
**GENERATIVE ARTIFICIAL INTELLIGENCE AND COPYRIGHT PROTECTION
IN PAKISTAN: A CRITICAL ANALYSIS OF AUTHORSHIP, OWNERSHIP AND
INFRINGEMENT****Mahboob Ahmad (Advocate)**

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Conventional copyright systems are now facing major difficulties in interpreting the new challenges arising from the rapid development of generative artificial intelligence (GenAI) in terms of authorship, ownership and infringement. This research critically analyzes the effectiveness of the current copyright regime of Pakistan, mainly the Copyright Ordinance, 1962 in the light of the emerging legal issues related to AI-assisted and AI-generated works. Following a qualitative doctrinal legal research approach, the study examines the pertinent provisions of the Pakistani copyright laws, the developments of copyright policies in Pakistan, the scholarly literature and selected international copyright policies including those of UK and USA. The results have shown that, although Pakistan's copyright law offers a basis for solving problems with AI, there is a lack of specific provisions regarding AI-generated products, human creativity, liability of the users, developers and platforms. The study also concludes that there should be a significant role for meaningful human creative contribution in copyright protection, and that use of an AI system and ownership of the underlying AI technology are not the same thing. There is a need to address copyright infringement issues as a separate matter at the training stage and the output stage, especially issues of reproduction of protected expression without permission. The study suggests that targeted legislation is needed and should center on human authorship and ownership, training-data transparency, licensing and differentiated liability. It concludes that an adaptive Copyright framework is needed in Pakistan which balances protection of the rights of creators with the promotion of responsible technological innovation.

Keywords: Generative AI; Copyright; Authorship; Ownership; Infringement**1. INTRODUCTION**

Generative artificial intelligence (GenAI) has revolutionized the way technology, creativity and IP interact. Today's generative AI systems can generate seemingly original text, images, music, videos, computer code and other types of expressive content, based on a comparatively rudimentary human command. As a result, AI has transitioned from being an analytical tool to a technology that can now be a part of the creation of creative and communicative products, like large language models and text-to-image generators. This technological shift poses an inherent problem in copyright law, which has always emerged from a conception of human creativity, identifiable authorship and relatively defined relationships among creative individuals and the products of their creativity. The advent of GenAI thus begs the pertinent question as to who, if anyone, may be considered as the legal author of a work created by a human user interacting with an AI system? (Mazzi, 2024; Khosrowi et al., 2025).

The challenge gets more complex because generative AI generates its output in a context that isn't a vacuum of information. Modern GenAI models are trained with the help of vast amounts of data, such as books, articles, photographs, artwork, music, software code and more, which can all be copyright protected. This training process can then establish a legal connection between the AI developers and the original copyright owners, before the AI output is even used by the user. The copyright controversy is thus conducted on two interdependent levels. The question at the input or training stage is whether it is lawfully possible to collect, copy, process

and use copyright-protected works to train AI models. There is a question at the input or training stage as to whether it is lawfully possible to collect, copy, process and use copyright-protected works to train AI models. The questions at the output stage are whether the output infringes upon preexisting copyright and whether the output is itself eligible for copyright and whether the output constitutes a derivative work of the original. The two stages can't simply be equated due to the fact that the legal basis for using protected material for the creation of an AI system does not imply the copyright status or legality of the AI system's outputs (Guadamuz, 2024; Manteghi, 2024).

Perhaps the most basic conceptual challenge is the question of authorship. Copyright law has always been tied to the protection of an original work which has been created by the intellectual or creative effort of an author. Generative AI, on the other hand, can generate very expressive and sophisticated content in response to a brief set of instructions or a long string of instructions, revisions, selections and modifications. This is a continuum of human involvement, not a dichotomy of "human" and "machine". On one side, one user may simply type in a few instructions and get the output without having some sort of creative input. On one end, the user might just type in a few instructions and get the output without having some kind of creative input. On the other hand a user could have a very detailed creative concept, give detailed instructions, make the output go through many changes, choose from the choices given, and make significant changes to the resulting product. These two scenarios are not the same for legal purposes, as it ignores the significance of human creative contribution. With this in mind, recent copyright analyses have begun to turn to the level of human involvement in the creation of expressive elements, and not just whether or not AI technology was used in the creative process (Mazzi, 2024; U.S. Copyright Office, 2025).

The difference is significant, especially because, merely using a technological device does not always mean that human authorship is discarded. New cameras and editing programs, digital audio systems and other technology can help to produce creatively, but do not create the law themselves. However, generative AI is unique when compared to a large number of traditional creative tools because the system can also determine key expressive aspects of the final product itself. The legal issue here is not merely one of whether a particular kind of human was somehow involved in the creation of the protected expression but whether that human had enough creative control over the protected expression. For instance, the United States Copyright Office determined in its 2025 report that generative-AI outputs could be protected by copyright where a human determined that the AI output contains sufficient expressive elements, but providing merely prompts is not in and of itself sufficient. This is not a binding position in Pakistan but it represents a growing international option for dealing with the human-authorship problem (U.S. Copyright Office, 2025).

The issue of who owns the work is closely related to the topic of authorship and is not necessarily the same as authorship. Ownership is usually established in copyright systems in the context of the author's legal status, contractual agreements, employment contracts or statutory exceptions. Section 13 of Pakistan's Copyright Ordinance, 1962 says that, except as provided in this Ordinance, copyright in a work belongs to the author. The rules also include those relating to employment, commissioned works and government works. The challenge that GenAI poses is that with significant portions of the final expression being generated by an AI system, the distinction of "author" can become problematic. If the AI system does not have copyright, the law needs to establish whether the user, AI developer, commissioning party or another human can be deemed to have enough legal connection to the work to claim ownership. There is no clear statutory provision for works created using AI, which leaves questions unanswered: can ownership ever occur and who will own it? (Copyright Ordinance, 1962).

The present copyright system of Pakistan is thus a very salient feature of this discussion. According to Copyright Ordinance 1962, copyright is a bundle of exclusive rights, such as rights to reproduction, rights to publication, rights to performance, rights to translation, rights to adaptation and rights to communication. It also acknowledges joint authorship as well as offers legal remedies for infringement, such as injunctions and damages. The provisions were created in a context that was very different from the technological landscape we are in today with generative AI. While the legislation envisions identifiable works, authors and copyright owners, GenAI can be a system that includes multiple layers of contribution: Developers created the model, programmers designed the system, the datasets may have thousands or millions of human authors, the platform may have been used to provide access to the system, the user may have provided prompts, and the model may have produced the final output. The resulting chain of contribution renders the attribution of authorship and ownership much more complicated than the traditional copyright doctrine (Copyright Ordinance 1962; Islam & Greenwood 2024) presumes from a relationship of author–work–owner.

Infringement is the other problem that's as complicated. The content produced by a generative AI could be a substantial part of a copyrighted work, a copy of another work's protected expression, or material that is sufficiently similar to another work to spark a dispute over copyright infringement. However, it is important to note that not all parallels are infringements of copyright; copyright protection is not for ideas, facts or abstract styles. With generative AI, this can be more complicated, as models can also learn statistical relationships from huge amounts of existing work, and then generate outputs that look like some work, but aren't necessarily copies of it. Thus, when assessing whether a copy is legal, there needs to be careful examination of copying, substantiality, similarity, originality and the specific rights protected under the applicable copyright law. The emergence of generative AI has put pressure on existing theories on the distinction between idea and expression, and substantial similarity, due to the fact that creative decisions can become made via interaction with the generative system instead of by the human creator producing each and every element of the expression (Lemley, 2024; Guadamuz, 2024).

An additional dimension of training-stage infringement that is particularly critical for copyright protection is added to the mix. Access to vast amounts of copyrighted material may be needed for the training of AI models, and this raises a number of concerns, including whether it is permitted to use copyrighted content for AI training, whether there is a copyright exception, whether it requires copyright consent or copyright licences, and who is responsible when copyrighted content is used without permission. The legal methods used across the globe are yet to be resolved. There are some jurisdictions that have exceptions that allow text and data mining under specific circumstances, while others focus more on licensing or rights-holder control or remuneration. This lack of uniformity around the globe is a testament to the fact that the copyright issues arising from AI training do not lend themselves to a “new” question and answer format. However, the lawfulness of the underlying training process can have an impact on the interests of copyright parties and the future incentives involved in creative production (Manteghi, 2024; Wu, 2024; Buick, 2025).

These questions are particularly relevant in the Pakistani context, where the country's main copyright law was in place decades before the advent of generative AI. The Copyright Ordinance, 1962 lays out several key principles on authorship, first ownership and infringement, but does not explicitly define an AI-generated work, define an AI user as an author, consider autonomous AI outputs as works for which copyright can be claimed, or provide a specific liability regime for the providers of generative-AI. It does not mean, however, that copyright law as it is now is unable to apply to AI disputes; courts can apply

established principles in a technologically adaptable manner. The lack of express provisions, however, leaves room for ambiguities, especially to technologically innovative processes such as “author”, “originality”, “reproduction” and “substantial part”. The question, therefore, is not merely whether Pakistan has copyright law but whether the current law offers clear and predictable guidelines in the context of the unique problems arising in the context of GenAI (Copyright Ordinance, 1962).

This legal uncertainty is magnified by the new national AI policy framework in Pakistan. The National Artificial Intelligence Policy 2025 explicitly defines generative AI as one of the spaces in which regulations will be needed, and mentions specific steps to prevent copyright infringement. The policy also calls for the establishment of governance mechanisms related to open-source AI and IP issues. This advancement signifies that the matter of AI and IP is not simply an abstract academic concern anymore, but has now become a part of the larger technology-policy discussion in Pakistan. However, policy recognition does not mean that there is a comprehensive statutory copyright regime. A policy can provide information on risks and set strategic directions while questions about authorship, ownership, infringement, remedies and liability will need legally enforceable rules, which can provide predictable rights and obligations (Ministry of IT & Telecom, 2025).

