The Impact of Artificial Intelligence and Digital Economy on Vietnam's Legal System

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Abstract

Digital transformation incorporates new technology into all elements of business and will require the modification of old business models. Similarly, artificial intelligence (AI) is a relatively new disruptive technology with the potential to impact industry and society substantially. Cognitive techniques imitating human behaviour and thought have resulted in advanced analytical models that assist businesses in increasing sales and improving customer engagement, operational efficiency, and service quality by producing new relevant from existing data. These decision-making models are based on descriptive, predictive, and prescriptive analytics. A legislative framework that oversees all digital development uniformly across countries and facilitates a fully regulated digital transformation process is required. However, this regulatory system must not hinder the digital revolution. This study shows that AI and digital transformation will be integrated into various applications and thus used extensively. Nonetheless, the implementation must be carried out in conformity with both standard regulations and the new realities.

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1 Introduction

Vietnam has experienced significant industrialisation, modernisation, and international integration over the last four decades. Science, technology, and innovation all play a key role in the advancing economic development of this new Vietnam. Multiple economic sectors are being transformed by digital progress, from industry and agriculture to commerce, payment, transportation, banking, and education [1]. Vietnam is among the Association of South East Asian Nations' (ASEAN) fastest-growing digital economies, with its economy increasing at a pace of 38% per year. Consequently, Vietnam's digital sector is predicted to contribute 30% to the country's GDP by 2030. Vietnam's digital economy was worth US $12 billion in 2019, four times what it was in 2015, and accounts for 5% of the country's GDP, according to the 'e-Conomy South East Asian (SEA) 2019' report [2].

Vietnam's economy is rapidly transforming due to adopting new digital technologies. Numerous industries in Vietnam are quickly digitising, such as e-commerce, tourism, digital content, and fintech. These sectors represent significant growth opportunities for Vietnam's digital economy in the coming years. The report's case studies indicate a modest level of readiness for digital transformation in Vietnam between 2030 and 2045. While businesses in these industries recognise the value of digital technology in manufacturing, financial and technical constraints pose barriers to adoption. However, given Vietnam's background and position in 2019, its digital economy retains significant potential for growth in both established and emergent industries. According to the consumer survey results, Vietnamese consumers are rapidly adapting and embracing new digital economy products and services as industries shift. This is advantageous for attracting investment and fostering the growth of Vietnam's digital economy [3].

For several years, a transition from an analogue society to a new digital society (new technologies, new business models, new ways of organising and communicating, etc.) has been occurring, resulting in changes in and transformation of the way business models are conceived and new job structures. Artificial intelligence (AI) will likely be the next technological revolution, following the Internet and mobility. AI refers to a computer's capacity to perform cognitive processes traditionally associated with the human brain, such as sensing, thinking, learning, growing with experience, solving problems, interacting with the environment, and even exercising creativity.

In this scenario, it is critical that legislation that uniformly regulates all digital changes across countries facilitates an adequate digital transformation process under clear regulations while refraining from suppressing digital disruption. As is the case with most wealthy countries worldwide, Vietnam is investing more in developing AI—a critical component of the current technological era's future advancement. To this end, Vietnam aspires to become a hub in the ASEAN region and globally for the research, development, and deployment of AI technologies and applications. The country has thus developed the 2030 Intellectual Property Strategy and 2030 National Strategy on AI Research, Development, and Application [4]. Carrying out this plan requires executing concurrent solutions, such as finalising legal systems that pertain to the digital economy and AI that can prioritise the completion of AI-related

legal paperwork. Once the legal framework is in place, businesses can effectively and transparently protect and use AI-related intellectual property to its full potential.

It must be considered that the earliest legislation was enacted prior to the emergence of social networks and technical advancement. This new legal regulation involves a continual regulation process as businesses must establish mandatory compliance throughout their entire cycle. Nguyen himself emphasises this issue: 'Any law affecting the digital world must be a steady process. It cannot be a hindrance to advancement but must act as a facilitator, with guarantees that whatever is done is in the best interests of industry and the global market and must be agreed upon locally with each ASEAN country' [1].
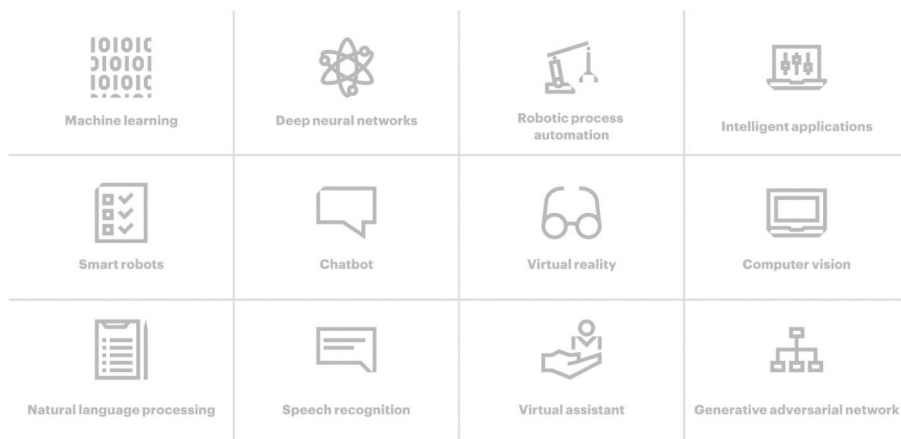
Vietnam has taken a proactive approach to the potential for economic growth presented by the digital economy in general and AI in particular [5]. After witnessing the collapse of numerous traditional economic activities during the COVID-19 pandemic, the Vietnamese government and firms have become more deeply committed to digital transformation. All of these regulatory considerations are necessary in this era of digital disruption, particularly regarding AI-based projects, which are data-driven. Data are needed to train and validate the models. Additionally, the data generated by the model's interaction must be saved and analysed to determine whether the solution's implementation satisfies the intended objectives. Continual evaluation of the models facilitates improvement and evolution; consequently, current data privacy regulations significantly impact AI-related initiatives.

