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AI-ASSISTED MUSIC PRODUCTION AND THE TRANSFORMATION OF PRODUCTION PROCESSES: POSSIBILITIES AND LIMITATIONS

YAPAY ZEKÂ DESTEKLİ MÜZİK ÜRETİMİ VE ÜRETİM SÜREÇLERİNİN DÖNÜŞÜMÜ: İMKÂNLAR VE SINIRLILIKLAR

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Abstract
Artificial intelligence-assisted music production technologies have introduced a comprehensive transformation in music production processes encompassing technical, economic, and creative dimensions. This study aims to examine the impacts of AI-assisted music production on production practices in relation to the decreasing need for physical studio spaces and equipment, changes in cost structures, spatial flexibility, acceleration of production processes, expanded access to production, musical competence and evaluation processes, as well as the technical, aesthetic, and ethical limitations of AI-assisted production. Adopting a qualitative research design based on document analysis, the study thematically evaluates national and international academic literature. The findings indicate that AI-assisted production tools enhance technical and economic accessibility, enable production to be sustained in home-based and mobile environments independent of professional studio spaces, and significantly accelerate production workflows. However, the expansion of access to production increases the importance of musical competence and critical evaluation skills. Although AI-assisted systems can generate technically balanced and rapid outputs, they also introduce limitations and ongoing debates concerning musical coherence, aesthetic diversity, originality, copyright, and data use. In conclusion, AI-assisted music production should be considered not only as a technological transformation but also as a multilayered production environment that reshapes decision-making, evaluation, and production processes in music creation.

Keywords: Artificial intelligence, Music Production, Music Technology.

Öz
Yapay zekâ destekli müzik üretim teknolojileri son yıllarda müzik üretim süreçlerinde teknik, ekonomik ve yaratıcı boyutları kapsayan kapsamlı bir dönüşüm ortaya çıkarmıştır. Bu çalışma, yapay zekâ destekli müzik üretiminin üretim pratikleri üzerindeki etkilerini fiziksel stüdyo ve donanım gereksiniminin azalması, maliyet yapılarının değişimi, mekânsal esneklik, üretim süreçlerinin hızlanması, üretime erişimin genişlemesi, müzikal yetkinlik ve değerlendirme süreçleri ile yapay zekâ destekli üretimin teknik, estetik ve etik sınırlılıkları çerçevesinde incelemeyi amaçlamaktadır. Nitel araştırma yaklaşımı kapsamında doküman analizi yöntemi kullanılarak gerçekleştirilen çalışmada ulusal ve uluslararası akademik literatür tematik olarak değerlendirilmiştir. Bulgular, yapay zekâ destekli üretim araçlarının müzik üretimini teknik ve ekonomik açıdan daha erişilebilir hale getirdiğini, üretimi profesyonel stüdyo mekânlarından bağımsızlaştırarak ev ve mobil ortamlarda sürdürülebilir kıldığını ve üretim süreçlerini hızlandırdığını göstermektedir. Bununla birlikte üretime erişimin genişlemesi, müzikal yetkinlik ve eleştirel değerlendirme becerilerinin önemini artırmaktadır. Yapay zekâ destekli sistemler teknik açıdan dengeli ve hızlı çıktılar üretebilmekle birlikte müzikal bütünlük, estetik çeşitlilik, özgünlük, telif hakları ve veri kullanımı gibi alanlarda çeşitli sınırlılıklar ve tartışmaları da beraberinde getirmektedir. Sonuç olarak yapay zekâ destekli müzik üretimi yalnızca teknik bir dönüşüm değil, müzik üretiminde karar verme, değerlendirme ve üretim süreçlerinin yapısını yeniden şekillendiren çok katmanlı bir üretim ortamı olarak değerlendirilmektedir.

Anahtar Kelimeler: Yapay Zekâ, Müzik Prodüksiyonu, Müzik Teknolojisi.

