Review Article

Artificial Intelligence and the Search for Prior Art: Opportunities and Challenges within the Oapi System

Minyu Careme-Ange Afanyi[1]*

[1]Ph.D. Researcher, Faculty of Laws and Political Science, University of Yaounde II

Abstract

The rapid expansion of global patent filings has increased the complexity of prior art searches and intensified pressure on patent offices to maintain examination quality. Within the Organisation African Intellectual Property Organisation known by its French acronym (OAPI), the 2015 revision of Annex I to the Bangui Agreement strengthened substantive examination procedures, including prior art search obligations. However, structural and technological constraints may limit the effective implementation of these reforms. This article examines the opportunities and challenges of integrating artificial intelligence (AI) into prior art search within the OAPI system. Using a doctrinal analysis of Annex I, combined with a comparative examination of the use of AI in major patent offices, it argues that AI can enhance semantic search capabilities, improve efficiency, and strengthen patent quality across OAPI Member States. Yet uncritical adoption risks technological dependency, algorithmic opacity, and weakened institutional autonomy. The article proposes a calibrated integration model grounded in phased adoption, human oversight, capacity-building, and transparency safeguards to ensure modernization without compromising legal legitimacy.

Keywords: Artificial Intelligence (AI), Prior Art Search, Patent Examination, Patent Quality.

I. INTRODUCTION

The exponential growth of global patent filings has significantly transformed the landscape of patent examination. Patent offices are increasingly confronted with vast and complex bodies of prior art spanning multiple jurisdictions, languages, and technological domains. Ensuring accurate and comprehensive prior art searches has therefore become central to maintaining patent quality and preventing the grant of unwarranted monopolies. In this evolving environment, artificial intelligence (AI) has emerged as a transformative tool capable of enhancing search efficiency, semantic analysis, and document classification.

While major patent offices, such as the European Patent Office and the United States Patent and Trademark Office have progressively integrated AI-assisted tools into their examination processes, the implications of such technological adoption within regional systems such as the OAPI remain underexplored. Given the unitary effect of OAPI patents across its Member States, deficiencies in prior art search may generate region-wide consequences, affecting innovation, competition, and legal certainty. The Bangui Agreement establishes novelty, inventive step, and industrial applicability as core conditions for patentability. However, the effectiveness of novelty examination is intrinsically linked to the quality and depth of prior art searches conducted by the patent office. In resource-constrained environments, reliance on traditional search methodologies may be insufficient to cope with the increasing complexity of technological disclosures. This article examines the opportunities and challenges associated with integrating artificial intelligence into prior art search within the OAPI system. It argues that while AI presents significant potential to strengthen patent quality and examination efficiency, its adoption must be carefully calibrated to address concerns relating to institutional capacity, algorithmic accountability, data sovereignty, and legal legitimacy.

The article proceeds as follows. Section II analyses the legal framework governing prior art and patent examination under the Bangui Agreement. Section III explores the use of artificial intelligence in prior art search within leading patent offices. Section IV evaluates the opportunities AI presents for OAPI. Section V critically examines the structural and normative challenges of such integration. Section VI proposes a calibrated model for AI-assisted prior art search within

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the OAPI system. The article concludes by reflecting on the broader implications of technological modernisation for regional intellectual property governance in Africa.

II. Prior Art, Patent Quality and Structural Constraints under the Bangui Agreement

Given that an invention will not be new if it forms part of the prior art, it is necessary for us to understand what consists of a prior art, otherwise known as state of the art. First of all, as defined by the European Patent Office, prior art can be said to be any evidence that an invention is already known [1]. Thus, we may aver that when the legislator describes it in Article 3(2) of Annex I as 'everything made available to the public', it is saying that anything made available to the public before the filing date of the application or priority when it is claimed, can constitute the prior art. Something becomes part of the "prior art" the moment it is made available to the public and it does not matter if members of the public have had actual sight of the information or not [2]. It however requires rather that had they wanted to do so, they could get access to it freely [3], or at least one person should be free to use it [4]. Plus, it could be in any place or in any language or even remotely used in a particular area; it would still anticipate the invention [5]. The information made available to the public could either be elements of the product or process for which protection is sought, or could be a previously granted patent or a pending patent application [6]. Prior art is an important element of examination especially as regards both the novelty and inventive step criteria as will be seen subsequently.

