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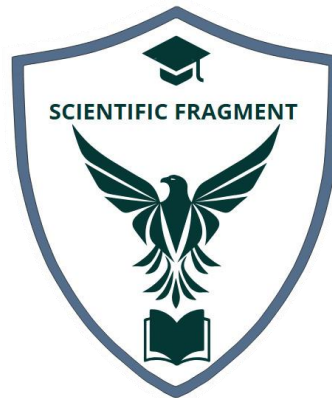
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ANILINE AND ITS IMPORTANCE IN THE PHARMACEUTICAL INDUSTRY

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Abstract. This article comprehensively discusses the chemical structure, physicochemical properties, methods of obtaining aniline, and its significance in the pharmaceutical industry. In addition, the role of aniline derivatives in modern pharmaceutical technologies is analyzed. The results of the study show that aniline is an important intermediate product in pharmaceutical chemistry and is used as a primary raw material in the synthesis of many medicinal drugs.

Keywords: aniline, aromatic amines, acetanilide, sulfanilamide, pharmaceutical chemistry, drug synthesis, organic chemistry, pharmaceutical technology.

Introduction. Pharmaceutical chemistry is one of the most important scientific fields of modern medicine. This discipline is engaged in the development of new drugs, the study of their chemical structures, and the synthesis of biologically active compounds [1].

In organic chemistry, aromatic compounds occupy a special place. Aromatic amines are widely used as important raw materials in the pharmaceutical industry [2].

Aniline is one of the simplest representatives of aromatic amines and is formed by the attachment of an amino group to a benzene ring. Its chemical formula is expressed as $C_6H_5NH_2$.

Aniline was discovered in the 19th century and was initially used in the production of synthetic dyes. Later, its chemical properties were thoroughly studied, and it began to gain importance in the pharmaceutical industry as well [3].

Today, aniline is widely used as an intermediate in the synthesis of many drugs. In particular, aniline derivatives play a significant role in the production of analgesic, antiseptic, and antibacterial medications.

Main Part:

Chemical Structure and Properties of Aniline

Aniline is an aromatic amine whose molecule consists of a benzene ring and an amino group.

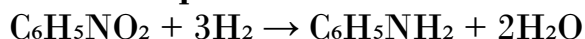
The amino group exerts an electronic effect on the benzene ring, increasing the reactivity of the molecule.

Chemically, aniline is a weak base. It reacts with acids to form various salts [4].

Preparation of Aniline

In industry, aniline is mainly obtained by the reduction of nitrobenzene. This process is carried out in the presence of hydrogen using a catalyst.

Reaction equation:



This method is the most widely used industrial process for aniline production [5].

Importance in Pharmaceuticals

Aniline is an important intermediate product in the pharmaceutical industry [6–7]. Its derivatives are widely used in the synthesis of many medicinal drugs.

Among the main compounds derived from aniline are **acetanilide** and **sulfanilamide**.

- **Acetanilide** is an analgesic drug that acts on the central nervous system to reduce pain.
- **Sulfanilamide** exhibits antibacterial properties.

Aniline derivatives can act against microorganisms, which is why they are used in the production of antiseptic agents.

Aniline is also used in laboratory analysis to determine qualitative reactions of various substances [8].

Biological Effects of Aniline

Aniline is considered a toxic substance. When it enters the body, it can alter the structure of hemoglobin and lead to the formation of methemoglobin.

This disrupts the oxygen transport process in the body. Therefore, strict safety precautions must be followed when working with aniline [9–10].

Conclusion. Aniline is an important representative of aromatic amines and is widely used in the chemical and pharmaceutical industries. Due to the presence of the amino group in its molecule, it can participate in various chemical reactions and serves as a key raw material in the synthesis of many biologically active compounds.

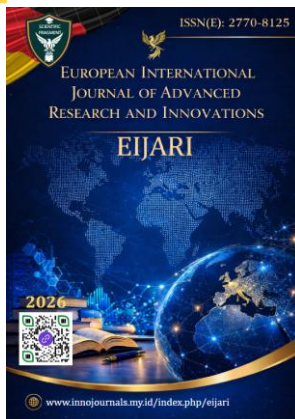
In the pharmaceutical industry, aniline derivatives are widely used in the production of analgesic, antibacterial, and antiseptic drugs.

