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## **Enhancing Bahrain's E-Commerce Legislation with Respect to Electronic Signatures Through Adoption of UNCITRAL 2001 Model Law on Electronic Signatures.**

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# **Enhancing Bahrain's E-Commerce Legislation with Respect to Electronic Signatures Through Adoption of UNCITRAL 2001 Model Law on Electronic Signatures**

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## **Abstract**

The benefits of e-commerce are that it helps in the development of proactive and integrated strategies for success. It ensures that products and services are available to the customers with the focus on convenience and satisfaction. E-commerce helps firms to conduct transactions through the Internet and access a larger group of customers. It facilitates growth because of the low costs of operating an online firm as opposed to the conventional firms. Bahrain is a country with infrastructure and initiatives that help to support e-commerce. The country has been striving to focus on e-commerce to provide platform for the growth of diversified businesses so that they can connect with their customer segments. The current e-commerce legislation appears to be outdated in providing security. The concept of electronic signatures is that it is a security mechanism designed to protect the interests of the companies and customers that engage in E-commerce. The current legislation in Bahrain needs to be modified with respect to electronic signatures. It should be updated according to international standards.

## Chapter 1 Introduction

The Internet has created a major revolution in terms of ensuring that business firms can focus on growing in an efficient manner. Furthermore, the nature of change has enabled the development of new business concepts which has created tremendous opportunities for firms to ensure that they can maintain their competitive advantage and profitability. Furthermore, e-commerce has helped to ensure that commercial activities can be conducted over computer mediated networks<sup>(1)</sup>. The benefits of e-commerce are that it helps in the development of proactive and integrated strategies for success. It ensures that products and services are available to the customers with the focus on convenience and satisfaction. E-commerce helps firms to conduct transactions through the Internet and access a larger group of customers<sup>(2)</sup>. It facilitates growth because of the low costs of operating an online firm as opposed to the conventional firms. Furthermore, e-commerce helps firms to use innovative branding and relationship development strategies for success. Online retailing is driven by traffic that comes from search engines<sup>(3)</sup>. Customers can access these links through search engines which in turn can help organizations to achieve their critical goals. There are however concerns about security of e-commerce transactions as it is important to protect companies and customers from having their data breached or tampered by malicious intruders and hackers<sup>(4)</sup>. The concept of electronic signatures is important because it can help to provide security and reliability for companies and customers. Bahrain's e-commerce law needs to be enhanced so that it is able to ensure that definition and scope of electronic signatures is according to the UNCITRAL Model Law.

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- (1) Mason, Stephen. *Electronic signatures in law*. Cambridge University Press, 2012. p. 34
  - (2) Mason, Stephen. *Electronic signatures in law*. Cambridge University Press, 2012. p. 35
  - (3) Fitzgerald, Anne M., Brian F. Fitzgerald, Gaye Middleton, Eugene Clark, and Yee Fen Lim. *Internet and e-commerce law, business and policy*. Thomson Reuters (Professional) Australia Ltd, 2011. p. 56
  - (4) Fitzgerald, Anne M., Brian F. Fitzgerald, Gaye Middleton, Eugene Clark, and Yee Fen Lim. *Internet and e-commerce law, business and policy*. Thomson Reuters (Professional) Australia Ltd, 2011. p. 57

## Objectives of the Research

The objectives of this study are to identify the current state of e-commerce legislation in Bahrain with the focus on e-signatures. It will make recommendations to modify the current legislation in the light of international laws related to electronic signatures. This will help in promotion of e-commerce legislation so that the interests of e-commerce companies and customers can be safeguarded.

## Background study

Electronic commerce (e-commerce) has been defined as the purchase or sale of products and services through the use of various computer and electronic systems. The rapid advent of technology has ensured that many businesses are striving to focus on developing their online stores<sup>(5)</sup>. E-commerce is gaining popularity because it offers easiness and convenience to the customers. They can purchase products from the electronic markets with the convenience of using IT from their home. Even geographical location does not matter as many countries transport products to different parts of the world<sup>(6)</sup>. Business enterprises are able to reduce their costs associated with managing inventory of goods. They can automate the inventory management using the web based management system. They can save their operational costs through the adoption of e-commerce systems.