This only reinforces the case for Pakistan to look at the issue in the broader context. The U.S. Copyright Office has determined that many AI-related scenarios fit within the current framework of copyright principles, and reminded the public of the enduring significance of being authored by humans. In the meantime, scholarship has emerged examining various approaches to training data, text-and-data mining, licensing and rights-holder protection is emerging in Europe and other jurisdictions. Such global disparities have implications for Pakistan as AI systems and digital information transcend geographical boundaries. A Pakistani creator might have content incorporated into an AI model that was created across the globe; a Pakistani user might use an AI system hosted overseas to create content; or AI-generated output may be released at the same time in several jurisdictions. In this context, the notion of copyright protection requires a transnational perspective, as the technological systems and commercial practices involved in GenAI are inherently global (U.S. Copyright Office, 2025; Guadamuz, 2024; Manteghi, 2024).

The division of responsibility between the various actors of generative AI is another key aspect. The person typing a prompt can say the platform is responsible for the product that comes out; the platform can say it's in the hands of the person that typed the prompt; the platform developer can say it is not responsible for what comes out of the platform when given a prompt; and the original copyright holder can say that it is harming its economic or reputational interest. This can be referred to as a distributed-liability problem. The model of infringement that it is common to find is that of the person who copied or distributed a protected work, a model that is being challenged by GenAI. It is essential for there to be a legally sound distinction between the conduct of the developer when the system is being trained, the conduct of the platforms when providing service, the conduct of the person who prompts and disseminates the system, and the technical behaviour of the system. This is important to prevent over-enforcement on commercially successful AI developers but also to prevent liability from being placed on ordinary users who might not know how the AI model was trained (Buick, 2025; Khosrowi et al., 2025).

But the ethical aspect of authorship should also be considered, since copyright does not only focus on economic ownership. When a computer or database appears in the text, the implied author is the software developer responsible for making the software. Authorship has implications for attribution, recognition, and responsibility and moral agency when the

computer or database is part of the text. With AI producing significant amounts of creative output, the traditional link between the person credited with the creation of the work and the person responsible for its creative control can be undermined. This problem is especially pertinent for academic publications, journalism, artistic works and other fields where authorship is not just a matter of economic rights, but intellectual responsibility as well. Islam and Greenwood (2024) talk about generative AI as a “hypercommons,” meaning that the systems are reliant on human inputs collectively created by humans that can be hard to attribute to individual human contributions. This view goes beyond copyright issues of whether AI-generated content should be protected, it also questions whether current legal frameworks sufficiently consider the human labour that underpins the datasets that these generative systems are built upon (Islam & Greenwood, 2024).

The problem of the current study, then, is the “friction” between a rapidly evolving generative-AI world and a copyright system that was conceived in human authorship and traditional copying and dissemination. The problem shouldn't be trivialized to the extent that “the author has been replaced by AI.” This type of definition ignores the host of forms that are in between, and it doesn't differentiate between work created with AI assistance, work that contains material created by AI, or work that has little or no human creative control. A more careful consideration of the Pakistani legal framework, however, ought to pose the question of how existing principles of Pakistani copyright law can be applied on this continuum, where there is a moderate degree of clarity in the law, a high degree of uncertainty, and where there is a need for legislation or regulatory change. This also allows Pakistan to assess its stance on a developing international model without assuming that a foreign model can be readily adopted in the Pakistani context (Mazzi, 2024; U.S. Copyright Office, 2025).

In this background, the present paper aims at critically examining generative artificial intelligence and copyright protection in Pakistan with a special focus on three intertwined legal issues: authorship, ownership and infringement. It explores whether the human-authorship presumptions of Pakistani copyright law are suitable for the works produced by AI and those trained by AI, examines their implications for establishing first ownership and copyright, and considers the implications of current copyright infringement principles for the scenarios of AI training and AI-generated outputs. The study also takes into account developments in the international arena to consider potential future reforms within the context of Pakistan's doctrinal and institutional framework. The study does not assume that technological innovation and copyright protection are antithetical, but rather takes its starting point to be the need for a legally coherent balance between technological innovation, access to AI and the protection of human creators, and the preservation of incentives for creative production. This equilibrium becomes all the more important in the world of commerce, education, art and literature, as generative AI is integrated into Pakistan and the world of work (Tyagi, 2024; Centivany, 2024).

1.1 Problem Statement

The advent of generative AI has brought many questions of concepts and regulations to light within the traditional copyright framework. In Pakistan, copyright protection is provided under the Copyright Ordinance, 1962, for identifiable works, authors, and owners but fails to specifically address the creation of AI-generated works, the responsibility of the AI user as potential author, the ownership of AI-generated output with varying levels of human involvement, and the application of copyrighted materials in the training of AI models. Thus, it is unclear how concepts of authorship, originality, ownership and infringement ought to be applied when the creative product is shared between human users, developers of AI, platforms, creators of training data, and generative systems. The uncertainty introduces potential risks for both parties to the copyright relationship: creators may be subject to unlicensed use and

copying of their works in AI training data or reproduction of their expressive work by AI; stakeholders may be held liable or have content ownership over AI outputs. While Pakistan's National AI Policy 2025 acknowledges the importance of action on copyright issues pertaining to GAs, policy recognition is not enough to address the doctrinal questions.

The current academic discussion on the matter of AI copyright rights has already been developed in the United States and European Union and other countries, especially regarding the AI outputs' copyrightability and the use of training data. But a doctrinal study of the interaction of these issues with Pakistan's statutory copyright laws would be useful. The lack of clear legislation leaves a potential protection gap where human creators' rights and the legitimate interests of the creators of and users of AI cannot be sufficiently predictable. The main issue that this research seeks to address is the lack of or ambiguity about existing Pakistani principles addressing the unique challenges of generative AI, specifically who is the author of an AI-assisted or AI-generated work, and when the training or output of an AI system can be considered copyright infringement (Buick, 2025; Khosrowi et al., 2025).

1.2 Objectives of the Study

- a) To critically examine the concept of authorship under Pakistani copyright law in relation to human-created, AI-assisted and AI-generated works.
- b) To analyse the legal basis for determining copyright ownership of works produced through generative artificial intelligence in Pakistan, with particular attention to the roles of users, developers and other relevant stakeholders.
- c) To evaluate the potential copyright infringement arising from the use of copyrighted works in generative-AI training and from AI-generated outputs, and to identify appropriate directions for strengthening copyright protection in Pakistan.

1.3 Research Questions

- a) How adequately does Pakistani copyright law address authorship in relation to human-created, AI-assisted and AI-generated works?
- b) Who should legally own copyright in works produced through generative artificial intelligence under the existing Pakistani copyright framework?
- c) To what extent can the existing Pakistani copyright framework address infringement arising from AI training and AI-generated outputs, and what legal reforms may be required?

1.4 Significance of the Research

The study is important for many reasons including the fact that it is the first study to consider the growing clash of technological innovation and IP law in the unique Pakistani context. It's not merely about replacing existing concepts and frameworks with newer ones, but critically questioning if the Copyright Ordinance, 1962 will be enough to safeguard the new forms of authorship, ownership and infringement brought about by generative AI. The study will bring the principles of copyright in Pakistan into the fold of the ongoing global discussions on the copyrightability of AI training and human authorship. It might also have policy utility for policy makers, legislators, judges, copyright holders, software and AI developers, creators, researchers, and users of generative AI, by highlighting areas of uncertainty and opportunities for legal change. Specifically, the research can help in creating a more symmetrical framework that balances the protection of human creators with technological innovation. This framework becomes even more pertinent in Pakistan's context of the National AI Policy 2025 which includes copyright-infringement issues raised by generative AI (U.S. Copyright Office, 2025; Ministry of IT & Telecom, 2025).

1.5 Limitations of the Research

There are a few limitations in this study. First, it takes a doctrinal/comparative legal approach and does not attempt to measure the experiences of Pakistani artists and writers, software developers, AI users, or the copyright enforcement authorities. Secondly, technology of Generative AI and international responses to it are constantly evolving, which means that judicial rulings, laws and administrative guidance and practices in the AI-platforms could evolve since the study is completed. Third, the study is confined to copyright, and does not set out to examine other aspects of intellectual property law, like patents, trademarks, trade secrets or the general law of personality and publicity rights, unless these issues are directly relevant to the copyright analysis. Finally, comparative discussion of foreign jurisdictions is provided in order to give light upon ways and means by which Pakistan could go, but not to imply that foreign legal rules automatically apply in the Pakistani legal system.

1.6 Delimitation of the Research

The study is deliberately limited to the relationship between generative artificial intelligence and copyright protection in Pakistan as it has three main areas of study authorship, ownership and infringement. The key legislations reviewed include Pakistan's Copyright Ordinance, 1962, and where relevant, any policies, judicial and administrative documents. International perspectives, in particular from the jurisdictions of the U.S., the European Union and the UK, are viewed comparatively to find principles and potential options for reform in Pakistan. It examines generative AI systems that create expressive content like text, images, audio, video and software code. Rather than being an attempt to cover the broad topic of AI, it does not focus on autonomous general intelligence, robotics or on the more generic side of prediction AI. Likewise, the research does not seek to address all ethical, economic or technological implications of GenAI, but only those that impact the issues of authorship, ownership and copyright infringement.