The current circumstances are highly provocative. Today, AI applied to business focuses more on finding and analysing data to provide forecasts, suggestions, and decision support, facilitating human–computer interactions and automating certain responses. This focus is critical for business' digital transformation, particularly for data-driven decision-making. With a projected impact of increasing global GDP by 14% by 2030 [6], AI will revolutionise business strategies and operational models, initially resulting in substantial increases in productivity models. According to estimates, by 2030, 45% of expected economic gains may be attributable to applying commercial AI technologies to business [6]. The influence of AI applications on the corporate environment is shown in Fig. 1.

AI's present capabilities include building simulation models, or propensity to purchase, personalising the purchasing process via recommendation systems based on machine learning technologies, and virtual assistant contacts to aid purchases. These capabilities all present significant opportunities to enhance customer experiences with brands while simultaneously monetising them. Therefore, the intelligent experience economy has entered a new stage. Bonnet and Westerman explain this experience on a worldwide scale, digitally linking all partners in the digital business ecosystem [7]. Potential significant gains in business performance are shown in Fig. 2.

AI history stretches back to the second part of the twentieth century, when Alan Turing proposed what became known as the Turing Test: Can a computer communicate sufficiently, fluently, and intelligently such that a human cannot determine whether it is a person or a machine? Turing devised this test while working at the University of Manchester and introduced it in his essay 'Computing Machinery and Intelligence' [8]. The article begins with the topic 'Can machines think?' and argues that computers capable of mimicking human behaviour are plausible [9].

Figure 1

A range of AI applications were considered in our research

Machine learning	Deep neural networks	Robotic process automation	Intelligent applications
Smart robots	Chatbot	Virtual reality	Computer vision
Natural language processing	Speech recognition	Virtual assistant	Generative adversarial network

Source: Kearney analysis

Fig. 1 AI applications on the business environment (Chua et al., 2021)

Turing's article has aroused much debate and controversy in the AI field. While the notion that robots can think and be intelligent is extremely appealing [10], [11], a strict interpretation of the Turing Test has conditioned the development of machines, and the sole aim of this is to defeat the AI by emulating human reasoning to some degree. Consequently, there are divergent views on the Turing Test's validity as a means of demonstrating entirely automated intelligence. Even if machines are explicitly engineered to pass the Turing Test, this does not indicate that they are truly intelligent. Therefore, the implications for simulating human thought and authentic intellect spark disputes that have at times been deemed damaging to the growth of AI [12].

However, interest in AI has been revitalised in the twenty-first century, this time with the confidence of researchers, investors, and businesses. Advances in machine learning, the availability of much more powerful computers, and new data processing capabilities have ushered in a new era in which AI is viewed as both a self-learning technology and a critical component of digital transformation and the so-called fourth industrial revolution.

While these AI applications are still evolving, the advent of quantum computing will eliminate criticism regarding AI's restrictions and existing limitations. Quantum computing and AI are transformative technologies, and improvements in quantum computing will increase the pace of growth in AI tenfold. Although it is possible to develop functioning AI applications on ancient computers, their processing capacity is limited. Quantum computing has the potential to deliver the quantum leap that AI requires to address more complicated problems in a wide variety of industries and to engage in true intelligent reasoning [13]. Logic dictates that while academic definitions of digital transformation and, subsequently, AI differ in their precise details, they almost all agree on its global nature. Several authors downplay the significance of applying various information technologies in organisational processes, referring to

Figure 8

AI adopters have reported significant improvements in performance across the value chain

High-impact use cases across the value chain
Selected examples from AI leaders (results may vary across industries)