There are several types of e-commerce systems that are found in the market. The direct e-commerce systems use order and delivery systems for selling and purchasing of products and services<sup>(7)</sup>. Indirect e-commerce uses online contracts while the delivery is done through mail or courier systems. Mobile e-commerce uses mobile devices for selling or purchasing of products and services. However, e-commerce has posed serious threats to users in terms of security. Hackers and on-line criminals have used various means in order to steal the information of online companies and consumers. Protection of online consumers is an important goal for governments through the development of regula-

- (5) Wang, F.F., 2014. Law of electronic commercial transactions: Contemporary issues in the EU, US and China. Routledge. p. 87
- (6) Wang, F.F., 2014. Law of electronic commercial transactions: Contemporary issues in the EU, US and China. Routledge. p. 87
- (7) Geva, Benjamin. The law of electronic funds transfers. LexisNexis, 2017. p. 92

tory and legal frameworks<sup>(8)</sup>. Bahrain is an oil rich state present in the Gulf region. It has one of the highest internet penetration rates in the region. Furthermore, it is a regional hub that attracts various international businesses. The diverse population includes locals and expatriates. The rapid adoption of e-commerce in the country has been attributed to government backed initiatives designed with the aim of promoting it for growth of the local economy. The importance of online documents is such that they need to be protected through the focus on electronic signatures<sup>(9)</sup>. The use of electronic signatures is increasing in the world which means that e-commerce legislation in Bahrain needs to be studied to identify areas for improvement. Electronic signatures are vital for online businesses since they can save time and improve productivity of the workforce. The time consuming process of doing manual work is reduced with the focus on efficiency and effectiveness<sup>(10)</sup>.

The slow and expensive process of using manual documents is replaced with a faster and cheaper method of using electronic signatures. It is important to study the current legislation on electronic signatures in Bahrain in order to make recommendations so that it can be modified in accordance with international law. This will help to create sound outcomes for achieving the objectives of the research.

### Problem Statement

E-commerce is steadily growing in the world with online businesses emerging to provide various products and services to customer segments. The benefits of e-commerce are that it helps companies and consumers to engage in purchasing and selling activities in an efficient and effective manner<sup>(11)</sup>. The evolution of technology has helped to provide mechanisms that enable companies to grow while determined to provide products and services to diversified customer segments throughout the world and at the same time bring prosperity and growth in the e-commerce business with the vision to equip new entre-

(8) Geva, Benjamin. *The law of electronic funds transfers*. LexisNexis, 2017. p. 93

(9) Qin, Zheng, ed. *Introduction to E-commerce*. Springer science & business media, 2010. p. 92

(10) Qin, Zheng, ed. *Introduction to E-commerce*. Springer science & business media, 2010. p. 56

(11) Gillies, Lorna E. *Electronic commerce and international private law: A study of electronic consumer contracts*. Routledge, 2016 p. 78

preneurs and business entities in the Kingdom of Bahrain. The security concerns associated with e-commerce mean that there is the need for integrated strategies to ensure that the confidential information and data of companies and customers can be safeguarded. Bahrain is a country with infrastructure and initiatives that help to support e-commerce. The country has been striving to focus on e-commerce to provide platform for the growth of diversified businesses so that they can connect with their customer segments<sup>(12)</sup>. The current e-commerce legislation appears to be outdated in providing security. The concept of electronic signatures is that it is a security mechanism designed to protect the interests of the companies and customers that engage in e-commerce.

The current legislation in Bahrain needs to be modified with respect to electronic signatures. It should be updated according to international standards.

## Research Questions

The following research questions will be answered in this study:

1. What is the framework regarding electronic signatures in the current e-commerce legislation in Bahrain?
2. How can the legislation related to electronic signatures be modified in Bahrain?

## Importance of Study

This study will be beneficial because it will update the e-commerce legislation in Bahrain with respect to electronic signatures. The acceptance of electronic signatures can be significant for the growth of the e-commerce market as it provides ease of business transactions, growth prosperity, faster execution and easier processing by eliminating the physical presence, travelling time and personal meetings. Electronic signatures are also important for the Kingdom of Bahrain because e-commerce is a key driver of growth for the Bahraini economy. The need to regulate e-commerce business is a vital goal for the country. However, this regulation needs to be modified in accordance with international

(12) Gillies, Lorna E. *Electronic commerce and international private law: A study of electronic consumer contracts*. Routledge, 2016. p. 78

goals in order to ensure sound outcomes. E-commerce law is relatively in its nascent stages in Bahrain even though there have been tremendous achievements in providing an adequate e-commerce framework to meet the needs of the market. This study will help government to study the best practices in international law related to electronic signatures. Consequently, it can be used as the basis for future research to improve the e-commerce legislation in the country. The trends in e-commerce are changing while new technologies and applications are creating tremendous opportunities for companies and customers. Updating the legislation will facilitate customer protection as well as the protection of companies. E-commerce does not have geographical boundaries which creates the need for law that can response to these changes. Many of these changes are disruptive and rapid in nature which traditional legal systems are unable to handle.

