



## TWO-HAND STEERING DIGITAL PLATFORM MODEL: A FRAMEWORK FOR DEVELOPING DIGITAL PLATFORMS SHOWCASING THE SOUNDS AND VISUALS OF GHANAIAAN TRADITIONAL MUSICAL INSTRUMENTS

Stephen Nyanteh Ayesu

Department of Music Education, University of Education, Winneba, Ghana.

Email: [snayesu@uew.edu.gh](mailto:snayesu@uew.edu.gh)

### Cite this article:

S. N., Ayesu (2026), Two-Hand Steering Digital Platform Model: A Framework for Developing Digital Platforms Showcasing the Sounds and Visuals of Ghanaian Traditional Musical Instruments. *British Journal of Mass Communication and Media Research* 6(1), 1-17. DOI: 10.52589/BJMCMR-3LRS4KXE

### Manuscript History

Received: 25 Nov 2025

Accepted: 29 Dec 2025

Published: 15 Jan 2026

### Copyright © 2026 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

**ABSTRACT:** *The strong interest in showcasing the sounds and visuals of Ghanaian traditional musical instruments on digital platforms has led to various efforts to digitise these instruments for use in digital music activities. J.H. Nketiah's Digital Platform Model, as discussed by Opoku-Boateng et al. (2020), promotes a holistic digitisation of Ghanaian traditional music but does not focus specifically on individual elements such as instruments, songs, or dance. These models also lack detailed guidelines on how to create digital platforms. This study, through a review of theories and literature, proposes the Two-Hand Steering Digital Platform Model—a unique approach based on the Uses and Gratification Theory, Interdisciplinary Theory, and the Technology Acceptance Model. This model provides a clear methodology for creating digital platforms specifically for the sounds and visuals of Ghanaian traditional musical instruments. The Two-Hand Steering Digital Platform Model is recommended as a framework for developing digital platforms that celebrate and preserve Ghanaian indigenous musical instruments.*

**KEYWORDS:** Digital platform; digitisation; traditional music; idiosyncratic; uses and gratification; interdisciplinary theory; technological acceptance model.



## INTRODUCTION

Digital platforms have changed social, commercial, and educational activities worldwide. Considering the rapid digitisation activities happening in Sub-Saharan Africa, it can be said that Africa has digitally emerged in social and economic activities. According to Gorenšek and Kohont (2019), digital platforms involve shifting an organisation from old approaches to new ways of working and thinking through the use of digital, social, mobile, and emerging technologies. The drastic shift from traditional means of operation to recent digital platforms has informed various facets of commercial, educational, and social activities. The effectiveness of digital platforms in various sectors, institutions, entities, and industries can be recognised in the form of digital libraries, databases, websites, digital archives, digital publications, digital educational packages, digital money, and digital musical instruments. All these digital platforms have been developed to serve the dynamic needs of the global world. Consequently, various digital platforms have been created for musical instruments for music education, production, performance, and composition. The Chinese, Indians, the West, Japanese, and even some parts of northern Africa have digital platforms for their traditional musical instruments, such as the ukulele, kora, mandolin, dizi, tabla, sitar, guzheng, koto, and djembe. Examples of such digital platforms are imusic-school, SwarShala, Tarang, and Virtual Koto. Sounds and visuals from these musical instruments have been digitised and digitalised in the form of websites, Play Store applications, and other digital media handles for various musical activities. Similar attempts to create digital platforms for Ghanaian traditional music elements have been made in the past, but the difficulty in identifying the sounds and visuals of Ghanaian traditional musical instruments on various digital platforms for musical endeavours points to the need to consider a new digital platform model specifically for the sounds and visuals of Ghanaian traditional musical instruments.

Considering the rapid technological advancement and the growing dynamics of needs regarding the use of Ghanaian traditional musical instruments, it is necessary to develop a model for creating digital platforms for the effective use of these elements on digital platforms. Opoku-Boateng et al. (2020) described the processes used to convert the analogue sounds and visual recordings at J.H Nketiah's Archive into digital format as a model for creating a digital platform for the sounds and visuals of Ghanaian traditional musical elements. However, it is crucial to specifically create a model that systematically describes the methodology and techniques to create a digital platform specifically for the sounds and visuals of Ghanaian traditional musical instruments, as Nketiah's model and other models generally convert analogue recordings or record the sounds and visuals of various traditional musical elements primarily from ethnographic fieldwork or performance situations onto digital format. The absence of such a model has prevented the development of digital platforms that allow digital societies to use the sounds and visuals of Ghanaian traditional musical instruments extensively in music education, composition, production, performance, and research on digital platforms within the current technological dispensation. Therefore, this study reviewed relevant literature and theories, such as the Uses and Gratification Theory, Interdisciplinary Theory, and the Technology Acceptance Model, as well as research and creative designs, to propose an idiosyncratic methodology to create a digital platform for the sounds and visuals of Ghanaian traditional musical instruments. The outcome of this review resulted in the Two-Hand Steering Digital Platform Model, which is proposed to be used to create digital platforms for the sounds and visuals of Ghanaian traditional musical instruments.

## Theoretical Frameworks

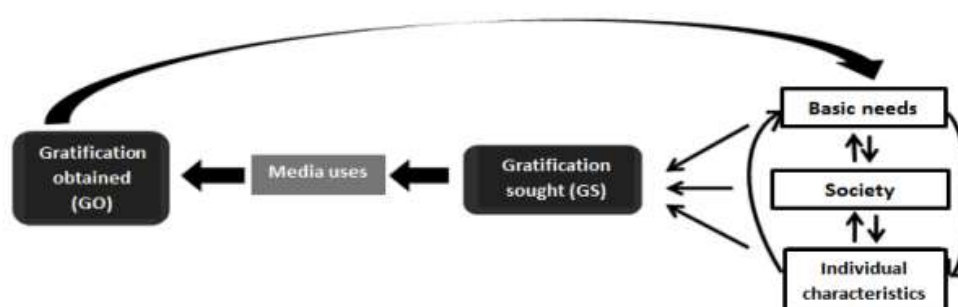
According to Gregor (2006), the type of theory which forms the basis of development can influence the choice of an epistemological approach. This study was therefore underpinned by the development of the model on the Uses and Gratification Theory (Blumler & Katz, 1974) and the Interdisciplinary Theory (Carp, 2018). Additionally, the Technology Acceptance Model (Davis, 1989) was adopted to technically mould the practicality of the novel model.

