Artificial Intelligence and Automation in E-Commerce

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This practice note discusses legal issues arising from the increasing use of artificial intelligence and automation in conducting e-commerce. Technology is used to automate review and decision making in e-commerce transactions. As a result, transaction processing is faster and more efficient. While this facilitates commerce, such automation depends upon combinations of innovative technologies unlike any that have ever existed before. The legal questions that will arise from these applications of technology are novel; new regulatory schemes and legal doctrines will no doubt evolve.

At present, you should be aware of the nature of the systems and consider the questions that may arise in your client's industry. This practice note is written primarily from the perspective of an attorney representing an e-commerce client incorporating an artificial intelligence system within its transaction processing. This practice note does not address issues related to other applications of artificial intelligence such as driverless automobiles. This practice note will discuss the following:

- Defining Artificial Intelligence
- Contract Law Issues in E-Commerce
- Tort Law Issues in E-Commerce

For more information about e-commerce in general, see E-Commerce Fundamentals. For more information about representing clients in software development and licensing transactions, see Software Development Agreement Negotiating and Drafting, Software License Agreements: Drafting and Negotiating the Agreement, and Software Source Code Escrow Agreements: Drafting and Negotiating the Agreement.

Defining Artificial Intelligence

Understanding what artificial intelligence is, and what some of its effects upon society may be, are necessary first steps in understanding legal risks arising from the application of artificial intelligence in e-commerce. One definition notes for four elements of artificial intelligence:

- Machine Processing
- Machine Learning
- Machine Perception
- Machine Control

In this case, the term machine does not necessarily indicate a mechanical process. It refers instead to the artificially intelligent system. That system may take any number of forms. It may be wholly intangible, such as computer software. It may be incorporated into a simple machine to perform a task like a robotic vacuum cleaner. It may be part of a network of systems to operate a more complex device like the steering control system in a driverless car.

Machine Processing

The first requirement of artificial intelligence is the ability to process information. Such processing is the result of countless binary decisions made by the system as with any computer operation. Faster information processing results in a more intelligent system. For the past half century or so, a computer science axiom called Moore's Law

has proven true (i.e., processor speeds have doubled approximately every two years). This rapid development continues, but you should be aware that certain physical limits may soon be reached with current technology and materials.

Machine Learning

Machine processing is what every computer software operation does at its core. To be an artificial intelligence system, the machine must do more than simply process information. It must learn from the data that it processes. The machine will learn from examples in the data and teach itself to recognize patterns in the data without explicit instructions.

The artificially intelligent system can be programmed to learn in various ways:

- **Supervised learning**. The system is instructed with labeled samples from a restricted data set.
- **Unsupervised learning**. The system creates its own pattern recognition rules, which may result in finding unknown or unsuspected relationships among the data.
- **Reinforcement learning**. The system is first instructed using supervised learning techniques and then later conducts unsupervised learning.
- **Deep learning**. The system is programmed with algorithms that are designed to imitate human learning patterns.

Machine Perception

Machine perception refers to the ability of the system to collect data autonomously. As with other facets of artificial intelligence, the system's need to collect information about its environment and the results of its actions has required the contemporaneous evolution of other technology.

That technology consists of both hardware and software assets. For example, small cheap cameras greatly facilitate video surveillance. Data can be collected that will allow the system to learn about human faces for recognition. Proximity sensors that detect near objects are essential for self-driving cars. These items allow the system to collect information while processing and learning. Software is used to instruct the system to react to collected information, and can also be used to collect information. Foreign language translating software can provide nearly simultaneous translations.

You should be aware that these devices and software are continually being improved; made more efficient, smaller, and less expensive. These hardware and software information collection technologies allow the system to react to information or instructions in accordance with its learning.

Machine Control

Machine control in artificial intelligence is the ongoing process to improve the performance of the automated system in the physical world. This requires engineering of tangible components to reduce weight, add strength, improve durability, and otherwise improve control of the system. These improvements are intended to make the artificially intelligent system respond faster and more accurately to the information collected and processed in accordance with its learning.

Data Is Required

Data is the fuel that drives the artificial intelligence engine. The larger the data set, the more that an intelligence (artificial or otherwise) can learn from that data. The development of useful artificially intelligent systems has depended upon another convergence of technologies:

- Social Media
- Data Storage Centers

- Mobile Devices
- Data Collection

These factors have enabled e-commerce merchants to solicit data from consumers and lessened consumer resistance to providing it. Along with the development of cloud-based storage, these have led to the ability to compile, store, and analyze increasingly massive amounts of information. That massive information allows for artificially intelligent systems to operate autonomously, determining patterns in the data, and reacting accordingly.