A). Examining under Novelty and Inventive Step

The requirement of novelty under Annex I of the Bangui Agreement constitutes a central pillar of patentability within the OAPI system. An invention is considered new if it does not form part of the state of the art, which comprises all information made available to the public anywhere in the world before the filing date of the patent application. This reflects an absolute novelty standard consistent with Article 27(1) of the TRIPS Agreement, which obliges Members to make patents available for inventions that are new, involve an inventive step and are capable of industrial application [7]. The novelty criterion requires that the invention be quantitatively different from what has been disclosed previously that is, the technical information disclosed by the patent must not already be available to the public [8]. Accordingly, Annex I states; 'an invention shall be new if it has not been anticipated by a prior art' [9]. Defining prior art, the Bangui legislator provides in Article 3(2) that is shall consist of everything made available to the public, anywhere and by any means or method, before the filing date either of the patent application or of a patent application filed abroad the priority of which has been validly claimed. Prior art has again been referred to in OAPI Administrative Instructions of 2021, N°1.23, as state of the prior art and is described in the same language [10]. Thus, where an invention is anticipated by a prior art, a patent will not be granted and if it had been granted, it is liable of being revoked. As regards proof of novelty, the patent examiner compares the invention with the multitude of existing information in order to determine if the invention satisfies this criterion [11]. We must thus quickly note that novelty is not something which can be proved or established; only its absence can be proved.

Inventive step is as important a requirement as novelty though, while novelty constitutes a quantitative requirement, inventive step a qualitative requirement [12]. More specifically, inventive step ensures that patent is granted for meritorious inventions, as opposed to obvious extensions and modification of the prior art [13]. It is hence not enough to state that an invention is new or different from what already exists in the state of the art but that this difference is inventive such that it results from a creative idea and that it is a noticeable step as regards what already existed [14]. Also, any advance or progress should be noticeable, significant and essential to the invention.

The state of the art for the purpose of proving inventive step is different from the prior art in relation to novelty. First, the starting point for assessing the state of the art for the purpose of inventive step is its definition

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[1] EPO- what is prior art? https://www.epo.org

[2] Bently L. and Sherman B. (2014), op. cit., p.532.

[3] Ibid. Accordingly, the disclosure of material that may constitute prior art need not be actually accessible but just potentially be capable of being reached by anyone in the public.

[4] Bainbridge, D. I. (2012), op. cit., p.434.

[5] Loc. cit.

[6] Given that previously granted patent by virtue of the requirement of disclosure have been made available to the public, they will constitute part of the state of the art and will be examine when examine novelty in a new patent application. The prior art will also consist of patent applications published before the priority date of the patent in suit but which however had a priority date which is earlier than that of the patent in suit.

[7] Article 7 of the TRIPS, 1994.

[8] Loc. cit.

[9] See Article 3(1) of Annex I of the Bangui Agreement 2015.

[10] For further reading on this, see Dashaco J.T., "Quest for Legitimacy of Intellectual Property Rights in a Common Market: Introduction of Examination on Merits of Patent Applications",

[11] Bently L. & Sherman B. (2014), op. cit. 529.

[12] *Molnlycke vs Proctor & Gamble Ltd* (1994) RPC49, 112

[13] A. Griffiths, 'Windsurfing and the inventive step' (1999) IPQ 160, 163-4 as cited in Aplin T. and Davis J. (2013) op cit p. 685.

[14] Loc. cit.

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in Annex I, Article 3(1), according to which prior art can be said to include the sum total of human knowledge that is available to the public. This provision implicitly provides for the differentiation between the subject matter of the claim and what already exists in nature. Though it defines prior art, it does not make any difference between the analysis of prior art under novelty and that under inventiveness.

Though the prior art element is essentially the same for both novelty and inventive step, practice has however shown that there exist two key differences between both [15]. Firstly, previously unpublished patent applications are excluded from the prior art for the purpose of inventiveness [16]. This presumably, is in order to avoid double patenting and also because this test has already been carried out when testing for novelty and hence is unnecessary [17]. Secondly, a single prior art can defeat novelty meanwhile, when testing inventive step, it is possible and even necessary to combine different pieces of prior art [18]. This is known as to 'mosaic' prior art, and it applies provided it is natural and logical or obvious to do so and if it is something someone skilled in the art would have done [19]. Thus, the subject matter is compared not with each individual publication or disclosure (as in the case of novelty) but with the combinations thereof [20]. It is the sum of the different related prior arts that have been discovered that will be compared with the invention and judged as to obviousness and not each of the new elements taken individually.

