

Innovative digital rock music processing tools as an approach to upgrading the alternative music industry

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Abstract. The need to transform approaches to processing musical works is explained by the total digitalization of the cultural and artistic field. The purpose of the article is to analyze the potential advantages and challenges of integrating digital technologies into the process of processing rock music. The study analyzes the potential of digital transformation of the music sphere and substantiates that the upgrade of the alternative sphere of the music industry contributes to the expansion of the conceptual vision of rock music. The specifics of the integration of immersive technologies of virtual and mixed reality in the context of interactive experience, simulation of concert performances and immersion in an authentic musical environment are investigated. It has been proven that current trends in the development of digital systems in the music field are aimed at personalizing the creative process, creativity and efficiency, which is achieved by involving online collaboration, mobile applications, computer programs for creating music, virtual musical instruments, digital scores and applications for developing hearing and rhythm, as well as adaptive technologies, artificial intelligence and social networks.

Keywords: digitalization, rock music, music industry, musical processing, artificial intelligence (AI), immersive technologies.

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Introduction

As a result of the integration of music into the processes of mass communication, significant transformations of its forms, content, and functions occur; music is transformed from an art that presents and reveals reality into a means and product of mass communication that serves and provokes mass social processes. The most visible consequence of the digitalization of music is the change in processing tools and the form of presentation of musical works.

As an innovative phenomenon, virtualization systematically transforms the artistic and cultural environment, while the advantages of such transformation are increased integration of the global community and cross-cultural competence, greater synergy of the information field. At the same time, there are also negative consequences, in particular, the threat of loss of identity, dehumanization of social ties, the threat of alienation of the individual from his own essence.

In the publications of modern scientists K. Onderdijk et al. (2023), I. Dobroskok et al. (2020), as well as A. Brown (2020), R. Nowak, A. Bennett (2020), which are devoted to the diverse aspects of the adaptation of modern musical works, including in the rock industry, to the global processes of development of the music industry, actualizing the blurring of the boundaries between the physical and virtual worlds in the context of musical identity. Certain conceptual aspects of the problem are highlighted by N. Kovalchuk, L. Ovsyankina [8], R. Inglehart [9], J. Causadias [10].

Q. Zhang, K. Negus (2021), L. Eusterbrock (2023), Y. Cheng (2023) analyze the potential impact of cyberspace on the system of values, identity and civic position, which is reflected in the modern musical and artistic field. At the same time, scientists D. Zheng, Y. Wang (2022), Z. Özer, R. Demirbatır (2023), T. Buchborn, J. Treb (2023) expand the vision of the impact of modern social development on the transformation of the alternative sphere of the music industry, outline the foundations of its content.

Results

Experimentation goes hand in hand with creativity, composers and musicians are constantly looking for new sounds, working with different timbres. In the process active development of the possibilities of electronic technology appear electroacoustic, spectral, synthesizer, and later computer music based on a unique combination of new technical achievements and modern aesthetics.

Today, musical creativity using electronic digital technologies is, first and foremost, a management process software or external audio equipment. Thus, a modern rock musician must have media programming capabilities, sound engineering technologies, and the ability to creatively use digital technologies in sound editing.

Rock music performs intentional, personality-forming, adaptive, modeling, protective and a number of other functions in the context of the value-semantic sphere of modern youth. Taking into account that the formation and change of personality is a constant process, it should be noted that each sphere of personality is modified in parallel with social changes (Mandanici et al., 2023; Park, 2021).

The main trends in the digital upgrade of the music industry are:

- 1) virtual and mixed reality: immersive technologies allow you to simulate a musical environment for greater immersion – concert performances, virtual lessons or improving your instrument playing, etc. to expand music processing capabilities;

- 2) online collaborations – participation in joint musical projects without spatial restrictions, organization of online performances open up wider opportunities for the formation of a musician's creative personality, contribute to the development of his potential;

3) interactive technologies – digital notes and scores, brainstorming, and the use of electronic instruments develop the analytical and creative skills of musicians, making the process of processing musical works more effective and creative;

4) artificial intelligence – personalization of creative search, automation of music processing, use of accumulated experience and creation of inclusive access to information resources;

5) social networks – creating communities for participants in the process of working on a musical work, where resources, experience and support can be shared (Mandanici et al., 2023; Park, 2021; Pasichnyi et al., 2024).