INTRODUCTION

Music production has long been carried out within a centralized structure based on professional recording studios, high-cost equipment, and specialized technical expertise. This structure has rendered high-quality music production dependent on specific physical spaces and hierarchies of expertise, positioning production processes as a limited domain defined by technical infrastructure and professional division of labor (Théberge, 1997). However, with the development of digital audio technologies and the widespread adoption of computer-based production tools, this centralized model of production has gradually begun to dissolve, and home-based and individual production practices have become increasingly visible within contemporary music production (Subrt & Kostka, 2024).

This transformation has gained a new dimension with the proliferation of AI-assisted music production technologies. AI-assisted systems can automate processes such as mixing, mastering, audio editing, analysis, and composition, enabling many operations that previously required advanced technical expertise and specialized equipment to be carried out through software-based solutions (Deruty et al., 2022). These developments have made music production more accessible both technically and economically, while allowing production processes to be conducted with greater independence from spatial and temporal constraints. Consequently, music production is no longer confined to professional studio environments but has evolved into a more flexible practice that can be sustained across home-based and mobile environments (Yavuz et al., 2025).

The development of generative AI systems has created a significant transformation in terms of speed, accessibility, and production diversity in music production processes. Text-based music generation models (such as generative music platforms including Suno, Udio, AIVA, and Soundraw) enable users to produce musical content without requiring advanced knowledge of music theory, thereby transforming the production process into a more technically inclusive structure (Yavuz et al., 2025). Recent literature reviews on AI-assisted music production indicate that deep learning and generative models are restructuring idea development, arrangement, and production processes, and that this transformation simultaneously affects both technical production practices and creative decision-making processes.

Nevertheless, the literature emphasizes that the technical convenience offered by AI-assisted production tools has introduced new areas of debate regarding musical competence, critical evaluation, and creative control. Although AI-generated musical outputs may appear technically balanced and consistent, they are not always equally reliable in terms of musical structure, aesthetic coherence, and contextual meaning (Mycka & Mańdziuk, 2025). Studies examining the relationship between AI and music in the context of creativity, ownership, and aesthetic decision-making suggest that the human role in the production process is shifting from that of a technical producer toward a more selective, directive, and supervisory position (Sturm et al., 2019; Herremans et al., 2017).

AI-assisted music production not only introduces automation and accessibility into production workflows but also reveals a multilayered production ecosystem that must be reconsidered in terms of musical competence, critical evaluation, and creative oversight (Gündoğdu & Okcu, 2024). Although existing studies address various technical and creative dimensions of this transformation, the literature indicates that research evaluating both the opportunities and limitations of AI-assisted music production within a unified analytical framework remains limited (Karaarslan et al., 2024). In particular, examining issues such as the decreasing need for physical studio infrastructure, the transformation of cost structures, spatial flexibility, acceleration of production processes, expanded access to production, musical competence, and creative control within a holistic perspective is crucial for understanding contemporary music production processes.

The aim of this study is to examine the transformation generated by AI-assisted music production processes in relation to the decreasing need for physical studio spaces and equipment, the transformation of cost structures, spatial flexibility, the acceleration of production workflows, expanded access to music production, musical competence, and creative control.

Furthermore, the study seeks to evaluate both the opportunities and the limitations emerging from this transformation within a holistic analytical framework.

METHOD

This study was conducted using the document analysis method, one of the qualitative research designs. Document analysis is a research method based on the systematic examination of written and visual materials that contain information related to the research topic (Yıldırım & Şimşek, 2021). This method was preferred because it enables a holistic and thematic evaluation of theoretical approaches, technical applications, and prominent discussions emerging in the rapidly evolving fields of artificial intelligence and music technologies.

The data sources of the study consist of peer-reviewed journal articles, conference papers, and book chapters related to AI-assisted music production and music production processes. The literature review was conducted using the Google Scholar, Web of Science, Scopus, and TR Dizin databases, employing both Turkish and English keywords related to AI-assisted music production and generative music systems. The studies included in the analysis were selected from academic publications that provide direct technical and theoretical contributions to music production processes, while non-academic popular content was excluded from the scope of the study.