### Chapter 2 Research Methodology

Research has been defined as the creative and systematic work which is done with the intention of improving the body of knowledge on diversified topics<sup>(13)</sup>. The current research Adopts an inductive research and explore the different published journals and critically analyse. The process of documentation, identification, Comparative analysis and interpretation for the advancement are taken into consideration<sup>(14)</sup>. The method adopted does not focus to provide solutions rather focuses on it theoretical justification of the topic in terms of its importance, legalities and laws currently<sup>(15)</sup>. This is further validated with other researches and publications which helps to enhance the accuracy and reliability of the study.

### Research Strategy

The research strategy adopted by this study is the constructivist paradigm which regards knowledge as constructed by humans<sup>(16)</sup>. It does not consider knowledge to be insight that is part of objective reality. Most studies in the legal discipline are constructivist in nature because they strive to understand the different viewpoints and realities instead of constructing a single reality.

(13) Taylor, Steven J., Robert Bogdan, and Marjorie DeVault. *Introduction to qualitative research methods: A guidebook and resource*. John Wiley & Sons, 2015. p. 92

(14) Taylor, Steven J., Robert Bogdan, and Marjorie DeVault. *Introduction to qualitative research methods: A guidebook and resource*. John Wiley & Sons, 2015. p. 99

(15) Taylor, Steven J., Robert Bogdan, and Marjorie DeVault. *Introduction to qualitative research methods: A guidebook and resource*. John Wiley & Sons, 2015. p. 34

(16) Bryman, Alan. *Social research methods*. Oxford university press, 2015. p. 32

The qualitative research approach has been used for the study. This is because qualitative research approach can be beneficial in developing insight and interpretations about the nature of electronic signatures in e-commerce laws. Secondary research is used in this research for data collection and use of desk based research is used. This allows the researchers to access extensive data that is available in public databases and libraries<sup>(17)</sup>. Consequently, this helps the researcher to carefully design the methods and objectives of the study. This is beneficial since the researcher can spend adequate time on the main goals of the study. Secondary research is the best approach because e-commerce legal framework is not a fully implemented discipline in Bahrain. It is important to study other legal frameworks so that recommendations can be made for improving the concept of electronic signatures in the Bahraini legal framework.

## Chapter 3 Literature Review

### E-Commerce

E-commerce has been defined as transactions that are conducted through the Internet. The use of specific technologies such as mobile commerce, electronic funds transfer, supply chain management, internet marketing, online transaction processing, inventory management systems, and others has been considered to play an instrumental role in the development of e-commerce<sup>(18)</sup>. The growth of e-commerce markets has been phenomenal in the world with projections that it will grow by 56% within the next decade<sup>(19)</sup>. Simultaneously, traditional markets will grow only by 2% in the same time. Online retailers are successful because of their specific competitive advantages like offering diversified products and reducing their costs. Furthermore, e-commerce enables customers to overcome geographical barriers and purchase products according to their convenience. Online retailers can directly send orders from the manufacturer to the customer which means that they have low

(17) Bryman, Alan. Social research methods. Oxford university press, 2015. p. 45

(18) Spindler, Gerald, and Fritjof Börner, eds. *E-Commerce Law in Europe and the USA*. Springer Science & Business Media, 2013. p. 87

(19) Spindler, Gerald, and Fritjof Börner, eds. *E-Commerce Law in Europe and the USA*. Springer Science & Business Media, 2013. p. 98



inventory costs<sup>(20)</sup>. The speed of delivery is an added advantage that e-commerce retailers have over their traditional competitors. However, e-commerce retailers have certain disadvantages when compared with traditional retailers. Specifically, they are unable to offer physical experience of shopping that conventional shopping offer.

Another problem is trust and reliability issues in many countries where e-commerce is at its infant stages. Product or seller uncertainty can create problems which mean that traditional retailers will retain their market share<sup>(21)</sup>. E-commerce is successful when information system quality, service quality, and users' satisfaction can be achieved by companies. The success of companies is their ability to provide extensive information on the details of their products and services. User friendly interfaces with appropriate reviews and product details can influence the purchasing decisions of the customers<sup>(22)</sup>. The reason is that conventional shopping involves customers seeing the product physically. However, e-commerce has to ensure that it provides considerable details for selling products or services. Users' satisfaction must be acquired through a systematic policy of building brands and investing in marketing strategies. Service quality is very important because e-commerce companies need to build up the brand and provide effective approaches for success. They need to focus on investments in developing a loyal customer base<sup>(23)</sup>. E-commerce has rapidly helped customers in many ways by providing satisfaction and convenience in order to achieve success. The customers do not need to leave their homes as they only need to browse the websites which can provide sufficient information to meet their needs and requirements<sup>(24)</sup>. Online shopping provides sales promotion or discounts which can be price effective for customers. There is detailed information on the products which can help to provide success for customers.