2. LITERATURE REVIEW

Copyright has become one of the most litigated problems in the field of intellectual property (IP) research today, with the interweaving of generative artificial intelligence (GenAI) and copyright law leading the way in raising the most questions. Copyright has become one of the most litigated issues in intellectual property (IP) scholarship today, and generative artificial intelligence (GenAI) and copyright are the ones with the most questions. The preceding discussions regarding AI and copyright primarily focused on computer-assisted creativity, automated systems and safeguarding computer-generated works. The introduction of large language models and image, music and video generators has brought this discussion to a head, as these can generate highly expressive and sophisticated outputs that might be hard to tell apart from human-made ones. There are two problems that are increasingly being identified in the literature, both of which are legally problematic and interconnected: firstly, the legal question of whether it is legal to use existing copyrighted works as a basis for training generative systems, and secondly, the copyright question of whether the material created by such systems is subsequently copyrighted. Guadamuz (2024) has suggested that an examination of these input and output questions should be separate, since the legality of use of copyrighted works for training does not necessarily mean that an AI-generated output is legal. Likewise, Engel (2025) notes that the current legal system is still flexible and could be made fit for generative AI, but there is still a lot of uncertainty regarding the training and the outputs. One of the central themes of the existing literature is the question of authorship. Traditional copyright systems normally assume that a human is the creator of the work whose intellectual contribution leads to an original work. Generative AI challenges this aspect since the expressive qualities of the output can be influenced, at least in part, by a computational system, and not by the person using it. Van Woudenberg, Ranalli, and Bracker (2024) are more

conservative, and argue that ChatGPT should not be considered an author at all, and that the conceptual problems with assigning authorship to a non-human system are more significant. Their argument echoes a wider worry that competence in a language (or in some cases, in an art) does not necessarily imply legal authorship. In a related analysis, Mazzi (2024) analyzes authorship using the notions of originality, prompts and AI outputs, and contends that the legal evaluation should focus on the human participant's creative contribution. The literature is thus starting to focus on the contribution of the human mind, not just on the involvement of technology, to assess copyrightability.

However, recent scholarship has called into question the notion that all GenAI authorial works are necessarily dichotomous, human versus machine. Khosrowi, Finn, and Clark (2025) refer to this as the “many-hands problem,” pointing to the fact that GenAI outputs could be the result of various contributors, including users, the developer, the producers of the training data, and the AI system itself. Their idea of creating in a collective way suggests that claims to creatorship can be of various levels, depending on the importance of the individual contribution. The view of this is especially valuable since it reveals a flaw in the binary conception of authorship. A user who types in a brief prompt and the output is more of a finished product is in a different situation than one who types out a concept, then iterates it several times, chooses from the various outputs, and extensively edits the final product. The literature recommends, then, that future copyright analysis needs to consider more nuanced notions of human control over AI-generated works, and not assume that all human-AI interactions are legally equivalent.

In recent legal discussions, the concept of AI-assisted versus AI-generated is becoming more prominent. The U.S. Copyright Office's 2025 report on copyrightability found that current copyright law allows for copyright protection for works created by AI, but recognized that there must be enough human involvement for copyright to be granted. The report suggests that the works created with the assistance of AI can still be protected by copyright when the human creator plays a significant role in shaping the expression elements, whereas the purely AI-generated work and the work in which AI plays a significant role but the human creator plays a minor role is not protected. Importantly, the Office did not think that simply supplying prompts is enough to make it obvious that the person has written it, because there is not enough control over the expressive details of the output, and prompts are generally used in the same way to produce output. However, protectable expression may be found where those human selection, arrangement and modification of AI-generated material meet the relevant originality threshold. Though it is not a rule of universal application, it has become an important reference point in the international literature, as it is a United States position.

The authorship controversy cannot be separated out from the question of who owns the copyright? The Copyright Ordinance, 1962 of Pakistan gives the general rule that the proprietor of copyright is the author unless the copyright is vested in another person by statute as would be the case, for example, for works of government, or for works made for hire. The term “author” is defined by the type of work, for example the writer of a literary or dramatic work, the composer of a musical work, and the artist of an artistic work. It also provides for assignment of copyright by the owner. The problem is that the Ordinance does not specifically address a work that is created from an expression that is produced by a contemporary GenAI system. Therefore, a previous determination of authorship and of human creative contribution is needed to determine ownership. The current legal framework thus does not directly address the question of ownership of purely AI creations and heavily AI-mediated works.

The literature also notes that the ownership of AI must be regarded in more than just the users' framework. Islam and Greenwood (2024) define generative AI as a “hypercommons”,

highlighting the vast quantity of human-generated content that provides the informational context and infrastructure for generative systems. This is because their argument challenges the notion that the person entering a prompt is the only meaningful contributor to an AI-generated work. The model relies on existing creative and intellectual work that has already been done in training data, developers provide technical infrastructure, and users provide prompts, selections and modifications. This does not imply that all contributors would automatically be granted copyright on all AI products, but rather, an indication as to why traditional copyright frameworks may be hard to implement with multiple contributors.

The infringement of copyright during the training of GenAI systems is another key theme of the second large body of scholarship. Another key theme in the second large body of scholarship is copyright infringement during the training of GenAI systems. Typically, generative models demand huge datasets, a lot of which can be composed of work and creativity protected by copyright, such as books, images, articles, music, code, and more. This poses a basic transparency issue, as AI developers can train models that include copyrighted content without transparently stating what information is included in the training sets or whether authorization was gained from rights holders, according to Buick (2025). The ensuing litigation in multiple jurisdictions shows that training is not as simple as it sounds but also a potential source of copyright liability. Also, Guadamuz (2024) identifies the practice of accessing and processing copyrighted works in training AI from the generation of outputs, and Tyagi (2024) explores the conflict between text-and-data-mining exceptions and copyright protection and innovation. These studies are meant to show that the training stage produces independent legal questions that can't simply be answered on the basis of the end product of artificial intelligence.

Competing approaches have emerged regarding exceptions and limitations, as well, in the debate on training data. Tyagi (2024) explores the potential for integrating GenAI into the current text-and-data-mining ecosystem without losing the innovative spirit and creative output of the industry. Additionally, Manteghi (2024) examines whether exceptions or synthetic data to the copyright rules can mitigate copyright-related concerns raised by generative AI. Others, more circumspect. Dornis and Stober (2025) state that a generative-AI training process could fundamentally differ from the traditional approach to text-and-data mining, in which only the facts are extracted and preserved. They also draw attention to memorization as a separate copyright issue, since a model can include parts of training content in reaction to specific stimuli. This has left the literature split on the pros and cons of the available exceptions, and whether there should be new licensing, remuneration, or transparency frameworks.

Infringement is not a problem just after training. A unique issue comes into play when the output of the AI system is very much like a previous copyrighted work. One of the challenges Guadamuz (2024) highlights is that it is hard to determine if breach of copyright has occurred when an AI has been trained by a large number of works, and an AI-generated output is similar to, but not necessarily identical with, a protected work. Kahveci (2023) further looks at attribution issues that stem from generative AI systems and copyright claims by owners of content incorporated into training sets. The growing number of lawsuits filed by rights holders against AI developers and authors, visual artists, and software programmers, shows that the rights holders are not just contesting the use of their works as training data—they're also holding the developers responsible for what the models produce and for the lack of identification and attribution of source materials. These conflicts reveal the challenges of traditional notions of copying and attribution when it comes to probabilistic generative technologies.

Another key question that needs to be explored is the relationship between copyright infringement and similarity. A resemblance between two works is not enough to be a violation

of copyright under the normal rules; it is a violation of copyright only when a legally relevant copying or reproduction of protected expression takes place. The framework becomes complicated by the ability of the GenAI models to generate content that mimics aspects of creators' work, even if it isn't the exact protected work. This leaves a gap in the doctrine between copyright infringement and other issues of stylistic imitation. On the one hand, the literature is growing more and more anxious to prevent copyright from becoming too broad to allow control of artistic style or ideas, and on the other hand, creative generative systems can behave in such a way that the products of that system are sufficiently linked to the system's source content to make it difficult to apply traditional infringement rules. Geiger (2024) thus calls for a copyright regime that is "human-rights friendly" in order to safeguard the rights of creators while, at the same time, fostering freedom of expression, information and technological innovation rather than granting exclusive rights to creators whenever a new technology is born.

The GenAI copyright issue has no one-size-fits-all international solution, as Comparative scholarship shows. The United States has been very particular about the authorship of works and has insisted that works created entirely from an AI are not eligible for copyright protection, but that works sufficiently made by a human are. The scholarship in Europe has been largely centered on exceptions to the text and data mining rights, transparency and the interplay between copyright law and the new regulation on AI. Other jurisdictions have asked whether existing copyright laws for computer-generated works will be sufficient to cover AI-generated works, while Japan has devised its own solution to the problem of AI and copyright. While copyright systems might still be adaptable, as discussed by Engel (2025), the regulatory landscape for training and complying with AI can be as significant as traditional copyright law. Comparative Literature finds that this should not be achieved through copying a foreign model but reform should be based on Pakistan's existing statutory structure, its enforcement capacity and the overall policy objectives.

Comparatively, literature concerning the life of Hazrat e shahid is less developed in Pakistan than internationally. The Copyright Ordinance, 1962 is still the basic law and copyright is recognised in original works of literature, drama, music and art, in cinematographic works and records. Potentially relevant legal principles are offered in the authorship, first ownership and assignment, exemptions and civil remedies sections. The legislation however was fashioned long before the advent of modern generative models and does not have any specific provisions regarding liability between AI developers, platforms, and users, nor does it have any provisions for the training of AI or for AI-generated works. Khan, Ali, and Nawaz have recently conducted a doctrinal analysis in Pakistan that discusses the potential for creating a fair use doctrine for AI-generated content and proposes a doctrine that is tailored to meet Pakistan's socio-economic and legal context and is not uncritically imported from elsewhere. The importance of this work lies in the fact that the AI–copyright issue has started to find its way into the realm of Pakistani legal literature, but it is not that much developed as yet.

The budding policy framework of Pakistan for Artificial Intelligence (AI) adds to the significance of the study. Further, the policy for Artificial Intelligence (AI) in Pakistan is in the process of development and it further reinforces the need of this study. In the National Artificial Intelligence Policy 2025, intellectual property and copyright issues have been highlighted as concerns related to AI, noting the necessity for actions to tackle copyright infringement in generative AI. The significance of this policy development lies in the fact that it shows that institutional recognition has finally come to the realization that AI governance is not distinct from intellectual property protection. However, a policy framework alone does not answer the doctrinal questions of who is an author; who owns an AI generated work; whether the use of

AI in training infringes on copyright or does not; or how responsibility can be apportioned among the developer, the platform, and the user. The unclear difference between the policy and detailed copyright rules then leaves room for legal research.