	High-impact use cases		
Marketing and sales	Predictive purchase intent identification >30% increase in lead conversion	Next product to buy/ individualized offerings 21% to 30% increase in revenue	Churn reduction 21% to 30% decrease in customer churn
Supply chain, manufacturing, and procurement	Predictive maintenance >30% reduction in maintenance cost	Yield, throughput, and line optimization >30% increase in productivity	Inventory and parts optimization 21% to 30% decrease in stock-outs
Human resources	Candidate sourcing and matching 11% to 20% increase in hiring productivity	Adaptive learning 11% to 20% increase in employee engagement	Employee retention 11% to 20% decrease in employee attrition
Product and service management	Product feature optimization 21% to 30% decrease in lead time	AI-assisted product development 6% to 10% decrease in new product development time	Predictive defect detection 6% to 10% increase in first pass yield
Finance	Credit risk modelling >30% improvement in risk model performance	Audit and compliance 21% to 30% reduction in noncompliance-associated costs	Fraud and anomaly detection 11% to 20% decrease in cases of fraudulent transactions
Information technology	IT operations monitoring 11% to 20% reduction in IT downtime	Predictive ticket management 11% to 20% improved IT productivity	Resource optimization 11% to 20% increased utilization of bandwidth and storage
Customer service operations	Call center customer/agent profiling and routing >30% increase in first call resolution	Predictive service intervention 21% to 30% decrease in customer service ticket	Self-serve incident management 21% to 30% reduction in customer service cost

Source: Kearney–EDBI artificial intelligence study

Fig. 2 AI significant improvements in business performance. (Chua et al., 2021)

this as merely another evolutionary process [14], while others define digital transformation as a complete disruption of the economic world [15]. Some authors go further, referring to the process as the digital era [16]. Any definition must include 'an evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes, and consumer experiences that generate value' [17]. Numerous authors have emphasised the importance of connecting the digitalisation process to all business sectors in light of the fourth industrial revolution [18].

Thus, it is common in academia to refer to digitalisation as a global maturity model that entails implementing new processes and models across all dimensions (processes, people, governance, etc.) [18] or to refer to it directly in terms of the

capacity for interaction between users (people) and technology for the purpose of decision-making [19]. Finally, because the list is likely to be lengthy and connected to what was stated at the outset of this section, authors such as Giannakitsidou stress the path of no return that any global digitalisation process includes [20].

Based on this introduction, we can affirm the relevance and importance of the digital economy and AI phases in the corporate world. However, it is critical not to overlook the inherent hazards in this new technology and the importance of clear regulation to ensure that its use respects citizens' fundamental rights. Thus, the following sections emphasise the ethical implications of this new reality, analyse its challenges and risks, and review various legal frameworks.

2 Literature Review

As previously stated, digital transformation and AI are transforming company models and enhancing human interactions, facilitating corporate structure. This is a genuinely global corporate revolution in which technology has altered every step, even leading to the digitising of the products themselves. Undoubtedly, technology is the primary enabler of digital transformation, with AI playing a major role.

While the most critical aspect of the digital transformation process on a global scale is the transformation of business itself, this process should be viewed as a way to increase a firm's efficiency and sustainability rather than as an end in itself. Thus, Boulton notes that 'digital transformation constitutes the great pending process to be completed in a large majority of organisations after a first stage of integration of digital devices and networks' [5]. The success or failure of this process is ultimately determined by formulating specific and quantifiable objectives for a digital strategy to accomplish these objectives and establishing tactics and important variables to be used throughout the process [5]. The term 'digital ecosystem' refers to 'a collection of businesses united by a shared interest in the prosperity of a digital technology to materialise their own innovative product or service' [21]. Some authors define this concept more broadly, referring to 'the environment in which digital objects are embedded in changing interdependencies with other entities' [21], while others emphasise technological interconnectedness by referring to digital ecosystems as collections of information technologies that are related based on a particular context of use [13].

'Artificial intelligence' refers to systems that exhibit intelligent behaviour and can access their environment and act autonomously to accomplish particular goals [22]. Authors in [23] classify definitions into two categories based on the global consequences of AI [24]:

[1] *Axis 1*: Thought-Behaviour.
[2] *Axis 2*: Human-Rational.

This two-group technique is typical of the Turing Test [25]. When confronted with a human interrogator, the computer will pass the exam because the human cannot tell whether the answers were provided by a computer or another person. According to Russell and Norvig's own perspective on AI's relationship with human behaviour, the computer must possess the following abilities:

- Natural language processing to facilitate communication.
- A representation of knowledge to store what it knows or hears.
- Automatic thinking to answer questions and deduce new conclusions from stored data.
- Automatic learning to adapt to changing situations and recognise and extrapolate trends.

Therefore (as will be demonstrated in Sect. 3), AI methods must consider human behaviour, human thinking, logical thinking, and reasonable action [26]. AI's inter-sectoral penetration, high impact, quick expansion, and contribution to boosting competitiveness give it enormous transformational potential from a technological, economic, environmental, and social perspective.

