relatively similar ratings, with the traditional workflow scoring 3.33 and the AI-assisted workflow scoring 3.29. This minimal difference suggests that participants considered both approaches manageable and efficient during the design process.

Although AI-assisted tools simplify repetitive tasks and accelerate workflow processes, participants may have still preferred traditional workflows due to familiarity, greater control, and the need to refine AI-generated outputs manually. Overall, the results imply that while AI-assisted systems are effective in enhancing workflow convenience and supporting creative tasks, traditional Figma workflows remain more favorable in promoting creative autonomy, innovation, and overall professional satisfaction.

The relationship Between Design Quality and Creative Output

This section presents the findings for Research Question 4, which examined whether a significant relationship exists between the level of Design Quality and the level of Creative Output among BSIT students under both the traditional Figma and AI-assisted workflows.

Since the gathered data were ordinal in nature, Spearman's Rank-Order Correlation Coefficient (ρ) was utilized to determine the strength and direction of the relationships between the composite scores of the measured variables. Correlation strength was interpreted using Cohen's (1988) criteria: weak ($\rho < 0.30$), moderate ($0.30 \leq \rho < 0.50$), and strong ($\rho \geq 0.50$). All statistical tests were conducted at a significance level of $\alpha = 0.05$.

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Table 4. Spearman's Rank-Order Correlation between Design Quality and Creative Output: Traditional Figma Workflow (n = 60)

Design Quality Criteria	**Creative Autonomy**	**Innovation**	**Ease of Workflow**	**Overall Creative Output**
	ρ	ρ	ρ	ρ
Functional Suitability	0.644	0.685	0.620	0.730
Usability	0.718	0.792	0.699	0.828
Performance Efficiency	0.655	0.717	0.710	0.765
Overall Design Quality	—	—	—	0.862*

As shown in Table 4, the traditional Figma workflow demonstrated a strong and statistically significant positive relationship between overall Design Quality and overall Creative Output ($\rho = 0.862$, $p < .001$). This finding indicates that respondents who perceived their manually created prototypes as higher in quality also tended to report greater levels of creativity, professional satisfaction, and workflow engagement. Based on Cohen's (1988) criteria, the obtained correlation reflects a very strong practical relationship between the two constructs within the traditional design environment.

At the sub-criteria level, all correlations between the Design Quality dimensions (Functional Suitability, Usability, and Performance Efficiency) and the Creative Output dimensions (Creative Autonomy, Innovation, and Ease of Workflow) were positive, strong, and statistically significant (ρ range = 0.620 to 0.792, $p < .001$). Among these relationships, Usability and Innovation yielded the strongest association ($\rho = 0.792$), suggesting that respondents who perceived their interfaces as more user-centered and usable also reported higher levels of creative originality and innovation. This finding aligns with Fu et al. (2024), who emphasized that greater authorial control and human-centered interaction in manual design environments contribute positively to creative engagement and satisfaction.

Functional Suitability showed its strongest relationship with Innovation ($\rho = 0.685$), indicating that participants who believed their interfaces effectively met functional requirements also tended to perceive their outputs as more innovative. Meanwhile, Performance Efficiency demonstrated consistently strong correlations with all Creative Output dimensions (ρ range = 0.655 to 0.717), suggesting that respondents who perceived themselves as productive and efficient during the design process also experienced greater creative satisfaction. This finding supports the observations of Lively and Hutson (2024), who noted that efficient workflows do not necessarily reduce creativity among skilled designers.