B). The role of Patent Examiners and Structural Limitations

Examiners at OAPI are typically trained engineers, scientists, or legal experts specializing in technical fields. Their institutional mandate emphasizes impartiality and efficiency, with OAPI's structure allowing for collaborative examination teams when complex technologies are involved. This role extends beyond individual assessments to contributing to regional harmonization of IP standards, supporting economic development in Member States by fostering innovation while preventing monopolies on non-novel ideas.

OAPI examiners are responsible for conducting comprehensive prior art searches using internal databases, international resources like Espacenet, PATENTSCOPE, and cooperative agreements with bodies such as the European Patent Office (EPO) and the World Intellectual Property Organization (WIPO). The search aims to identify relevant documents that could anticipate the claimed invention. For instance, examiners classify the application using the International Patent Classification (IPC) system to target searches effectively.

In evaluating novelty, examiners compare the application's claims against prior art to determine if the invention is identical or substantially similar to existing disclosures. For inventive step (non-obviousness), they assess whether the invention would be obvious to a person skilled in the art, often applying the "problem-solution approach" similar to EPO practices. If prior art raises objections, examiners issue a search report and opinion, allowing applicants to amend claims. This iterative process underscores the examiners' gatekeeping function, balancing applicant rights with public interest in accessible knowledge.

Challenges in this role include limited resources for exhaustive searches in emerging technologies and the multilingual nature of prior art (French being OAPI's working language). Nonetheless, OAPI has enhanced examiner training through WIPO partnerships to improve prior art handling, ensuring compliance with TRIPS Agreement obligations.

As has been observed in patent scholarship, the doctrinal articulation of novelty and Inventiveness is only as effective as the quality of the prior art search conducted during examination [21]. The prior art search functions as the epistemic basis of patent validity; weaknesses in search methodology may result in the grant of patents that lack substantive novelty, thereby undermining legal certainty and market efficiency [22]. Within the OAPI system, this concern is amplified by the unitary nature of granted patents. A patent granted by OAPI takes effect across all Member States, producing region-wide legal consequences. Accordingly, deficiencies in examination do not merely affect one jurisdiction but may generate systemic effects across multiple economies. The stakes of prior art search are therefore structurally higher in a regional framework than in purely national systems.

The exponential growth of global patent filings and technical disclosures further complicates the examination process. As WIPO statistics consistently demonstrate, patent applications worldwide have increased significantly over the past decades, generating vast and complex patent databases [23]. The increasing technical sophistication of emerging fields such as biotechnology and artificial intelligence intensifies the difficulty of comprehensive search. Traditional

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15 Aplin T. and Davis J. (2013) op cit. 687.

16 Loc. cit.

17 Loc. cit.

18 Ibid., p. 688.

19 Bently L. & Sherman B. (2014) op. cit. 555.

20 Loc. cit.

21 Loc. it.

22 Lemley M. (2001), "Rational Ignorance at the Patent Office" 95 Northwestern University Law Review 1495. P. 15.

23 WIPO (2025), World Intellectual Property Indicators. WIPO Publications NO. 941.17EN/25

keyword-based methods may fail to capture semantically related disclosures across languages and jurisdictions.

These structural constraints do not imply institutional inadequacy; rather, they highlight the tension between normative patent standards and administrative capacity in resource-constrained environments. It is within this context that artificial intelligence has been presented as a potential solution capable of enhancing search efficiency and semantic retrieval. Yet, as contemporary scholarship warns, the introduction of algorithmic systems into public decision-making processes raises questions concerning transparency, accountability, and epistemic dependence [24].

III. Artificial Intelligence in Global Patent Examination: Promises and Limits

The growing complexity and volume of patent applications have prompted major patent offices to integrate artificial intelligence tools into their prior art search systems. According to WIPO's *Technology Trends: Artificial Intelligence report*, AI-related patent filings have expanded dramatically over the past decade, contributing to an increasingly dense and technically sophisticated patent landscape [25]. This expansion has intensified concerns regarding examination capacity and search completeness.