The collected data were analyzed using a thematic analysis approach. During the analysis process, recurring concepts, production models, and technical implications were identified, and similar findings were categorized under common thematic frameworks. Accordingly, the findings were interpreted within the following themes: the decreasing need for physical studio spaces and equipment, cost reduction and economic accessibility, spatial flexibility and mobile production possibilities, acceleration of production processes and automation, expanded access to production and participation, musical competence, critical evaluation and error awareness, and the limitations of AI-assisted production. Since the study is based solely on the examination of published academic sources, it does not require ethics committee approval.

FINDINGS

The findings obtained from the literature review indicate that AI-assisted music production technologies have generated a multidimensional transformation in music production processes encompassing technical, economic, and creative dimensions. The reviewed studies demonstrate that AI-assisted production tools are not merely instruments that accelerate technical production processes; rather, they exert significant influence on production environments, cost structures, access to production, musical competence, and creative decision-making processes.

Accordingly, the findings were evaluated within a thematic framework based on recurring discussions and common trends identified in the literature. The impacts of AI-assisted music production on production infrastructures, workflows, user profiles, and creative processes were examined under the following themes: the decreasing need for physical studio spaces and equipment; cost reduction and economic accessibility; spatial flexibility and mobile production possibilities; the acceleration of production processes and automation; expanded access to production and participation; musical competence, critical evaluation, and error awareness; and the limitations of AI-assisted production.

This thematic structure enables a simultaneous evaluation of the technical possibilities offered by AI-assisted music production and the creative and aesthetic limitations it introduces, thereby providing a multidimensional perspective on the transformation of contemporary music production processes.

Decline in the Requirement for Physical Studio Spaces and Equipment

The findings obtained from the study indicate that AI-assisted and digital music production technologies have significantly reduced the need for traditional physical studio spaces and extensive equipment infrastructures that have long been central to music production practices. Contemporary production environments increasingly enable music creation to be carried out in home-based and flexible settings rather than acoustically optimized professional studios. This shift reflects the broader transformation of

music production from a fixed studio-centered activity into a more distributed and mobile practice supported by software-based production systems (Harkins & Prior, 2020).

In traditional music production, the physical studio has been positioned as an integrated production environment defined by acoustic isolation, the separation of control and recording rooms, and chains of analog and digital equipment. However, with the widespread adoption of AI-assisted production tools, many of the technical functions previously performed within this environment can now be executed through software-based systems. Karaarslan et al. (2024) emphasize that AI-assisted music production tools contribute to the sustainability of production under more limited physical conditions by reducing the reliance on conventional studio infrastructures.

The literature also indicates that multi-stage mixing and mastering chains traditionally used in physical studio environments are increasingly consolidated into single or integrated AI-assisted modules. Contemporary AI-based music production systems bring together sound processing, arrangement, and production functions within unified digital environments, enabling multiple technical processes to be executed automatically through integrated workflows (Yu et al., 2025). This integration allows production to be carried out with reduced equipment and spatial requirements and is associated with a decrease in technical complexity, thereby lowering the need for extensive physical infrastructure.

The reduction in the need for physical studio space is further supported by findings highlighting increased spatial flexibility in production practices. Subrt and Kostka (2024) note that with the expansion of home-based production, the studio is increasingly conceptualized not as a fixed physical structure but as a technical production system shaped around software and portable equipment. In this context, production can be sustained across diverse physical environments through headphone-based monitoring systems and portable devices.

The ability of generative AI systems to provide compositional, arrangement, and structural suggestions is also linked to the decreasing reliance on physical studio environments and related equipment infrastructures. Recent studies indicate that generative AI systems enable users to produce musical content through software-based environments without requiring extensive technical equipment or dedicated production spaces (Mycka & Mańdziuk, 2025). These systems are reported to replicate a wide range of technical processes traditionally associated with physical studio environments at the software level, thereby supporting flexible and portable production practices.