All of the foregoing points demonstrate the utility of developing national AI policies that allow administrations to structure their digital transformation efforts and provide a point of reference and an impetus for the public and commercial sectors. For instance, a news release from the Ministry of Information and Communications stated that AI is advancing swiftly and steadily, confirming its status as a pillar and as game-changing technology in the fourth industrial revolution. Technological giants have long developed their own AI strategies, focusing on this technology as a means of boosting economic progress. Over the last few years, an increasing number of organisations have researched and implemented AI in a variety of sectors, including education, telecommunications, retail, and healthcare, and all such organisations have steadily dominated the market and reaped substantial profits. Vietnam's prime minister issued Decision No. 127/QD-TTg on the promulgation of the National Strategy for Artificial Intelligence (AI) Research, Development, and Application through 2030.

By 2030, Vietnam will be one of the top four countries in the ASEAN region and one of the top 50 countries worldwide in terms of AI research, development, and application; it will have established ten prestigious AI brands in the region and three national AI innovation centres, and it will have at least one representative among the top 20 AI research and training institutions in the ASEAN region. Additionally, strategic objectives include establishing a system of AI legal documents and legal corridors; establishing data and computing infrastructure for AI research, development, and application; fostering international cooperation in the AI field; developing an AI ecosystem; and promoting AI application.

The Vietnamese Communist Party and government have identified the development of information technology application in economic and social sectors as a critical pillar of Vietnam's strategic growth. A series of legal documents at various levels have been released, laying the groundwork for establishing a legal framework to manage and regulate the digital economy's various elements and activities in Vietnam. This study discusses (i) the general legal framework for digital transformation, (ii) legal framework for e-government development, (iii) legal framework for e-commerce development, (iv) legal framework for electronic transaction development, (v) legal frameworks for non-cash payment development, (vi) legal framework for the development of the sharing of economic activity, and (vii) legal framework for AI development.

Academic and civil reporting of legal problems related to AI is extensive [27] and covers a range of hazards and unresolved issues [28]. These include broad considerations, such as intellectual property [29], privacy and data protection [30], the workplace and its impact [17], opaque algorithms [13], and damage management and associated responsibilities [31]. Given that this study's objective is to assess the related ethical and legal consequences from an academic perspective, it is vital that this section of the literature review addresses these issues. This is significant because it is the first-ever legal framework for AI and is a new plan coordinated with member states. The regulation's aims are to guarantee individuals' and enterprises' safety and fundamental rights while also promoting AI investment and innovation across Asia.

The purpose of this literature review is to examine the relationship between the significance and validity of digital transformation and AI processes in the business realm as well as their ethical and regulatory components. Compliance with new regulations should not be construed as a roadblock to the various economic sectors' digital development. Rather, the proposed AI regulation offers a stable framework that protects AI applications and simplifies the interpretation of prudent behaviour, which is critical for organisations' internal and external risk management. In other words, the new legislative framework allows for the development of new AI applications with legal certainty while balancing innovation and high security standards in favour of user and consumer rights [32].

3 Methods and Materials

The aforementioned AI techniques define distinct areas of work and algorithmic learning models. However, they share a common use of cognitive technologies, which facilitates a fundamental shift in the way we engage with machines [33]. Just as humans use five major senses to interact with their environment (seeing, hearing, smell, taste, and touch), AI systems' 'senses' can be thought of as the ability to hear, speak, see, recall (knowledge), and evaluate. The technologies linked to these five AI senses are key components of AI as they are the foundation upon which applications and use cases are constructed. Any enterprise AI platform or system can be subdivided into solutions based on one or more of these fundamental components.

Communication and hearing: virtual personal assistants (VPAs) such as Apple's Siri, Google's Assistant, Microsoft's Cortana, Amazon's Alexa, and Baidu's Duer already enable users to search for information and perform orders using voice input [27]. This covers the rise and expansion of platforms for natural language processing (NLP) [34]. Chatbots, which are directly connected to the corporate world, are being used to increase customer support productivity and efficiency [35].

Currently, all conversational agents (VPA) consist of the following components:

- Accepts input via a user interface (voice or text commands).
- NLP or speech recognition is used to comprehend user input and manage dialogue by contextualising the exchange.
- Infrastructure on the backend that connects the bots/VPAs to the various applications/services [36].

- Apart from Business to Consumer (B2C) applications, businesses are promoting the use of conversational bots to help internal procedures, such as supplier payments/billing, human resources recruiting and training, and administrative processes. The ability of machines to extract meaningful information from photos or movies is referred to as computer vision or machine vision. Currently, image and video traffic are the primary drivers of increases in so-called 'unstructured' data [37]. This makes manually visualising, categorising, and indexing this type of data for further analysis more difficult.

Machine vision facilitates a new generation of applications to be hosted [38]. Advances in machine learning techniques (along with advancements in camera hardware and processing power) have prompted businesses to use these technologies for applications featuring object and person identification, facial expression recognition, activity monitoring, and video surveillance [11]. Machine vision is also producing a surge of innovation in the realm of robotics, extending its application to a variety of other sectors, such as medicine (image analysis for early disease detection) [39], retail (automatic stock control, facial recognition to enhance the shopping experience) [40], automotive (assisted driving systems), assembly lines (assembly line monitoring), and security (surveillance) [41].