The European Patent Office (EPO) has progressively introduced AI-based tools to assist examiners in document classification, machine translation, and semantic search. Similarly, the United States Patent and Trademark Office (USPTO) has reported the deployment of AI-driven prior art search tools designed to enhance retrieval accuracy and reduce examination time [26]. These systems rely on machine learning models capable of identifying conceptual similarities between technical disclosures between the invention and the material existing in the state of the art, beyond traditional keyword matching.

However, the integration of AI into administrative decision-making is not without controversy. Coglianese and Lehr caution that algorithmic systems in public administration raise concerns relating to transparency, accountability, and the explainability of automated reasoning [27]. In the patent context, while AI may enhance document retrieval, it does not substitute for the normative legal judgment required to assess novelty and inventive step. It must thus be noted that patentability ultimately depends on

doctrinal interpretation rather than purely technical similarity.

Moreover, reliance on proprietary AI systems developed externally may create forms of technological dependency, particularly for smaller or regional patent offices. Questions arise as to data sovereignty, algorithmic bias, and institutional oversight. The introduction of AI into examination processes therefore requires not only technical infrastructure but also governance mechanisms ensuring that algorithmic assistance remains subordinate to legally accountable human decision-making.

For a regional organisation such as OAPI, these global developments present both an opportunity and a cautionary example. AI-assisted prior art search may enhance examination quality, yet its adoption must be calibrated to preserve institutional autonomy, transparency, and legal legitimacy.

IV. Prior Art Examination under Annex I and Opportunities for Integrating Ai within the OAPI
A). Examination under the OAPI System: Legal and Institutional Considerations

The examination of patent applications is the primary mechanism through which the OAPI system ensures compliance with novelty, inventive step, and industrial applicability under Annex I of the Bangui Agreement. The 2015 revision of Annex I introduced clarified examination procedures, including:

- The obligation to conduct a search of prior art;
- The formal requirement to issue a written report with objections; and
- Procedural timelines for responding to examiner queries [28].

These reforms were intended to strengthen the rigor of patent examination and harmonize OAPI practices with international standards, particularly in line with TRIPS Article 27(1).

Despite these procedural improvements, practical challenges remain. The 2015 revision did not provide additional resources or technological tools for conducting prior art searches. Given OAPI's limited access to global patent and non-patent literature, examiners face structural constraints in fully implementing the revised examination procedures [29]. Manual searches, especially for complex or emerging technologies, may miss relevant prior art, risking the

[24] Coglianese, C. & Lehr, D., (2017) "Regulating by Robot: Administrative Decision Making in the Machine-Learning Era" (2017) 105 Georgetown Law Journal 1147.
[25] WIPO (2019), Technology Trends: Artificial Intelligence.
[26] USPTO, "Public views on Artificial Intelligence and Intellectual Property Policy" (2020 report).
[27] Coglianese, C. & Lehr, D., (2017), op. cit.
[28] See Article 6-8 of Annex I of the Bangui Agreement, 2015.
[29] Bently L. & Sherman B (2014), op. cit.

grant of patents that fail substantive novelty and inventive step standards [30].

The examination of prior art will thus, still be met with challenges. Firstly, the fact that thousands of patents are being filed annually and countless non-patent documents are constantly made available to the public, makes sifting through this vast sea of information overwhelming. Examiners must thus search across industries and jurisdictions, each with its own database, format, and classification systems. The sheer scale of data often results in missed references or incomplete results, jeopardizing the success of patent applications. Secondly, traditional prior art searches are highly time-intensive, requiring significant manual effort. Researchers and examiners will thus spend long hours creating keyword searches, Boolean queries [31], and interpreting the results. These tasks require careful iteration, making the process complex and prone to fatigue. Despite the effort, the absence of a practical automated search process and the complexity of the traditional process often still leads to delays in filing, which can be critical in competitive industries.

Again, hiring patent experts and legal professionals for comprehensive prior art searches is expensive. The cumulative costs of repeated searches across multiple jurisdictions add up quickly, impacting budgets for R&D and innovation. It must also be noted that prior art searches are not just about finding documents—they require a deeper understanding of the context and manually identifying nuanced claims and connecting them to prior art is a complex task. Examiners hence, often struggle to interpret the technical and legal aspects of prior art effectively. Without proper contextual mapping, it becomes difficult to determine whether a reference truly overlaps with or affects the novelty or inventiveness of an invention. This coupled with the fact that human limitations often lead to errors. It is challenging to filter and analyze vast amounts of search results, especially when dealing with ambiguous or highly technical documents. Missing critical prior art references can have negative consequences, such as patent rejections or invalidations after filing. This is not just a loss of effort but also a financial setback for innovators.