Overall, these findings suggest that AI-assisted music production is transforming the technical conditions associated with physical studio space and equipment requirements, enabling production processes to be conducted through software-centered, portable, and less infrastructure-dependent systems.

Cost Reduction and Economic Accessibility

Findings in the literature indicate that AI-assisted music production technologies have significantly reduced the need for costly physical infrastructure and technical service requirements that have long been central to music production. In traditional production processes, professional studio rental, equipment investments, and outsourced mixing and mastering services constitute major cost components, whereas AI-assisted production tools are able to address a substantial portion of these processes through software-based solutions. Gündoğdu and Okcu (2024) emphasize that AI-assisted music production tools reduce dependence on high-cost studio and equipment investments, enabling production with lower budgets and contributing to the economic accessibility of music production.

Studies focusing on home-based production practices demonstrate that economic constraints directly affect production processes, particularly for independent and semi-professional musicians. Subrt and Kostka (2024) note that in contexts where access to professional studio infrastructure is limited, home-based production emerges as a model shaped by technical and economic conditions. AI-assisted production tools make it possible to obtain technically functional outputs under such conditions with relatively low budgets.

The economic impact of AI-assisted mixing and mastering systems extends beyond the reduction of equipment investments. Jin et al. (2024) report that the automation and simplification provided by AI-assisted music production tools reduce the technical workload required in production processes and enable users to generate outputs more efficiently. This shift is associated with decreases in both direct production costs and indirect time-related costs. In particular, automated assistance and recommendation mechanisms are reported to limit repetitive trial-and-error processes.

Another factor influencing economic accessibility concerns the usage and licensing models of AI-assisted music production software. Recent studies indicate that many AI-assisted music production tools are distributed through accessible digital platforms and flexible usage models, enabling broader user groups to engage in music production without requiring substantial initial investment. These developments contribute to the emergence of lower-cost production environments compared with traditional studio-based production structures that demand high levels of financial capital (Duarte dos Santos, 2024).

The economic impact of AI-assisted production tools is also closely linked to spatial flexibility in production practices. The decreasing need for professional studio rental enables production to be sustained in home environments or temporary spaces, and this shift is reported alongside the reduction in production costs (Subrt & Kostka, 2024; Deruty et al., 2022). These findings demonstrate that AI-assisted music production is transforming the cost structure of music production and enabling production practices to be carried out at lower economic thresholds.

Spatial Flexibility and Mobile Production Capabilities

Research findings indicate that AI-assisted music production technologies have largely detached music production from being an activity dependent on fixed and physical studio infrastructures. In traditional production paradigms, the studio has been defined as a specific physical space with its own technical infrastructure; however, contemporary AI-assisted production systems are reported to have transformed this structure into a software-centered model that supports portability and mobile production (Deruty et al., 2022). Karaarslan et al. (2024) note that AI-assisted music production tools significantly reduce spatial dependency by enabling production to be sustained across diverse physical environments.

Studies focusing on home-based production practices reveal that music production is increasingly being relocated to acoustically non-optimized living spaces. Subrt and Kostka (2024) report that musicians working in home environments frequently produce music in living rooms, bedrooms, or temporarily adapted spaces, highlighting the importance of quiet working conditions, rapid setup, and portability. AI-assisted production software is reported to be designed to accommodate these requirements, enabling production to be sustained under constrained spatial conditions.

The reduction of spatial dependency is also associated with the widespread use of AI-based audio processing and correction tools. In production environments with acoustic disadvantages, software-based balancing, noise reduction, and tonal correction tools can compensate for problems arising from room acoustics. This development reduces the need for physical acoustic treatment and enables production to be carried out across diverse spatial contexts.

Location-independent production possibilities are further expanded by the proliferation of mobile devices and cloud-based AI systems. Ronchini et al, (2025) demonstrate that text-to-music production systems allow users to create music in various physical environments using only laptops or mobile devices. These systems are reported to detach production from fixed temporal and spatial constraints, making it possible to conduct production in fragmented time intervals.