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(20) Niranjana Murthy, M., and DR Dharmendra Chahar. "The study of e-commerce security issues and solutions." *International Journal of Advanced Research in Computer and Communication Engineering* 2, no. 7 (2013). p. 99

(21) Niranjana Murthy, M., and DR Dharmendra Chahar. "The study of e-commerce security issues and solutions." *International Journal of Advanced Research in Computer and Communication Engineering* 2, no. 7 (2013). p. 98

(22) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017. p. 93

(23) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017 p. 93

(24) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017 p. 95

In contrast, conventional shopping staff might not be able to provide comprehensive product information. This is a major reason for the proliferation of e-commerce in the market<sup>(25)</sup>. It helps to create an integrated strategy for success that can help to produce sound outcomes for the growth of the e-commerce market. Customers can review and track order history online which is a benefit of technology. This feature enables them to make records of their purchasing activities while helping them to identify the companies that offer superior products for their needs and requirements.

## E-Commerce Legal Framework in Bahrain

E-commerce has been rapidly growing in Bahrain with current internet penetration rate being more than 90%<sup>(26)</sup>. The increase in internet penetration has helped in the development of online shopping and business activities. Furthermore, the users in the country are becoming familiar with the concept of e-commerce. Online consumer sales have been steadily increasing in Bahrain with \$175 million in 2016<sup>(27)</sup>. The highest internet usage levels in the Arab world are the key driver in the growth of e-commerce in the country. Moreover, the penetration of mobile internet has also been steadily increasing. However, there are obstacles towards the development of e-commerce such as the reliance of consumers on conventional channels, the use of cash on delivery payments, and low consumer acceptance of online shopping in comparison with international benchmarks<sup>(28)</sup>.

Specific product categories that are generating significant growth in online shopping are consumer electronics, computers, and jewelry. Mobile commerce will remain a potentially lucrative sector in Bahrain with increased growth opportunities. Price, customer service, and ease of use are the main concerns for online consumers. However, security concerns are also significantly important for the online consumers<sup>(29)</sup>. Currently 5% of retail sales in Bahrain are being done through e-com-

(25) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017 p. 102

(26) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017. p. 103

(27) Todd, Paul. *E-commerce Law*. Taylor & Francis, 2017. p. 104

(28) Turban, E, Jae K. L, David. K, Ting P. L, and Deborrah T.2009. *Electronic commerce 2010*. Prentice Hall Press, 2009 p. 98

(29) Turban, E, Jae K. L, David. K, Ting P. L, and Deborrah T.2009. *Electronic commerce 2010*. Prentice Hall Press, 2009 p. 102

merce channels. This is a significant portion since the internet penetration rates in Bahrain is very high in the region<sup>(30)</sup>. The projections show that e-commerce market will increase by 20% each year. The obstacles towards growth of e-commerce channels remain which need to be countered through the development of government initiatives that can help to achieve long term growth and success<sup>(31)</sup>. Online financial exchanges must be present for the growth of the sector so that currency exchanges or trading purposes can be allowed for the growth. Furthermore, there is the need for support for business activities that comes under the domain of e-commerce by the Bahraini government in order to take advantage of this lucrative sector<sup>(32)</sup>. Previously, Bahrain's e-commerce laws were insufficient to meet the growing need for such a framework for managing and monitoring e-commerce transactions. Consequently, the government decided to improve the e-commerce legal framework in 2002 with the aim of promoting growth in the sector through the use of efficient strategies.

Legislative Decree no 28 of 2002 is the comprehensive and updated e-commerce law in Bahrain that provides guidelines regarding e-commerce transactions. Article 6 of the Decree provides information about the use of electronic signatures in e-commerce transactions. The article recognizes an electronic signature when the law has made it mandatory for a person's signature to be accepted. Moreover, the electronic signature of the person will be recognized in a legal process with the requirement that it was used by that person. The article recognizes the electronic signature if it has not been tampered or altered through any means. An Accredited Certificate is important in order to ensure the validity and reliability of the electronic signature.

### Electronic Signatures

Many businesses are adapting to the electronic environment because it is seen as a key driver of growth and development. Some le-

- (30) Madiwalar, M B., and B. S. Reddy. 2017. E-Consumer Protection: Problems and Perspectives. *IUP Law Review* 7, no. 1 (2017) p. 105
- (31) Niranjnamurthy, M., and DR Dharmendra Chahar. "The study of e-commerce security issues and solutions." *International Journal of Advanced Research in Computer and Communication Engineering* 2, no. 7 (2013). p. 83
- (32) Madiwalar, M B., and B. S. Reddy. 2017. E-Consumer Protection: Problems and Perspectives. *IUP Law Review* 7, no. 1 (2017) p. 91

gal rules continue to make it mandatory that transactions or documents should be in writing<sup>(33)</sup>. This is considered to be an obstacle towards the growth of online business. There have been arguments that there is little or no benefit in the requirement that electronic transactions should be in written form and signed manually. The world of electronic communications has transformed the nature of business which means that there is the need for electronic signatures that would help in ensuring the highest levels of success<sup>(34)</sup>.