These challenges highlight why prior art searches remain a significant pain point in the patenting process. As the volume of data continues to grow and the demand for accuracy increases, traditional methods fall short.

B). Opportunities for Integrating AI within OAPI System

The adoption of artificial intelligence in prior art search presents several compelling opportunities for the OAPI system. First, AI can enhance the accuracy and comprehensiveness of novelty and inventive step assessment, addressing one of the structural weaknesses of OAPI operating with limited access to global patent and non-patent literature. Machine learning and semantic analysis tools allow examiners to identify conceptual similarities across diverse sources, including multilingual documents and emerging technological disclosures [32].

Secondly, AI-assisted search can reduce examination backlog and processing time, improving efficiency while maintaining patent quality. As Lemley observes, patent offices face inherent capacity constraints that limit the depth of prior art searches [33]. AI may partially mitigate this "rational ignorance" by enabling faster identification of relevant prior art. For a regional office like OAPI, where a single patent grants effect across multiple Member States, such efficiency gains are particularly significant.

Thirdly, AI integration facilitates regional and global harmonisation of examination standards. By aligning search capabilities with practices at the EPO, USPTO, and WIPO, OAPI can strengthen the credibility and legal robustness of its patents. WIPO has emphasised that AI-assisted tools can support smaller or developing offices by providing access to technological knowledge previously difficult to assimilate [34]. Again, the adoption of AI provides capacity-building opportunities. Integrating AI tools into examination processes requires training, development of technical expertise, and institutional learning. Such initiatives may strengthen the professional competence of examiners and support the long-term institutional resilience of the OAPI system.

Finally, AI can serve as a strategic instrument for enhancing patent quality, mitigating the risk of invalid or weakly substantiated patents, and fostering a more innovation-friendly environment in Member States. By improving prior art identification, AI indirectly supports both legal certainty and economic development objectives, consistent with the public interest goals articulated in the Bangui Agreement.

Artificial intelligence thus presents an opportunity to operationalize the OAPI examination procedures more effectively. AI-assisted search tools can:

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30 Lemley M. (2001), op. cit.
31 These are search expressions that use special logical operators to combine keywords and control how results are retrieved in databases, search engines, or search platforms. They are usually based on Boolean logic.

32 WIPO, (2019), op. cit.
33 Lemley, M. (2001), op. cit.
34 WIPO (2020), "Artificial Intelligence and Intellectual Property Policy".

- Expand coverage across patent databases, scientific publications, and technical reports;
- Enable semantic analysis, detecting relevant disclosures beyond exact keyword matches;
- Automate classification, supporting faster identification of relevant prior art for each application; and
- Provide decision-support by flagging potential conflicts with existing patents [35].

In this context, AI does not replace the examiner's judgment but enhances the implementation of Annex I obligations. Human oversight remains critical, as legal assessment of novelty and inventive step cannot be fully automated. However, linking AI to the provisions Annex I procedures also highlights institutional and normative risks. The use of proprietary AI tools may introduce dependency on foreign technologies, potentially compromising OAPI's autonomy. Furthermore, without proper governance, AI outputs may influence examiner decisions in ways that are opaque or difficult to justify legally, raising concerns about accountability and transparency [36].

Therefore, the integration of AI must be carefully aligned with the procedural requirements of Annex I. AI should function as a tool to enhance examiner capacity, ensuring that the 2015 reforms are fully operationalized without undermining human oversight or legal legitimacy. Gradual adoption, combined with training and oversight, can maximize benefits while mitigating structural and normative risks. Blind reliance on AI risks overconfidence, algorithmic bias, and dependency on proprietary foreign technologies. Nevertheless, the alternative — inaction — may result in OAPI falling behind global patenting standards, weakening regional innovation capacity and undermining patent quality.

V. CHALLENGES OF AI INTEGRATION IN THE OAPI SYSTEM

While artificial intelligence offers significant potential to enhance prior art search within the OAPI system, its integration raises structural, legal, and normative challenges that require careful consideration.