Studies focusing on mobile AI-assisted music applications indicate that production can be integrated into different domestic spaces and everyday life contexts. AI-assisted music production applications with intuitive interfaces enable users to produce music without requiring a fixed studio environment. Such systems make it possible for music production processes to be conducted largely independently of

physical infrastructure through portable devices and software-based production tools (Gündoğdu & Okcu, 2024; Yavuz et al., 2025). This shift demonstrates that music production is evolving into a more flexible and mobile practice that can be sustained within the flow of daily life.

The theoretical background of spatial flexibility is addressed in relation to the historical transformation of the studio concept. Théberge (1997) notes that developments in music technologies have redefined the studio not as a purely physical space but as a technical and organizational structure that enables the production process. AI-assisted production tools appear to extend this transformation further, significantly expanding the spatial boundaries of the studio. This shift enables music production to be sustained through more flexible and portable production models without being tied to a specific physical studio environment.

Acceleration of the Production Process and Automation

Studies indicate that AI-assisted music production technologies significantly accelerate production processes and automate many stages that traditionally required human intervention within conventional production workflows. In traditional music production, stages such as post-recording editing, mixing, and mastering require considerable time, repetitive trial-and-error processes, and advanced technical expertise. In contrast, contemporary AI-assisted systems are capable of executing these processes within integrated and automated workflows. It is emphasized that AI-assisted music production tools optimize time usage in both analysis and production processes, enabling the rapid generation of multiple outputs and thereby directly influencing production speed (Tunç, 2026).

One of the most evident effects of AI-assisted automation is the reduction of technical workload placed on the user. Studies focusing on music production workflows demonstrate that processes such as compression, equalization, dynamic control, and audio editing can be carried out through automated modules, significantly shortening production time (Yu et al., 2025). This automation is noted as a factor that enhances production continuity, particularly for users who produce within limited time frames.

The acceleration of production processes is not limited to technical editing stages. The ability of generative AI systems to provide suggestions for melody, harmony, and formal structure accelerates idea generation in the early stages of the creative process. Studies on AI-assisted music generation indicate that such systems facilitate rapid idea development and enable users to produce multiple musical variations within short time frames, thereby reducing creative bottlenecks in early production stages (Fu et al., 2025). Literature on deep learning-based music generation systems similarly indicates that the automation of repetitive technical and creative decision-making processes enhances the scalability of production and reduces production time (Briot et al., 2020).

Generative music platforms prominent in current production practices (such as Suno, Udio, AIVA, and Soundraw) enable users to create musical content quickly through text-based prompts, thereby significantly accelerating production processes. Although these tools have only recently begun to receive limited direct academic attention, research on the generative AI and deep learning models on which they are built demonstrates that such systems transform production workflows by accelerating idea development, draft generation, and editing stages. In this context, these tools provide accelerated production environments that enable even users with limited technical knowledge to participate in production processes within short timeframes.

The impact of automation on production processes is also addressed in terms of the structural reorganization of workflows. Intelligent music production systems transform production from a sequential and manual structure into a model based on simultaneous and automated decision-making mechanisms, reducing the cognitive load that users allocate to technical details and enabling a more fluid production process. This transformation not only shortens production time but also introduces a new production model in which decision-making and implementation processes become increasingly intertwined.

However, the literature also indicates that acceleration in production processes is not always directly associated with production quality. Rapid production capabilities may weaken critical evaluation processes, particularly for users with limited musical training, and the ability to generate large numbers of outputs in a short time may lead to more superficial evaluation practices (Fu et al., 2025; Mycka & Mańdziuk, 2025). This suggests that while automation reduces production time, it also makes the evaluation and supervision of production outputs more critical.