Table 5. Spearman's Rank-Order Correlation between Design Quality and Creative Output: AI-Assisted Workflow (n = 60)

Design Quality Criteria	**Creative Autonomy**	**Innovation**	**Ease of Workflow**	**Overall Creative Output**
	ρ	ρ	ρ	ρ
Functional Suitability	0.703	0.881	0.646	0.784
Usability	0.785	0.902	0.621	0.814
Performance Efficiency	0.720	0.795	0.622	0.729
Overall Design Quality	—	—	—	0.807*

As presented in Table 5, the AI-assisted workflow also revealed a strong and statistically significant positive relationship between overall Design Quality and overall Creative Output ($\rho = 0.807$, $p < .001$). This indicates that respondents who evaluated AI-generated prototypes more positively in terms of functionality, usability, and efficiency likewise reported higher levels of creative autonomy, innovation, and workflow satisfaction. Although

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slightly lower than the correlation observed in the traditional workflow, the relationship remains within the strong range, demonstrating that Design Quality and Creative Output are closely associated even in AI-assisted environments.

Notably, the AI-assisted workflow produced the highest correlation values observed in the entire study. Specifically, Usability and Innovation exhibited an exceptionally strong correlation ($\rho = 0.902$), followed by Functional Suitability and Innovation ($\rho = 0.881$). These findings suggest that respondents' perceptions of innovation within AI-generated interfaces were highly dependent on whether the outputs were also perceived as usable and functionally appropriate. This pattern supports the findings of Namoun and Alanezi (2024), who argued that AI-generated interfaces are more positively received when they successfully satisfy usability and human-centered design expectations. In this context, respondents appeared to value AI-generated creativity more strongly when the produced outputs also met practical and functional standards.

Compared to the other dimensions, Ease of Workflow demonstrated relatively weaker — though still strong — associations with the Design Quality dimensions (ρ range = 0.621 to 0.646). This suggests that while respondents appreciated the convenience and automation offered by AI-assisted tools, workflow ease alone was less strongly connected to perceptions of design quality. This finding is consistent with Mustafa's (2023) observation that AI tools are often valued primarily for reducing task effort and speeding up workflows rather than guaranteeing high-quality design outcomes.

CONCLUSION

This study examined the comparative performance of traditional Figma workflows and AI-assisted Figma workflows in terms of Design Quality and Creative Output among BSIT students. The findings revealed that both workflows were positively evaluated by the respondents, indicating that traditional and AI-assisted approaches are both capable of supporting the development of high-fidelity UI/UX prototypes. However, the traditional Figma workflow consistently obtained higher ratings across all measured dimensions, particularly in Functional Suitability, Usability, and Creative Autonomy. These results suggest that manual design processes continue to provide stronger support for human-centered decision-making, interface control, and creative independence.

The results of the Wilcoxon Signed-Rank Test further confirmed that significant differences existed between the two workflows in Functional Suitability, Usability, and Creative Autonomy, favoring the traditional Figma workflow. In contrast, no significant differences were identified in Performance Efficiency, Innovation, and Ease of Workflow, indicating that AI-assisted tools are already competitive in improving workflow speed, reducing repetitive tasks, and supporting idea generation. These findings imply that while AI-assisted systems enhance productivity and workflow convenience, they still face limitations in independently satisfying complex usability standards, functional requirements, and deeper creative expectations without human intervention.

Moreover, the correlation analysis demonstrated strong and statistically significant positive relationships between Design Quality and Creative Output in both workflows. This indicates that higher perceptions of prototype quality were consistently associated with greater levels of creativity, professional satisfaction, and workflow engagement. The particularly strong relationships observed between Usability and Innovation in the AI-assisted workflow suggest that respondents valued AI-generated creativity more positively when the outputs also met usability and functional expectations. Overall, the findings support the view that AI-assisted tools function most effectively as complementary technologies that enhance — rather than replace — human creativity and expertise in UI/UX design.

From an educational and professional perspective, the study highlights the continuing importance of foundational design skills, human-centered thinking, and manual prototyping expertise despite the growing integration of generative AI technologies in design workflows. While AI-assisted tools provide substantial benefits in efficiency and workflow support, the findings suggest that optimal design performance is achieved through a balanced and hybrid approach that combines AI-driven automation with human creativity, critical thinking, and usability refinement. Consequently, the study concludes that AI should be viewed as an assistive design partner rather than a substitute for human designers in the development of effective and user-centered digital interfaces.

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