The present literature suggests three main findings and one major research gap. First, scholars have increasingly been in agreement that human creativity, expressed in a work, is the basis of copyrightability, if any, but there is still debate about the amount of human contribution necessary. Second, the training data is a separate copyright issue related to copying, exception, licensing, transparency and potentially remuneration. Third, AI generated outputs raise challenging questions of ownership, substantial similarity, attribution and responsibility. But, majority of the literature on the subject is focused on the United States, European Union and other prominent jurisdictions and Pakistan has been comparatively given less systematic study. But the consideration of fair use and AI-generated content are just beginning in the scholarship of existing Pakistan at present, with a need for an integrated analysis of authorship, ownership and infringement under Pakistan's own copyright law, which is also built on, but not reliant upon, foreign scholarship. This gap is addressed in the present study by integrating these three aspects and considering the efficacy of Pakistan's current Copyright Ordinance, 1962, in meeting the legal challenges posed by generative AI.

3. METHODOLOGY

3.1 Research Design

The approach of this study is qualitative doctrinal legal research, which aims to critically analyze the role of generative AI in copyright protection in Pakistan. A doctrinal approach is suitable, as the focus of the research is on the interpretation, application and sufficiency of the current legal rules on authorship, ownership and copyright infringement. The study does not seek to gather numerical data from respondents but rather primary legal sources (legislation, judicial rulings, government policy documents and relevant international legal instruments), and, in addition, secondary literature (scholarly works) are examined. The research is primarily analytical as it aims at finding answers to the query of how the existing Pakistani Copyright principles can be used for technologically new creative works that are produced or assisted by Artificial Intelligence.

The study does not necessarily imply that a new legal framework needs to be established for generative AI, but rather that it is a legal and technological evolution that raises new issues around the existing concepts of copyright. The research, therefore, investigates the notions of originality, authorship, ownership, reproduction, significant similarity, infringement and exceptions related to generative AI. It can lead to a study that highlights the areas where the existing Pakistani law is reasonably able to accommodate disputes arising from AI, and the areas where it is ambiguous or has a gap.

3.2 Doctrinal Legal Research Approach

The main research method used is doctrinal legal research. Doctrinal research entails a systematic study of law rules and concepts to ascertain what the law affords, how it's been interpreted and where there's discrepancy and uncertainty. In the present study, doctrinal analysis is employed to discuss the copyright regime of Pakistan with a special reference to Copyright Ordinance, 1962 and to consider this framework's applicability to the works created by AI tools and AI itself.

The analysis starts from the premise that technology alone is not a sufficient basis to establish the legal status of generative AI. Instead, the appropriate technological practices ought to be explored with the existing legal concepts. For instance, whether an AI-generated work can be copyrighted depends on the concept of authorship and originality; whether it is the first owner of such work depends on understanding the relationship between authorship and first

ownership; and whether it has been infringed depends on whether it has been reproduced, belongs to a protected expression, is substantially similar and is covered by any applicable exceptions. The doctrinal approach is thus a framework to link the developments of technology with the existing copyright principles.

3.3 Primary Legal Sources

The Copyright Ordinance, 1962 of Pakistan is the main source of law for the study, to which are attached relevant provisions regarding copyrightable works, authorship, first ownership, assignment, infringement, exemptions and remedies. Special emphasis is placed on provisions that might apply to the issue of authorship and ownership of an AI-assisted creative process.

This study also investigates relevant cases in Pakistan that shed light on the concept of originality, authorship and infringement of copyright in the context of material copying and ownership of copyright or copyright principles. The policy documents of the government are also taken into consideration, especially the National Artificial Intelligence Policy 2025, which sets the regulatory tone of the country for AI and importantly acknowledges AI's impact on intellectual-property rights and copyrights. The primary legal and policy materials allow the analysis to be based firmly on the legal and institutional realities of Pakistan as opposed to the use of foreign scholarship alone.

3.4 Secondary Sources

Secondary sources are peer-reviewed journal articles, scholarly books and book chapters, legal commentaries and authoritative institutional reports related to AI and copyright. A special focus is placed on scholarship published in the last four years (2023-26), as generative AI has evolved extremely quickly in this timeframe. Where relevant, existing copyright scholarship is drawn on to illuminate familiar concepts, such as the notion of authorship, originality, ownership and infringement.

The study also takes into account authoritative texts issued by such entities as the United States Copyright Office, the World Intellectual Property Organization (WIPO), the European Union institutions and other accepted intellectual property institutions. These sources do not have a binding effect in Pakistan. Rather these are employed comparatively to demonstrate how new international solutions are emerging and to examine if specific solutions can offer some valuable guidance for law reform in Pakistan.

3.5 Comparative Legal Analysis

A comparative legal perspective is also used to provide a broader context on copyright provisions in Pakistan in the larger global debate on generative AI. The comparison is largely made between jurisdictions which have already developed significant legal or policy interventions in relation to AI-generated content, primarily the United States, the European Union and the United Kingdom, where relevant interventions in other jurisdictions provide a direct link to the research questions.

The comparative analysis focuses on three aspects: whether AI-generated works are human works and/or copyrightable; whether works that are used for training AI are also covered by copyright; and whether liability and infringement can be imposed on AI. The point of comparison is not to imply that the foreign rules should be automatically applied in Pakistan. Instead, comparative materials are leveraged to find alternative regulatory models and assess their possibility of being found to be appropriate in Pakistan's statutory and institutional landscape.

3.6 Analytical Framework

It's organized by three interconnected legal aspects: authorship, ownership and infringement. These dimensions will directly relate to the objectives and research questions of the study.

First, the study looks at authorship with a distinction between works created by humans, works created with AI assistance, and works that are largely or fully created by AI. Focus is paid on the level of human creative input, such as prompting, selection, arrangement, editing and modification.

Secondly, the research looks into ownership, asking whether copyright can be the owner of the AI-generated content and, if it can, who the owner is. The analysis covers the prospect of the AI user, developer, employer, commissioner, as well as other stakeholders.

Third, it looks at infringement at the input level and at the output level. The study examines whether copying copyrighted works for the purposes of AI training constitutes infringement and whether existing exceptions or limitations of copyright law can offer a legal rationale. At the output stage it considers whether the material created will or can reproduce or substantially copy protected expression in earlier works.

This three dimensional approach enables the study to separate out legal issues that are often mistakenly considered as one. It is not possible to automatically conclude that the copyright of any AI system trained with copyrighted material infringes on all outputs, nor is it possible to automatically conclude that the copyright of any human user operating an AI system is infringed upon by all outputs.

3.7 Data Selection and Source Criteria

The term 'data' in the context of doctrinal legal research is most often legal or scholarly documents, and not survey responses or experiments. Sources are chosen on purpose based on their relevance, legal authority, scholarly credibility and contribution to the research questions. The Pakistani legal interpretation is primarily based on the primary legislation and official policy documents. For theoretical and comparative analysis, it is preferred that scientific articles are peer reviewed and published in academic journals. Recent publications are highlighted due to the speed of generative AI development, and seminal works are included when they still play an important role in existing copyright doctrine.

Sources that cannot be reasonably determined to be legal or scholarly reliable are not included. Unverified sites, anonymous commentary, unsupported opinion pieces and sources that simply restate “prophets of the AI revolution” statements without concrete evidence are not considered authoritative. This source selection technique aims to ensure the educational and legal soundness of the investigation.

3.8 Procedure of Analysis

The analysis is presented systematically. First, the pertinent provisions of the Pakistani copyright law are identified and analyzed to determine the current law of the land with respect to authorship, ownership and infringement. Secondly, current Pakistani judicial and policy documents are analyzed to uncover interpretive principles and contemporary policy developments. Thirdly, recent international scholarship and developments in law around generative AI are explored. Fourth, Pakistani law is juxtaposed with selected international approaches to highlight the similarities and differences and possible regulatory gaps.

The last step is the critical analysis of the results. The study does not only provide a description of foreign legal approaches, but it also assesses their merits, drawbacks and applicability to Pakistan. The analysis questions whether current Pakistani law can be reasonably interpreted to address generative AI or if law needs to be updated to address this use. If reform is deemed necessary, recommendations are drafted taking into account the competing interests of copyright holders, AI developers, users and technology companies, and the public interest in general.

3.9 Scope of the Legal Analysis

The methodological domain of the study is restricted to copyright-related issues which may emerge from generative AI. Research thus concentrates on literary, artistic, musical, audiovisual and software based works in which copyright protection is likely to occur. It takes into account AI-backed human creativity and claims created by AI, as a legal analysis based on treating them as the same would be too simplistic.

The study also differentiates conduct at the training stage from conduct at the output stage. Permission to acquire, reproduce and process copyrighted material for training purposes. Output-stage analysis is the analysis of legal status and possible infringement of material created by such systems. This distinction is of great methodical significance, since the legal dimensions that can be applied to the two phases can vary.

3.10 Reliability and Validity of the Legal Analysis

Triangulation of sources lends credibility to the research. Legal conclusions are not drawn from one academic publication/commentary. Rather, statutory provisions are taken into account along with judicial decisions, official policy documents, authoritative institutional reports and peer-reviewed scholarship. When international approaches are mentioned, the paper clearly differentiates between persuasive/comparative and binding law.

Nor does the analysis presume that a foreign legal stance is necessarily the right one for Pakistan. International developments are critically assessed with regard to the statutory language, legal institutions and regulatory context in Pakistan. This helps to mitigate the danger of importing ideas from jurisdictions with vastly different legal traditions for reasons that are not sufficiently grounded.

3.11 Ethical Considerations

The research does not include human subjects, human interviews or confidential information and is based on publicly available legal documents, legislation, judicial decisions, policy materials and published academic scholarship. As such, traditional research methods addressing informed consent and participant confidentiality are not relevant. However, the essence of studying is academic honesty. All substantive claims of law and scholarship are properly cited, and sources are accurately cited without intentional manipulation of arguments or conclusions.

Special attention is given to make clear the scholar's own critical analysis of the issues, as well as the views of scholars, courts, the government and international organizations. This distinction is relevant in legal scholarship as comparative or scholarly arguments should not be made as the law in Pakistan.