Electronic signatures are concerned with providing secure and accurate information to protect the identity of the signatory in order to ensure a seamless transaction. The electronic signature must ensure that the signatory is able to be uniquely identified while being linked to the signature. Moreover, the signatory must possess the private key that can be used to develop electronic signatures. The electronic signature must have the ability to identify any tampering that has occurred in the accompanying data<sup>(35)</sup>. Any changes in the accompanying data will mean that the signature has become invalid. Electronic signatures have been developed with increased levels of security. These security levels have their specific requirements that help to ensure the validity of signature. Qualified electronic signature for instance has been one of the ways that additional levels of security have been implemented in order to ensure the highest levels of success and efficiency for online transactions<sup>(36)</sup>. The authorship of statements signed with qualified electronic signature is hard to be tampered. The qualified electronic signature is developed with a digital certificate that is encrypted through security signature creating devices. A qualified trust service provider helps to provide authentication in order to ensure the highest levels of security<sup>(37)</sup>. The benefits of electronic signatures in e-commerce have been extensively

(33) Mohapatra, S.2013. *E-commerce Strategy*. In *E-Commerce Strategy*, pp. 155-171. Springer US, 2013 p. 12

(34) Mohapatra, S.2013. *E-commerce Strategy*. In *E-Commerce Strategy*, pp. 155-171. Springer US, 2013 p. 45

(35) Nica, E.2015. Positive Drivers of Consumer Trust in E-commerce. *Journal of Self-Governance and Management Economics* 3, no. 1 (2015): 60-65.

(36) Nica, E.2015. Positive Drivers of Consumer Trust in E-commerce. *Journal of Self-Governance and Management Economics* 3, no. 1 (2015): 60-65.

(37) Chaffey, Dave. *Digital business and E-commerce management*. Pearson Education Limited, 2015. p. 43

studied. They help to increase contract speed for many sectors. Unnecessary delays in specific sectors might cause problems which mean that electronic signatures can play a critical role in achieving the highest levels of efficiency and effectiveness.

Electronic signatures can assist in being good for the duration of the contract. There would be no need for repetitive signing during contract development<sup>(38)</sup>. Furthermore, the benefits of electronic signatures are witnessed during negotiations that can be speeded up since each step in the process is authenticated and easily accessed by all parties to the contract. Many parties might be located in different geographical areas which means that electronic signatures can help in providing contract updates in a reliable manner<sup>(39)</sup>. Security is an added advantage of electronic signatures since it uses digital encryption to protect information of individuals. There is less chances of the contract being tampered as electronic signatures use multiple levels of security for achieving sound outcomes. The electronic signing process is beneficial because it assists in reducing the financial impact of human error by organizations<sup>(40)</sup>. These mistakes can cause major problems that might disrupt the process or lead to costly problems if they are undetected at the initial levels. Furthermore, electronic signatures help in managing the documents of the organization. The electronic signing software can play a leading role in providing alerts about suspicious records or compliance issues that are associated with a contract<sup>(41)</sup>.

Electronic signatures are defined in different terms in many jurisdictions. For instance, the EU directive on digital signatures differentiates between electronic signature and advanced electronic signature. The electronic signature is defined as data in electronic form which is linked with other electronic data while serving as a method of authentication. In contrast, an advanced electronic signature is uniquely

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(38) Chaffey, Dave. *Digital business and E-commerce management*. Pearson Education Limited, 2015. p. 43

(39) Lodder, Arno R., and Andrew D. Murray. "EU regulation of e-commerce: a commentary." (2017). p. 43

(40) Lodder, Arno R., and Andrew D. Murray. "EU regulation of e-commerce: a commentary." (2017). p. 43

(41) Lodder, Arno R., and Andrew D. Murray. "EU regulation of e-commerce: a commentary." (2017). p. 98

linked to the signatory. It can identify the signatory while being under the exclusive control. Any changes in data can be detected in advanced electronic signatures<sup>(42)</sup>.