With the development of modern pharmaceutical technologies, the prospects for creating new aniline-based drugs continue to expand.

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DIGITAL TRADE BARRIERS AND THEIR EFFECT ON DEVELOPING ECONOMIES

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Abstract. The rapid expansion of the digital economy has introduced a new class of trade barriers — data localization mandates, regulatory asymmetries, platform gatekeeping, and payment infrastructure exclusions — that disproportionately constrain developing economies. Unlike traditional tariffs, these barriers operate invisibly yet systematically, limiting market access, suppressing digital exports, and widening the global economic divide. This paper examines the nature and economic consequences of digital trade barriers across developing regions, analyzes existing multilateral frameworks, and argues for reform that centers equitable digital participation as a prerequisite for sustainable economic development. Digital trade, born in the context of digitisation, is an emerging model based on digital technology and realised through the digitisation of trade methods and trade objects. While solving the limitations of time and space, digital trade barriers have also emerged, which have become a major obstacle in the process of economic globalisation.

Key words. Digital trade barriers, developing economies, data localization, regulatory asymmetry, digital market access, multilateral trade frameworks, platform gatekeeping, cross-border data flows, digital protectionism, e-commerce exclusion, WTO digital trade, fintech infrastructure, bandwidth inequality.

The virtual nature of digital trade naturally makes it more difficult to regulate, and the barriers to digital trade on behalf of restricting cross-border data flows, protecting the privacy of personal information and preventing intellectual property rights from being infringed upon are even higher and higher, cascading down the mountain. Compared to traditional tariff barriers, digital trade tariff barriers are more complex and non-trivial, and whether or not they are intentionally discriminatory, they are a serious impediment to the flow of digital products. To a certain extent, the existence of digital trade barriers hinders the flow and diffusion of data and information in the division of labor in production, and also prevents the corresponding technological factors from

being put into the production chain, especially the "sticky" data and information technology, which to a certain extent also raises production costs. This has led to a series of knock-on consequences, such as the suspension or even closure of enterprises, trade disruption, economic stagnation or even regression, and the self-sufficiency of countries and the reduction of cross-border trade transactions have had a long-term impact on the division of labor in the global value chain.

Literature Review. Digital Trade and Economic Development The nexus between digital trade and economic growth in developing economies has been extensively studied. Lopez-Gonzalez and Ferencz (2018) establish that digital connectivity, when combined with open trade agreements, significantly amplifies export growth, yet developing nations consistently capture fewer of these gains due to structural infrastructure deficits.¹ Riker (2014) further quantifies this gap, estimating that closing the broadband divide between developed and developing countries could raise trade-to-GDP ratios by nearly 29 percentage points on average — a figure that underscores infrastructure exclusion as a foundational barrier.²

Data Localization and Its Economic Costs A focused strand of literature addresses data localization as a particularly damaging policy instrument. Ferracane et al. (2018) demonstrate that economy-wide localization mandates reduce GDP, suppress domestic investment, and curtail exports — with the burden falling heaviest on smaller, import-dependent economies.³ Medine (2024) reinforces this finding, estimating that a 1% increase in data flow restrictions produces a 7% decline in gross trade output and a measurable rise in consumer prices, effectively functioning as a regressive tax on low-income populations.

Multilateral Frameworks and Governance Gaps. The inadequacy of multilateral frameworks to protect developing economies is a recurring concern.⁴ Aaronson and Leblond (2020) argue that the global digital trade agenda has been captured by advanced economies and large technology firms, leaving developing nations with limited voice in rule-setting.⁵ This is compounded by findings from the joint IMF-OECD-WTO report (2023), which warns that despite digital services trade reaching \$3.82 trillion globally, low-income

¹ Lopez-Gonzalez, J. and Ferencz, J. (2018). Digital Trade and Market Openness. OECD Trade Policy Papers, No. 208.

² Riker, D. (2014). Internet Use and Broadband Connectivity in Developing Trade Economies. USITC Working Paper.

³ Ferracane, M.F. et al. (2018). Data Flows and Trade Policy. ECIPE Working Paper.

⁴ Medine, D. (2024). Data Localization: A Tax on the Poor. CGD Working Paper 674.