## Uses and Gratification Theory

According to Mehrad and Tajer (2016), the Uses and Gratification Theory adopts a functionalistic approach to communications and media and states that the most important role of media is to fulfil the needs and motivations of the audience. Expressively, this theory hinges on the fact that an audience's use of media documents is driven by the purposes they fulfil. Certainly, this theory concentrates on how users seek media and to what extent they are satisfied with its type, content, and method of use (Amiri et al., 2012). Audience satisfaction has been the driving force behind the Uses and Gratification Theory. The Uses and Gratification Theory, among other theories, was chosen for this novel model to provide the theoretical basis that allows the consideration of approaches to understand the gratification stakeholders demand from the sounds and visuals of Ghanaian traditional musical instruments on digital platforms.

Parveen (2017) also postulated that the Uses and Gratification Theory roots itself in the idea that the people who "use" the media have certain "gratifications" that they seek from it, illustrating that people are always intentional about the kind of gratification they need from a media document. Parveen (2017) further revealed that, since the gratifications sought may vary from one person to another, the way media will be used will also vary. Hence, operating with this theory established the need to reveal dynamic user perspectives with the right methodology in creating digital platforms for the sounds and visuals of Ghanaian traditional musical instruments. Given that the Uses and Gratification Theory has gone through phases of development, as revealed by Mehrad and Tajer (2016), more propositions have been created, revised and merged, and fundamental steps have also been taken towards the theoretical coherence of this approach. Mehrad and Tajer (2016) discussed the role Katz et al. (1974) and Katz et al. (1973) played in describing the Uses and Gratification Theory at its third phase of development. From the readings of Mehrad and Tajer (2016) and Katz et al. (1973, 1974), it is worth indicating that individuals experience social and psychological needs that shape their expectations of mass media or other sources, ultimately leading to varied patterns of media use or preferences, which, in turn, satisfy their gratification needs. Upon this thought, Rosengren (1974) developed a conceptual model for the Uses and Gratification Theory.

**Figure 1: Rosengren (1974) Uses and Gratification**





This model clarifies the Uses and Gratification Theory by exploring the fundamental needs, societal influences, and individual characteristics that determine the types of media people seek for satisfaction. As noted by Katz et al. (1973, 1974), the relationship between society, individuals' basic needs, and their unique traits shapes the kind of media they require. To fully understand how users seek the sounds and visuals of Ghanaian traditional musical instruments on digital platforms, it is essential to consider these three interconnected factors: basic needs, society, and individual characteristics. For this reason, the study proposed interaction with the natural society to understand the basic and dynamic needs in terms of the sounds and visuals of Ghanaian traditional musical instruments in creating digital platforms.

### **Interdisciplinary Theory**

According to Klein (2010), the drivers of interdisciplinary growth and development have been the complexity of nature and society, the desire to explore problems and questions that do not nest comfortably within one discipline, the quest to solve society's problems, and the opportunity to exploit the power of new technologies. Notably, complications in societies and the natural principles of social interactions and connections initiate Interdisciplinary Theory. According to Newell (2001), the nature of complex systems provides a rationale for interdisciplinary principles. As exhibited in the humanities, Interdisciplinary Theory has been the foundation for the interrelation of disciplines for comprehensive understanding as well as resolving complex problems within languages or literature, the arts, history, and philosophy. As has been noted by several authorities across various disciplines, the environment and societal settings kindle problems that go beyond a single discipline for adequate appreciation and introduce questions that require interdisciplinary foundations to provide sufficient answers. Carp (2018) postulated that interdisciplinarity involves a synthesis or balance of multiple perspectives to produce such things as a deeper understanding or illumination, a balanced judgement, a viable solution, or a product that creatively accommodates the different perspectives. Given these points, Carp (2018) found the balance of multiple perspectives on three pillars: illumination, balanced judgement, and viable solutions.

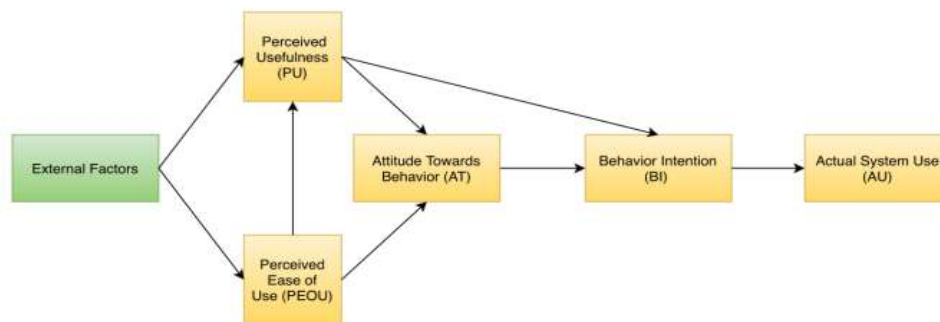
Interdisciplinary Theory provides the theoretical underpinning for the development of the digital platform from multiple perspectives. The theory also encouraged the subjection of the sounds and visuals of Ghanaian traditional musical instruments to balanced judgement from multiple perspectives. This stimulates the development of the digital platform to employ designs that adequately explore the prospects of the sounds and visuals of Ghanaian traditional musical instruments. Furthermore, the theory establishes the practical foundation to use the studio-based design to create viable products for the sounds and visuals of Ghanaian traditional musical instruments from multiple perspectives in a reflexive manner. This theory provides a solid framework for understanding the connections between music, sound engineering, visual arts, and ICT in creating a digital platform for the sounds and visuals of Ghanaian traditional musical instruments. It encourages a well-rounded evaluation of these sounds and visuals from multiple perspectives, enabling effective strategies to promote their widespread use on digital platforms. Interdisciplinary Theory allows the study to propose the intentional and effective integration of various fields, including audio engineering, photography, videography, ICT, and content management systems, to address the needs of the digital society.

### **Technological Acceptance Model**

According to Schaefer et al. (2002), model-based development relies on the use of explicit models to describe the development process, including its activities and products. On this basis,

the Technology Acceptance Model (TAM) is proposed as the creative foundation for this novel model. The Technology Acceptance Model (TAM), introduced by Davis (1986), is one of the most widely used models to explain user acceptance behaviour (Ma & Liu, 2005, p.60). Zaineldeen et al. (2020) defined TAM as a model that emulates how the customer comes to accept and utilise technological innovation. The Technology Acceptance Model defines user acceptance behaviour towards any technological innovation or technological activity. Liao et al. (2018) explained that, in an attempt to create a common theoretical basis for reasoned action, Davis (1986) developed the Technology Acceptance Model. Reasoned action operates on the assumption that people behave in a sensible and rational manner and that their behaviour is based on the information available to them about a particular phenomenon. The Technology Acceptance Model relates these principles to propose two external variables that moderate how people develop a particular behaviour towards technology: Perceived Ease of Use and Perceived Usefulness.