3.1 Methodology

This emergence of new disruptive technologies that have defined the process of digitisation and industrial transformation itself shows the following:

- Technologies that address physics and that are related to biotechnology, robotics, the Internet of Things, 3D printing, new ways of using energy, and many other concepts.
- Technologies that are more closely related to digitalisation, such as Blockchain, new computational capabilities, big data, virtual reality, augmented reality, and (more globally and holistically) AI.

Four key points mark this disruption:

- Data storage and management capacity: Storage capacity for a high volume of data facilitated by cloud technologies and its management and processing based on the use of big data technologies.
- The processing power of this information: high volumes of mostly unstructured data require high computing capacity.
- Improved communications: enabling access to data in the cloud with high speed and minimal latency.
- Advances in mobility and different access points: making it possible to access data wherever it is generated.

To methodologically develop this process, the machine learning concept will be fundamental, defined as a subset of AI aimed at recognising data patterns and mak-

ing predictions, and partially based on the principles of classical statistics. These advanced data processing capabilities allow machine learning-based models to perform different types of analysis:

- Descriptive analysis: Describes what has happened. It is widely used at the enterprise level because of its simplicity.
- Predictive analytics: Anticipates what will happen and is based on probabilistic techniques. It is often used in data-driven organisations as an element in decision-making.
- Prescriptive analytics: Provides recommendations on what to do to achieve an objective. It is used in companies with a high degree of digitalisation because it requires large volumes of data.

All companies are overwhelmed with data. The real need lies in capabilities that add 'intelligence' to the data—so-called 'smart data'. Organisations need to process these data as well as coordinate activities both inside and outside the organisation with the data analysis results [42]. As is true with AI, machine learning focuses on both analysing and learning. Thus, three main learning methods are based on machine learning:

- Supervised learning: The algorithm uses human-provided training data and feedback to learn the relationships between input and output data. The algorithm determines the logic that can be used to predict the response. This method is used when we know how to label the input data and the type of behaviour we want to predict; however, we need the algorithm to automatically calculate and predict the new input data. The algorithms (linear regression, decision trees, Naive Bayes, random forest, AdaBoost, affinity analysis, etc.) are trained with the labelled data to identify the connection between input variables and the results [43]. Once the training is completed, which typically occurs when the algorithm is sufficiently accurate, the obtained model is applied to new data. The use of some supervised learning methods can be applied to different fields, such as predicting a call centre's call volume for sizing purposes, detecting fraudulent activity in credit card transactions, predicting a product's demand and necessary inventory levels, and predicting the probability of a patient joining a health programme.
- Unsupervised learning: In unsupervised learning, the algorithm explores the input data but is not explicitly provided with an output variable or response [44]. Unsupervised learning is conceptually modelled in the same way that humans observe the world: drawing inferences and grouping things based on observation and intuition. As our experience increases (or, in the case of machines, the volume of data being processed grows), our intuition and observations change or become more refined. This method is used when the procedure for classifying is unknown, and an algorithm is needed to find patterns and classify the data for us. The algorithm (K-means clustering, Gaussian Models, hierarchical trees, etc.) receives unlabelled input data and infers a structure from those data, identifying groups of data that have similar behaviour. Uses of unsupervised learning methods include segmenting customers into groups with different characteristics

to optimise the performance of marketing campaigns, recommending movies to users based on the preferences of customers with similar attributes, and recommending new books based on previously purchased books.

- Reinforcement learning: In reinforcement learning, the model is provided with a set of allowed actions, rules, and potential end states—that is, the rules of the game are defined. By applying these rules, exploring different actions, and observing the resulting actions, the machine learns to use the rules to maximise the outcome. That is, the algorithm learns to perform a task by attempting to maximise the reward it receives for its actions [45]. Reinforcement-based learning is equivalent to teaching someone to play a game. The rules are defined, but the outcome varies according to the judgement of the player, who must adjust to the game's context, their own skill level, and the opponent's actions. This method is used when data is available to train the algorithm, and the ideal state cannot be defined. The only way to learn about the context is to interact with it. The algorithm takes action (for example, buying or selling stocks) and receives a reward if the action brings it closer to the goal of maximising the total possible rewards (for example, doubling the value of the stock portfolio). The algorithm optimises the outcome by continually correcting itself to achieve the best possible set of actions. Uses of reinforcement learning methods include optimising trading strategies, stock management, optimising autonomous cars' behaviour, and optimising online prices in real-time based on products with low stock or foreseeable variations owing to competitor campaigns.

In summary, applying technology to the business environment uses innovation as the basis for radically improving companies' performance or scope [46]. In general, as authors such as Schaupp and Belanger note, when all hierarchies and business processes are influenced simultaneously, the new reality often leads to completely new business models [21]. The described idea of digital transformation under the umbrella of AI and machine learning shows that its multifaceted nature surpasses the level of any past transformation or innovation. This reality becomes clear when observing the real difficulties nearly all industries face when carrying out digital transformation processes [11]. Although the theory is often well known and its fundamental importance accepted, organisations still face numerous obstacles that prevent them from initiating or completing a full digital transformation process.

