

Intelligent Agent and its Impact on E-Commerce

Mohamed Mahmoud El Gammal

Asso. Prof. Dr., College of Islamic Studies, HBKU, Qatar

malgammal@hbku.edu.qa

Abstract

All praise be to Allah, Lord of the worlds. May Allah's peace and blessings be upon the Prophet Muḥammad, his family, and his Companions!. The paper's title is "The Intelligent Agent and its Impact on E-Commerce." The first section of the paper deals with the concept of the Intelligent Agent, whereas the second section talks about its unique characteristics. In the last section, the paper discusses the impact of the Intelligent Agent on E-commerce.

Keywords: Intelligent Agent, E-Commerce, Technology Impact, Internet

I. INTRODUCTION

Concept of the Intelligent Agent: The "intelligent agent" may be technically defined as follows:

- An agent "is anything that can be viewed as perceiving its environment through sensors and acting upon that environment through effectors [1].
- The definition is unclear regarding the words "sensors" and "effectors" and does not define the level of acting upon its environment. It could include a range of software that does not work as an "intelligent agent."
- It is also defined as a "computational system that inhabits some complex dynamic environment, senses, and acts autonomously in this environment, and by doing so realizes a set of goals or tasks for which it is designed [2]. This definition describes the environment in which the "intelligent agent" works. It also states the function of the "intelligent agent" and depicts it as autonomous when acting.
- Another definition is "a computer program which works toward goals in a dynamic environment (where change is the norm) on behalf of another entity (human or computational), possibly over an extended period of time, without continuous direct supervision or control, and exhibits a significant degree of flexibility and even creativity in how it seeks to transform goals into action tasks through its ability to communicate and interact with other intelligent agents or humans [3].
- Dr. Ahmad Faraj defined it as "a computer program which can proactively implement specific works and tasks and transform oriented goals into action tasks on behalf of the user without its control or direct intervention. It exhibits a significant degree of flexibility,

learning, and adaptation to its changing and advanced environment through the ability to communicate and interact with other agents or its user [4].

- It has been clear that the intelligent Agent is a software or electronic system equipped with many sensors and effectors and having several characteristics, such as independence of its programmer and owner, flexibility, learning, adaptability, communication and interaction with its users, the ability to transform goals into tasks, and influence on its environment.

II. CHARACTERISTICS OF THE INTELLIGENT AGENT

“Intelligent Agent” enjoys some fundamental properties that qualified it to play the user's role better than the human Agent. These properties include:

- **Autonomy**

One of the most critical features of the “intelligent agent” is that it works independently of its contractors. Not only does it work according to the data and conditions provided by the user, but it also taps on its previous experiences to accomplish its operations. Working autonomously, it is an agent with artificial intelligence that can build its core data and inputs, utilizes the new data, and learn from the previous experiences and experiments as well as from its interaction with other providers, consumers, and agents in the very best interest of the user.

It could be said that each intelligent Agent has an experience different from that of the other intelligent Agent, even if their inputs are the same [5].

- **Interaction with others**

This feature means that the Agent can communicate with physical persons or electronic agents. It may exchange data with them, negotiate the service fees or the product price, record all details of the previous experiences, and understand the electronic environment in which it works. The intelligent Agent responds to any changes arising in this environment, such as the emergence of new products, declining prices, or the existence of new virtual stores [6].

- **Proactiveness**

It means that the “intelligent agent” program not only carries out tasks or responds to the changes in its environment but also enjoys high mobility between different websites simultaneously. After collecting and comparing the required data and information related to the product's price or service fees, the Agent proactively negotiates the price and concludes the contract when seeing it's in the client's interest. In this case, the Agent expresses its offer to the second party, and if the latter accepts the offer, the contract is concluded. These capabilities indeed develop if the second party is an electronic agent [7].

- **Veracity and Rationality**

A rational “intelligent agent” is the Agent that accomplishes its mission perfectly in terms of speed, accuracy and with no mistakes or damages to the users. In doing so, it removes any obstacles it might face during the execution stage. The Intelligent Agent's level of rationality relies on how accurate its programming, inputs, and previous experiments are, enabling it to react proactively, communicate socially, provide precise and variable outputs, and implement actions on behalf of the user with zero mistakes [8].

Therefore, the intelligent Agent has several technical characteristics, including the ability to deal with others and react to them. Other features enable the Agent to perform its contractual

function, such as autonomy in taking decisions, interaction and communication, proactive mobility, and rapid movement. Furthermore, it is precise and rational and can represent its users whether they are consumers or suppliers.

These properties exist in the second generation of the “intelligent agent,” although it is not entirely trustworthy or secure to deal with it.

III. IMPACT OF THE INTELLIGENT AGENT ON E-COMMERCE TRANSACTIONS

Intelligent Agent is one of the most significant technological advancements in telecommunications of the time. This technology can search for the required information and access it efficiently, rapidly, and accurately compared to the traditional search on the internet. If the Intelligent Agent, for instance, is requested to purchase a commodity, it navigates the internet to find this commodity, compares it to similar items in the market, negotiates the prices, and sets the conditions suitable for the buyer. The Agent’s role extends to concluding and executing the contract.