## United Nations

The United Nations has recognized the importance of business communications as electronic commerce has grown in recent years. Businesses have sought to adapt their operations to an electronic environment. They have to engage in electronic transactions with the result that the use of paper to document business transactions became less important<sup>(43)</sup>. Conducting business through digitized information reduces the need for transmitting and storing paper. The aim of the UN e-commerce legislation is to develop legal rules for regulating transactions or documents in writing. There needs to be legal accommodation in the world of electronic communications<sup>(44)</sup>. Electronic transactions are being recognized as equal to paper documents which perform identical purposes. The UNCITRAL Model Law on Electronic Commerce has been developed with the intent of responding to the rapid changes that have occurred in the world.

The goal is to enhance the business and international trade in the e-commerce market. The use of electronic mail and electronic data interchange has become prevalent<sup>(45)</sup>. The legal obstacles towards electronic communications and uncertainty regarding their legal effect and validity need to be addressed in a systematic manner. The UNCITRAL Model Law on Electronic Signatures is an extension of the UN effort to regulate e-commerce. This law was adopted in 2001 with the aim of protecting trade transactions that are being conducted through electronic

(42) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborah C. Turban. "E-Commerce Security and Fraud Issues and Protections." In *Electronic Commerce*, pp. 457-518. Springer International Publishing, 2015.

(43) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborah C. Turban. "E-Commerce Security and Fraud Issues and Protections." In *Electronic Commerce*, pp. 457-518. Springer International Publishing, 2015.

(44) Freeman, Jason. "Consumer Legislation and E-Commerce Challenges." *Rivista Italiana di Antitrust/Italian Antitrust Review* 2, no. 1 (2015) p. 73

(45) Freeman, Jason. "Consumer Legislation and E-Commerce Challenges." *Rivista Italiana di Antitrust/Italian Antitrust Review* 2, no. 1 (2015) p. 71

communication<sup>(46)</sup>. It strives to promote the use of electronic signatures as being equal to handwritten ones. It is a model law not a convention since it provides guidelines to help countries to customize when they are formulating legislation. It is developed in the context of commercial activities so that electronic signatures can be used to achieve efficiency.

## Chapter 4 Findings and Analysis

The rapid adoption of e-commerce means that Bahrain needs to implement the legislation that will modernize its e-commerce framework. Specifically, it is important to ensure that the framework provides adequate standards related to the concept of electronic signatures. Decree no 28 of 2002 is insufficient with respect to the concept of electronic signatures. It needs to be modified in accordance with UNCITRAL Model Law on Electronic Signatures adopted in 2001. One of the key provisions that Decree no 28 of 2002 needs to modify is the definition of electronic signatures. Article 2 of UNCITRAL Model Law defines electronic signature that can be found in electronic form. The signature is linked with a data message that can be used to identify the signatory in the context of the data message. It also helps to ensure that the signatory has approved the information possessed in the data message<sup>(47)</sup>. Decree no 28 should define “data message” according to the UNCITRAL law so that it can be considered to be any information that can be generated, received, or stored by electronic, optical or identical means. Providing comprehensive information regarding the nature of electronic signatures will assist Bahrain in ensuring that electronic transactions can be legally accepted in the e-commerce industry.

Article 6 of UNCITRAL Law provides comprehensive information about the validity of electronic signatures which could be applied by Bahrain's e-commerce legislation. The focus on this article is to identify that the requirements and purpose of electronic signatures are met with the focus on reliability<sup>(48)</sup>. It identifies the areas where signatures are

(46) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborrah C. Turban. *Electronic commerce: A managerial and social networks perspective*. Springer, 2015. p. 89

(47) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborrah C. Turban. *Electronic commerce: A managerial and social networks perspective*. Springer, 2015. p. 45

(48) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborrah C. Turban. “E-Commerce Security and Fraud Issues and Protections.” In *Electronic Commerce*, pp. 457-518. Springer International Publishing, 2015. p. 46



required while assessing the purpose of the data message. The reliability of electronic signatures is determined by specific factors according to Article 6. The signature creation data is linked only to that of the signatory. The data used to develop the signature is linked with the signatory<sup>(49)</sup>. Furthermore, any alterations made after the time of the initial signing is detectable. The signature is an assurance for the integrity of the particular information as any later changes can be detected. Reliability is made by respecting international standards related to e-commerce legislation<sup>(50)</sup>. The above elements of the UNCITRAL law needs to be added to the Bahraini e-commerce legislation because it will help to ensure high levels of safety and security for e-commerce transactions. Electronic signatures contain adequate information about who signed them. They can be safeguarded from unauthorized tampering<sup>(51)</sup>. Electronic records can be encrypted and stored securely through online means.