3.2 Preconceptions

What was once an ethical concern—avoiding discrimination when utilising data and algorithms to make decisions—has evolved into a legal issue. Given the technological and scientific environment's rapid and unpredictable evolution, the regulatory environment cannot always protect people' rights; therefore, specialists, scientists, and technicians must uphold high ethical standards in their daily work.

Several aspects should be considered:

- Always keep data protection standards in mind.

- Ensure that the algorithms we use do not imply prejudice against any group based on age, sex, ethnicity, religion, or any other factor.
- Ensure that the data are free of prejudice that could result in incorrect choices.
- Interpret model results scientifically, avoiding interpretations that are self-serving and unrelated to reality.
- Adhere to proper working techniques that ensure the outcomes' reliability.

AI and machine learning are now part of the daily lexicon of labour councils and governments worldwide. Millions of people are impacted by decisions based on these models. Consequently, experts are obligated to ensure that the ultimate goal is to benefit society in general or the company's clients in particular while preserving people's fundamental rights.

3.2.1 Why Algorithms Learn and Their Primary Weakness

Biases are unavoidable because they are the process through which algorithms learn. Developing biases and forming broad generalisations while ignoring specific facts is a necessary part of learning; therefore, exceptions will always exist. The critical point in this scenario is to minimise exceptions and ensure that these unlearned biases do not result from inadequate data selection training or factors related to age, sex, colour, or religion.

It is critical to consider these types of challenges in sensitive contexts in which biases can result in discrimination. If an individual should not be judged based on ideology, gender, ethnic origin, or any other factor, algorithms should not discriminate based on these factors. The following points should be considered to eliminate biases:

- Carefully select training data.
- Validate the algorithms using data from both the first-world or regional sphere of influence and from other global regions with varying characteristics, cultures, and ethical standards.
- Continually monitor AI decisions and act as soon as is feasible if biases are found.
- Have human evaluators corroborate the algorithms' decisions or, at the very least, provide a mechanism by which impacted people can appeal regarding their particular situation.

This will become one of the most significant concerns in the coming years as AI algorithms take control of an increasing number of procedures that touch individuals' lives. Establishing accountability for these algorithms' faults is difficult. However, we as a society must strive for accountability. The ultimate responsibility for adequately testing these algorithms lies with the business that uses them. Therefore, the margin of error allowable for each task entrusted to AI must be determined. Humans are fallible as well; however, the distinction here is that the chain of human responsibility is traceable and reasonably transparent. When an AI algorithm is introduced, the training data source becomes unclear: is it from the algorithm's inventors or from

someone who did not properly review the algorithm's decision? This is a significant future challenge to consider.

3.2.2 Artificial Intelligence Algorithm Explicability

It is easier to foresee or avoid these errors if we can describe the model that is formed during the learning process. This is not always achievable because not all algorithms are comprehensible. Algorithms explicability raise a number of concerns that we must consider:

- Reliability: It is crucial that an algorithm's decisions are trustworthy, particularly when it is responsible for a critical task, such as driving a vehicle, making stock market purchases, or operating a nuclear power plant. However, even for minor concerns, understanding the algorithm's choice is critical because it may be introducing biases. Understanding how an algorithm's choice is made can help prevent this undesirable outcome.
- Acquire new knowledge: Algorithms are occasionally capable of finding or discovering novel solutions to previously unknown issues. However, these problems are frequently intractable because we do not know how the algorithm arrived at the conclusion. Consequently, we forget the specifics of our recently gained knowledge.
- Detection of model failures: Knowing the model's failures allows for their prediction, mitigation, or retraining. Currently, the only way to determine whether a black box algorithm is wrong is to thoroughly test it. However, there will always be scenarios that have not been considered when an algorithm fails.

In summary, we must be aware of domains in which the model's lack of explicability is irrelevant and in which the benefits of these models outweigh the disadvantages, as well as domains in which it is prudent to utilise explainable algorithms, even if they demonstrate lower performance.

3.3 Artificial Intelligence and Ethical Considerations

The most significant difficulty facing AI is its appropriate and ethical application, even within businesses. According to the Boston Consulting Group [47], 55% of businesses overestimate the maturity of their AI-related activities. These programmes are organised along three axes: justice and equity, social and environmental impact mitigation, and human and ethical AI. These Fundamental Principles of Artificial Intelligence were developed by the Asilomar conference's AI Principles [45], which structured them in three blocks:

- Conduct research on issues: The goal of AI is to create intelligence that directly benefits people through constructively and healthily exchanging ideas between AI research fields and policymakers, developing a culture of cooperation, trust, and transparency among researchers and AI developers, and protecting safety regulations through investments.