3.12 Methodological Alignment with the Research Objectives

The methodology is directly related with the three objectives of the study. The doctrinal analysis of authorship provides a basis for the first objective to study the legal status of human, AI-assisted and AI-generated works. The second objective is addressed by examining the rules of ownership, that is, how copyright might be claimed in AI-assisted creative production. Finally, analysis of the conduct in the training stage and in the output stage is available, and comparative legal analysis is carried out, to answer the third objective, on copyright infringement and potential legal changes.

As a result, the methodology offers a logical foundation for advancing from legal rules to their critical use with generative AI. It is not just about technological developments but whether Pakistan's current copyright system can offer the tools to ensure predictable and effective protection, when the distinction between human creativity and machine-generated expression is becoming harder to draw.

4. DATA ANALYSIS AND LEGAL ANALYSIS

4.1 Introduction to the Legal Analysis

The key aim of the present study lies in the three focal research questions, namely of authorship, ownership and infringement in the light of generative artificial intelligence (GenAI) in the framework of Pakistani copyright law. As the study is doctrinally oriented, the "data" analyzed here are primarily legislative provisions, legal principles, policy documents, judicial materials and law developments from other jurisdictions as appropriate. The objective is not just to document the current provisions of the copyright law but to assess the capability of the current Pakistani copyright regime to respond to the unique issues posed by GenAI. This means the need to differentiate between AI-influenced human creativity and the output made by AI with little or non-meaningful human creative input. It also demands addressing copyright considerations at the training phase and the use or dissemination of AI outputs in the future.

The analysis starts with the Copyright Ordinance, 1962 as it is the foundation of copyright protection in Pakistan. Copyright of original literary, dramatic, musical and artistic works, cinematographic works and records are acknowledged by the Ordinance. It gives copyright holder(s) the exclusive rights to reproduce, publish, perform, translate, adapt and communicate protected works. But the law was written before today's generative AI and doesn't specifically cover rules on works created by AI, AI training sets or the division of liability among the creators of AI, the platforms, and the users. The central analytical question of this study is whether copyright existing concepts can be understood broadly enough to cover GenAI or whether it is essential to take legislative steps.

4.2 Analysis of Objective One: Authorship under Pakistani Copyright Law

4.2.1 Human Authorship as the Foundation of Copyright

The first goal of the research is to critically analyze the notion of authorship in copyright law in Pakistan for human created, AI-assisted and AI-generated works. The first section, 10 of the Copyright Ordinance, 1962, identifies what types of works are covered by copyright, including literary works, dramatic works, musical works, artistic works, cinematographic works and records. The legal framework is thus hinged on the recognition of a work and an author identified within it. Section 13 also holds that the author is the first owner of copyright, with a few exceptions. This forms an important legal chain: authorship is before first ownership. So, the issue of ownership of an AI-generated work remains unresolved until the legal nature of the work is clarified, and a legally recognized author emerges.

This is a problem immediately if it's used in a completely automatic expression. There is no specific AI author in the Copyright Ordinance. Nor does it include a specific means of attributing the author of the output of an AI system to the person who operates it. Article 4 does not mean that all AI generated outputs are not protected by copyright, but it does make the traditional approach to obtaining copyright protection via the law look shaky. Where the basis for copyright is an original work to which an author can be attributed, the issue is whether the human subject was the author of the work because he or she has made enough original contribution to the work to be considered an author. What is important is, therefore, not whether AI was used but what the human actually contributed to the protected expression.

4.2.2 AI-Assisted Works versus AI-Generated Works

The analysis suggests, however, that AI-assisted works should not be considered as copies of works created near entirely by an AI system. In an AI-assisted work, the human creator can set the subject matter, composition, structure, language, characters, story, and/or artistic direction of the work, and then use AI as a technology tool to carry out, refine, and/or adjust the human creator's decisions. In these cases, AI is more of a high-tech creativity aid. AI doesn't exclude human writing.

It becomes significantly more challenging when a user provides a broad cue, and the AI algorithm is then free to build out the expression. This may be an idea or general instruction

given by a short prompt like “write a romantic short story set in Lahore,” but not necessarily a proof that the user had decided the specific protected expression in the story they ended up with. This is also true of their image generation. When a user simply types “a traditional Pakistani village at sunset,” they give a concept, and the AI system can handle composition, characters, lighting, textures, colours and so much more that can express. In terms of copyright law, however, this human intention does not necessarily translate into a human author.

This separation is the same as what the U.S. Copyright Office did in its 2025 report. The Office has determined that generative-AI outputs can be protected if a human selects the elements to be protected as sufficient for expression, such as by adding human-authored material to the output or by changing the output. It did expressly find that the presences of prompts alone are insufficient to create the kind of human control required for copyrightability. This is not Pakistani law, but it does offer a comparative guide as to the extent of human creative activity necessary to achieve copyright recognition.

4.2.3 The Problem of Prompt-Based Authorship

One of the most challenging questions of authorship is prompted. A good prompt may include many elements of intellectual effort, stylistic focus, plot directions and structural needs. However, mere effort does not automatically mean that it is a copyright work. Copyright does not cover ideas per se. The legal issue here is whether the prompt itself is protected expression, and whether the prompt provides the human enough control of the expressive elements of the final product.

The present analysis proposes that a human creative control test should be adopted in the Pakistani legislation in contrast to a prompt-based test. In this paradigm, the legal evaluation would take into account the level and type of human involvement, such as the level of specificity in instructions, iterative prompting, choosing from generated output, arranging AI-generated parts and then editing them by human. A user who takes a long time to select and edit a result to achieve a creative effect will have a greater authorship claim than a user who simply provides a generic prompt and accepts the result generated by that prompt.

In this way one would also be able to prevent two opposite mistakes. The first would be to remove the copyright protection from all AI-generated works, thereby punishing genuine human creativity for simply using a technical aid. The second would be to automatically give copyright to all AI users, which would then lead to private ownership of outputs to which the claimant had limited real creative control.

4.2.4 Comparative Evidence from the United Kingdom

Important contrasting model: UK. There is existing UK copyright law which provides for protection of literary, dramatic, musical and artistic works created by a computer where there is no human author in situations where the computer was used in the manner described. The person who makes the arrangements to create is considered the author. Under this provision, for a general-purpose AI system that is generating a response to a query entered by a user, the user entering the query is likely to be considered the author of the query. For the case of a general purpose AI system that is generating a response to a query entered by a user, the person entering the query is likely to be treated as the author of the query under this provision.

It is a different way of thinking than what the U.S. Copyright Office has done with regards to human authorship. It shows that there are at least two ways that Pakistan can be legally established. The first is the human-authorship model that makes protection rely on the adequate human creative contribution. The second is a computer-generated-work model, where the law can make a human actor liable to arrange the creation even when there is no human author.

The UK model is appealing for Pakistan because it offers more predictability on the ownership of outputs that are fully AI-generated. It would also raise a normative question, however: If a person can get a copyright on an AI-generated work, without doing anything of value or creative, how is the rest of the world to be the beneficiary of that creation? The UK's approach, therefore, may provide a potential legislative remedy to uncertainty, but the implementation of this approach would need to be considered with regard to whether further protections were needed.

4.2.5 Finding on Research Question One

The analysis answers to RQ1, which found that Pakistan's current copyright regime offers more foundation to protect works created by a human and genuinely assisted by AI than to protect purely AI-generated works. The legislation based on authorship and originality raises an uncertainty when no specific human has fixed enough expressive elements. The current rule doesn't explicitly define whether prompts, selection, arrangement or other human-GenAI interactions meet the threshold.

Rather, the major flaw is that Pakistani copyright law has no ideas of its own capable of tackling AI or its impacts. Instead, the problem is the lack of specific criteria to evaluate human creative contribution in AI-generated content. These criteria could emerge through judicial interpretation but would be more predictable if confirmed by legislature or regulation.

4.3 Analysis of Objective Two: Copyright Ownership of AI-Generated Works

4.3.1 Relationship between Authorship and Ownership

The second aim is to establish a legal framework for the ownership of works created with GenAI. According to the Copyright Ordinance, the copyright owner is normally the author, unless there are legal exceptions. The importance of this provision is that it is indicative of the fact that under the Pakistani copyright law, ownership is structurally linked to authorship. The first owner of the book is much less clear if the law does not specify one.

In the case of works of human origin, that's a fairly simple structure. The author of a novel is the first copyright owner, and is the one who writes the novel. An employee can develop a work in circumstances where the employer becomes the 1st owner pursuant to statutory regulations. A statutory allocation of first ownership is another type of commissioned work. These provisions illustrate that when copyright law has specifically provided for separating the concepts of creator and owner, it is able to do so.

GenAI reveals the lack of such a rule for content created with AI. Ownership potential can be the user, the AI developer, the platform provider, the employer, or the commissioner/other contracting party. But none of them are automatically qualified just because of their association to the technology.

4.3.2 The AI User as Potential Copyright Owner

The most compelling argument might seem to be that of the AI user, since the user is the one who starts the process of generating and can put creative work into formulating prompts and choosing outputs. But this linkage is only as strong as the human contribution. If the user substantially alters, rearranges or uses AI-generated content in a piece of content that they created, copyright could apply to the human-created content and possibly to the original arrangement.

The position becomes weaker when a user simply feeds in a simple instruction and has the output disseminated without much creative effort. To automatically presume in such cases that the user is the copyright owner would effectively be to give protection to technological access instead of creative authorship.

The analysis therefore implies that it would be advisable for Pakistan to steer clear of an automatic rule of "the person who poses the question to the AI owns the output" This would

be a very general and broad rule and could result in claims of copyright over vast amounts of machine-made content. On the contrary, ownership should follow on from a previous evaluation of the contribution of humans in the creation.

4.3.3 The AI Developer as Copyright Owner

The AI developer also argues for a possible claim of ownership, but it is important to differentiate this ownership claim from the output generated by the AI. The underlying software, model architecture, code, documentation and other elements of the AI system could also have copyright or other intellectual property rights held by the developer. But it is not always the case that the ownership of the AI system translates to ownership of all the expressive works produced by it.