⁵ Aaronson, S.A. and Leblond, P. (2020). International Trade Regime and Digital Trade. International Studies Review, 22(3).

countries risk systematic exclusion without targeted multilateral intervention.⁶The digital economy has emerged as one of the most consequential drivers of global economic growth in the twenty-first century. Cross-border flows of data, digital services, and technology-enabled trade have reshaped the architecture of international commerce, creating new pathways for economic participation that, in principle, transcend the geographic and logistical constraints of traditional trade.

Methodology. This study employs a qualitative-analytical research design to examine the nature, mechanisms, and economic consequences of digital trade barriers on developing economies. Given the complexity and multidimensional character of the subject, the research draws on a combination of systematic literature review, secondary data analysis, and conceptual framework construction. The study adopts a descriptive and explanatory approach. Rather than generating new primary data, it synthesizes existing empirical findings, policy documents, and institutional reports to construct a coherent analytical framework. This approach is justified by the nature of the research question, which concerns structural and systemic phenomena that are better captured through comparative analysis of existing evidence than through survey or experimental methods.

Discussion. This article examines the nature, mechanisms, and economic consequences of digital trade barriers as they affect developing economies. It proceeds in four parts: first, by establishing a taxonomy of digital trade barriers; second, by analyzing their measurable economic consequences; third, by assessing the limitations of existing multilateral frameworks; and finally, by proposing a set of reforms oriented toward equitable digital participation. The central argument is that digital trade barriers constitute a structural impediment to development — one that demands urgent and coordinated multilateral response.

The Digital STRI covers cross-cutting barriers that inhibit or completely prohibit firms' ability to supply services using electronic networks, irrespective of the sector in which they operate. The framework is structured in five policy areas:

- **Infrastructure and connectivity.** This area covers measures related to communication infrastructures essential to engaging in digitally enabled trade as well as policies that affect connectivity and cross-border data flows.
- **Electronic transactions.** This area covers barriers that inhibit electronic transactions through

⁶ IMF, OECD, UNCTAD, World Bank and WTO (2023). Digital Trade for Development. Joint Report.

barriers such as discriminatory conditions for issuing licenses for e-commerce activities, deviation from internationally accepted rules on electronic contracts, or inability the use authentication methods (such as electronic signature).

- **Payment systems.** This area captures measures that affect payments made through electronic means.
- **Intellectual property rights.** This area covers domestic policies related to the protection and enforcement of trademarks, copyright and related rights, including in respect of national treatment.
- **Other barriers affecting trade in digitally enabled services.** This area covers other barriers to trade in digitally enabled services that do not fall under the previous policy areas.

Digital trade barriers defy easy categorization. Unlike tariffs or quotas, which operate through explicit policy instruments and are subject to established multilateral disciplines, digital trade barriers emerge from a complex interplay of regulatory choices, infrastructural realities, and market dynamics.

Results and Analysis. While proponents argue that localization protects citizens' data from foreign surveillance and builds domestic digital capacity, the economic literature presents a more critical assessment. Ferracane et al. (2018) demonstrate that economy-wide localization mandates suppress GDP, reduce domestic investment, and curtail export performance — effects that are magnified in smaller, import-dependent economies that lack the domestic cloud infrastructure necessary to comply cost-effectively. For a multinational firm headquartered in a high-income economy, building a local data center is an operational inconvenience. For a startup in Nairobi or Dhaka, it represents a prohibitive barrier to market entry. A second and equally consequential category of digital trade barrier arises from regulatory asymmetry — the condition in which compliance requirements imposed by high-income importing economies fall disproportionately on exporters from developing nations. The European Union's General Data Protection Regulation (GDPR) and California's Consumer Privacy Act (CCPA) are instructive examples. Designed primarily to govern the conduct of large technology firms, these frameworks impose extensive data handling, consent management, and accountability obligations on any entity seeking to serve consumers in their jurisdictions — regardless of the entity's size or origin.

For digital service exporters in developing economies, achieving compliance with these frameworks demands legal expertise, technical infrastructure, and administrative capacity that many small and medium-sized enterprises simply do not possess. The result is a de facto market access barrier: firms from developing nations are effectively priced out of high-value digital export markets not by explicit protectionist intent, but by the asymmetric cost of regulatory compliance. Aaronson and Leblond (2020) situate this dynamic within the broader argument that the global digital trade agenda has been constructed around the interests of advanced economies, embedding structural disadvantages for lower-income participants.