**Figure 2: Technological Acceptance Model**



According to Zaineldeen et al. (2020), Perceived Usefulness denotes the extent to which an individual accepts that employing a certain application framework will raise his or her work performance within an organisational environment. Perceived Usefulness, therefore, is the user's subjective notion that employing a particular technology can enhance the quality of their work performance. It determines the degree to which a person accepts that utilising a particular technology will improve his or her work effectiveness in society. Zaineldeen et al. (2020) further discussed Perceived Usefulness as the Subjective Norm, which includes image, job relevance, output quality, and results demonstrability.

- Image signifies the extent to which the user's status is perceived to be improved by the use of technology or innovation within the user's social systems. The study proposes considering how the use of the digital platform will elevate the status of its users within the social system of musical activities. For instance, the type of image created for a music educator who uses the digital platform to teach the playing of Ghanaian traditional musical instruments needs to be considered. This intent establishes the selection of appropriate facilities, equipment, and techniques to record, digitise, and digitalise the sounds and visuals of Ghanaian traditional musical instruments.
- Job relevance depicts the degree to which an innovation or technology is tied to a person's employment. The study suggests carefully connecting the creation of digital platforms to the employment of people who use the sounds and visuals of Ghanaian traditional musical instruments. For this reason, the study consciously prescribes the configuration of digital platforms to contemporary technological ramifications, considering the



employee's capability in terms of technological innovations. For example, a dance performer who may not use digital platforms could remain unemployed in a performance setting that requires dancers without instruments or drummers. This will also contribute to the selection of appropriate facilities, equipment, and techniques for creating the digital platform.

- The output quality implies how well the new innovation or technology executes the work of the user. The study took into account how well the generated innovation performed the task for its users. For example, what would make a music producer choose the digital platform over the actual recording of Ghanaian traditional musical instruments in a music production context? The study therefore proposes that the facilities, equipment, and techniques used to create the digital platform for Ghanaian traditional musical instruments produce a high-quality output that surpasses the regular music producer's effort to manipulate sounds in Virtual Studio Technology Instruments (VSTi).
- Results demonstrability considers how distinct the visible results achieved with the technology or innovation are. What makes the digital platform exceptional in terms of the visible results it can produce needs to be considered. For instance, the development process should consider how an instrumental pattern score on the digital platform will be distinct from a regular music composer's effort to score this part in a music notation software programme. This consideration will lead the developer to consider the use of appropriate facilities, equipment, and techniques to record, digitise, and digitalise the sounds and visuals of Ghanaian traditional musical instruments.
- Perceived Ease of Use, on the other hand, according to Zaineldeen et al. (2020), measures the extent to which a person assumes that employing a system is effortless. The Perceived Ease of Use aspect of the TAM determines how much a person believes using a system is simple. Zaineldeen et al. (2020) discussed four anchors that influence Perceived Ease of Use: computer playfulness, perceptions of external control, computer self-efficacy, and computer anxiety.
- Computer playfulness signifies the essential encouragement to engage with new innovations or technology. In this case, the development of the digital platform should involve mechanisms to motivate users to adopt the innovation. This can include tactful audio and visual techniques, as well as incorporating graphic design strategies that will entice users to visit and stay on the website for musical endeavours.
- Perception of external controls involves the extent to which a person believes that the technical and organisational resources are available to support the system they use. The development of the digital platform should ensure alignment between the technical and organisational resources of the setting and how the members of the digital society perceive these features in the platform's development. The creation of the database and website should be directly targeted at the activities of the digital society's members. This will enable users to have confidence in the digital platform, as it will be calibrated to reflect their organisational system and support their work.
- Computer self-efficacy is the degree to which individuals believe they can use a computer to complete a specific task. Similarly, the development of the digital platform should take into account users' ability to engage with the platform on a computer. As part of the development process, users' proficiency in using a computer to complete tasks needs to



be considered. This will inform how the digital platform is situated within internet and computer technologies.

- Computer anxiety is a strong apprehension about using computers that is out of proportion to the actual threat these devices pose. The study proposes user-friendly digital platforms so that users with computer anxiety can easily engage with the platform. It suggests simple and straightforward digital platforms, free from ambiguity. For instance, the categories and sections for the sounds and visuals on the platform should be organised based on users' preferences.

The factors and anchors from Perceived Usefulness and Perceived Ease of Use should guide the selection of appropriate facilities, equipment, and techniques to create a database for the sounds and visuals of Ghanaian traditional musical instruments. Additionally, these factors and anchors should inform the use of a studio-based design to record, digitise, and develop the website. The factors and anchors from Perceived Usefulness and Perceived Ease of Use will ensure the development of a positive attitude towards using the website created for musical activities (Attitude Towards Behaviour). The Perceived Usefulness and the Attitude Towards Behaviour will foster a strong and justified intention for users to engage with the digital platform (website). The Technology Acceptance Model provides a practical outline of what is expected from the digital platform and how users may want to utilise it for their activities.

## REVIEW OF RELATED LITERATURE

### *Digital Platforms in Ghana*

It is important to review what digital platforms are and their effects on activities in Ghana to enable fruitful discussions in this section. Eijk et al. (2015) defined a digital platform as a (technological) basis for delivering or aggregating services/content from service/content providers to end-users. Similarly, Michalke et al. (2022) defined a digital platform as a building block that provides an essential function to a technological system and serves as a foundation upon which complementary products, technologies or services can be developed. As can be seen, a digital platform can be described as a digital base made up of contents or products with a digital procedure that enables users to interact with digital information, products, innovations, or services. In other words, a digital platform involves digital content or services and digital procedures or ways of engagement for the ultimate end-user. As a matter of fact, Senyo et al. (2021) revealed that, notwithstanding the digital divide, institutional voids, economic and development challenges facing less developed economies, digital platformisation as a strategy is fuelling technology leapfrogging in public sector transformation. Consistently, Gray and Rumpe (2017) explained digital platforms as a buzzword that allows different stakeholders to inject various forms of innovation into their respective companies, businesses, governments, academic institutions or other public services.

Ghana as a country is considered to be developing, yet Ghanaians are incredibly active on digital platforms. Commenting on digital platforms in the Ghanaian agriculture system, Sarku et al. (2021) highlighted that digital platforms are available to smallholder farmers and agricultural extension agents, to analyze the public and/or private governance arrangements that underpin the implementation of digital climate information delivery. Moreover, Preko et al. (2019) postulated that the Ghanaian health sector, as in many developing countries, seeks



to continuously improve patient care through the use of various healthcare technologies. For the time being, the Ghanaian health insurance scheme which was previously renewed at health insurance offices is now renewable on digital platforms. Ghanaians may avoid long queues and renew their health insurance with ease by using mobile devices. Agyapong (2020) as well commented on digital platforms and Ghana's financial sector and disclosed that digital platforms have revolutionised financial service provision and compelled financial services institutions to adopt technologies that help deliver quality service at a minimal cost. Also, Famiyeh and Barima (2011) discussed improved capacity utilisation, access to new technology, enhanced corporate social responsibility, diversification of strategy and extending firms' product lines as some benefits of ICT usage for banking. Examples of such developments include the popular mobile banking and E-zwich facility in Ghana. Likewise, Kotoua et al. (2015) revealed that education on digital platforms has brought easy ways to study and get a degree to the doorsteps of the working classes and students alike in Ghana through higher educational institutions.