This is significant because otherwise the general-purpose AI that is created by the developer might be held to own millions of outputs that were created independently by users. This would massively increase the economic rights of technology companies, which are not typically tied to a copyrighted work.

It is better to distinguish rights in the AI technology from rights in the output of the AI technology. The software, or other protected elements of the system, may be developed by the developer, or by the user, depending on the contract; the rights may be obtained by the user, upon the condition that the user's contributions be sufficiently original.

4.3.4 Contractual Allocation of Ownership

Another important factor is contractual allocation. The terms and conditions of the AI service provider often include provisions that seek to clarify the relationship between the AI service provider and the user with regard to content produced by the AI. Some rights and responsibilities can be divided between the parties, as provided in the contract. But, contractual allocation does not necessarily bring about copyright protection where there is none in the relevant statute.

The fact that this is important is key. A platform can provide a user with a broad right to use an output of an AI, but this does not automatically mean that the output is copyrightable. The issue of whether copyright subsists is thus separate from contractual rights to use content.

Under the copyright system in Pakistan copyright is assignable, but the assignment of copyright involves the assumption that there is an interest in the copyright which can be assigned. So it makes no sense to have a contract to address the original issue which is that the AI-generated output has no legal protection of authorship.

4.3.5 AI-Generated Works and Public-Domain Consequences

If produced outputs are deemed to have not satisfied the copyright requirements, then another effect is produced. This material may continue to be used, depending on other legal restrictions, since there would be no copyright monopoly in the product itself. This could facilitate access and innovation on one hand, and raise commercial uncertainty for businesses investing significant resources in content created by AI on the other.

Not everything that's not copyrighted is not a failure in a legal sense, however. Copyright is an incentive-based system. Where a work is not protected by the statutory requirements for protection, denying the right of exclusive use may be in keeping with the basic nature of copyright. The more challenging policy issue is whether Pakistan should adopt a special category of protection for computer-generated works, as the UK has done, or should have the traditional model of human authorship.

4.3.6 Finding on Research Question Two

Analysis shows that ownership could not be separated from authorship. In Pakistan, the present statutory framework is such that generally the uncertainty about the identity of the author would lead to uncertainty of ownership as well.

Therefore, the study concludes that the AI user should not be deemed the proprietor of all the outputs of the AI, nor should the AI developer be automatically deemed the proprietor because of its creation of the underlying system. Ownership should rather be based on the nature of the human contribution, statutory restrictions, contractual provisions and where needed, legislative clarification.

4.4 Analysis of Objective Three: Copyright Infringement

4.4.1 Infringement under the Pakistani Copyright Ordinance

The third goal explores the possibility of copyright violations in AI training and in the creation of AI-provided content. The Copyright Ordinance states that copyright infringes when anyone commits an act for which the copyright owner has an exclusive right without permission or a valid licence. The provision thus provides a potential legal basis in respect of any act that may be restricted by law in relation to the use of copyrighted material, such as unauthorized reproduction.

The difficulty is in the application of this provision to GenAI, as the technology opens up numerous layers at which copying can take place. The copying of a copyrighted work can happen during the collection of datasets, during preprocessing or training of the datasets, or in the retention of the copyrighted work in model-related systems, or in the reproduction of the copyrighted work in an output. The activities themselves do not necessarily have to be legally the same. The analysis thus separates the two types of infringement: training-stage infringement and output-stage infringement.

4.5 Training-Stage Infringement

4.5.1 Reproduction of Copyrighted Works During Training

Generative AI systems use huge chunks of data to train. If copyrighted books, articles, images, music, code or other protected works are copied into datasets without permission, the copying of these works could also be a copyright issue. Section 3 of the Pakistani Ordinance confers the exclusive right on the copyright owners to reproduce the copyrighted works and Section 56 of the Ordinance defines an infringement as an act of an unauthorized person or entity who exercises the exclusive right of the copyright owner.

The legal issue is now a reality. The developer shall identify the legal basis for reproduction if a protected work is reproduced in the course of the development of an AI model. Justifications can range from authorisation, licensing, a statutory exception or a judicial interpretation of existing limitations.

The concept of fair dealing is included in the statutory framework of Pakistan in Section 57, which encompasses fair dealing for research or private study, criticism or review. But the provision does not explicitly include a “generative-AI training exception.” This raises the question whether a large-scale commercial training of AI can be reasonably accommodated under existing exceptions.

4.5.2 Commercial AI Training and Fair Dealing

It gets harder when training is done for commercial use. A third party developer can use millions of copyrighted works to create a viable AI system for a commercial use, then sell access to that system. The ordinary meaning and purpose of existing exceptions would be extended to cover such activity as a de facto private research.

Simultaneously, an absolute ban on training with copyrighted content could significantly limit the development of AI. This results into a policy dilemma between copyright protection and technological innovation. Mechanisms like licensing, collective licensing, transparency obligations, opt-out mechanisms, remuneration or narrowly defined exceptions may thus be necessary for a balanced framework.

The right answer for Pakistan is not just a replica of the rules of some other jurisdiction. It should consider the creative industries, the powers of enforcement, the level of technology and the overall economic situation of the country.

4.6 Output-Stage Infringement

4.6.1 Reproduction of Protected Expression

A second infringement issue is when the output of an AI system incorporates a significant portion of a protected work. Although section 56 is sufficiently wide to be of legal consequence when it comes to copies produced by humans, the application of the section to products of AI will depend on whether the product is deemed to reproduce the expression of a protected earlier work.

There are other things to be considered if an output is similar to another one. Abstract ideas, themes or general concepts are generally not protectable by copyright. To correctly distinguish between similarities based on ideas or styles and those based on protectable expression the analysis must be able to do two things.

However, with generative AI, where outputs are probabilistic, and might even be influenced by patterns learned from very large datasets, this distinction can become more complex. An output can, therefore, be a copy of a specific work without there being a clear human act of copying that is analogous to the conventional infringement.

4.6.2 Memorization and Substantial Similarity

The risk is greater if an AI model creates identifiable parts of a pre-existing work. The output can be more likely to form a strong infringement case if the system produces a significant excerpt from a book, an easily-recognized part of a song, or a significant amount of source code.

Similarly, the UK government's recent guidance on AI and copyright materials acknowledges that where a significant part of a copyright work is reproduced or communicated without a licence in an AI output, it could be a breach of copyright.

This comparative situation is beneficial for Pakistan as it helps maintain an important analytical distinction: AI generation itself is not necessarily infringement; the creation of protected expression may be. The legal analysis should thus be not on AI producing the content but on the relationship between the output and the preceding protected work.

4.7 Responsibility for AI-Related Infringement

One of the challenging issues is whether a particular actor is legally liable in case of infringement. The potential actors include the model developer, platform operator, user and distributor. Each may have a varying level of control over the conduct in question.

This means that the developer has control over training process, but not the specific results produced by a specific user. The platform can access the model but cannot generate individual outputs. The generation process is started by the user, and the user is aware of and may intentionally specify content that is or is not similar to the content of a protected work. The resulting material can then be published or used commercially by a distributor.

The current Section 56 of the Pakistan Parliament is based on the person who commits an unauthorized restricted act. This will serve as a possible starting point but doesn't create a detailed distribution of the responsibility for AI.

A framework should therefore be distinguished in the future between training liability, generation liability and dissemination liability for Pakistan. To make all actors equally responsible is unfair, both in terms of law and economics. The liability should be commensurate with control, knowledge and authorization and contribution to the infringing conduct, insofar as possible.

4.8 Moral Rights and False Attribution

Another problem would be the right of the author to claim authorship and the right to prevent or secure damages for distortion, mutilation or other modification which would prejudice the author's honour or reputation under Section 62 of the Copyright Ordinance. Also covered in Section 70 is false attribution of authorship.

These provisions have special significance in the context of GenAI. AI systems can create content that is wrongly attributed to a human, or an AI-generated work might be presented as if it were 100% produced by a specific person. On the other hand, AI could alter the nature of a human creation in a way that would impact its attribution or reputation.

This highlights that there is a problem of AI copyright, but it is not just an economic one. There is also a relationship between the creators and their work and copyright law protects it. Thus any future formulation of an AI framework ought to take into account the issue of "attribution" and moral rights as well as economic rights.

4.9 Comparative Synthesis: Pakistan, United States and United Kingdom

Comparative evidence shows that there are three different approaches. The U.S. also focuses on human authorship and considers the question of whether sufficient elements of expression were determined by a human. The UK has a special category called computer-generated works, where there is no human author, and the creator of the work is deemed to be the person who arranges the work. There is a currently no similarly specific rule in Pakistan for AI.

One benefit of the U.S. system is that it maintains the linkage between copyright and human creativity. It also won't automatically create a copyright in machine-made works. But, it can lead to confusion in the ambiguous examples of keying in a lot of human prompts and editing. The UK approach offers more certainty as it determines who could be considered an author in situations where there are no conventional human authors. But it could give privileges to individuals who may have limited creative involvement. The UK government has also been rethinking the copyright-and-AI framework, an example of which is the government's consultation on the use of copyright exceptions to reduce copyright barriers for AI. The existence of a statutory solution does not imply the solution is normatively or economically settled, as the UK government is reconsidering aspects of the copyright-and-AI framework through its consultation on copyright exceptions to reduce copyright barriers for AI. In March 2026, the UK issued a significant report on copyright and AI, highlighting the ongoing policy debate between copyright and AI.

Therefore, Pakistan is left with a dilemma: can it continue with human-authorship or introduce a special category for computer generated works or can it create a hybrid system? The evidence indicates that a hybrid approach would offer the best balance, whereby human + meaningfully AI products would enjoy normal copyright protection (with the argument that the human is the one who created the work), while a narrowly drafted statutory exception would apply to the genuinely autonomous products (if policy makers believe some limited form of protection is justified).