Conclusion. For entrepreneurs and SMEs in the Global South, platform dependency creates a layered set of disadvantages. Commission rates of 15 to 30 percent on app store transactions impose margins that are economically viable for developers in high-income markets but deeply corrosive for those operating in lower-income environments with smaller addressable markets. Currency conversion losses, geographic restrictions on payment disbursement, and algorithmically driven visibility penalties further compound the structural disadvantage. The net effect is a form of digital market segmentation in which the formal architecture of open platforms conceals substantive barriers to equitable participation. Perhaps the most foundational category of digital trade barrier is infrastructural. Meaningful participation in digital trade requires reliable, affordable broadband connectivity — a prerequisite that remains unmet for large portions of the developing world. As of the early 2020s, internet penetration rates in Sub-Saharan Africa hovered around 36%, compared to over 85% in high-income economies. Mobile data costs as a percentage of average income remain several multiples higher in low-income countries than in wealthy ones, rendering even basic digital trade participation economically inaccessible for significant portions of the population.

Riker (2014) estimates that bridging the broadband gap between developed and developing countries could increase trade-to-GDP ratios by nearly 29 percentage points on average, establishing infrastructure not merely as a development concern but as a trade policy issue of the first order. Lopez-Gonzalez and Ferencz (2018) reinforce this finding, showing that digital connectivity functions as a complementary asset — its trade-amplifying effects are only realized when paired with open regulatory frameworks. In the absence of both, developing economies face a compounding disadvantage in which infrastructural exclusion and regulatory barriers mutually reinforce one another.

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**THE ARTISTIC POETICS OF MURRAY BAIL'S EUCALYPTUS****Mukhammedova Nafisa Kamolovna,**Phd researcher, EFL teacher at *Uzbekistan State World Languages University (UzSWLU)*nnafiza106@mail.com<https://orcid.org/0009-0004-3203-566X>**Hayitova Gulmira Abdimalik qizi**

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Abstract. This article examines the artistic poetics of Murray Bail's *Eucalyptus* as a distinctive contribution to contemporary Australian fiction. The study argues that the novel's poetics emerge through the interaction of taxonomy, spatial precision, fairy-tale structure, and narrative self-consciousness. Rather than representing the Australian landscape as merely hostile, sublime, or burdensome, Bail transforms it into a field of naming, classification, and imaginative contest. The article focuses on three major dimensions of the novel: the poetics of taxonomy, the aesthetic function of landscape, and the tension between patriarchal order and storytelling freedom. It is argued that *Eucalyptus* constructs a literary world in which scientific classification and imaginative narration do not simply oppose one another; instead, they produce the novel's central artistic energy. Bail's prose is also notable for its formal restraint, visual clarity, and ironic reworking of inherited narrative patterns. Through these features, *Eucalyptus* reshapes the Australian novel by combining botanical discourse, romance, metafiction, and cultural reflection into a highly original poetic form.

Keywords: Murray Bail, *Eucalyptus*, Australian literature, poetics, taxonomy, landscape

Introduction. Murray Bail occupies a distinctive place in Australian literature, and *Eucalyptus* remains one of his most celebrated works. Published in 1998, the novel received major recognition, including the Miles Franklin Award and the Commonwealth Writers' Prize, and has since been treated as an important work of late twentieth-century Australian fiction (AustLit, n.d.). Text Publishing describes the novel as a modern fairy tale and a love story concerned with art, feminine beauty, landscape, and language (Bail, 1998/2010). These descriptions are especially useful because they point to the novel's hybrid character: *Eucalyptus* is at once a romance, a parable of naming, a meditation on storytelling, and a sustained aesthetic response to the Australian landscape.