Several educational institutions in Ghana are using online tools like Google Class, Moodles, and other video conferencing services like Zoom and TeamViewer for both synchronous and asynchronous online education. In summary, the advent of digital platforms has undoubtedly revolutionized several activities in Ghana, and these activities have undoubtedly been accompanied by academic conversations with literature and publications that contribute to the advancement of digital platforms in these activities. On the contrary, Ghana has had several digital platforms for musical activities, but discussions about these platforms for Ghanaian traditional musical elements, including songs, dance, drums, and costumes, have not gotten enough attention. This study therefore reviewed literature surrounding digital platforms in Ghana and the position of various studies that comment on the viability of digital platforms for Ghanaian traditional musical instruments in the confines of the theories reviewed above. This review led to the creation of a model that describes the method and the methodology to create digital platforms for Ghanaian traditional musical instruments for musical endeavours.

### ***Digital Platforms for Ghanaian Traditional Musical Instruments***

Durant (1990), commenting on the use of sounds and visuals of Ghanaian traditional musical instruments on digital platforms in the 1980s, postulated that the emergence of digital sampling, sequencing and other techniques, which collectively redefined concepts and terminologies of music-making, introduced in effect a new kind of 'music literacy.' In the same way, Shriver (2003) testified to this music literacy in Malaysia and discussed how musicians and composers wanted to use Malaysian traditional musical instruments and created a digital platform for Malaysian traditional musical instruments which involved a bank of digital samples of the indigenous instruments for musicians and composers to use with conventional triggering devices, such as keyboards, computers or drum triggers. In spite of the numerous opportunities presented by digital media technologies in developing countries like Ghana, the challenges are still eminent, which prevent the country from tapping the full potential of digital media (Demuyakor, 2020).

In Ghana, Acquah and Ayesu (2021) proposed the Asanka compositional model which prescribed the creation of a digital platform for the sounds of guitar-band highlife guitar patterns for computer-based composition on digital platforms. As Acquah and Ayesu (2021) and Shriver (2003) conceptually detailed methodological and technical processes for the creation of digital platforms for guitar patterns and Malaysian traditional musical instruments respectively, however, there has not been a digital platform in a similar manner for the sounds



and visuals of Ghanaian traditional musical instruments. It has been demonstrated by Acquah and Ayesu (2021) and Shriver (2003) that the methodological and technical complexity that comes with developing effective digital platforms for traditional instruments demands the conceptualization of the process to afford credible results. Given that the nature of the sounds and visuals of musical instruments raise methodological and technical interrogations in the process of creating digital platforms for them, none of the existing digital platform models focused on Ghanaian traditional musical instruments in terms of methodology and technicalities.

According to Arfib et al. (2003), creating a digital platform for musical instruments is complex and some skills and methods can help the designer. Also, Roca-Puig et al. (2005) revealed that the development of new digital platforms for musical instruments is a broad field that covers areas highly technical as well as disciplines linked to the study of human behaviour. There is therefore the need to consider a digital platform creation model for the sounds and visuals of Ghanaian traditional musical instruments especially as technological development is constantly changing social-cultural activities. According to Ruttan (2001), the rate and direction of technological innovation are viewed as induced by changes in relative resource endowments and by institutional innovations. Demuyakor (2020) postulated that since the introduction of digital technologies in the early 1990s, digital media and information and communication technology have shaped and still continue to shape the media landscape of the good people of Ghana. Therefore, the resource endowment and the institutional innovation in Ghana, as described by Durant (1990), involves the use of digital computers, digital synthesizers, digital samplers, drum machines, virtual musical instruments, computer-based educational visuals and compact discs for artistic and educational activities in Ghana. Stone and Stone (1981) revealed that the use of technological media is valuable, but the assumption of media objectivity is untenable. Therefore, to avoid the temptation of inconsistent assumptions which leads to creating digital platforms that do not achieve sufficient assimilation on digital platforms, there is the need to intentionally prescribe ways to achieve this effect based on theories and literature.

### ***The Digital Platform Model for Ghanaian Traditional Musical Instruments***

Based on the theoretical and literature review, this study recommends that an expedition to create a digital platform should be tackled with concepts adopted from the qualitative paradigm which uses techniques that result in a narrative, descriptive account of a setting or an activity. Denzin and Lincoln (2011) referred to qualitative research as interpretive, material practices that make the world visible. They added that these practices transform the world. Moreover, Chen et al. (2019) discussing qualitative research and its practices revealed traditional narrative research, unstructured interviews and community-based participatory research to the more innovative critical incident and basic content analysis to those that used computer analysis to facilitate qualitative research as techniques in qualitative research. In order to improve practice through innovative practice, the qualitative paradigm thus permitted the study to assume an idiosyncratic position in its methodological structure. This will allow the amalgamation of different research designs within the qualitative research paradigm to resolve problems.

Pragmatism is therefore recommended to be integrated into the qualitative research paradigm. Pragmatism is based on the proposition that developers should use the philosophical and/or methodological approach that works best for the particular problem that is being investigated (Cotton et al. 1999). According to Cassell et al. (2018), "The word 'pragmatism' is commonly used in the English language to denote the practicalities of just getting on and doing what the situation demands" (p.1). Pragmatism focuses on practical approaches and it implies being