Immersive technologies offer new opportunities for reproducing and visualizing various musical concepts using applications:

–SoundStage and VRChat are platforms for creating your own music studios with recording and arranging equipment;

–Virtuoso – a program for playing virtual instruments;

–TheWaveVR and MelodyVR are platforms for attending virtual concerts and interacting with the environment;

–MuseScore VR and the Fretello app – playing notes in virtual space (Zhang & Negus, 2021; Eusterbrock, 2023).

Modern music technologies, including digital sound stations Garage Band or Soundtrap, contain a wide range of sound samples and effects, musical instruments, and audio editing capabilities. GarageBand is equipped with functionality for mixing tracks and exporting finished works, while Soundtrap, thanks to cloud technologies and an intuitive interface, offers real-time collaboration on musical projects. It is advisable to use digital metronomes and tuners (TonalEnergy Tuner, Pro Metronome, etc.) that allow you to maintain the correct tempo and tuning of the instrument.

Other software includes Ableton Live for creating electronic music and DJing, Sibelius for working with musical scores, FL Studio for creating beats and melodies, SmartMusic for interactive learning to play musical instruments. In addition, global online educational platforms such as Coursera, Udemy, Berklee Online, etc. have significant potential. Here you can find music courses from well-known universities dedicated to theory, musical instruments, vocals, composition, arrangement, music business, complex performance techniques, which can be successfully used by musicians or their producers (Brown, 2020; Nowak & Bennett, 2020).

The synthesis of various trends and processes – the attention economy, the impression economy, the clip consciousness – in a sense forces music authors to lure and captivate listeners, focusing on their new digital “habits”, which requires constant tracking of listening statistics, which are provided by algorithms of innovative big data technologies. These algorithms analyze various factors: where music is listened to, which tracks are the most popular, when listeners switch music, when they increase or decrease the volume.

Blockchain technologies and NonFungible Token (NFT) are gaining particular importance. A music NFT gives an indisputable right of ownership to a product of intellectual or creative activity (audio and video work), which can always be confirmed through an open certificate of authenticity. Thanks to NFT, fans can become owners of the first recording of their favorite album or unreleased song.

Thus, with the increasing variability of channels of interaction with consumers and other market participants and the lowering of barriers to entry into the music market, competition in it is only intensifying. Those players who know all the technological subtleties and can adapt faster to the interests of the listener and his requests have a competitive advantage. Those companies that guess the unique preferences of the listener the fastest win.

The general specifics of the digital dynamics of the musical field at the present time are schematically depicted in Fig. 1.