- Ethical and moral principles: AI systems must be safe and secure throughout their operating lifetime, allowing for transparent examination of their operation and, if applicable and practical, verification. Highly autonomous AI systems must be created with human values in mind, and individuals must have the right to access, manage, and govern the data generated. Profit and wealth generated by AI technology should be distributed widely to avert an AI-led weapons race.
- Long-term issues: The fundamental shifts that AI may entail, particularly those associated with catastrophic or existential dangers, and the implementation of stringent security and control measures, must be planned and managed with adequate resources [48]. Superintelligence must be produced for the greater good of humanity as a whole, not only for the profit of a single state or group.

4 Results

This section summarises the findings of the literature review in terms of the business value of digital transformation and AI. AI has become a reality, both monetarily and in people's daily lives [49]. The severity of the situation is global in scope, prompting world authorities, including ASEAN, to address the legal issues involved. This allows us to concretely discuss the issues and areas that may require universal legal treatment to contribute to creating systematic and international solutions because traditional regulatory procedures are not wholly relevant. Recent public debates focused on the importance of regulating and limiting the AI field to prevent the creation of so-called artificial general intelligence, that is, an intelligent system that is equivalent or even superior to human intellectual capacity. Additionally, discussions emphasise the importance of teaching ethics to and incorporating society's ideals into AI systems.

This regulatory requirement becomes much more compelling when one considers the magnitude of business that AI already generates and will produce in the future. A more exact assessment of the digital revolution's impact requires considering two organisational facets. An external impact originates from outside the organisation. This dimension enhances the customer experience and transforms the entire customer–company relationship, from the initial commercial activity to post-sales service. This effect has a direct impact on organisations' forms and operations. The impact on company objectives, new labour and leadership relationships, and organisational structures imbues all organisations with a new dimension that has a critical aspect: it is mandatory, not optional. In other words, organisations that are unable to adjust to this new climate will find it difficult to survive.

AI-based learning models are expected to dramatically increase in the coming years. In 2021, 40% of development teams employed machine learning-based services to create models that incorporate AI capabilities into their apps, up from 2% to 2019 [47]. By 2025, AI will automate 50% of the functions performed by data scientist profiles [50].

This expansion of AI-based technologies is expected to triple AI spending in the next four years. This expenditure includes AI applications (software that learns, discovers, and makes recommendations/predictions) and AI software platforms (tools

developed on top of AI building blocks that enable AI-based use). AI professional services include enterprise-level AI technology consulting and implementation, AI hardware, and AI processing and storage capacity.

AI has the potential to revolutionise business productivity and is far-reaching enough to affect the global economy's GDP [34]. The highest economic gains from AI will occur in China (26% rise in OIB by 2030) and the United States (14.5% increase), totalling $10.7 trillion and accounting for about 70% of the worldwide economic effect. [51] McKinsey reported that 22% of 2,300 survey respondents in 2020 said that at least 5% of their company's EBIT was already attributed to the influence of AI.

The economic, social, and daily life effects of technology drive AI growth in Vietnam, where the application of AI technology is extensive. It spans healthcare, transportation, national security, finance, and criminal justice and promises to streamline decision-making, data analysis and integration, and criminal justice. AI development boosts creativity, productivity, efficiency, and competence while lowering the cost of daily company operations. Price Waterhouse Coopers estimates that AI will boost global GDP by $15.7 trillion by 2030. Vietnam's AI development is expected to be equally significant. If current trends continue, artificial technology is predicted to contribute 12% (over $109 billion) to the country's GDP by 2030. As Soon puts it, 'Hanoi wants to use artificial intelligence to increase public sector productivity, particularly through online public services that reduce processing and waiting times, public servant numbers, and other costs' [1].

It is vital to define the direct and indirect roles of ethics in technology regulation [3] by broadening the scope of analysis to include the social context of technology's use and moral consequences [49]. The conversation should also include an examination of labour relations because related reforms may eliminate thousands of jobs. Finally, it is necessary to underline the importance of considerations regarding expanding responsibility [52], not only at the individual and corporate levels but also at the national and global levels, because the use of new technologies may extend beyond individual obligations.

It is important to express a number of methodological and substantive concerns regarding the regulation of technology in general and of AI in particular. First, it is important to consider whether there are sufficient arguments for redefining these new technologies and thus justifying a change in the legal system. That is, are existing laws sufficient to address the regulatory issues posed by new technology? If not, should they be amended to do so? The concluding section will address these questions and suggest regulatory solutions in this area.

5 Discussion

This study demonstrated that digital transformation is no longer a permanent reality. Nearly 60% of businesses are aware of the benefits of digital transformation for their business models as well as the importance of developing a digitisation strategy. Globally, the term 'digital transformation' refers to organisations and businesses of all shapes and sizes, from a variety of sectors and with a variety of different objec-

tives and needs, but with one thing in common: the incorporation of new disruptive technologies that signal a turning point in defining new business models.

AI facilitates fully tailored marketing to all customer categories. In a multichannel world, AI can help improve the consumer experience. Recommender systems, virtual assistants, chatbots, and speech bots are all examples of applications. Virtual assistants or agents can handle a higher volume of customer care encounters, particularly if the interactions are repeated or routine, enhancing customer satisfaction and operational effectiveness. AI skills enhance quality control and predictive maintenance in industrial settings. Businesses that combine strong digital capabilities with the widespread use of AI technologies and a proactive AI strategy will outperform the market. Technology is a means to an end; it does not per se result in increased production. Rather, it must be complemented by the discovery of relevant uses, the development of internal competencies, and the implementation of change management, all of which contribute to creating agile work environments and a collaborative culture.