The central premise of the novel is deceptively simple. On a property in western New South Wales, a man named Holland plants an extraordinary range of eucalyptus species and declares that his daughter Ellen will marry the man who can correctly identify every tree on his land (Bail, 1998/2010). This premise immediately establishes the novel's symbolic framework. Marriage is linked to knowledge, desire to classification, and love to botanical mastery. Yet the novel gradually complicates the

authority of such systems. What begins as an apparently rigid order opens into uncertainty, narration, seduction, and imaginative resistance. Thus, the artistic poetics of *Eucalyptus* lie not only in its themes, but in the formal tension it creates between order and improvisation, system and story. This article argues that *Eucalyptus* should be read as a novel whose poetic force arises from three interrelated elements. First, taxonomy functions as an aesthetic and ideological principle rather than a merely botanical one. Second, landscape is reconfigured as a conceptual and visual structure, not simply a realist setting. Third, the novel's fairy-tale and metafictional dimensions destabilize patriarchal and classificatory authority. Through these devices, Bail produces a prose form that is restrained, ironic, and formally innovative.

One of the most striking features of *Eucalyptus* is its use of botanical classification as a literary principle. The extraordinary number of eucalyptus trees on Holland's property is not included merely for local color or ecological realism. Rather, taxonomy becomes one of the novel's central poetic devices. As Turner (2014) notes, *Eucalyptus* makes the proliferation of eucalyptus species a central plot device, thereby turning the Australian environment into an active component of narrative form. The novel does not merely describe trees; it organizes itself around acts of naming, distinction, and classification. In this way, Bail transforms taxonomy into a mode of literary composition. This classificatory impulse is aesthetically productive because it creates an illusion of order within a world that remains unstable and elusive. Holland's desire to name, arrange, and master the environment reflects a broader human desire to make the world legible. However, Bail does not present taxonomy as a neutral scientific tool. Gibson (2023) argues that the novel is deeply concerned with land ownership, plant classification, and human-land relations, suggesting that naming participates in broader structures of settlement and control. Classification in *Eucalyptus* therefore has both aesthetic and ideological significance: it produces beauty, but it also reveals the will to dominate. The poetic richness of *Eucalyptus* emerges precisely from this ambiguity. The naming of trees has an almost incantatory quality in the novel. Botanical language becomes rhythm, sound, and pattern. Even when classification seems rigid, it generates verbal texture and symbolic excess. Jacobs (2001) observes that eucalypts in the novel are bound up with cultural meaning, myth, and Australian identity, not merely botanical specificity. As a result, taxonomy becomes more than an epistemological framework; it becomes part of the novel's symbolic music. Bail thus turns scientific discourse into literary art. Landscape has long been central to Australian literary tradition, but Bail reworks that tradition in an original way. Instead of representing the Australian bush primarily as a site of hardship, danger, or masculine endurance, *Eucalyptus* renders it as a visual and conceptual space. Turner (2014) places the novel within contemporary Australian literature as a work that combines a deep sense of Australia with a highly self-aware literary style. This combination is essential to Bail's poetics. The novel is unmistakably Australian in setting and reference, yet it resists the heavy realism and

nationalist solemnity often associated with earlier literary treatments of landscape. Bail's landscape is shaped by precision, distance, and arrangement. The trees are positioned not just as natural presences but as elements in a larger aesthetic order. The land becomes a kind of living archive, one through which questions of inheritance, perception, and authority are staged. This gives the novel an unusual visual clarity. Space in *Eucalyptus* often appears measured and composed, almost painterly, yet never static. The landscape is both material and symbolic: it is a physical environment, but also a language through which characters attempt to interpret reality. At the same time, the novel revises Australian identity by refusing to treat "the bush" as a simple source of authenticity. Jacobs (2001) suggests that the novel's engagement with eucalypts cannot be separated from larger questions of cultural history and symbolic meaning. The eucalyptus tree itself is at once national emblem, scientific object, and literary sign. Bail uses this multiplicity to unsettle easy assumptions about Australianness. What appears national and natural is revealed to be mediated through discourse, classification, and imagination. In this sense, *Eucalyptus* is not simply a novel about landscape; it is a novel about how landscape becomes readable, meaningful, and narratable.