4.10 Integrated Findings in Relation to the Three Research Questions

Analysis of the first research question shows that Pakistani Copyright Law has the ability to address issues of this nature when there is any meaningful human input in the creation of an AI-generated work; however, it does not offer a clear direction on how to deal with purely AI-generated works. There is a lack of clarity and uncertainty around the definition of AI-generated works because there is no statutory definition of what constitutes an AI-generated work and no clear human-contribution test.

The second research question indicates that ownership is structurally dependent on authorship, as Section 13 specifies the author as the first owner to whom the statutory exceptions apply.

So when there is doubt about who wrote a work, one has doubt about who owns it. The AI user, developer and platform are not automatically regarded as the copyright holders due to their technological or contractual relationship with the AI system.

The third research question illustrates that the existing Pakistani infringement provisions may be suitable to tackle unauthorized reproduction in the context of AI, however, they were not developed to the specific multi-stage process of generative AI. Copies and reproductions at the training stage and at the output stage should be treated separately. Potential limitations of existing provisions on fair dealing are that they may lack clarity when large-scale commercial uses of AI are considered, or that Section 56 could apply if an AI-generated output uses copyrighted expression without permission.

4.11 Overall Findings of the Data Analysis

The first is that the Copyright Act in Pakistan is not completely unfit for purpose in the context of generative AI; its problem is it lacks the degree of specificity needed to effectively address the issue. Doctrinal concepts of originality, authorship, ownership and infringement offer a starting point, but bring a lot of confusion when used for works created with the help of AI.

The second discovery is that the ordinary copyright protection should be based on human creative contribution. Universal copyright for AI users would bypass the copyright concept as it relates to creativity, and denying copyright protection to any AI-generated work would otherwise hamper legitimate human creative work. An assessment of human control, selection, arrangement and modification, that is context sensitive, is more defensible.

The third discovery is that there is a need for legal separation of authorship and technological access. Ownership of an AI platform does not always mean that the owner or operator of that platform owns each and every output produced with it. Likewise, the one who sets up a prompt is not an automatic copyright author. Ownership should be based on copyrightability, human contribution, and rules provided by statutory or contractual provisions.

The fourth finding is that training-stage infringement is a huge problem in Pakistan which remains unsolved. While the Copyright Ordinance offers a range of exclusive reproduction rights and limited exceptions for fair dealing, it does not explicitly cover large-scale AI training. This leaves copyright owners and AI creators in limbo.

The fifth finding is that, in the output-stage, there is no automatic presumption of infringement, but rather a conventional copyright analysis is necessary for the sake of the technology of AI. The question that should be asked is whether there has been any unauthorised exploitation of or reproduction of protected expression from an existing work. The mere stylistic similarity or resemblance of ideas should not be considered copyright infringement.

The 6th finding is that targeted legislative clarity is more desirable for Pakistan than a separate copyright regime. A reform package could be drafted to define AI-assisted and AI-generated works, to introduce a human-contribution standard, clarify the nature of purely AI-generated works, introduce transparency and liability rules.

Finally, the analysis shows that Pakistan's new policy agenda on AI and existing copyright law are both heading towards the same policy issue from both sides. The National AI Policy pays attention to the intellectual property issues of AI, and the Copyright Ordinance provides the existing legal framework for the protection of copyright. What remains to be done is to link them up in a transparent and binding framework of rules regarding authorship and ownership, as well as training and infringement. This lack of clarity can introduce uncertainty for creators and technology developers alike, potentially undermining the enforcement of copyright and responsible AI development in Pakistan.

5. Discussion

The results of this study show that the whole issue of copyright problem arising out of the use of generative AI in Pakistan is not the absence of any applicable law in the country; it is the growing incongruity between the copyright concepts and technological reality of generative AI. A legal framework for original works, authorship, ownership, reproduction, infringement and remedies already exists in the Copyright Ordinance, 1962. It was created, however, without considering scenarios where systems could create expressive content, with only a minimum amount of direct human input. The results thus align with the theories in the literature that copyright law may be flexible to the use of generative AI, while there is uncertainty in exactly those areas where traditional concepts of copying and human creativity are hard to apply. Similarly, Engel (2025) concludes that current copyright laws could be adapted to fit generative AI, pointing out, however, that there is significant uncertainty, especially in relation to training and AI-generated outputs.

5.1 Authorship: Human Creativity Remains the Critical Threshold

The first significant finding is related to authorship. The analysis suggests that the copyright framework in Pakistan is relatively robust in its protection of AI-driven human creativity, compared with those that rely heavily on AI with minimal human creative input. This is in line with the prevailing stance in recent international scholarship on the subject of whether the human creative contribution is a decisive factor in determining whether an AI-mediated output can qualify for copyright protection. This is a statement that is well captured by the 2025 report from the U.S. Copyright Office: AI can assist but not preclude copyright protection; AI-generated works, or those where humans cannot control the expressive elements, are not covered by copyright. The Office also finds that prompts, on their own, typically are not enough to control the expressive elements of an output.

This has significance for the Pakistani context as it will avoid unnecessary polarization in the debate. No, don't say that using generative AI is killing the human writer. A writer can use AI to help generate ideas, rearrange sentences, proofread her text, or even find alternative ways to phrase it without giving up much of her own control over the text. Similarly, an artist can use an AI image generator as a tool for a larger project, and then engage in significant artistic choices and alterations. In such cases, the technology is used for the benefit of the creator and not to replace the creator. This distinction has been supported by literature. The analysis of generative AI and copyright has increasingly taken into account whether AI was involved in the creation, but the more important question is whether the human had control over the protected expression.

The results, however, contradict the assumption that it is enough to simply enter a prompt to prove authorship, which is often made by researchers in this field. This may be an appealing legal scenario, in that the person who creates the prompt is the author. But simplicity does not mean doctrinal soundness. A prompt can express an idea, intention, and/or desired result; it may not be the final expressed details of the model. The law could give the individual exclusive rights over the expression that he or she did not actually create if copyright protection is granted simply because the person typed an instruction into an AI system. Prompt alone is not enough, as the U.S. Copyright Office has ruled, is therefore a helpful comparative caution for Pakistan. The present results thus validate the human creative contribution or human creative control approach in Pakistan. For such an approach, the legal investigation might look at the specifics of prompts, the iterative interaction with the system, the selection among outputs, the arrangement of generated material, and substantial modification by the human being. This is better than two extremes: automatic protection of all AI-generated output, or automatic denial of protection for all AI-generated works. It also aligns with Mazzi's (2024) focus on originality

and human contribution and with Khosrowi et al.'s (2025) proposed that generative AI production is not necessarily a one-to-one creator–work relationship.

5.2 The Authorship Problem Reveals a Deeper Structural Gap in Pakistani Law

The results vindicate human creativity as the right foundation for ordinary copyright law but also reveal a structural weakness in the current copyright regime in Pakistan. The Copyright Ordinance of 1962 was built on the idea of an identifiable author and does not provide a statutory definition of an AI-produced work. It thus fails to provide a court with a clear indication of how to deal with an output in which the human input is real but relatively small. The question is not just about whether Pakistani law acknowledges “AI authorship” but rather about how it can. This issue is not just about the recognition of “AI authorship” in Pakistan law but how it can be. The issue is that the law does not provide any graduated measure to assess various degrees of human involvement, however.

This observation adds to, not replicates the literature. International scholarship has shifted from the question "Is AI an author?" to the question of "How is AI an author?". Increasingly, international scholarship has shifted away from the question of whether AI can be an author, and towards the question of how AI can be an author. Khosrowi et al. (2025) explain how this transformation is needed with their “many-hands” approach. A generative-AI output can be the creation of the person using the system, of creators whose creations are included in the system, and of creators who are the ones who build the technological system. That doesn't imply that every contributor be a copyright owner. Instead, it shows that the notion of the single "human author" creating a single "work" is not always applicable to the creation of AI-generated texts. In Pakistan, this implies the need for future legislation that defines the differences between works written by humans, works created with the aid of AI, and those that are predominantly AI-generated. This classification would be of more benefit to courts and creators. It would also lower the risk of copyright decisions being made on the basis of the marketing description of an AI platform or user's subjective claims.

5.3 Ownership Should Follow Copyrightability, Not Mere Use of AI

The second large conclusion is about ownership. The study revealed that logical ownership can only be determined after the copyrightability and authorship have been established. Under the Copyright Ordinance in Pakistan, the first ownership is linked to the authorship in general. This has a significant consequence for GenAI: When an output is not sufficiently authored by one or more humans, there may be no conventional copyright ownership to assign in the first place. This is in line with the literature. The debate about “who owns AI-generated content?” is typically pitched against the user versus the AI developer. The first sentence is not a complete sentence. The issue of ownership and the ownership stance itself restricts the material's ability to be protected, as recent scholarship has indicated. The literature thus differentiates ownership of the AI technology from rights to the content created by means of the technology. A software developer does not automatically become the copyright owner of the software outputs of its users if he has IP rights in the software itself, the model architecture, or other protected parts of the software.

This finding then challenges two presumptions of automatic ownership. First, the AI developer should not have automatic ownership of everything produced by the AI system just because the developer developed the system. This type of policy would create an exception for technology providers claiming a very wide licence to users' content. Second, the user should not automatically be the owner of all of the output just because the user started the process of producing it. Where the user added few expressive elements, automatic ownership would essentially mean there was no creativity by the user and copyright would be assumed.

The more defensible position is that ownership should be accorded to the copyrightable human contribution. If a user produces original content and uses AI tools to add to it in a larger, human-authored composition, the copyright may belong to the human-authored expression as well as to the overall creative arrangement or modification. If there is no independent human control over the whole product, and no human element at all in its creation, the more robust human-authorship theory suggests there is no copyright.

5.4 The UK Model Demonstrates That Pakistan Has More Than One Reform Option

The results also suggest that Pakistan does not have to opt to do nothing or radically revise the copyright framework. There are a number of models of comparative law. The United States focuses on human authorship, while the United Kingdom also acknowledges computer-generated works, and names as author the person who made them ready for publication in cases where there is no human author. These approaches are very different approaches to the same technological problem.