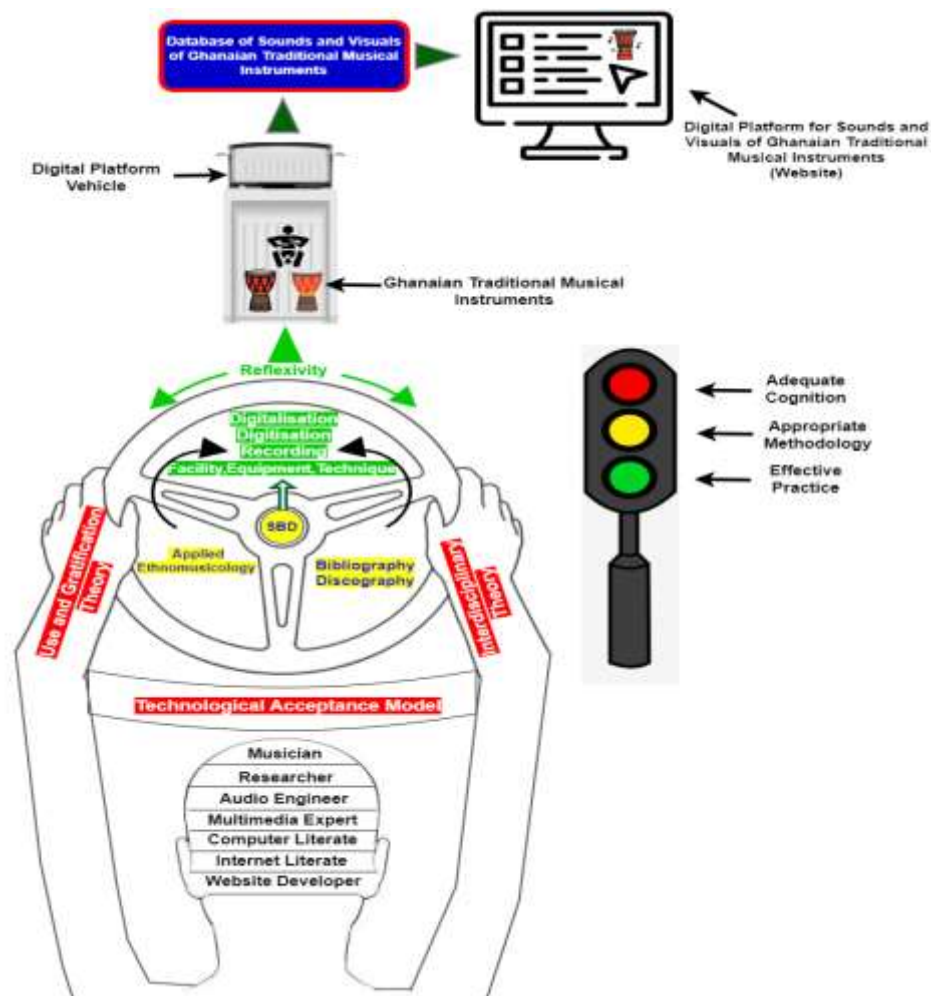


practical with the situation at hand and employing practical means to address the situation. Practical approaches to digitise the sounds and visuals of Ghanaian traditional musical instruments have been prioritised in various parts of the world, leading to significant sounds and visuals of traditional musical instruments on digital platforms. Digital platforms for traditional musical instruments are emerging as innovative tools for preservation and education. These platforms typically involve recording and analyzing the sounds of traditional instruments, then reproducing them digitally (Siswanto et al., 2014). Android-based applications have been developed to introduce traditional instruments like the Indonesian *dol*, allowing for interactive virtual learning experiences (Apridiansyah & Pahrizal, 2019; Andriansyah & Sadikin, 2018). Such applications often feature 3D models of instruments to enhance user engagement (Andriansyah & Sadikin, 2018).

In China, digital platforms are being used to showcase traditional musical instruments through various media formats, including audio, video, 3D images, and virtual reality (Jia, 2021). These digital initiatives aim to break the limitations of time and place, creating new platforms for better protection and development of traditional musical instruments (Jia, 2021). Overall, these digital approaches offer promising avenues for preserving cultural heritage and increasing public interest in traditional instruments. Based on the review conducted, this study proposed a methodological strip that is very professional and intentional in relating with the society to engage with the digital platform. As technology adoption increases, there is a growing need to empower professional and ethical bases in its application (Huda, 2019). In fact, it is crucial for the creator of a digital platform to understand how the society wants to use the sounds and visuals of Ghanaian traditional musical instruments in order to have a background of their needs, which will form the basis for the development of the digital platform (Zamaraeva et al. 2021). This is because a digital platform must reflect the needs of a digital society. Moreover, the study recommends describing existing initiatives, works and studies in digitizing Ghanaian traditional musical instruments to inform the creators on how to appreciate the digitisation endeavour. Institutions or creators can benefit from existing expertise and resources within the higher education community to navigate complex decisions (Jephcott, 1998). Lastly, the study emphasises the connection between theory and practice in creative developments (Marshall, 2010) and fosters a unique studio culture that supports both creative work and research endeavors (Fallman, 2007). Therefore, the study suggests creating the digital platform through practice.

### **The Two-Hand Steering Digital Platform Model**

Based on the above theories and reviews, the study proposed the Two-Hand Steering Digital Platform Model for creating digital platforms for Ghanaian traditional musical instruments. This model is gleaned from the review of theories and literature as well as methodologies to serve as a formal structure (framework) to direct ethnomusicologists or music scholars or digital platform developers who want to create digital platforms for Ghanaian traditional musical instruments.

**Figure 3: Two-Hand Steering Digital Model**

In the above model, sounds and visuals of Ghanaian traditional musical instruments are the materials to be transported to the digital platform. Traditional instrumental setups of the various traditional musical types in Ghana could be selected or individual Ghanaian traditional musical instruments could be selected. The destination for the vehicle is the digital platform, which can only be arrived at through adequate cognition, appropriate methodology and effective practice coordinated through multifaceted expertise in areas such as music, research, audio engineering, multimedia expertise, computer literacy and website development. At the adequate cognition stage indicated by the red colour, the model is founded on user-oriented cognition, which directs the creation of digital platforms for the sounds and visuals of Ghanaian traditional musical instruments to be user-focused.

The Uses and Gratification Theory describes the active role the users of the digital platform need to play in the development of the digital platform for the sounds and visuals of Ghanaian traditional musical instruments (Harrison, 2018; Valkenburg & Peter, 2008; Katz et al., 1973). The interdisciplinary theory provides the basis for the balance of multiple perspectives to produce a deeper understanding of the digitisation situation, which aims at effective assimilation. This leads to forming the right judgment about the sounds and visuals of Ghanaian traditional musical instruments and also coming up with a viable product that creatively accommodates the different perspectives to achieve effective assimilation of the sounds and



visuals of Ghanaian traditional musical instruments on digital platforms (Benson, 2015; Frodeman, 2014; Klein, 2010). Moreover, the Technological Acceptance Model, which also contributes to the cognition of the digital platform, provides the practical basis for the creation of the digital platform for the sounds and visuals of Ghanaian traditional musical instruments. This model establishes the background to map out the perceived usefulness and the perceived ease of use that will practically ensure that users engage the digital platform created for the sounds and visuals of Ghanaian traditional musical instruments (Davis, 1989; Venkatesh & Davis, 2000).