Although taxonomy gives *Eucalyptus* one of its most visible structures, the novel does not finally submit to system. Its deeper movement is toward storytelling. Text Publishing characterizes the book as a modern fairy tale, and that description is crucial because the fairy-tale mode allows Bail to stage a conflict between authoritarian order and narrative openness (Bail, 1998/2010). Holland's challenge appears absolute: the successful suitor must master the system of names. Yet Ellen's fate is not finally determined by classification alone. Storytelling enters as an alternative mode of relation, one that cannot be reduced to cataloguing. This tension has important gender implications. Rooks (2007) reads *Eucalyptus* as a parody of patriarchal logic, showing how the novel critiques structures of domination embedded in hierarchy, possession, and masculine authority. Holland's attempt to regulate Ellen's future by means of a classificatory contest turns the daughter into an object within a system of exchange. The novel, however, does not simply repeat that logic; it exposes and ironizes it. Storytelling becomes the means by which rigid authority is interrupted. In this way, Bail reconfigures the fairy-tale marriage plot into a critique of domination disguised as order. Gibson (2023) similarly emphasizes the novel's concern with ownership and human-land relations, which can be extended to the issue of gendered possession. Ellen exists at the center of intersecting systems of value: botanical, familial, social, and narrative. Yet the novel's imaginative energy continually exceeds these systems. What cannot be fully classified also cannot be fully possessed. This is one of the novel's central poetic insights. Bail shows that stories do not merely decorate reality; they unsettle closed systems and create new modes of perception.

Conclusion. The artistic poetics of *Eucalyptus* arise from Murray Bail's remarkable ability to synthesize classification, landscape, irony, and narrative play. Taxonomy in

the novel is never merely technical; it is poetic, ideological, and symbolic. Landscape is not treated as passive scenery but as a structured field of meaning. The fairy-tale framework, in turn, allows Bail to question the authority of systems that seek to name, order, and possess both land and women. These features make *Eucalyptus* a formally distinctive work within Australian literature. What makes the novel especially important is its refusal to choose between system and imagination. Instead, it stages their encounter. Scientific naming gives the novel shape, but storytelling gives it movement. Precision provides structure, but narrative desire disrupts closure. In this tension, Bail discovers a unique prose mode: one that is restrained yet resonant, local yet self-consciously literary, and intellectually playful without sacrificing emotional and symbolic depth. *Eucalyptus* therefore deserves continued attention not only as an Australian novel, but also as a sophisticated meditation on how literary form can emerge from the act of naming the world.

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Digital Hypertext Reading and Nonlinear Processing in EFL

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Abstract. The expansion of digital technologies has significantly transformed reading practices in English as a Foreign Language (EFL). Unlike traditional print reading, digital hypertext reading is characterized by nonlinearity, multimodality, and reader-controlled navigation. In hypertext environments, learners move across linked nodes, evaluate information, and construct meaning through selective pathways rather than through fixed linear sequences. This shift introduces both opportunities and challenges for EFL learners. On the one hand, hypertext can promote learner autonomy, motivation, access to authentic materials, and interactive meaning-making. On the other hand, nonlinear processing may increase cognitive load, fragment attention, and hinder comprehension, especially for learners with limited language proficiency or insufficient digital reading strategies. This article examines the nature of digital hypertext reading in EFL and explores how nonlinear processing affects comprehension. It argues that successful hypertext reading depends on an interaction among linguistic proficiency, prior knowledge, strategic competence, and the design of the digital environment. Drawing on studies of digital reading, online strategy use, and cognitive processing, the article suggests that EFL pedagogy should explicitly teach students how to navigate hypertext, evaluate links, synthesize dispersed information, and regulate online reading behavior. The article concludes that digital reading instruction should move beyond print-based models and incorporate the distinct cognitive and strategic demands of hypertext environments.

Keywords: EFL reading, digital reading, hypertext, nonlinear processing, online reading strategies, cognitive load

Introduction. The growing presence of digital technologies in language education has altered the way learners read and interact with texts. In contemporary EFL contexts, students increasingly encounter reading materials in online environments rather than exclusively in printed formats. These digital texts often include hyperlinks, multimedia features, and interactive elements that change reading from a linear act into a more dynamic and nonlinear process. As a result, reading in digital environments requires not only linguistic comprehension but also navigational decisions, strategic link selection, and the ability to integrate information across multiple sources and modes. This shift is particularly important in EFL settings, where reading is often one of the main channels for language input and academic

development. Reiber-Kuijpers et al. (2021) emphasize that digital reading in a second or foreign language differs from print reading because it requires additional concentration, memory, and strategic control. Their systematic literature review shows that digital reading environments may support motivation and interaction, but they also increase the demands placed on learners. In this sense, digital hypertext reading should not be treated as a simple technological variation of print reading; rather, it represents a distinct literacy practice that requires specific skills. The purpose of this article is to examine digital hypertext reading in EFL with special attention to nonlinear processing. It discusses the nature of hypertext reading, the cognitive and strategic demands it imposes, and the implications for EFL pedagogy. The main argument is that hypertext can be pedagogically valuable, but only when learners are given sufficient support to manage its nonlinear structure.