A). Institutional and Infrastructural

First, OAPI faces institutional and infrastructural limitations. Unlike larger offices such as the EPO or USPTO, OAPI operates with constrained financial and technical resources, which may impede the acquisition, implementation, and maintenance of AI-assisted search systems [37]. These limitations also extend to human capacity: examiners require specialized training to use AI tools effectively, and insufficient expertise may lead to misuse or overreliance [38]. He OAPI hence faces the challenge of.

B). Data Sovereignty and Dependence on Technology

Secondly, the adoption of AI raises questions of technological dependency and data sovereignty. Proprietary AI systems are often developed by external entities in technologically advanced jurisdictions, creating reliance on foreign algorithms, data sets, and cloud infrastructures [39]. Such dependency can compromise institutional autonomy, reduce control over examination processes, and expose OAPI to biases embedded in algorithmic decision-making [40].

C). Accountability and Transparency

There are legal and normative concerns regarding accountability and transparency. AI tools may recommend prior art based on patterns or correlations that are not immediately intelligible to human examiners [41]. If decisions are made solely based on AI outputs, the normative basis for patent grants may become opaque, raising potential challenges for enforcement and judicial review. Scholars such as Coglianese and Lehr emphasise that algorithmic decision-making in public administration must remain explainable, accountable, and subordinate to legally responsible actors [42]. Again, algorithmic bias and errors present tangible risks. Machine learning systems are trained on historical data, which may underrepresent certain regions, languages, or technical domains. In the OAPI context, this could skew prior art searches toward European or US-centric patent literature, undermining equity for local or regional applicants [43].

Finally, the normative challenge of balancing efficiency and human judgment is central. While AI can improve search coverage and reduce examiner workload, the ultimate assessment of novelty and inventive step remains a legal determination [44]. Overreliance on AI could erode examiner discretion, potentially allowing semantically similar but legally distinct inventions to be unduly rejected or granted.

Taken together, these challenges suggest that AI adoption in OAPI cannot be purely technological. It must be accompanied by:
- Institutional capacity-building,
- Robust governance and oversight mechanisms,
- Transparent methodologies, and
- Ongoing human-in-the-loop review.

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35 WIPO (2019), op. cit.

36 USPTO, (2020) "Public Views on Artificial Intelligence and Intellectual Property Policy", 2020 Report.

37 Bently L. & Sherman B. (2018), op. cit.

38 Ibid.

39 WIPO (2019), op. cit.

40 Ibid.

41 USPTO, (2020 report).

42 Ibid.

43 Lemley, M. (2001), op. cit.

44 Bently L. & Sherman B. (2018), op. cit.

Otherwise, what begins as an efficiency-enhancing tool may inadvertently compromise patent quality, legal certainty, and regional autonomy.

VI. AN INTEGRATION MODEL FOR AI-ASSISTED EXAMINATION IN OAPI

Given the structural constraints, legal framework, and normative considerations discussed above, a calibrated model for AI integration is essential to maximize benefits while minimizing risks. Such a model positions AI as an assistive tool, complementing human examiners rather than replacing their legal judgment, in line with the procedural requirements of Annex I and TRIPS obligations.

A). Gradual and Phased Adoption

AI implementation should occur in stages, beginning with pilot programs targeting high-volume or well-documented technical fields. This approach allows OAPI to:

- Test AI tools in controlled contexts
- Assess reliability and relevance of AI-generated prior art
- Develop internal capacity for training and evaluation

Phased adoption mitigates the risk of overreliance on technology and ensures that examiners retain final decision-making authority [45].

B). Human-in-the-Loop Oversight and Capacity-Building

Consistent with the legal requirement for human judgment under Annex I, all AI-generated outputs should be reviewed by trained examiners. AI should support semantic searches, classification, and document retrieval, but the assessment of novelty and inventive step must remain a normatively grounded human decision [46]. Also, effective integration requires continuous training programs for OAPI examiners, focusing on:

- Interpretation of AI outputs
- Multilingual and cross-disciplinary prior art assessment
- Understanding algorithmic limitations and biases

Capacity-building also strengthens institutional resilience and mitigates dependency on external expertise [47]. To address concerns of technological dependency, OAPI could develop a regional patent data pool combining existing Member State filings with international databases. Partnerships with WIPO, EPO, or other regional offices such as the ARIPO can to this effect, provide technical support and shared AI tools

while preserving OAPI's decision-making autonomy [48].