These theories should establish methodologies that allow an analysis of existing digital platforms, explore users' needs and employ practical designs for effective practice that can create viable user-oriented digital platforms for the sounds and visuals of Ghanaian traditional musical instruments. The above model made some suggestions in terms of designs to engage the society, to review existing works and also to embark on the creation. These are methodological guidelines which can be changed or modified; however, the model insists that upon these theories and reviews, the method should engage the society, study past audio-visuals as well as written works and finally practice in a reflexive manner. Through this means, the final action to actually move the traditional musical instruments to the digital platform can be achieved (Bennett, 2016; Borgo, 2005; McCormick, 2012).

## CONCLUSION

The goal of this study was to expand the field of literature surrounding digital platforms for Ghanaian traditional musical elements by exploring the essential practices that can effectively drive the sounds and visuals of traditional musical elements onto digital platforms. The lack of digital platforms for sounds and visuals of Ghanaian traditional musical elements within the current technological dispensation, as opposed to the growth and development of digital possibilities and their relations to the sounds and visuals of traditional musical instruments, served as the impetus for the aforementioned intentions. Dei et al. (2025) revealed that digital technology is extremely limited in Ghanaian communities, with most Indigenous knowledge still transmitted orally. Harper et al. (2019) further underscores the challenges in creating sustainable audio-visual archives, while John Demuyakor et al. (2020) notes that despite digital media's introduction in the 1990s, significant obstacles prevent Ghana from fully leveraging technological potential. Possibly, the lack of such digital platforms is a result of the complexity of the process of coordinating methodologies and methods within the right technological situation to create such platforms.

The complexity of coordinating methodologies and technological requirements is indeed a significant barrier to digital platform development. Tilson et al. (2013) argues that current research models oversimplify the inherent complexity of digital platforms, removing critical features that define their potential. Reuver et al. (2018) further emphasizes that digital platforms are challenging due to their distributed nature and intricate connections with institutions, markets, and technologies. Topalova et al. (2024) provides concrete evidence of this complexity, recommending advanced methodological approaches like SADT and Agile methodologies to manage platform coordination. The research suggests that creating digital platforms requires sophisticated coordination mechanisms that can handle the intricate interactions between technological systems, business processes, and organizational structures. In this sense, the study explored ideas that brought concepts together to build a conceptual



model for creating digital platforms for sounds and visuals of Ghanaian traditional musical instruments, which was grounded on the uses and gratification theory, interdisciplinary theory and the technological acceptance model. By reviewing literature and various designs, such as bibliographic design, discographic design and applied ethnographic design, an idiosyncratic procedure was allowed for the use of interviews and studio-based design to gather data and create the digital platforms, respectively.

Multiple research designs, including bibliographic, discographic, and applied ethnographic approaches, enable an innovative methodology for gathering data and developing digital platforms through interviews and studio-based techniques. Acquah et al. (2022) demonstrates that such research designs can provide a structured approach with distinct phases of data collection, analysis, and creative development. Cantarella et al. (2019) further supports this by highlighting how design studio practices can transform ethnographic inquiry, allowing researchers to develop unique questions and shape research encounters. Da et al. (2023) provides a concrete example, using semi-structured interviews with designers and non-participatory observations to triangulate data about digital platform design. While promising, the approach's effectiveness depends on careful implementation and cross-method validation. A model for a digital platform has been created (Two-Hand Steering Digital Platform Model) and this model provides the procedure for developing digital platforms for the sounds and visuals of Ghanaian traditional musical instruments within the African setting. This model was conceptualised and established as a digital platform model for sounds and visuals of Ghanaian traditional musical instruments through the analysis of the relevant literature. It is essential to note that the study into the development of a conceptual model for creating digital platforms for Ghanaian traditional musical instruments is a great triumph. It extends the dearth of literature surrounding digital platforms and Ghanaian traditional musical elements.

The development of the model accelerates ongoing discussions about digital platforms for Ghanaian traditional musical instruments and rejuvenates the concept of digitalisation for Ghanaian traditional musical elements. Ongoing digital transformation efforts in Ghana do not specifically address digital platforms for traditional musical instruments; they discuss digital platforms broadly, but not in the context of musical heritage (Ayakwah et al., 2021; Bonina et al., 2021). The concept of creating a digital platform should emanate from users' perspectives, and the recording, digitisation and digitalisation should be guided by existing written and media materials and digital platforms, as the model suggests, and the procedure should be based on interdisciplinary ideologies and technological standards woven from a local setting with studio-based research design. The study makes recommendations for how to create digital platforms using elements from Ghanaian traditional musical instruments and idiosyncratic methods from the setting of digital societies that engage these elements for musical activities. To increase the discourse in that regard, it is advised that new digital platforms should be created for the elements in Ghanaian traditional music, utilising the Two-Hand Steering Digital Platform model. This proposed conceptual framework can be discussed further, adapted for the creation of a digital platform for the sound and visual elements in Ghanaian and African traditional music. These technological developments will foster and encourage technological and digital development among ethnomusicology and music scholars who engage traditional music for their activities.