Hypertext is generally understood as a digital system in which segments of information are connected through links, allowing readers to move across texts according to their own choices rather than through a predetermined linear order. This feature of reader-controlled navigation distinguishes hypertext from conventional print and makes digital reading inherently nonlinear. In a hypertext environment, readers do not simply decode information in sequence; they must also decide where to go next, which links to follow, and how to build coherence from fragmented textual units. This nonlinear structure has major implications for comprehension. DeStefano and LeFevre (2007) argue that hypertext reading imposes additional cognitive demands because readers must divide their attention between comprehending content and making navigational decisions. Their review demonstrates that the visual complexity and decision-making requirements of hypertext can reduce reading performance when compared with more linear forms of reading. In other words, comprehension is influenced not only by what is read but also by how the reading path is constructed. For EFL learners, the problem may be even more pronounced. Since foreign language reading already involves lexical, syntactic, and inferential effort, the added task of hyperlink navigation can overload working memory. Fontanini and Tomitch (2009) found that working memory capacity influenced how L2 readers comprehended linear texts and hypertexts. Their study suggests that hypertext environments can complicate text processing because readers must simultaneously process language and manage digital navigation. Thus, nonlinear reading may interfere with the formation of a coherent mental representation of the text, particularly for less proficient readers. However, nonlinear processing is not necessarily a disadvantage. Hypertext environments may also support deeper engagement by allowing learners to pursue personally relevant information, access glosses, and connect ideas across sources. Erçetin (2010) found that topic interest influenced both text recall and annotation use in L2 hypermedia reading. This indicates that when learners are interested in the content and know how to use digital support tools, hypertext can facilitate more active and meaningful reading.

Because hypertext reading is nonlinear, successful comprehension depends heavily on strategy use. In digital environments, learners must plan their reading path, monitor comprehension, evaluate the relevance of links, and synthesize information scattered across multiple nodes. These are not merely extensions of traditional reading strategies; they also involve digital literacy practices specific to online environments. Huang et al. (2009) investigated EFL learners' use of online reading strategies and found that strategy use significantly affected comprehension performance. Their results showed that support strategies were frequently used, but global strategies played a more important role in understanding more difficult texts. This finding is important because it suggests that successful online reading depends not simply on local problem-solving, such as checking unknown words, but on broader strategic control over the reading process. Similarly, Park and Kim (2011) found that ESL learners engaged in online reading in a nonlinear and dialogic manner, employing multiple strategies to negotiate meaning across digital texts. Their study highlights that online reading involves flexible interactions with text rather than passive reception. Readers adapt their strategies according to task demands, textual complexity, and available digital tools. Li (2020) further strengthens this argument by showing that second language online reading requires strategies that go beyond conventional print-based reading. In developing and validating the Second Language Online Reading Strategies Inventory, Li identified dimensions of online reading such as information location, navigation, evaluation, and synthesis. This suggests that EFL instruction must explicitly teach learners how to operate in digital reading environments instead of assuming that traditional reading instruction is sufficient. The pedagogical importance of strategy instruction becomes even clearer when considering that many EFL learners are familiar with digital devices but not necessarily skilled in academic online reading. Being able to click, scroll, or search does not automatically mean being able to construct meaning effectively in a hypertext environment. Therefore, EFL reading pedagogy must distinguish between technological familiarity and genuine digital reading competence.