C). Transparency, Accountability, and Legal Oversight

Governance mechanisms should ensure transparency in AI use by

- Document AI search parameters and outputs
- Maintain audit trails for examination decisions
- Establish protocols for addressing algorithmic errors or biases

These measures align with administrative law principles and reinforce confidence in AI-assisted examination [49].

D). Strategic Integration: Balancing Innovation and Autonomy

A calibrated AI integration strategy enables OAPI to:

- Enhance patent quality by improving prior art coverage
- Accelerate examination without compromising legal rigor
- Avoid technological dependency on proprietary foreign systems
- Ensure regional consistency in patent grant standards

Failure to adopt AI, the OAPI risks falling behind global standards, reducing the credibility of OAPI patents, while unregulated adoption may compromise autonomy and accountability. The calibrated model balances these competing imperatives, offering a practical roadmap for modernization [50].

VII. SPECIFIC RECOMMENDATIONS

This article thus proposes the following specific recommendations for a legally sound integration of AI into the prior search propose of the OAPI System.

- The Bangui legislator could adopt implementing regulations under Annex I expressly recognising the use of AI-assisted tools in prior art searches. Clarifying the legal basis of AI-supported examination would enhance procedural certainty and prevent future challenges to the legitimacy of technologically assisted decisions, without altering substantive patentability standards.
- The Bangui legislator, could also affirm that examiners retain full legal responsibility for novelty and inventive step examination and determinations even where AI tools are used. Such clarification would preserve human accountability, reinforce administrative legitimacy and, and ensure that AI remains a

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45 Bently L. & Sherman B. (2018), op. cit.
46 Lemley M. (2001), op. cit.
47 WIPO, (2019), op. cit.

48 Ibid.
49 Conglianese & Lehr, (2017), op. cit.
50 USPTO, (2020), op. cit.

decision-support mechanism rather than a substitute for doctrinal judgement. This will make the AI-search process subject to mandatory human examination.

- The Bangui legislator should adopt AI-assisted prior art search through phased pilot programs, rather than an immediate system wide use in selected technical sectors. This will ensure a quality and well calibrated test process of available AI search tools. It would allow the examiners to assess reliability, relevance and contextual suitability for AI generated search outputs before broader integration.

- The organisation could conveniently establish internal AI governance guidelines ensuring transparency and auditability. These may include documentation of search parameters, maintenance of audit trials. This will ensure that the examination process and decision making remains explainable in the event of litigation or review.

- Examiner training programs such as the regional and international, already should include AI literacy and it should be institutionalised.

VIII. CONCLUSION

The integration of artificial intelligence into prior art search represents both a significant opportunity and a complex challenge for the OAPI system. AI has the potential to enhance examination accuracy, reduce backlogs, and strengthen regional patent quality, aligning OAPI practices with global standards. At the same time, uncritical adoption risks overreliance on foreign technologies, algorithmic bias, and erosion of human oversight, raising concerns about institutional autonomy, transparency, and legal accountability.

The 2015 revision of Annex I provides a procedural foundation for robust patent examination, emphasizing the search for prior art, written reports, and examiner discretion. AI-assisted search can operationalize these reforms more effectively, enabling examiners to meet the normative requirements of novelty, inventive step, and industrial applicability. However, as this article has argued, technological integration must be gradual, carefully monitored, and firmly anchored in human judgment.

A calibrated integration model that combines phased adoption, human-in-the-loop oversight, capacity-building, regional data governance, and transparent accountability mechanisms offers a practical pathway for modernization. Such a strategy balances the imperative of innovation and efficiency with the need to preserve institutional sovereignty and legal legitimacy. In doing so, it positions OAPI to benefit from global advances in AI-assisted patent examination while mitigating structural, normative, and legal risks.

Ultimately, the future of patent quality within OAPI depends not solely on technological adoption but on the ability of the organisation to strategically harness AI within a framework of robust governance, professional expertise, and adherence to procedural and legal norms. By adopting a cautious but forward-looking approach, OAPI can ensure that AI enhances rather than undermines its mandate, supporting both regional innovation and the rule of law in intellectual property.