Electronic signatures will help e-commerce companies in Bahrain to keep their signature secure and achieve protection from fraud. The information can be kept away from malicious intruders and hackers who might use it to harm the reputation and integrity of the business if they are given the opportunity. Article 8 of the UNCITRAL law provides comprehensive guidelines for the signatory who can safeguard the electronic signature<sup>(52)</sup>. It recommends that the signatory must take comprehensive and realistic steps to safeguard the signature creation data. This is important because it will help in using a preventive approach towards security. However, if the signature has been compromised then it is imperative for the signatory to identify anyone who might be im-

(49) Turban, Efraim, David King, Jae Kyu Lee, Ting-Peng Liang, and Deborah C. Turban. "E-Commerce Security and Fraud Issues and Protections." In *Electronic Commerce*, pp. 457-518. Springer International Publishing, 2015. p. 49

(50) Falk, Martin, and Eva Hagsten. "E-commerce trends and impacts across Europe." *International Journal of Production Economics* 170 (2015): 357-369.

(51) Falk, Martin, and Eva Hagsten. "E-commerce trends and impacts across Europe." *International Journal of Production Economics* 170 (2015): 357-369.

(52) Kirillova, Elena Anatolyevna, Elena Anatolyevna Shergunova, Elena Stepanovna Ustinovich, Nikolay Nikolaevich Nadezhin, and Lyubov Borisovna Sitdikova. "The Principles of the Consumer Right Protection in Electronic Trade: A Comparative Law Analysis." *International Journal of Economics and Financial Issues* 6, no. 2S (2016). p. 104



pacted by the tampering process<sup>(53)</sup>. They should notify the certification service provider immediately as this would constitute a good practice. The signatory should use reasonable care to enhance the accuracy and completeness of all representations that are part of the certificate. Legally, the signatories are held responsible if they fail to take reasonable steps for protecting the integrity of the certificate. The benefits of this approach for Bahrain's e-commerce companies will be that they will be able to utilize a preventive approach towards security during the creation of signature creation data<sup>(54)</sup>. The current law is ineffective as it does not provide comprehensive guidelines about this process. Consequently, it is important for the legislative framework to be modified so that it can be used for providing comprehensive guidelines to signatories to safeguard the electronic signature. Article 9 of UNCITRAL law identifies the obligations of certification service provider that offers services to support electronic signatures. The provider is entrusted to work according to established policies and procedures<sup>(55)</sup>. They should make adequate steps for the electronic signature to be accurate and complete at all stages. The certification service provider should allow relying parties to be able to identify the provider and ensure that the signatory has control of the signature at the relevant time. The signature creation data must be valid at the time that the certificate was issued<sup>(56)</sup>. Other guidelines include the ability to provide systems, procedures, and human resources which can enhance the certification services to the clients. The services must be robust so that they can provide methods to identify

(53) Kirillova, Elena Anatolyevna, Elena Anatolyevna Shergunova, Elena Stepanovna Ustinovich, Nikolay Nikolaevich Nadezhin, and Lyubov Borisovna Sitdikova. "The Principles of the Consumer Right Protection in Electronic Trade: A Comparative Law Analysis." *International Journal of Economics and Financial Issues* 6, no. 2S (2016). p. 106

(54) Lloyd, Ian. *Information technology law*. Oxford University Press, 2017. p. 91

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signatory and ensure the validity and integrity of the signature creation data. It is important to ensure that extent of liability is clearly defined by the certification service provider<sup>(57)</sup>.

These guidelines must be integrated into Decree no 28 of 2002 because it regulates the electronic signatures that can be backed by the relevant certification service provider. This will help to generate trust and reliability in electronic signatures for the e-commerce market while helping to enhance the security of transactions. Furthermore, it is important to use clear and specific goals for enhancing the overall e-commerce legislation in Bahrain. Study of the UNCITRAL law will be important because it can help to provide sound outcomes. Article 10 of the law ensures that trustworthiness can be defined in the systems, procedures, and human resources utilized by the certification service provider<sup>(58)</sup>. These factors are important because they provide requirements for the certification service provider so that they can meet the goals of companies. The factors include procedures for processing certificates, applications for certificates, financial and human resources, availability of information to signatories and potential relying parties, and others<sup>(59)</sup>. These factors are vital for ensuring that certification service providers can enhance the security for clients. The goal is to enhance the ability of certification service providers to provide trustworthy services<sup>(60)</sup>. Bahrain's e-commerce legislation needs to work on this aspect because it will promote the use of electronic signatures. The result will be in the long-term that e-commerce can be promoted and developed with the support of the government. Furthermore, the companies will have reliable certification service providers that can help them meet their

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business requirements in a robust manner. Compliance with these requirements will help certification service providers to provide secure services to their customers<sup>(61)</sup>. Article 11 of the UNCITRAL law provides guidelines for the parties that rely on the electronic signature. The party must take reasonable steps for verifying the reliability of an electronic signature or where the signature is safeguarded by a certificate provider<sup>(62)</sup>. This is important for Bahrain's e-commerce sector because they must take adequate steps to protect their information. This is part of the security aspect that will help to achieve the business goals. Article 12 states that foreign certificates and electronic signatures must be recognized<sup>(63)</sup>. This is important for Bahrain because it must prohibit geographic discrimination. It must recognize electronic signatures without any focus on the location. This helps to ensure the validity of an electronic signature.