In this environment, although technological barriers are being eliminated (albeit at a snail's pace), there are still major impediments to AI use in business, such as a scarcity of AI-related talent (data scientists, machine learning experts, etc.) and the usual difficulties associated with demonstrating an immature technology's value (e.g., quantifying the value of deployed AI solutions and a lack of a strategic impetus at the company management level).

Singapore, Vietnam's neighbour in Southeast Asia, exemplifies such legal actions; alongside cybersecurity, immersive media, and the Internet of Things, the government of Singapore has selected AI as one of the four frontier technologies important to the growth of the country's digital economy. To this end, the government has launched a multitude of initiatives to promote the adoption and development of these new technologies in Singapore across the public and private sectors, to develop AI capabilities, and foster a highly conducive environment for businesses to develop in these fields. A National Research Foundation (NRF) initiative aims to develop AI capabilities, cultivate local talent, establish an AI ecosystem, and place Singapore on the global map. Related efforts include fostering and supporting AI research, accelerating the application of AI by Singapore-based organisations, and developing AI talent. In addition, the Singapore Academy of Law has launched the Future Law Innovation Programme to promote the adoption and development of new technology by law firms, legal departments, and legal tech start-ups. Accordingly, a national AI plan [53] comprising five 'National AI' projects in the high socio-economic impact sectors of border security, logistics, healthcare, education management, and estate management is intended to bring concrete benefits to residents and enterprises. The COVID-19 pandemic has accelerated enterprises' use of digital technologies. In turn, this has led to a rise in AI adoption by businesses, with a recent poll [54] revealing that 43% of around 500 businesses had expedited their rollout of AI products. In a world that is becoming increasingly digitised and is being disrupted by the COVID-19 pandemic, Singapore is making headway towards its goals of leveraging AI and machine learning tools and research to optimise innovation and create new economic value. Singapore can anticipate substantial increases in investments and advancements in the development of a framework for the regulation of issues associated with AI adoption in the coming years, which will ultimately benefit businesses and

the lives of Singaporean citizens by realising AI's potential to have a wide-ranging impact on all aspects of society.

One of the most significant difficulties facing AI is its appropriate and ethical application, even within businesses. The Boston Consulting Group reported that 55% of businesses overestimate the maturity of their AI-related activities [47]. These programmes are organised along three axes: justice and equity, social and environmental impact mitigation, and human and ethical AI.

6 Conclusions

It is critical to develop legislation that balances the interests of all stakeholders (business, consumer, global market, and national governments) to ensure that these digital transformation processes adhere to a certain legal standard. Vietnam is committed to a dependable AI that is compliant with regulatory and ethical standards. In April 2017, the legal documents introduced a proposal that regulates AI use, prohibiting high-risk scenarios and providing recommendations on data management. In this regard, instances in which a trade-off must be made between commercial outcomes and legislation will be frequent. Based on our findings, it is evident that AI should never take precedence over citizens' fundamental rights. As specified in the rule, an acceptable degree of risk must be considered when developing these technologies:

- Unacceptable risk: In many instances, systems associated with AI that are deemed to pose a demonstrable threat to an individual's security or rights should be explicitly prohibited.
- Extremely dangerous: In these instances, the possibility of security risk and rights violations must be assessed. All such AI-enabled technologies that are deemed to be potentially dangerous will be subject to stringent compliance requirements prior to receiving marketing authorisation.
- Limited risk: Providers of these ostensibly low-risk technologies should be compelled to adhere to certain transparency requirements to guarantee that users are aware of their compliance.
- Little or no risk: In many instances, the presence of a regulator is superfluous, as this collection of systems poses little or no risk of a security breach or infringement of rights.

It is evident that the sector requires standards or laws to ensure that these activities are undertaken with a degree of assurance. The message that the public administration should convey regarding digital market legislation is that regulatory framework should be established to assist and guide businesses that have not yet completed their digital transformation. Minimum parameters should be established to homogenise the company fabric and preserve global competitiveness. However, these rules must be unambiguous and enforceable. Another issue for future work results from this predicament. After defining the legislative requirements, it will be necessary to specify which AI applications fall into each of the aforementioned categories. Presumably, there are instances of straightforward application. Thus, systems that control human

behaviour to subvert users' will or systems that violate fundamental rights should be categorically ruled out as unacceptable risks. Similarly, systems combining technology used in vital infrastructure, security components, key public services, criminal justice administration, and biometric identity systems, among others, pose a serious danger. However, the spectrum is quite broad, and many applications with low or no danger (conversational robots, emotion recognition systems, spam filters, etc.) should also be watched. The other critical step is to define the governance and the sanctions regime once legislation is determined.

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