The first generation of the Intelligent Agent would only collect the required data and classify it according to criteria previously set by the designers to fulfill the users’ needs. The second generation of artificial intelligence in this technology, however, may enable proactive actions, follow-up, classification, supervision, negotiation, reply, and representation of the parties upon concluding the contract. This generation maintains a considerable amount of autonomy, perception, gaining experience, and rational behavior. It is also more trustworthy and secure and protects the contractor’s privacy and confidential data better than direct online contracting [9].

Searching on the internet may take considerable time and effort, starting with traditional search engines after writing keywords. The search engine lists all the results it has regardless of whether they are required or not, and they may reach hundreds in no order, so the user has to narrow the search domain frequently until he gets the required result. However, the user may need to do another search similar to the first one to obtain the lowest prices, then contact the target website without knowing its credibility, rating, credit, and ability to deliver the required goods. Still, there is a possibility of hacking his/her personal information and banking data provided to the site to complete the transaction.

As for the party offering the commodity or service on the internet, it is difficult for the user to recognize the item due to the overlap between the massive number of products and services listed without categories based on quality. This degree of overlapping forces the user to sign in the website appearing in the top search results or showing the lowest prices without considering the item’s detail, which entails the exhibitor's high competitiveness should the purchaser know about them. Therefore, the Intelligent Agent has become an effective tool for the supplier to market the goods and target the customers directly [10].

Conversely, the Intelligent Agent collects the information and data of the commodity or service required, lists it in categories, negotiates its prices and contracting terms, compares it with similar items in terms of the cost, quality, and conditions. Then, the Agent presents the product to the consumer attached with the recommendation to purchase or not and why this recommendation is given. Once the consumer approves the proposal, the Agent concludes the contract immediately on behalf of its user and executes the agreement by paying the price using the consumer’s credit card code provided in the form of digital data [11].

Later, the Agent requests the contracting parties to assess their satisfaction with how each party has fulfilled their commitments. Then, it confines its negotiations to the list of suppliers who have gained credibility of the customers and excludes from negotiation any party with negative or unsatisfactory evaluation. In the future, the Intelligent Agent is expected to offer the users the items and services they need after it has searched for them and compared and negotiated their prices. It shall undertake this process based on reading their needs, and the users are only required to accept or reject the proposal [12].

The Intelligent Agent demonstrates its ability to present the required commodity or service, which serves the consumer's best interest according to its quality, brand, price, production date, and the way, time, and place of delivery. Furthermore, the Agent can negotiate with the various specialized suppliers on behalf of the purchaser. Of course, it cannot perform these functions unless it works independently of the contractors and has the rationality to complete the contract more potently than the physical person. It additionally saves the time and effort of the latter and reduces their expenses [13].

REFERENCES

- [1] Nabila Kurdi: The tradition of Tariq Al-Wakeel Al-Zakawi in e-commerce and the active form of Nehu (Jordan: Yarmouk University, Faculty of Law, Master's Thesis, 2011) p. 8.
- [2] Ahmed Qassem Faraj: Using the Zakat Wakeel in Electronic Commerce: A bottle study cemetery in Iyar Mihya and Nafeh Taara Al Uloom 2017), December 12 edition.
- [3] Nabila Kurdi: Sweating Ran Tariq Al-Wakeel Al-Zaki in Electronic Commerce, previous reference, p. 11.
- [4] Ahmed Farag: The Street of Employment, the Honorable Wakeel in Electronic Commerce, previous reference, p. 18.
- [5] Nisreen Salman Mansour: The bottle price of the electronic agent in the Syrian Star (United Arab Emirates: University of Sharjah Journal of Sharia and Law Sciences, Volume 14, Issue 1, June 2017) p434.
- [6] Fairouz Mofi, Farida Al-Mihabi: Abra Al-Kininiya for the electronic agent in Ibrim, the colonel of electronic commerce (Algeria: Athra University - Mira 2 - 2017).
- [7] Fayrouz Mofi, Farida Al-Mihabi: Abra Al-Qeniniyah for the electronic agent in Ibrim, the colonel of electronic commerce (Algeria: Athra University - Mira 2 - 2017), p. 26.
- [8] Ahmed Farag: The Street of Use of the Zakatable Wakeel in Electronic Commerce, previous reference, pp. 30-31.
- [9] Ahmed Farag: Using the Zakatable Wakeel in Electronic Commerce, previous reference, pp. 23-24; Nabila Kurdi: The Tariq Ali Tariq Al-Wakeel Al-Zaki in Electronic Commerce, op. cit., p. g p.
- [10] Dr. The prey of the casbah, Nabila Kurdi: the virtuous agent of Mansour Qanini: A Technic Tower with Inqlab Ra'la Al-Qourid? (United Arab Emirates: Sharia and Law Journal, College of Law, UAE University, Issue 55, July 2013) p. 129.

[11] Ahmed Farag: Al-Ustijim Al-Wakeel Al-Zakim in E-Commerce, previous reference, p. 33.

[12] Ahmed Farag: Street of Employment, the Honorable Wakeel in Electronic Commerce, previous reference, p. 12, 33.

[13] Ahmed Farag: The Street of Use of the Zakatable Wakeel in Electronic Commerce, previous reference, p. 25.