### Conclusions and Recommendations

The United Nations has recognized the importance of business communications as electronic commerce has grown in recent years. Businesses have sought to adapt their operations to an electronic environment. They have to engage in electronic transactions with the result that the use of paper to document business transactions became less important. Conducting business through digitized information reduces the need for transmitting and storing paper. The aim of the UN e-commerce legislation is to develop legal rules for regulating transactions or documents in writing. There needs to be legal accommodation in the world of electronic communications. Electronic transactions are being recognized as equal to paper documents which perform identical purposes. The UNCITRAL Model Law on Electronic Commerce has been developed with the intent of responding to the rapid changes that have occurred in the world. The goal is to enhance the business and interna-

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(61) Popescu, Gheorghe H. "Redefining consumer protection in digital content markets." *Journal of Self-Governance and Management Economics* 3, no. 1 (2015): 66-72.

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tional trade in the e-commerce market. The use of electronic mail and electronic data interchange has become prevalent. The legal obstacles towards electronic communications and uncertainty regarding their legal effect and validity need to be addressed in a systematic manner. The UNCITRAL Model Law on Electronic Signatures is an extension of the UN effort to regulate e-commerce. This law was adopted in 2001 with the aim of protecting trade transactions that are being conducted through electronic communication. It strives to promote the use of electronic signatures as being equal to handwritten ones. It is a model law not a convention since it provides guidelines to help countries to customize when they are formulating legislation. It is developed in the context of commercial activities so that electronic signatures can be used to achieve efficiency. Bahrain needs to modify its e-commerce legislation in accordance with the UNCITRAL Model Law on Electronic Signatures. This is important because it will help to accomplish the key goals of upgrading the framework so that it is able to respond to the needs of the legal complexities that are occurring in the e-commerce sector. Updating its provision would require the use of integrated strategies. It should be based on using innovation and creativity for sound outcomes. The rapid adoption of e-commerce means that Bahrain needs to implement the legislation that will modernize its e-commerce framework. Specifically, it is important to ensure that the framework provides adequate standards related to the concept of electronic signatures. Decree no 28 of 2002 is insufficient with respect to the concept of electronic signatures. It needs to be modified in accordance with UNCITRAL Model Law on Electronic Signatures adopted in 2001.

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# **تعزيز تشريعات مملكة البحرين في مجال التجارة الإلكترونية المتعلقة بالتوقيعات الإلكترونية من خلال اعتماد قانون الأونسيترال النموذجي ٢٠٠١ بشأن التوقيعات الإلكترونية**

الدكتور/ قيس خليل المعاينة

## **ملخص:**

إن من الفوائد التي تمنحها التجارة الإلكترونية، هي إنها تساعد في وضع استراتيجيات استباقية ومكاملة للوصول للنجاح. بحيث تضمن أن المنتجات والخدمات المتاحة للعملاء على مستوى الرضا و الراحة مع التركيز على الوقت المناسب ، وعليه تساعد التجارة الإلكترونية على إجراء أكبر عدد من المعاملات من خلال الإنترنت والوصول إلى مجموعة أكبر من العملاء. ويسهل النمو بسبب انخفاض تكاليف تشغيل الإنترنت على العكس ما يتم عليه الأمر في الطرق التقليدية ، وتتمتع البحرين كبلد به بنية أساسية ومبادرات تساعد في دعم التجارة الإلكترونية. وإن كانت الدولة تسعى جاهدة للتركيز على التجارة الإلكترونية لتوفير منصة لنمو الأعمال التجارية المتنوعة حتى تتمكن من التواصل كافة شرائح العملاء . يبدو أن تشريع التجارة الإلكترونية الحالي أصبح قديم في توفير الأمن. يتمثل مفهوم التوقيعات الإلكترونية في أنها آلية أمينة مصممة لحماية مصالح الشركات والعملاء الذين ينخرطون في التجارة الإلكترونية. حيث التشريعات الحالية في البحرين فيما يتعلق بالتوقيعات الإلكترونية. بحاجة إلى تحديث والتعديل وفقاً للمعايير الدولية.





# مجلة الحقوق

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