In conclusion, AI-assisted music production systems transform time management and workflow organization in music production, enabling faster, more automated, and continuous production processes. This acceleration provides a technical foundation for the expansion of access to and participation in music production, which will be addressed in the following section.

Expansion of Access and Participation in Music Production

Empirical and literature-based studies indicate that AI-assisted music production technologies have significantly expanded access to music production and facilitated the inclusion of users who were previously excluded from production processes due to technical, economic, or knowledge-based constraints. By automating complex production stages and presenting them through intuitive interfaces, AI-assisted systems make music production feasible for broader user groups. Dulkadir and Belge (2025) note that AI-assisted music production tools increase participation in production processes among users with varying levels of experience, transforming music production into a more inclusive field of practice.

Studies focusing on production in home and mobile environments demonstrate that the lowering of technical thresholds plays a decisive role in expanding access. Subrt and Kostka (2024) state that home-based production practices provide a technical alternative that enables production for users without access to professional studio infrastructure, while AI-assisted production tools support this process through software-centered solutions. The reduction in technical knowledge requirements emerges as one of the primary factors facilitating broader participation in production.

The simplification of complex signal processing, editing, and structuring processes through AI-assisted music production and educational tools enables users with diverse levels of experience to engage in production activities. Recent studies indicate that AI-assisted music tools lower technical barriers and support broader participation by simplifying production workflows and offering intuitive interfaces (Merchán Sánchez-Jara et al., 2024). This shift indicates a transformation in the perception of music production as a domain requiring specialized technical expertise.

The ability of generative AI systems to offer suggestions for melody, harmony, and formal structure enables users with limited knowledge of music theory to participate in production processes. Recent studies indicate that generative AI music systems transform music production from a process requiring advanced technical expertise into one that supports rapid experimentation and idea generation for users with diverse skill levels (Mycka & Mańdziuk, 2025). Such systems significantly reduce the need for technical knowledge during the early stages of production.

The expansion of access to production is not limited to increased availability of production tools but also contributes to the transformation of production practices into more participatory and shareable structures. Roberts and Krueger (2022) note that the distribution of tasks between humans and AI in digital production environments fosters more participatory and collaborative forms of music production. This shift allows multiple roles to be assumed simultaneously within the production process and contributes to the scalability of production practices.

However, the literature also indicates that expanded access to production introduces new requirements for the evaluation of production outputs. Fu et al. (2025) demonstrate that users with limited musical training may struggle to critically evaluate AI-generated outputs and may encounter difficulties distinguishing technically balanced yet musically problematic structures.

This suggests that as participation in production increases, evaluation and selection processes become more decisive.

AI-assisted music production systems enable users with diverse levels of experience to participate in production processes by lowering technical thresholds and making music production accessible to broader audiences. The expansion of participation in production provides the foundation for discussions on musical competence, critical evaluation, and error awareness addressed in the following section.

Musical Competence, Critical Evaluation, and Error Awareness

Although AI-assisted music production technologies reduce technical barriers, they introduce new areas of debate concerning musical competence, critical evaluation, and error awareness. The acceleration of production processes and the expansion of access to production may make it more difficult to critically evaluate generated outputs, particularly for users without formal training in music theory and composition (Dulkadir & Belge, 2025). Arcagök et al. (2025) emphasize that the conscious and critical use of AI-assisted music applications is directly related to musical learning processes and that technical production convenience cannot replace musical evaluation skills.

Generative AI systems are capable of producing technically balanced and high-resolution audio outputs; however, these outputs do not always provide reliable results in terms of musical structure, harmonic coherence, and formal integrity. Studies on deep learning–based music generation emphasize that algorithmic systems may produce outputs that are technically coherent yet musically limited in terms of structural consistency and stylistic originality (Briot et al., 2020). This situation may lead users to interpret technically accurate outputs as musically correct, increasing the likelihood that structurally or aesthetically problematic musical content may be accepted without sufficient critical evaluation.