Current Legal Principles May Be Inadequate to New Technology Issues

The operational development of each aspect of a useful artificially intelligent system has depended upon the development of supporting technology. Virtually all this supporting technology has been introduced or refined to its useful level of operation within the past few decades. In our precedent-based legal system, this means that current law may be wholly inadequate to address issues arising from the employment of a nonhuman autonomous actor to serve human needs. The nature of that actor remains to be determined in many legal contexts and regulatory schemes covering many industries will no doubt be enacted to protect various interests.

Contract Law Issues in E-Commerce

Contract law issues are somewhat more straightforward than tort issues (but see Tort Law Issues in E-Commerce). Two situations that can create these issues should be distinguished

- Contract issues related to the creation and use of the artificial intelligence
- Contract issues arising from contracts formed during retail e-commerce by the artificial intelligence

Contracts for Creation and Licensing

Contracts for the development of artificial intelligence should be virtually indistinguishable from those used in ordinary commercial software development. First, the software must be created by a developer. Such development will require either a work-for-hire development agreement or a software license of existing software. The terms of these agreements are likely to be very like existing agreements for such work. See Software Development Agreement Negotiating and Drafting. The developed software must then be licensed to users.

Creation of the governing contract for participants in an artificial intelligence smart contract system must address the following:

- A system of basic contract rules, codifying basic transactional expectations
- Functions in the software that address potential issues

The Agreement should incorporate conditional responses to anticipated aspects of the transactions, such as payment, defaults, and records retention.

Contract Issues in E-Commerce Customer Transactions

User licensing of an artificial intelligence entity may be accomplished in several ways; again, these methods are not dissimilar from current licensing standards. The license may be produced through a negotiated agreement or it may be a license where acceptance is indicated by physical act such as removing shrink wrap packaging. The Apple Siri and Amazon Alexa services are examples of artificial intelligence that are licensed by a click. For a form of internet purchased software license, see Software "Clickwrap" License (Purchased on Internet).

Contract issues may also arise from those agreements that are created between parties using only artificial intelligence rather than human agency. Consider an e-commerce transaction: the consumer purchasing via the website enters into an agreement to sell and to purchase the goods displayed on the site. The entire transaction

may be conducted without human agency on the seller's part. For example, auto insurance policies can be purchased via the insurer's website. But such a transaction raises many issues:

- Does the transaction meet the usual requirements for contract formation (i.e., offer and acceptance, exchange of consideration, and each party having capacity to contract)?
- Does the artificial intelligence incorporated into the insurer's website even have the capacity to contract?
- What is the insurer's responsibility for errors in rates or coverage?
- Can a computer-generated product recommendation give rise to a warranty of fitness for particular purpose under the Uniform Commercial Code?

From another perspective, the user interface must not only provide legal protection but also present users with an acceptable experience. Does the experience with the artificially intelligent entity allow customers to understand the nature of the interaction and the merchant's attempts to limit liability? Does it allow consumers to understand the security of their personal information?

Smart Contracts

Smart contracts are likely to become increasingly common, and the issues associated with them may take some time to resolve. The smart contract is based upon the concept of a blockchain (i.e., databases updated continuously to provide an accurate and current ledger of ownership or transactions). Bitcoin, the electronic virtual cash system, was among the originators of the blockchain concept. For more information about Bitcoin, see Understanding Bitcoin and Virtual Currency.

The integrity of the records in the blockchain is necessary for the successful operation of the blockchain. That integrity is protected in two ways:

- Secure identification of transactions and participants
- Protection of the blockchain records

Participant identity is protected through technology. Computer encryption is used to perform two separate functions:

- Authenticating parties
- Creating digests of transactions

Parties can be authenticated through passwords and other identifiers such as biometric factors. The transactional records are protected by creating unchangeable records of each ledger record (the block) and the links between that block and prior blocks (the chain). If established correctly, these records are current, secure, accurate, and permanent.

These blockchain records are also protected against outside threats to their integrity. The records are protected through dispersal as each participant in the blockchain holds a current copy of the virtual ledger. This dispersal protects against hacking or other outside interference since no one single copy is regarded as true and correct.