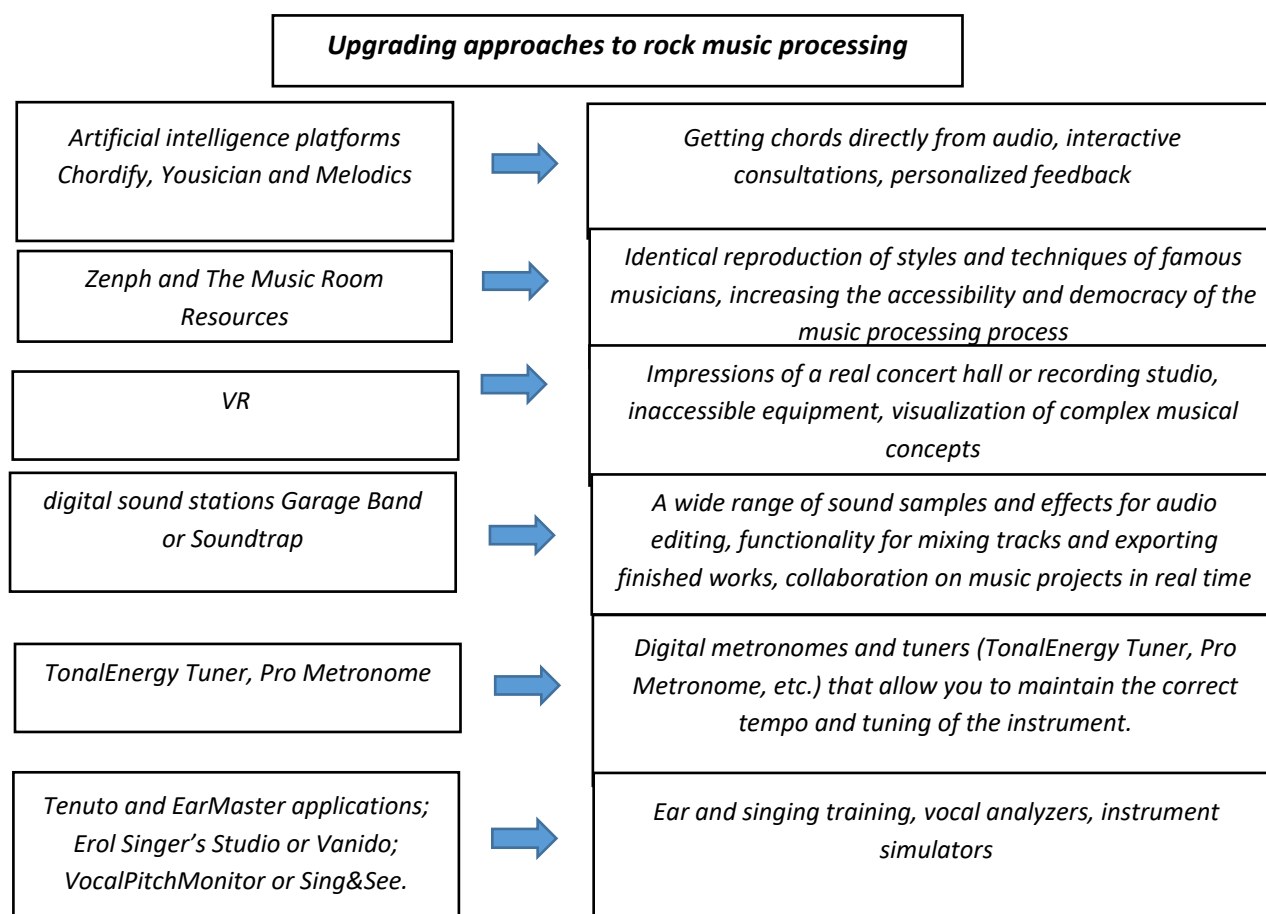


Fig. 1. Transformation of rock music processing tools under the influence of digitalization

Source – author's development

Under the influence of cyberspace, not only a new socio-cultural reality is being formed, but also a new type of person. Virtualization as one of the forms of the formation of the information environment changes the semantic intention of modernity, since the production of information from a means of solving private issues can turn into the goal of a person and society. Virtualization, first of all, must be considered as a socio-cultural phenomenon that is formed and evolves under the influence of technical innovations.

To understand the compensatory capabilities of digital music in studio recording, let's recall some of the methods and techniques adopted in mix engineering when mixing voice. After recording, separate audio tracks remain that need to be mixed, brought together into a single whole.

Mixing, as is known, is divided into frequency, dynamic and spatial processing of the voice. In this case, such methods are used as: vocal equalization, which allows you to adjust the timbre of the singer's voice, weakening or strengthening different frequencies; compression method, which helps create "density" and uniformity of voices by strengthening sounds or phrases that the singer sang on the nuances P and PP; saturation method - filling the audio signal with new harmonics in order to add brightness, saturation and "warmth" of the sound of the voice timbre; spatial processing methods: reverberation and delay of the sound signal (delay), which allow you to give volume to the voice.

The modern practice of recording multiple vocal tracks also contributes to the feeling of a "staged" voice. Programs such as Melodyne allow you to edit the pitch of each note taken by a vocalist to achieve perfect intonation during recording, and plug-ins such as Auto-Tune Pro allow you to achieve intonation purity in real time.

Digital sound has effectively become the musical tool of the new age, generating computer-synthesized timbres and stylistic trends led by new youth idols. Despite the unlimited possibilities of computer processing during recording in studio conditions and subsequent processing of a musical work, the set singing voice even in such "artificial" conditions distinguishes the artist from vocalists who have not received appropriate education. Teaching the academic manner of singing among rock artists is especially relevant, since rock music implies an expressive, emotional and rich style of performance, which requires a powerful voice and a bright individual timbre.

Conclusions. In general, there has been a change in the business model, including the general model of creation and processing, consumption of a musical product. Music as a basic product is dematerialized, depersonalized and easily distributed in a vast digital space. At the same time, the attention of individuals, ready to consume unique and personalized content, becomes the main value for which artists and companies in the global music market are fighting.

It can be argued that the full risks of using digital tools will be felt after a certain period of time, which has already been noticed by the modern community of musicians: ethical principles for using advanced digital solutions in their activities (for example, artificial intelligence) are actively promoted, a responsible approach to the use of digital technologies is promoted, which will not allow the negative aspects of digitalization to exceed the positive ones in terms of scope and content.

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