## REFERENCES

- Acquah, E. O. (2022). Bibliographic and discographic inquiries in music composition. *Journal of Humanities Music and Dance*, 25, 4–12. <https://doi.org/10.55529/jhmd.25.5.13>
- Acquah, E. O., & Ayesu, S. N. (2021). Asanka compositional model: an aid to computer assisted guitar-band highlife music composition with “battery 4” virtual studio technology instrument. *Journal of Advanced Research and Multidisciplinary*, 1(1), 1-12.
- Agyapong, D. (2020, July 14). Implications of digital economy for financial institutions in Ghana: an exploratory inquiry. *Transnational Corporations Review*, 13(1), 51–61.
- Ayakwah, A., Damoah, I. S., & Osabutey, E. L. C. (2021). Digitalization in Africa: The case of public programs in Ghana. In *Advances in theory and practice of emerging markets* (pp. 7–25). [https://doi.org/10.1007/978-3-030-70538-1\\_2](https://doi.org/10.1007/978-3-030-70538-1_2)
- Amiri, M., Asemi, A., & Rezaei, N. (2012). Uses and gratifications theory in media studies. *Journal of Media Studies*, 14(2), 101–115.
- Apradiansyah, Y. A., & Pahrizal, P. (2019). PENGENALAN ALAT MUSIK TRADISIONAL BENGKULU (DOL) DIGITAL BERBASIS ANDROID. *Journal of Technopreneurship and Information System (JTIS)*, 2(1), 12–17. <https://doi.org/10.36085/jtis.v2i1.179>
- Arifianto, T., Nurullah, Q. S., & Syufagi, M. A. (2018). Perancangan Aplikasi Alat Musik Tradisional Rebana Berbasis Android untuk Pembelajaran Ekstrakurikuler Hadrah di SLB B-C Nusantara Bangil Kab. Pasuruan. *Rekayasa*, 11(2), 146. <https://doi.org/10.21107/rekayasa.v11i2.4420>
- Arfib, D., Couturier, J., & Kessous, L. (2003). Design and Use of Some New Digital Musical Instruments. In *Lecture notes in computer science* (pp. 509–518). [https://doi.org/10.1007/978-3-540-24598-8\\_47](https://doi.org/10.1007/978-3-540-24598-8_47)
- Benson, J. (2015). *Interdisciplinary collaboration: A guide for researchers and practitioners*. Springer. <https://doi.org/10.1007/978-3-319-13819-0>
- Bennett, A. (2016). *Researching musical performance: A reflexive approach*. *Music Research Annual*, 2(1), 25-42. <https://doi.org/10.1177/2515245916643028>
- Blumler, J. G., & Katz, E. (1974). *The uses of mass communications: Current perspectives on gratifications research*. SAGE Publications.
- Bonina, C., Koskinen, K., Eaton, B., & Gawer, A. (2021). Digital platforms for development: Foundations and research agenda. *Information Systems Journal*, 31(6), 869–902. <https://doi.org/10.1111/isj.12326>
- Borgo, D. (2005). *Developing a reflexive approach to music technology research*. *Journal of New Music Research*, 34(3), 223-233. <https://doi.org/10.1080/09298210500119196>
- Cantarella, L., Hegel, C., & Marcus, G. E. (2019). *Ethnography by design*. <https://doi.org/10.5040/9781350071018>
- Carp, D. (2018). *Teaching Interdisciplinary Artistic Research* [Master of Education in Arts & Research Group Arts Education, Amsterdam University of the Arts].
- Chen, E., Leos, C., Kowitt, S. D., & Moracco, K. E. (2019). Enhancing Community-Based Participatory Research Through Human-Centered Design Strategies. *Health Promotion Practice*, 21(1), 37–48.
- Cotten, S. R., Tashakkori, A., & Teddlie, C. (1999b). Mixed Methodology: Combining Qualitative and Quantitative Approaches. *Contemporary Sociology a Journal of Reviews*, 28(6), 752. <https://doi.org/10.2307/2655606>
- Da, A. C. R. F., & Velloso, L. M. R. (2023). Aspectos metodológicos de uma pesquisa sobre as abordagens de design relacionadas ao usuário no desenvolvimento de plataformas digitais. *Blucher Design Proceedings*, 7–8. <https://doi.org/10.5151/5spdesign-5>
- Davis, F. D. (1986). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319.



- De Reuver, M., Sørensen, C., & Basole, R. C. (2017). The Digital Platform: a research agenda. *Journal of Information Technology*, 33(2), 124–135. <https://doi.org/10.1057/s41265-016-0033-3>
- Demuyakor, J. (2020). Opportunities and Challenges of Digital Media: A Comprehensive Literature Review of Ghana. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3576045>
- Dei, D. J., Ocloo, P. E. D., Anane-Donkor, L., Peasah-Aidoo, T. E., & Asamoah, C. (2025). Leveraging information technology and systems for the sustainable management and preservation of indigenous knowledge. *Information Development*. <https://doi.org/10.1177/02666669251370351>
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. sage.
- Durant, A. (1990). A new day for music? Digital technologies in contemporary music-making. In P. Hayward (Ed.), *Culture, technology and creativity in the late twentieth century* (pp. 175-196). John Libby and Co.
- Eijk, N. van, Fahy, R., Til, H. van, Nooren, P.A., Stokking, H.M., & Gelever, H.F.B.F. (2015). *Digital Platforms: An analytical framework for identifying and evaluating policy options*. Delft: TNO.
- Fallman, D. (2007). Supporting studio culture in design research. Proceedings of International Association of Societies of Design Research, the Hong Kong Polytechnic University School of Design, 12-15 November 2007.
- Famiyeh, S., & Barima, C. T. (2011). Impacts of information technology implementation on banks' operations in Ghana. *International Journal of Services and Standards*, 7(3/4), 249.
- Frodeman, R. (2014). *Sustainability and the interdisciplinary university*. *Research in Higher Education*, 55(5), 439-456. <https://doi.org/10.1007/s11162-013-9303-7>
- Gorenšek, T., & Kohont, A. (2018). Conceptualization of digitalization: Opportunities and challenges for organizations in the Euro-Mediterranean area. *International Journal of Euro-Mediterranean Studies*, 12(2), 93-106. [https://emuni.si/wp-content/uploads/2020/01/IJEMS-2-2019\\_93%E2%80%9393115.pdf](https://emuni.si/wp-content/uploads/2020/01/IJEMS-2-2019_93%E2%80%9393115.pdf)
- Gray, J., & Rumpe, B. (2017). Models for the digital transformation. *Software and Systems Modeling*, 16(2), 307-308.
- Gregor, M. (2006). The nature of theory in information systems. *MIS Quarterly*, 30(3), 611.
- Harper, C., & Opoku-Boateng, J. (2019). Renewing cultural resources and sustaining J.H. Kwabena Nketia's vision for an African Music Archive in Ghana. *International Association of Sound and Audiovisual Archives (IASA) Journal*, 50. <https://doi.org/10.35320/ij.v0i50.101>
- Harrison, J. (2018). Uses and Gratifications of social media: A study of communication students in a public university. *International Journal of Communication Studies*, 10(1), 15-28. <https://doi.org/10.1080/17512786.2018.1484671>
- Harrison, K., Mackinlay, E., & Pettan, S. (2010). *Applied ethnomusicology: Historical and contemporary approaches*. Cambridge Scholars Publishing.
- Huda, M. (2018). Empowering application strategy in the technology adoption. *Journal of Science and Technology Policy Management*, 10(1), 172–192. <https://doi.org/10.1108/jstpm-09-2017-0044>
- Jephcott, S. (1998). Why digitise? Principles in planning and managing a successful digitisation project. *New Review of Academic Librarianship*, 4(1), 39–52. <https://doi.org/10.1080/13614539809516768>
- Jia, Q. (2021). Application of Chinese Traditional Musical Instruments. *Scientific and Social Research*, 3(1), 80–84. <https://doi.org/10.36922/ssr.v3i1.1063>



- Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. G. Blumler & E. Katz (Eds.), *The uses of mass communications: Current perspectives on gratifications research* (pp. 19–32). Beverly Hills, CA: Sage.
- Katz, E., Gurevitch, M., & Haas, H. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164–181. <https://doi.org/10.2307/2094393>
- Klein, J. T. (2010). Resources for Interdisciplinary Studies. *Change: The Magazine of Higher Learning*, 38(2), 50–56. <https://doi.org/10.3200/chng.38.2.50-56>
- Kotoua, S., Ilkan, M., & Kilic, H. (2015). The growing usage of online education: Impact on Ghanaian universities. *African Educational Research Journal*, 3(3), 162–168.
- Liao, C., Palvia, P., & Chen, J. (2018). The roles of habit and compatibility in the continued use of short-form video applications: A study of TikTok. *Journal of Organizational Computing and Electronic Commerce*, 28(3), 158–175. <https://doi.org/10.1080/10919392.2018.1482684>
- Ma, Q., & Liu, L. (2005). The technology acceptance model: A meta-analysis of empirical findings. *Journal of Organizational and End User Computing*, 16(1), 59–72. <https://doi.org/10.4018/joeuc.2005010104>
- Marshall, C. (2010b). A Research Design for Studio-Based Research in Art. *Teaching Artist Journal*, 8(2), 77–87. <https://doi.org/10.1080/15411791003618597>
- Mason, J. (2002). *Qualitative researching (2nd ed.)*. SAGE Publications.
- McCormick, J. (2012). *Studio-based research: A reflexive approach to music production*. *International Journal of Music Education*, 30(1), 18–30. <https://doi.org/10.1177/0255761411421251>
- Mehrad, J., & Tajer, P. (2016). Uses and Gratification Theory in Connection with Knowledge and Information Science: A Proposed Conceptual Model. *International Journal of Information Science and Management*, 14(2), 1–14.
- Michalke, S., Lohrenz, L., Siemon, D., Lattemann, C., & Robra-Bissantz, S. (2022). Design knowledge for digital business ecosystems: towards design principles for digital engagement platforms. In *Handbook on digital business ecosystems* (pp. 161–176). Edward Elgar Publishing.
- Newell, W. (2010). A Theory of Interdisciplinary Studies. *ISSUES IN INTEGRATIVE STUDIES*, 19(1), 1–25.
- Opoku-Boateng, J., Cann, E., Ntewusu, S. A., & Owusu, S. (2020, February 14). The J.H. Kwabena Nketia Archive at the University of Ghana- Legon. *History in Africa*, 47, 375–382.
- Parveen, H. (2017). *Communication Theories: Uses and Gratification, Cultivation, Knowledge Gap*. E-PG Pathshala.
- Pink, S. (2015). *Doing sensory ethnography*. SAGE Publications. <https://doi.org/10.4135/9781473914841>
- Preko, M., Boateng, R., & Effah, J. (2019). Healthcare Digitalisation in Ghana – Myth or Reality? *Americas Conference on Information Systems*. <http://dblp.uni-trier.de/db/conf/amcis/amcis2019.html#PrekoBE19a>
- Puadi, M. F. (2021). Studio Investigation: An Approach in Studio-Based Research. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(3), 846–851.
- Roca-Puig, V., Beltrán-Martín, I., Escrig-Tena, A. B., & Bou-Llusar, J. C. (2005, November). Strategic flexibility as a moderator of the relationship between commitment to employees and performance in service firms. *The International Journal of Human Resource Management*, 16(11), 2075–2093.
- Rosengren, K. E. (1974). Uses and gratifications: A paradigm outlined. In J. G. Blumler & E. Katz (Eds.), *The uses of mass communications: Current perspectives on gratifications research* (pp.269-286).



- Ruttan, V. W. (2001). *Technology, growth, and development: An induced innovation perspective*. Oxford University Press.
- Sarku, R., Appiah, D. O., Adiku, P., Alare, R. S., & Dotsey, S. (2021). Digital platforms in climate information service delivery for farming in Ghana. In *African handbook of climate change adaptation* (pp. 1247-1277). Cham: Springer International Publishing.
- Schaetz, B., Pretschner, A., Huber, F., & Philipps, J. (2002). Model-Based Development. *Institut für Informatik der Technischen Universität München*, 16(1), 1-33.
- Senyo, P., Effah, J., & Osabutey, E. L. (2021, January). Digital platformisation as public sector transformation strategy: A case of Ghana's paperless port. *Technological Forecasting and Social Change*, 162, 120387.
- Shriver, R. (2003, March). Digital stereo recording of traditional Malaysian musical instruments. In *Audio Engineering Society Convention 114*. Audio Engineering Society.
- Cassell, C., Cunliffe, A. L., & Grandy, G. (2017). *The SAGE Handbook of Qualitative Business and Management Research Methods*. SAGE.
- Siswanto, W. A., Wahab, W. M. a. C., Yahya, M. N. B., Ismail, A. E., & Nawi, I. (2014). A platform for digital reproduction sound of traditional musical instrument Kompang. *Applied Mechanics and Materials*, 660, 823-827. <https://doi.org/10.4028/www.scientific.net/amm.660.823>
- Smolicki, J. (2015). De-totalizing Capture: On Personal Recording and Archiving Practices. In *International Symposium on Electronic Art, Vancouver, Canada (2015)*. Institute of South East Asian Studies (ISEAS).
- Stone, R. M., & Stone, V. L. (1981). Event, Feedback, and Analysis: Research Media in the Study of Music Events. *Ethnomusicology*, 25(2), 215.
- Tilson, D., Sørensen, C., & Lyytinen, K. (2013, January). Platform complexity: Lessons from the music industry. In *2013 46th Hawaii International Conference on System Sciences* (pp. 4625-4634). IEEE.
- Topalova, I. (2024). THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF THE MANAGEMENT MODEL OF THE DIGITAL PLATFORM IN THE CONDITIONS OF a REFLECTIVE-ACTIVE ENVIRONMENT OF INTERACTION AND COORDINATION OF BUSINESS PROCESSES. *Economic Innovations*, 26(4(93)), 166-174. [https://doi.org/10.31520/ei.2024.26.4\(93\).166-174](https://doi.org/10.31520/ei.2024.26.4(93).166-174)
- Valkenburg, P. M., & Peter, J. (2008). How media use affects adolescent socio-emotional development: The role of media in the development of adolescents. *Journal of Adolescent Health*, 43(2), 121-127. <https://doi.org/10.1016/j.jadohealth.2008.01.012>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186-204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Zaineldeen, S., Hongbo, L., Koffi, A. L., & Hassan, B. M. A. (2020, October). Technology Acceptance Model' Concepts, Contribution, Limitation, and Adoption in Education. *Universal Journal of Educational Research*, 8(11), 5061-5071.
- Zamaraeva, E. I., & Naumov, A. V. (2021). Humanitarian knowledge in the age of digitisation: challenges and results. *SHS Web of Conferences*, 103, 02004.