One of the most important theoretical frameworks for understanding hypertext reading is cognitive load. In digital environments, readers are often exposed to multiple windows, hyperlinks, images, annotations, and embedded media. Each of these features may support comprehension, but they may also consume attentional resources. When the amount of information or the number of choices becomes too large, the learner's cognitive system may struggle to maintain coherence. DeStefano and LeFevre (2007) explain that the cognitive cost of hypertext reading lies partly in the need to make continuous decisions. These decisions involve evaluating whether a link is relevant, predicting what information lies behind it, and determining whether the current reading path should be maintained or changed. Such activities compete with comprehension for limited working-memory resources. As a result, hypertext may hinder understanding when its structure is too complex or when readers lack sufficient strategy control. Reiber-Kuijpers et al. (2021) also note that digital reading

in a second or foreign language requires more time, memory, and concentration than traditional reading. This is particularly relevant in EFL settings, where learners may already struggle with vocabulary recognition, sentence processing, and inferencing. If these language-related demands are combined with navigational complexity, comprehension may decline. This helps explain why some learners who perform relatively well on printed reading passages may still have difficulty understanding online texts. Another important point is that online reading comprehension is not fully predicted by offline reading ability alone. Coiro (2011) argues that online reading includes additional skills beyond traditional comprehension, such as locating relevant information, critically evaluating sources, and synthesizing ideas from multiple texts. This means that EFL learners may need separate training in online reading practices rather than relying solely on print-oriented instruction.

The literature suggests that the effectiveness of hypertext reading in EFL depends largely on instructional design. Hypertext itself is not automatically beneficial or harmful. Its pedagogical value depends on how it is used, how tasks are structured, and how learners are prepared for nonlinear reading. First, EFL teachers should explicitly teach online reading strategies. Learners need guidance in predicting link relevance, deciding when to skim or read deeply, evaluating information quality, and integrating ideas across pages. Huang et al. (2009) and Li (2020) both indicate that strategic awareness plays a key role in successful digital reading. Therefore, strategy instruction should become a regular part of EFL reading courses. Second, teachers should scaffold nonlinear navigation. Shang (2015) investigated scaffolded reading in EFL hypertext environments and found that hypertext reading, when supported appropriately, can contribute positively to learning and student attitudes. This suggests that learners benefit when digital reading tasks include prompts, structured pathways, guiding questions, or embedded support mechanisms. Such scaffolding helps reduce disorientation and unnecessary cognitive load. Third, text and task design should be carefully controlled. Hypertext environments with too many irrelevant links, distracting media, or poorly organized structures may overwhelm learners. In contrast, digital texts that provide meaningful support, clear structure, and purposeful interaction can enhance reading engagement and comprehension. EFL teachers should therefore select or design hypertext materials that match learners' proficiency levels and task goals. Finally, assessment practices should reflect the realities of digital reading. If online reading involves navigation, evaluation, and synthesis, then assessment should not focus only on literal comprehension questions. Instead, learners should also be evaluated on their ability to justify reading paths, assess source relevance, and integrate information from multiple linked texts. Such an approach would better reflect the literacy demands of modern academic environments.

Conclusion. Digital hypertext reading has reshaped EFL reading by introducing nonlinear pathways, multimodal environments, and reader-controlled navigation. These changes create new possibilities for engagement, autonomy, and authentic

interaction with texts. At the same time, they also generate challenges, especially in relation to cognitive load, fragmented attention, and strategic complexity. Research shows that nonlinear processing can either support or hinder comprehension depending on learner characteristics, task design, and the availability of instructional scaffolding (DeStefano & LeFevre, 2007; Reiber-Kuijpers et al., 2021). For this reason, EFL reading instruction in the digital age should not simply transfer print-based practices to screens. It should explicitly address the unique demands of hypertext reading by teaching students how to navigate, evaluate, monitor, and synthesize information in online environments. When these skills are developed systematically, hypertext can become not a source of confusion, but a powerful tool for language learning and academic literacy.

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TABLE OF CONTENTS | INHALTSVERZEICHNIS

1.	ANILINE AND ITS IMPORTANCE IN THE PHARMACEUTICAL INDUSTRY Usmonova S.G., Avazxonova S.	3
2.	DIGITAL TRADE BARRIERS AND THEIR EFFECT ON DEVELOPING ECONOMIES Khudoyberdiyeva Olima Otabek qizi	6
3.	THE ARTISTIC POETICS OF MURRAY BAIL'S EUCALYPTUS Mukhammedova Nafisa Kamolovna, Hayitova Gulmira Abdimalik qizi	11
4.	Digital Hypertext Reading and Nonlinear Processing in EFL Eshankulova Lola Sayfullayevna	15