From a functional standpoint, blockchain-based contract systems can create interlinked contracts that include conditions to performance. The strength of each link in the contract chain will depend upon the enforceability of each in their relevant jurisdiction. That means that each linked contract must meet the requirements of contract formation in that jurisdiction. These elements required for effective formation must be present in two distinct places:

- Agreements establishing the blockchain system
- Software code operating the blockchain system

Blockchain Enabled Smart Contract Issues

Use of a blockchain system allows business to use self-executing smart contracts. The software code can function for create and enforce contracts without human interaction if pre-defined conditions are satisfied. This can be a

single contract, such as an online insurance purchase. The code can also create bundles of linked agreements that all operate without human agency.

These linked chains of contracts can present both legal issues and business challenges for their users. Longer contract chains create potential for as-yet unresolved legal issues (e.g., if an upstream agreement in a chain of contracts executed autonomously, then what is the effect of that breach upon a downstream agreement?). Whatever the agreement of the parties regarding such situation may be, it must be reflected in the agreements establishing the blockchain as well as its operating software. Additional legal issues may arise from regulatory requirements imposed upon your client's business. For example, blockchain contract systems in a medical records and insurance environment must comply with patient privacy protection requirements; likewise, for financial transactions and their privacy requirements.

Blockchain Business Issues

Your clients are also likely to encounter business challenges in blockchain participation. Differing platforms and systems must be made to communicate and work together. This will require establishment of technical standards for the system. Various standards organizations at work on the issue; the ISO began developing such standards in 2016. Blockchain systems consume substantial electrical power. Finally, as the length of the chain of blocks extends and the number of transactions increases, the amount of information incorporated into each transaction record becomes larger. Resolution of the data size issue is increasingly being found in the use of intermediary third parties that can amend the information contained in blocks.

Tort Law Issues in E-Commerce

What Is the Nature of Artificial Intelligence?

You may find it difficult to evaluate and understand your client's potential tort liability from use of an artificial intelligence system. You are not alone. Much of the confusion on this issue relates to the uncertain nature of the intelligent autonomous actor. Humans have not determined legal principles for how to relate to an artificially intelligent entity. Is it a person, human, or otherwise? Who bears responsibility for its actions? The natural inclination is to anthropomorphize the entity, viewing the intelligence as a person. Consumer level artificial intelligences such as Siri strive for this effect by incorporating pleasant human voices as their interface.

The novel issues raised by the development of artificially intelligent entities should be considered with care and using principles of rigorous legal analysis. The legal nature of an artificial intelligence defies easy categorization. Agency law principles do not cover the relationship between the artificial intelligence and its user; the artificial intelligence cannot act as an agent. But should the liability of an employer for the acts of its employees apply in this context even absent agency? If not, then why not? Such questions demonstrate that new developments in legal classifications and theory are likely needed to provide a framework for determining the liability of an artificial intelligence user in each situation.

Does Artificial Intelligence Have a Separate Existence?

Another issue regarding the nature of artificial intelligence increases with the independence of the entity from the direction and control of its user. In theory, a point can be reached where the interaction of the artificially intelligent is so free of the direction and control of its owner that it becomes in fact more able to act independently of that owner.

- Should the artificial intelligence then be considered to have a distinct legal personhood, such as a corporation?
- Can the artificial intelligence create rights and obligations independent of its owners?
- Can the owners enjoy a double benefit by employing a technological "agent" for which it bears no responsibility?

Answers to these questions are likely to be forged by the courts and by the legislatures as employment of artificial intelligence becomes both more common and more complex.

Regulation of Artificial Intelligence

Regulation of artificial intelligences and their use is another open frontier. As with any regulation, the interests of certain parties will be protected at the expense of others. E-commerce transactions involve both business interests and consumers; either side of the transaction may be the target of legislative protection. It is impossible to predict what the regulatory environment might look like in 10 years, much less in 50 years. New entities may need to be created and recognized under corporation laws to define the legal personhood of artificial intelligences.

Related Content

Practice Notes

- E-Commerce Fundamentals
- Chat Commerce
- Personalization and Customer Experience in E-Commerce
- Software Development Agreement Negotiating and Drafting
- Software License Agreements: Drafting and Negotiating the Agreement
- Software Source Code Escrow Agreements: Drafting and Negotiating the Agreement
- Virtual Currency, Bitcoin, and Cryptocurrency Resource Kit

Templates

- Software "Clickwrap" License (Purchased on Internet)

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