Issues related to musical competence and critical evaluation become particularly evident during the stages of idea selection and validation within the production process. Fu et al. (2025) demonstrate that users with limited musical background often struggle to distinguish high-quality outputs from the numerous variations generated by AI systems. Their findings indicate that outputs containing harmonic inconsistencies, structural discontinuities, or rhythmic irregularities may be perceived as correct by users due to their technically “clean” and “balanced” sound.

Another dimension discussed in the literature concerns the partial shift of critical control from users to algorithmic systems. Studies on generative AI in music indicate that these systems tend to reproduce stylistic and structural patterns derived from their training data, which may lead to repetitive musical outputs and limited diversity in production. Users with limited theoretical background may adopt these algorithmically generated patterns as normative musical structures, thereby reinforcing stylistic standardization within AI-assisted production environments (Mycka & Mańdziuk, 2025).

Musical competence is also addressed within the context of human–machine collaboration. Roberts and Krueger (2022) argue that musical agency in digital production environments is being redefined in relation to who makes decisions within the production process. As AI systems assume technical and partially structural decision-making roles, the user’s role may shift from that of a direct producer to that of a selector or curator responsible for critical selection and validation. This transformation makes musical perception, theoretical knowledge, and analytical evaluation capacity more decisive within the production process.

Error types emerging in AI-assisted production are often associated not with technical malfunctions but with musical context and aesthetic coherence. Mycka and Mańdziuk (2025) note that musically weak structures that appear superficially convincing yet lack contextual and structural consistency constitute a significant challenge in AI-assisted music production. The rapid generation of large numbers of outputs may increase the likelihood that such issues remain unnoticed during evaluation.

Within this framework, while AI-assisted music production increases production speed and accessibility, it also renders the need for musical competence, critical evaluation, and error awareness

more crucial. The validation and evaluation of production outputs depend not only on technical proficiency but also on the capacity for critical analysis grounded in musical knowledge.

Limitations of AI-Assisted Production

Findings in the literature indicate that although AI-assisted music production technologies provide speed, automation, and accessibility within production processes, they also introduce various technical and creative limitations. AI-based production systems operate according to patterns learned from large datasets, which may lead to the emergence of certain structural and aesthetic constraints in production outputs. In particular, the probabilistic logic underlying generative music systems may result in limitations in terms of musical diversity and originality (Mycka & Mańdziuk, 2025).

The limitations encountered in AI-assisted production are not confined to technical errors but also become evident in areas such as musical structure, narrative coherence, and contextual meaning. Although generative systems can produce technically balanced and clean audio outputs, these outputs are not always equally adequate in terms of musical expression, formal integrity, and aesthetic coherence. For users with limited knowledge of music theory and composition, it may be difficult to distinguish structures that appear technically correct but are musically problematic (Briot et al., 2020).

The data-driven nature of algorithmic production processes also introduces issues of stylistic repetition and similarity. Generative AI models tend to reproduce dominant harmonic, rhythmic, and formal patterns present in their training data, which may result in the recurrence of similar structures in production outputs. Such repetition becomes more pronounced as production speed increases, and the rapid generation of large quantities of content may lead to the superficialization of aesthetic evaluation processes (Mycka & Mańdziuk, 2025).

Another limitation in AI-assisted music production relates to the contextual and intentional dimensions of the production process. Contemporary AI models generate musical content based on technical and statistical patterns; however, they cannot always represent human-centered elements such as cultural context, narrative coherence, and expressive intent at the same level. This may result in limitations in production outputs, particularly in terms of originality, expressive depth, and stylistic diversity (Sturm et al., 2019).

Another significant area of limitation concerns ethical and legal issues related to copyright and data use. The training of generative systems on large-scale datasets creates uncertainties regarding ownership and permission processes (Samuelson, 2023). As of 2024, these discussions have moved beyond a theoretical level and evolved into concrete legal conflicts. In June 2024, copyright infringement lawsuits filed by major record labels (UMG, Sony, and Warner), led by the RIAA, against platforms such as Suno and Udio transformed concerns about training data transparency into a global controversy (UMG v. Suno, 2024). Although licensing models continue to be debated within the industry, the opacity of "black box" algorithms remains an ethical legitimacy issue.