The UK approach is especially pertinent as it provides a way to prevent an 'ownership vacuum' in regard to computer-generated works. The model does, however, raise a tough moral dilemma: should a person be granted exclusive rights merely because he/she commissioned a computer system to produce the work? The debate on the subject in the UK today is a good witness to the fact that this question is not answered. The ongoing copyright and AI review in the UK suggests that the statutory acknowledgment of computer-generated works does not undermine issues of incentives, competition and scope of protection.

The message for Pakistan is that it is important that legal certainty should not be sought to the detriment of the rationale behind copyright. When Parliament decides to establish a special category for AI creations, it should be narrowly crafted. Without this, the law might produce a vast amount of machine-made material that has exclusive rights which would not be supported by any worthwhile human creativity.

5.5 Training Data Represents a Different Copyright Problem

The most important result of the study is that the authorship and ownership of the AI product must not be mistaken with the legality of the training process. This distinction bolsters Guadamuz (2024) who proposed that copyright issues in relation to the input and output of AI be examined separately. AI systems need massive amounts of data, and there can be copyrighted content in these datasets. The key legal issue here is whether the copying and processing of protected works for the purpose of training is covered by an exception, licensed, or is an unauthorized reproduction.

Thus it is one of the most economically important issues of the copyright debate, as indicated in the literature. As copyright holders often do not know whether their business or artistic creations have been incorporated into training sets or on which basis, transparency is key as highlighted by Buick (2025). This gives rise to an information gap between the technology developers and creators. While developers have technical expertise on the datasets and building the models, individual creators might not have much hands on experience to decide what has been done with their creations in terms of model development.

The findings from Pakistan indicate that there is clearly a problem with this, as the Copyright Ordinance has no specific regime for training AI generatively. There is some possibility in some situations that existing fair-dealing provisions might be applicable, but the extent to which large-scale commercial model training would be covered by the general research exception would be hard to defend without a careful reading of the law. The difference between an individual researcher reading a small number of copyrighted books and a commercial company copying millions of books to create a profitable generative model is very wide.

Hence, Pakistan needs more clarity on the legal framework of AI training. They are: licensing systems, carefully drafted statutory exceptions, transparency obligations, opt out systems or remuneration systems. It is important to identify the appropriate solution based on the economic and institutional context of the country and not just replicate the regulatory framework of the E.U. or the U.S.

5.6 Transparency Alone Will Not Solve the Training-Data Problem

There is an important warning in the literature about the transparent solution being complete. Knowing what was used in training is valuable but not sufficient, as per Buick (2025); knowing what has been used does not imply the lawfulness of the use or right to remuneration for the creators. In this regard, Pakistan can be of special concern. A system forcing AI companies to reveal training sets would make it more accountable, but disclosure doesn't address the question of authorization of underlying copying.

An important consideration here is the tendency for the emerging regulation of AI to see transparency as an easy middle ground between innovation and copyright protection. Transparency is required because rights holders cannot enforce rights that they do not know of or be able to prove. However, it is just part of the overall system. Pakistan would have to determine what occurs after disclosure – whether creators have the power to object, whether licensing should be required, whether remuneration should be considered appropriate, and whether certain types of training or use should continue without license.

5.7 Output Infringement Should Not Be Presumed

The results for the output stage infringement are also to be interpreted with care. It is important to note that the use of a generated AI model based on copyrighted content does not imply that all the generated content is necessarily copyright infringing. Guadamuz (2024) also makes a separation between the legal nature of inputs for training and the copyright nature of the outputs. The output should be analyzed separately and independently, to ascertain whether it reproduces a protected expression from a previous work.

This is especially relevant to Pakistan as copyright infringement is not to be allowed to be a tool of copyright owners for abstract ideas, themes or general styles. Presence of a similar theme in an earlier novel does not amount to infringement by an AI system when the AI system is creating a story about a wealthy family experiencing social conflict. The question of law is whether protected expression has been reproduced in a quantity that is recognized by copyright law.

But the other end of the spectrum would be a problem as well. The extension of the non-infringing treatment of AI-generated work to the case of a machine copying a "substantial part" of a copyrighted book, or a machine reproducing a "substantial part" of a protected image, or a machine reproducing a "substantial part" of a protected computer code, would create an artificial loophole. The method of copying, and not the underlying protected expression, should be the determining factor as to whether the expression is legally protected.

Technology neutral infringement analysis, therefore, is the lawful test to consider: whether something was reproduced, not by a human but by an AI system.

5.8 Attribution and Moral Rights Require Greater Attention

The results also lend credence to what the literature has been saying about attribution concerns. Kahveci (2023) shows that generative AI litigation has posed issues about the lack of attribution of works utilized in training. She analyzes the conflicts in the U.S. that arise when AI systems are used to train or use content that has been “misappropriated” without attribution or copyright-management information being maintained.

It is an interesting issue in Pakistan due to the provisions of the Copyright Ordinance regarding authorship, moral rights and false attribution. Such provisions allow Pakistan to weigh in on

the issue of attribution problems in the context of AI. The challenge here is just to make those principles work when the model has worked with many works and when it creates content without knowing what inspired the content it produced.

The discussion goes on, therefore, beyond the issue of economic ownership. The relationship between creators and their creations should also be protected under a copyright system. The issue goes beyond just money if AI systems systematically exclude information related to authorship from training data, or if they produce outputs that they claim are human-created but actually are not. It is about recognition, fame and authenticity of authorship.

5.9 The Pakistan-Specific Research Gap

The results show that the existing body of international literature on generative AI and copyright is also large. It would be pedagogically flawed to state that the overall issue of AI and copyright has not received attention from researchers. That authorship, training and output infringement have been the subject of significant scholarly and policy attention is illustrated by the work of Guadamuz (2024), Kahveci (2023), Buick (2025), Engel (2025), and the U.S. Copyright Office.

This study has pinpointed a more defensible gap—one relating to jurisdiction and integration. The Pakistan legal system has still not built a doctrinal framework to link between the three principles of authorship, ownership and infringement in relation to AI. The existing international strategies cannot be easily introduced in Pakistan as they come from other statutory traditions, judicial systems and policy context.

This study therefore has its contribution to make by coalescing the three issues together under the umbrella of the Pakistani Copyright Ordinance, 1962. But the question of authorship of AI does not stand alone – it reveals the uncertainty about authorship is also causing uncertainty about ownership, and vice versa; and that uncertainty about training and output reproduction is another infringement issue. This unified framework offers a more unified foundation for the law reform in Pakistan.

5.10 Implications for Pakistani Copyright Reform

The debate concludes that there is a need for reform rather than a new copyright regime in Pakistan with specific objectives. First, statutory clarification of AI-assisted and AI-generated works must be the top priority for reform. The question of whether there is any meaningful human creative contribution should be codified into legislation, and criteria for assessing human creative contribution should be provided.

Second, Pakistan should define the rules of ownership of AI-generated works. An option would be to grant copyright to the human element, creative selection and arrangement, and substantial human intervention, but not to the ordinary element of copyright, that is, to the purely AI-generated content, unless Parliament deliberately establishes a very narrowly defined category. Thirdly, Pakistan needs to pay particular attention to the training of AI explicitly. The existing system should be explained as to what conditions are required for the copying of a copyrighted work for training. Any exemption should be considered carefully in relation to the legitimate interests of copyright owners.

Fourthly, transparency should be integral to the regulatory environment. As far as technically and legally possible, an AI developer should give information about the categories or sources of copyrighted material used for training. But as the literature shows, transparency should not be used as a substitute for licensing rules or rules that provide for remuneration, if these are deemed necessary.

Last but not least, Pakistan should put in place a differentiated liability mechanism. There is a disparity between the level of control that developers, platforms and users have over AI systems. The knowledge, control, authorization, contribution, dissemination, therefore, should

be considered as the factors for the determination of liability. This would help prevent copyright infringement while limiting the liability of users who inadvertently engage with AI-generated content.

6. CONCLUSION

As with many things, generative artificial intelligence has left the copyright law-and-order relationship with creativity and authorship in a state of confusion, but not one that makes copyright law irrelevant. This study has identified that there is already a statutory foundation in place in Pakistan that answers several questions regarding copyright related issues as they relate to originality, authorship, ownership, reproduction, infringement, and moral rights which can be applied to the current context of AI, albeit not specifically when it comes to AI-assisted and AI-generated works. The analysis reveals that the question of authorship still prevails and the ownership in Pakistani copyright law is linked with the authorship. Therefore, works that are “assisted” by AI, but still have a high amount of human creativity, should be protected by copyright, and granting copyright to all AI-generated works, and to anyone who enters a prompt, would undermine copyright's relationship to human creative expression. In the same manner, AI developers shouldn't be automatically entitled to the outputs produced by their systems simply because they developed the system, and users shouldn't automatically become copyright owners to the output produced by systems that they had minimal creative control over. The study also illustrates that the question of copyright infringement should be addressed separately at the training and output phase of AI: infringing on copyrighted works for training AI systems involves different issues, such as licensing and exceptions, transparency and remuneration, and infringing on works of AI would not necessarily be infringing on a copyrighted work, but rather would be infringing on the protected expression it contains.

The results, therefore, call for specific amendments in the existing copyright framework in Pakistan instead of an altogether new system. Such reform should clarify the nature and scope of AI-assisted and AI-generated works, provide a principled test for whether there is sufficient human contribution, clarify the rights in the AI-generated work, add more transparency on how to use copyrighted works in AI training, provide for licensing or exceptions, and create a differentiated liability regime for AI developers, platforms and users. In conclusion, the best way forward for Pakistan is to retain the spirit of human creativity as the core of the copyright protection framework while being ready to adjust the current legal principles to meet the challenges of generative AI. This balance is crucial not only because it helps safeguard copyright owners such as authors, artists, writers, programmers and others who are the subject of copyright from unauthorized exploitation, but also because it helps prevent copyright law from unduly impeding technological innovation. The future challenge for Pakistan is to create a unified legal framework that enables both the artificial intelligence and copyright protection to grow, but does not allow one to become a black hole of innovation that hampers the other.

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