Most contemporary generative music tools began to proliferate widely as of 2024, and comprehensive academic studies directly testing these tools remain limited. Nevertheless, research on the large language models and generative learning approaches underlying these systems demonstrates that current AI models still face significant limitations in contextual understanding, original content generation, and the execution of complex creative tasks (Dou et al., 2026). These findings indicate that while AI-assisted music production tools offer rapid and accessible production possibilities from a technical perspective, they still require further development in terms of contextual understanding, aesthetic diversity, and creative direction.

Within this framework, AI-assisted music production offers significant conveniences and new opportunities within production processes while also introducing limitations related to originality, aesthetic coherence, contextual meaning-making, copyright and ethical responsibilities, and the need for critical evaluation.

These limitations suggest that the role of AI systems in production should be considered not merely as technical facilitators but in conjunction with human-centered processes of creative evaluation and direction.

CONCLUSION

This study examined the effects of AI-assisted music production technologies on contemporary music production practices through a qualitative approach based on document analysis and evaluated the technical, economic, and creative transformation areas highlighted in the literature within a holistic framework. The reviewed studies demonstrate that AI-assisted music production tools are not merely software that accelerates technical production processes; rather, they exert multidimensional influences on production environments, cost structures, access to production, musical competence, and creative decision-making processes. AI-assisted production technologies contribute to the proliferation of more flexible production models sustained in home-based and mobile environments by partially detaching music production from physical studio spaces and high equipment requirements.

Findings in the literature indicate that AI-assisted systems offer technical advantages such as reducing the need for physical studio infrastructure and equipment, lowering costs, and accelerating production processes. At the same time, expanded access to production and reduced technical barriers increase participation in music production among users with diverse levels of experience and knowledge, transforming music production into a more inclusive and democratized field. The automation and acceleration of production processes enable users to focus more on creative direction and selection rather than purely technical operations.

However, the findings also demonstrate that the technical and economic advantages offered by AI-assisted production introduce new requirements in terms of musical competence, critical evaluation, and creative oversight. AI systems capable of generating technically balanced and rapid production outputs do not always produce equally reliable results in terms of musical integrity, aesthetic coherence, and contextual meaning. This shift repositions the user from the role of a direct technical producer to that of a selector, director, and supervisor, increasing the importance of musical knowledge and critical evaluation skills within the production process. Evaluating both the speed and automation advantages of AI-assisted production alongside its aesthetic and creative limitations emerges as a fundamental requirement for understanding contemporary music production practices.

Nevertheless, the widespread adoption of text-to-music generative AI systems and large-scale music production models at the end-user level remains a relatively recent development. While initial examples of large-scale AI-based music production models such as MusicLM began to emerge around 2023, the proliferation of these technologies as production tools accessible to broad user groups has largely occurred after 2024. Consequently, comprehensive academic studies addressing the long-term creative, aesthetic, and production-related impacts of AI-assisted music production tools remain limited. Future experimental and applied studies focusing on diverse user profiles, production environments, and creative processes will contribute to a deeper understanding of the effects of AI-assisted music production on music technologies and the creative production ecosystem.

In conclusion, AI-assisted music production offers significant opportunities in terms of technical accessibility and production flexibility while simultaneously introducing new user-centered responsibilities related to musical competence, critical evaluation, and creative oversight. This dual structure suggests that AI-assisted music production should be considered not only as a technological transformation but also as a multilayered production ecosystem encompassing aesthetic, pedagogical, and creative dimensions.

Beyond functioning as a technical tool, AI-assisted music production can be regarded as a socio-technical transformation that redefines the music production ecosystem. Future research examining the long-term creative impacts of AI-assisted production processes, user experiences, and their relationship with music education will contribute to both the theoretical and practical development of the field.

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